

MBS Scintilla Plugin Documentation

Christian Schmitz

March 10, 2024

0.1 Introduction

This is the PDF version of the documentation for the Xojo Plug-in from Monkeybread Software Germany.
Plugin part: MBS Scintilla Plugin

0.2 Content

- 1 List of all topics 3
- 2 List of all classes 35
- 3 List of all controls 37
- 4 All items in this plugin 39
- 5 List of Questions in the FAQ 383
- 6 The FAQ 393

Chapter 1

List of Topics

• 4 Scintilla	39
– 4.1.1 control DesktopScintillaControlMBS	39
* 4.1.3 AddSelection(caret as Integer, anchor as Integer)	40
* 4.1.4 AddStyledText(StyledText as MemoryBlock)	40
* 4.1.5 AddTabStop(line as Integer, x as Integer)	40
* 4.1.6 AddText(Text as String)	40
* 4.1.7 AddUndoAction(token as Integer, UndoFlags as Integer)	41
* 4.1.8 AllocateBytes(bytes as Integer)	41
* 4.1.9 AllocateLineCharacterIndex(lineCharacterIndex as Integer)	41
* 4.1.10 AllocateLines(line as Integer)	42
* 4.1.11 AnnotationClearAll	42
* 4.1.12 AnnotationLines(line as Integer) as Integer	42
* 4.1.13 AppendText(Text as String)	42
* 4.1.14 AssignCmdKey(keyDefinition as Integer, sciCommand as Integer)	42
* 4.1.15 AutoComplete	43
* 4.1.16 AutoCompleteCancel	43
* 4.1.17 AutoCompletePosStart as Integer	44
* 4.1.18 AutoCompleteSelect(Value as String)	44
* 4.1.19 AutoCompleteSetFillUps(characterSet as String)	44
* 4.1.20 AutoCompleteShow(lengthEntered as Integer, itemList as String)	44
* 4.1.21 AutoCompleteStops(characterSet as String)	45
* 4.1.22 BackTab	45
* 4.1.23 BeginUndoAction	45
* 4.1.24 BraceBadLight(pos as Integer)	45
* 4.1.25 BraceBadLightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)	45
* 4.1.26 BraceHighlight(posA as Integer, posB as Integer)	46
* 4.1.27 BraceHighlightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)	46

* 4.1.28 BraceMatch(pos as Integer, maxReStyle as Integer) as Integer	46
* 4.1.29 BraceMatchNext(pos as Integer, startPos as Integer) as Integer	46
* 4.1.30 CallTipCancel	46
* 4.1.31 CallTipSetBackColor(backColor as Color)	47
* 4.1.32 CallTipSetForeColor(foreColor as Color)	47
* 4.1.33 CallTipSetForeColorHighlight(foreColor as Color)	47
* 4.1.34 CallTipSetHighlight(highlightStart as Integer, highlightEnd as Integer)	47
* 4.1.35 CallTipSetPosition(above as Boolean)	48
* 4.1.36 CallTipShow(pos as Integer, definition as String)	48
* 4.1.37 CallTipUseStyle(tabSize as Integer)	49
* 4.1.38 Cancel	49
* 4.1.39 ChangeInsertion(text as String)	49
* 4.1.40 ChangeLexerState(start as Integer, ende as Integer) as Integer	49
* 4.1.41 Character(position as Integer) as Integer	49
* 4.1.42 CharacterString(position as Integer, byref Length as Integer) as String	50
* 4.1.43 CharLeft	50
* 4.1.44 CharLeftExtend	50
* 4.1.45 CharLeftRectExtend	50
* 4.1.46 CharPositionFromPoint(x as Integer, y as Integer) as Integer	50
* 4.1.47 CharPositionFromPointClose(x as Integer, y as Integer) as Integer	51
* 4.1.48 CharRight	51
* 4.1.49 CharRightExtend	51
* 4.1.50 CharRightRectExtend	51
* 4.1.51 ChooseCaretX	51
* 4.1.52 Clear	51
* 4.1.53 ClearAll	52
* 4.1.54 ClearAllCmdKeys	52
* 4.1.55 ClearAllRepresentations	52
* 4.1.56 ClearCmdKey(keyDefinition as Integer)	52
* 4.1.57 ClearDocumentStyle	52
* 4.1.58 ClearRegisteredImages	53
* 4.1.59 ClearRepresentation(encodedCharacter as String)	53
* 4.1.60 ClearSelections	53
* 4.1.61 ClearTabStops(line as Integer)	53
* 4.1.62 Colourise(start as Integer, ende as Integer = -1)	53
* 4.1.63 ColouriseAll	53
* 4.1.64 Column(pos as Integer) as Integer	54
* 4.1.65 ContractedFoldNext(lineStart as Integer) as Integer	54
* 4.1.66 ConvertEOLs(EndOfLineMode as Integer)	54
* 4.1.67 Copy	55
* 4.1.68 CopyAllowLine	55
* 4.1.69 CopyRange(RangeStart as Integer, RangeEnd as Integer)	55

	5
* 4.1.70 CopyText(Text as String)	55
* 4.1.71 CountCharacters(start as Integer, ende as Integer) as Integer	55
* 4.1.72 CountCodeUnits(start as Integer, ende as Integer) as Integer	55
* 4.1.73 CreateLoader(bytes as Integer = 1000000, documentOptions as Integer = 0) as ScintillaLoaderMBS	56
* 4.1.74 Cut	56
* 4.1.75 DeleteBack	56
* 4.1.76 DeleteBackNotLine	56
* 4.1.77 DeleteRange(start as Integer, lengthDelete as Integer)	57
* 4.1.78 DelLineLeft	57
* 4.1.79 DelLineRight	57
* 4.1.80 DelWordLeft	57
* 4.1.81 DelWordRight	57
* 4.1.82 DelWordRightEnd	57
* 4.1.83 DescribeProperty(Key as String) as String	58
* 4.1.84 DocLineFromVisible(line as Integer) as Integer	58
* 4.1.85 DocumentEnd	58
* 4.1.86 DocumentEndExtend	58
* 4.1.87 DocumentStart	58
* 4.1.88 DocumentStartExtend	59
* 4.1.89 DropSelectionN(selection as Integer)	59
* 4.1.90 EditToggleOvertyp	59
* 4.1.91 ElementAllowsTranslucent(element as Integer) as Boolean	59
* 4.1.92 ElementBaseColour(element as Integer) as Color	59
* 4.1.93 ElementIsSet(element as Integer) as Boolean	60
* 4.1.94 EmptyUndoBuffer	60
* 4.1.95 EndStyled as Integer	60
* 4.1.96 EndUndoAction	60
* 4.1.97 EnsureVisible(line as Integer)	61
* 4.1.98 EnsureVisibleEnforcePolicy(line as Integer)	61
* 4.1.99 EOLAnnotationClearAll	61
* 4.1.100 ExpandChildren(Line as Integer, FoldLevel as Integer)	61
* 4.1.101 FindColumn(line as Integer, column as Integer) as Integer	61
* 4.1.102 FindIndicatorFlash(start as Integer, ende as Integer)	62
* 4.1.103 FindIndicatorHide	63
* 4.1.104 FindIndicatorShow(start as Integer, ende as Integer)	63
* 4.1.105 FindText(searchFlags as Integer, Text as String, byref RangeStart as Integer, byref RangeEnd as Integer) as Integer	63
* 4.1.106 FoldAll(FoldAction as Integer)	63
* 4.1.107 FoldChildren(Line as Integer, FoldAction as Integer)	64
* 4.1.108 FoldLine(Line as Integer, FoldAction as Integer)	64
* 4.1.109 FoldParent(line as Integer) as Integer	65

* 4.1.110 FormatRange(draw as boolean, range as ScintillaRangeToFormatMBS) as Integer	65
* 4.1.111 FormFeed	66
* 4.1.112 GetLineSelEndPosition(line as Integer) as Integer	66
* 4.1.113 GetLineSelStartPosition(line as Integer) as Integer	66
* 4.1.114 GetNextTabStop(line as Integer, x as Integer) as Integer	66
* 4.1.115 GetStyledText(RangeStart as Integer, RangeEnd as Integer, byref Styledtext as MemoryBlock) as Integer	67
* 4.1.116 GetTextRange(RangeStart as Integer, RangeEnd as Integer, byref Text as String) as Integer	67
* 4.1.117 GotoLine(line as Integer)	67
* 4.1.118 GotoPos(pos as Integer)	67
* 4.1.119 GrabFocus	68
* 4.1.120 HideLines(lineStart as Integer, lineEnd as Integer)	68
* 4.1.121 HideSelection(hide as Boolean)	68
* 4.1.122 Home	68
* 4.1.123 HomeDisplay	68
* 4.1.124 HomeDisplayExtend	69
* 4.1.125 HomeExtend	69
* 4.1.126 HomeRectExtend	69
* 4.1.127 HomeWrap	69
* 4.1.128 HomeWrapExtend	69
* 4.1.129 IndexPositionFromLine(line as Integer, lineCharacterIndex as Integer) as Integer	69
* 4.1.130 Indicator(index as Integer) as ScintillaIndicatorMBS	70
* 4.1.131 IndicatorAllOnFor(pos as Integer) as Integer	70
* 4.1.132 IndicatorClearRange(start as Integer, lengthClear as Integer)	70
* 4.1.133 IndicatorFillRange(start as Integer, lengthFill as Integer)	70
* 4.1.134 InitializeLexer(Lexer as String)	70
* 4.1.135 InsertText(Text as String, atPosition as Integer = -1)	71
* 4.1.136 IsRangeWord(start as Integer, ende as Integer) as Boolean	71
* 4.1.137 LastChild(line as Integer, level as Integer) as Integer	71
* 4.1.138 LexerNameFromID(ID as Integer) as String	72
* 4.1.139 LexerNames as String()	72
* 4.1.140 lexillaLibraryLoaded as boolean	72
* 4.1.141 Line(line as Integer) as String	72
* 4.1.142 LineCopy	73
* 4.1.143 LineCut	73
* 4.1.144 LineDelete	73
* 4.1.145 LineDown	73
* 4.1.146 LineDownExtend	73
* 4.1.147 LineDownRectExtend	74
* 4.1.148 LineDuplicate	74
* 4.1.149 LineEnd	74

	7
* 4.1.150 LineEnd(line as Integer) as Integer	74
* 4.1.151 LineEndDisplay	74
* 4.1.152 LineEndDisplayExtend	75
* 4.1.153 LineEndExtend	75
* 4.1.154 LineEndPosition(line as Integer) as Integer	75
* 4.1.155 LineEndRectExtend	75
* 4.1.156 LineEndWrap	75
* 4.1.157 LineEndWrapExtend	75
* 4.1.158 LineFromIndexPosition(pos as Integer, lineCharacterIndex as Integer) as Integer	76
* 4.1.159 LineFromPosition(pos as Integer) as Integer	76
* 4.1.160 LineIndentPosition(line as Integer) as Integer	76
* 4.1.161 LineLength(line as Integer) as Integer	76
* 4.1.162 LineReverse	76
* 4.1.163 LineScroll(columns as Integer, lines as Integer)	77
* 4.1.164 LineScrollDown	77
* 4.1.165 LineScrollUp	77
* 4.1.166 LinesJoin	77
* 4.1.167 LinesSplit(pixelWidth as Integer)	77
* 4.1.168 LineStart(line as Integer) as Integer	78
* 4.1.169 LineTranspose	78
* 4.1.170 LineUp	78
* 4.1.171 LineUpExtend	78
* 4.1.172 LineUpRectExtend	78
* 4.1.173 LineVisible(line as Integer) as Boolean	79
* 4.1.174 LoadFramework(path as folderitem) as boolean	79
* 4.1.175 LoadLibrary(path as folderitem) as boolean	79
* 4.1.176 LowerCase	79
* 4.1.177 Margin(index as Integer) as ScintillaMarginMBS	79
* 4.1.178 MarginTextClearAll	79
* 4.1.179 Marker(index as Integer) as ScintillaMarkerMBS	80
* 4.1.180 MarkerAdd(Line as Integer, markerNumber as Integer) as Integer	80
* 4.1.181 MarkerAddSet(line as Integer, markerSet as Integer)	80
* 4.1.182 MarkerDefineRGBAIImage(markerNumber as Integer, Width as Integer, Height as Integer, ScalePercent as Integer = 100, Pixels as MemoryBlock)	80
* 4.1.183 MarkerDelete(Line as Integer, markerNumber as Integer)	81
* 4.1.184 MarkerDeleteAll(markerNumber as Integer)	82
* 4.1.185 MarkerDeleteHandle(markerHandle as Integer)	82
* 4.1.186 MarkerEnableHighlight(enabled as Boolean)	82
* 4.1.187 MarkerGet(Line as Integer) as Integer	82
* 4.1.188 MarkerHandleFromLine(line as Integer, which as Integer) as Integer	82
* 4.1.189 MarkerLineFromHandle(markerHandle as Integer) as Integer	83
* 4.1.190 MarkerNext(lineStart as Integer, markerMask as Integer) as Integer	83

* 4.1.191 MarkerNumberFromLine(line as Integer, which as Integer) as Integer	83
* 4.1.192 MarkerPrevious(lineStart as Integer, markerMask as Integer) as Integer	83
* 4.1.193 MoveCaretInsideView	84
* 4.1.194 MoveSelectedLinesDown	84
* 4.1.195 MoveSelectedLinesUp	84
* 4.1.196 MultiEdgeAddLine(column as Integer, edgeColour as Color)	84
* 4.1.197 MultiEdgeClearAll	84
* 4.1.198 MultiEdgeColumn(which as Integer) as Integer	85
* 4.1.199 MultipleSelectAddEach	85
* 4.1.200 MultipleSelectAddNext	85
* 4.1.201 NewLine	85
* 4.1.202 PageDown	85
* 4.1.203 PageDownExtend	86
* 4.1.204 PageDownRectExtend	86
* 4.1.205 PageUp	86
* 4.1.206 PageUpExtend	86
* 4.1.207 PageUpRectExtend	86
* 4.1.208 ParaDown	86
* 4.1.209 ParaDownExtend	87
* 4.1.210 ParaUp	87
* 4.1.211 ParaUpExtend	87
* 4.1.212 Paste	87
* 4.1.213 PointXFromPosition(pos as Integer) as Integer	87
* 4.1.214 PointYFromPosition(pos as Integer) as Integer	88
* 4.1.215 PositionAfter(pos as Integer) as Integer	88
* 4.1.216 PositionBefore(pos as Integer) as Integer	88
* 4.1.217 PositionFromLine(line as Integer) as Integer	88
* 4.1.218 PositionFromPoint(x as Integer, y as integer) as integer	88
* 4.1.219 PositionFromPointClose(x as Integer, y as integer) as integer	89
* 4.1.220 PositionRelative(pos as Integer, relative as Integer) as Integer	89
* 4.1.221 PositionRelativeCodeUnits(pos as Integer, relative as Integer) as Integer	89
* 4.1.222 PropertyInt(name as String, defaultValue as Integer = 0) as Integer	89
* 4.1.223 PropertyType(name as String) as Integer	89
* 4.1.224 Redo	90
* 4.1.225 RegisterRGBAImage(type as Integer, Width as Integer, Height as Integer, Pixels as MemoryBlock)	90
* 4.1.226 ReleaseAllExtendedStyles	91
* 4.1.227 ReleaseLineCharacterIndex(lineCharacterIndex as Integer)	91
* 4.1.228 ReplaceRectangular(length as Integer, text as String)	91
* 4.1.229 ReplaceSelection(text as string)	92
* 4.1.230 ReplaceTarget(text as string) as Integer	92
* 4.1.231 ReplaceTargetRE(text as string) as Integer	92

* 4.1.232 ResetElementColour(element as Integer)	92
* 4.1.233 RotateSelection	92
* 4.1.234 scintillaLibraryLoaded as boolean	93
* 4.1.235 ScrollCaret	93
* 4.1.236 ScrollRange(secondary as Integer, primary as Integer)	93
* 4.1.237 ScrollToEnd	93
* 4.1.238 ScrollToStart	93
* 4.1.239 SearchAnchor	94
* 4.1.240 SearchInTarget(text as string) as Integer	94
* 4.1.241 SearchNext(searchFlags as Integer, text as String) as Integer	94
* 4.1.242 SearchPrev(searchFlags as Integer, text as String) as Integer	95
* 4.1.243 SelectAll	95
* 4.1.244 SelectionDuplicate	96
* 4.1.245 SelectionNEndVirtualSpace(selection as Integer) as Integer	96
* 4.1.246 SelectionNStartVirtualSpace(selection as Integer) as Integer	96
* 4.1.247 SetAdditionalSelBackColor(value as Color)	96
* 4.1.248 SetAdditionalSelForeColor(value as Color)	96
* 4.1.249 SetCharsDefault	97
* 4.1.250 SetDocument(otherControl as Variant)	97
* 4.1.251 SetEmptySelection(caret as Integer)	97
* 4.1.252 SetFoldFlags(FoldFlags as Integer)	97
* 4.1.253 SetFoldMarginColor(useSetting as boolean, value as Color)	98
* 4.1.254 SetFoldMarginHighlightColor(useSetting as boolean, value as Color)	98
* 4.1.255 SetHotspotActiveBackColor(useSetting as boolean, value as Color)	98
* 4.1.256 SetHotspotActiveForeColor(useSetting as boolean, value as Color)	99
* 4.1.257 SetSavePoint	99
* 4.1.258 SetSel(anchor as Integer, caret as Integer)	99
* 4.1.259 SetSelBackColor(useSetting as boolean, value as Color)	99
* 4.1.260 SetSelection(caret as Integer, anchor as Integer)	100
* 4.1.261 SetSelForeColor(useSetting as boolean, value as Color)	100
* 4.1.262 setStatusText(Text as String)	100
* 4.1.263 SetStyling(length as Integer, style as ScintillaStyleMBS)	100
* 4.1.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS)	100
* 4.1.265 SetStylingEx(Styles as MemoryBlock)	101
* 4.1.266 SetTargetRange(start as Integer, ende as Integer)	101
* 4.1.267 SetVisiblePolicy(visiblePolicy as Integer, visibleSlop as Integer)	101
* 4.1.268 SetWhitespaceBackColor(useSetting as boolean, value as Color)	101
* 4.1.269 SetWhitespaceForeColor(useSetting as boolean, value as Color)	102
* 4.1.270 SetXCaretPolicy(caretPolicy as Integer, caretSlop as Integer)	102
* 4.1.271 SetYCaretPolicy(caretPolicy as Integer, caretSlop as Integer)	102
* 4.1.272 ShowLines(lineStart as Integer, lineEnd as Integer)	103
* 4.1.273 StartRecord	103

* 4.1.274 StartStyling(start as Integer)	103
* 4.1.275 StopRecord	103
* 4.1.276 StringOfSpan(Span as ScintillaSpanMBS) as String	103
* 4.1.277 StutteredPageDown	104
* 4.1.278 StutteredPageDownExtend	104
* 4.1.279 StutteredPageUp	104
* 4.1.280 StutteredPageUpExtend	104
* 4.1.281 Style(index as Integer) as ScintillaStyleMBS	104
* 4.1.282 StyleAt(position as Integer) as ScintillaStyleMBS	105
* 4.1.283 StyleClearAll	105
* 4.1.284 StyleResetDefault	105
* 4.1.285 SupportsFeature(feature as Integer) as Boolean	105
* 4.1.286 SwapMainAnchorCaret	106
* 4.1.287 Tab	106
* 4.1.288 Tag(tagNumber as Integer) as String	106
* 4.1.289 TargetFromSelection	106
* 4.1.290 TargetWholeDocument	106
* 4.1.291 TextHeight(line as Integer) as Integer	106
* 4.1.292 ToggleCaretSticky	107
* 4.1.293 ToggleFold(line as Integer)	107
* 4.1.294 ToggleFoldShowText(Line as Integer, text as String)	107
* 4.1.295 Undo	108
* 4.1.296 UpperCase	108
* 4.1.297 UsePopUp(popUpMode as Integer)	108
* 4.1.298 UserListShow(listType as Integer, itemList as string)	108
* 4.1.299 VCHome	109
* 4.1.300 VCHomeDisplay	109
* 4.1.301 VCHomeDisplayExtend	109
* 4.1.302 VCHomeExtend	109
* 4.1.303 VCHomeRectExtend	110
* 4.1.304 VCHomeWrap	110
* 4.1.305 VCHomeWrapExtend	110
* 4.1.306 VerticalCentreCaret	110
* 4.1.307 VisibleFromDocLine(line as Integer) as Integer	110
* 4.1.308 WordEndPosition(pos as Integer, onlyWordCharacters as boolean) as Integer	111
* 4.1.309 WordLeft	111
* 4.1.310 WordLeftEnd	111
* 4.1.311 WordLeftEndExtend	111
* 4.1.312 WordLeftExtend	111
* 4.1.313 WordPartLeft	112
* 4.1.314 WordPartLeftExtend	112
* 4.1.315 WordPartRight	112

	11
* 4.1.316 WordPartRightExtend	112
* 4.1.317 WordRight	112
* 4.1.318 WordRightEnd	113
* 4.1.319 WordRightEndExtend	113
* 4.1.320 WordRightExtend	113
* 4.1.321 WordStartPosition(pos as Integer, onlyWordCharacters as boolean) as Integer	113
* 4.1.322 WrapCount(line as Integer) as Integer	114
* 4.1.323 ZoomIn	114
* 4.1.324 ZoomOut	114
* 4.1.326 Accessibility as Integer	114
* 4.1.327 AdditionalCaretForeColor as Color	114
* 4.1.328 AdditionalCaretsBlink as Boolean	115
* 4.1.329 AdditionalCaretsVisible as Boolean	115
* 4.1.330 AdditionalSelAlpha as Integer	115
* 4.1.331 AdditionalSelectionTyping as Boolean	115
* 4.1.332 AllLinesVisible as Boolean	115
* 4.1.333 Anchor as Integer	116
* 4.1.334 AnnotationVisible as Integer	116
* 4.1.335 AutoCompleteActive as Boolean	116
* 4.1.336 AutoCompleteAutoHide as Boolean	116
* 4.1.337 AutoCompleteCancelAtStart as Boolean	116
* 4.1.338 AutoCompleteCaseInsensitiveBehaviour as Integer	117
* 4.1.339 AutoCompleteChooseSingle as Boolean	117
* 4.1.340 AutoCompleteCurrent as Integer	117
* 4.1.341 AutoCompleteCurrentText as String	117
* 4.1.342 AutoCompleteDropRestOfWord as Boolean	118
* 4.1.343 AutoCompleteIgnoreCase as Boolean	118
* 4.1.344 AutoCompleteMaxHeight as Integer	118
* 4.1.345 AutoCompleteMaxWidth as Integer	118
* 4.1.346 AutoCompleteMulti as Integer	119
* 4.1.347 AutoCompleteOptions as Integer	119
* 4.1.348 AutoCompleteOrder as Integer	119
* 4.1.349 AutoCompleteSeparator as Integer	119
* 4.1.350 AutoCompleteTypeSeparator as Integer	120
* 4.1.351 AutomaticFold as Integer	120
* 4.1.352 BackSpaceUnIndents as Boolean	120
* 4.1.353 Bidirectional as Integer	121
* 4.1.354 CallTipActive as Boolean	121
* 4.1.355 CallTipPosStart as Integer	121
* 4.1.356 CanPaste as Boolean	122
* 4.1.357 CanRedo as Boolean	122
* 4.1.358 CanUndo as Boolean	122

* 4.1.359 CaretForeColor as Color	122
* 4.1.360 CaretLineBackAlpha as Integer	123
* 4.1.361 CaretLineBackColor as Color	123
* 4.1.362 CaretLineFrame as Integer	123
* 4.1.363 CaretLineHighlightSubLine as Boolean	123
* 4.1.364 CaretLineLayer as Integer	123
* 4.1.365 CaretLineVisible as Boolean	124
* 4.1.366 CaretLineVisibleAlways as Boolean	124
* 4.1.367 CaretPeriod as Integer	124
* 4.1.368 CaretSticky as Integer	124
* 4.1.369 CaretStyle as Integer	125
* 4.1.370 CaretWidth as Integer	125
* 4.1.371 CharacterCategoryOptimization as Integer	126
* 4.1.372 ControlCharSymbol as Integer	126
* 4.1.373 CurrentLine as String	126
* 4.1.374 Cursor as Integer	127
* 4.1.375 DefaultFoldDisplayText as String	127
* 4.1.376 DescribeKeyWordSets as String	127
* 4.1.377 DocumentOptions as Integer	127
* 4.1.378 EdgeColor as Color	128
* 4.1.379 EdgeColumn as Integer	128
* 4.1.380 EdgeMode as Integer	128
* 4.1.381 EndAtLastLine as Boolean	128
* 4.1.382 EOLAnnotationVisible as Integer	128
* 4.1.383 EOLMode as Integer	129
* 4.1.384 ExtraAscent as Integer	129
* 4.1.385 ExtraDescent as Integer	130
* 4.1.386 FirstVisibleLine as Integer	130
* 4.1.387 Focus as Boolean	130
* 4.1.388 FoldDisplayTextStyle as Integer	130
* 4.1.389 FontLocale as String	131
* 4.1.390 FontQuality as Integer	131
* 4.1.391 HasBorder as Boolean	131
* 4.1.392 HighlightGuide as Integer	131
* 4.1.393 HotspotActiveBack as Color	131
* 4.1.394 HotspotActiveFore as Color	132
* 4.1.395 HotspotActiveUnderline as Boolean	132
* 4.1.396 HotspotSingleLine as Boolean	132
* 4.1.397 HScrollBar as Boolean	132
* 4.1.398 IdleStyling as Integer	132
* 4.1.399 IMEInteraction as Integer	133
* 4.1.400 Indent as Integer	133

	13
* 4.1.401 IndentationGuides as Integer	134
* 4.1.402 IndicatorCurrent as ScintillaIndicatorMBS	134
* 4.1.403 IndicatorValue as Integer	134
* 4.1.404 LayoutCache as Integer	135
* 4.1.405 Length as Integer	135
* 4.1.406 LexerLanguage as String	135
* 4.1.407 LibraryError as String	135
* 4.1.408 LineCharacterIndex as Integer	135
* 4.1.409 LineCount as Integer	135
* 4.1.410 LineEndTypesActive as Integer	136
* 4.1.411 LineEndTypesAllowed as Integer	136
* 4.1.412 LineEndTypesSupported as Integer	136
* 4.1.413 LinesOnScreen as Integer	137
* 4.1.414 MainSelection as Integer	137
* 4.1.415 MarginLeft as Integer	137
* 4.1.416 MarginOptions as Integer	137
* 4.1.417 MarginRight as Integer	138
* 4.1.418 Margins as Integer	138
* 4.1.419 MaxLineState as Integer	138
* 4.1.420 ModEventMask as Integer	138
* 4.1.421 Modify as Boolean	138
* 4.1.422 MouseDownCaptures as Boolean	139
* 4.1.423 MouseDwellTime as Integer	139
* 4.1.424 MouseSelectionRectangularSwitch as Boolean	139
* 4.1.425 MouseWheelCaptures as Boolean	139
* 4.1.426 MoveExtendsSelection as Boolean	140
* 4.1.427 MultiPaste as Integer	140
* 4.1.428 MultipleSelection as Boolean	140
* 4.1.429 NamedStyles as Integer	141
* 4.1.430 NSView as Variant	141
* 4.1.431 Overtyping as Boolean	141
* 4.1.432 PasteConvertEndings as Boolean	141
* 4.1.433 Position as Integer	142
* 4.1.434 PositionCache as Integer	142
* 4.1.435 PrintColourMode as Integer	142
* 4.1.436 PrintMagnification as Integer	142
* 4.1.437 PrintWrapMode as Integer	143
* 4.1.438 PropertyNames as String	143
* 4.1.439 PunctuationChars as String	143
* 4.1.440 ReadOnly as Boolean	143
* 4.1.441 RectangularSelectionAnchor as Integer	143
* 4.1.442 RectangularSelectionAnchorVirtualSpace as Integer	144

* 4.1.443 RectangularSelectionCaret as Integer	144
* 4.1.444 RectangularSelectionCaretVirtualSpace as Integer	145
* 4.1.445 RectangularSelectionModifier as Integer	145
* 4.1.446 ScrollWidth as Integer	145
* 4.1.447 ScrollWidthTracking as Boolean	145
* 4.1.448 SearchFlags as Integer	146
* 4.1.449 SelAlpha as Integer	146
* 4.1.450 SelectedText as String	146
* 4.1.451 SelectionEmpty as Boolean	146
* 4.1.452 SelectionEnd as Integer	146
* 4.1.453 SelectionIsRectangle as Boolean	147
* 4.1.454 SelectionLayer as Integer	147
* 4.1.455 SelectionMode as Integer	147
* 4.1.456 Selections as Integer	147
* 4.1.457 SelectionSpan as ScintillaSpanMBS	148
* 4.1.458 SelectionStart as Integer	148
* 4.1.459 SelEOLFilled as Boolean	148
* 4.1.460 ShowInfoBar as Boolean	148
* 4.1.461 Status as Integer	148
* 4.1.462 TabDrawMode as Integer	149
* 4.1.463 TabIndents as Boolean	149
* 4.1.464 TabMinimumWidth as Integer	149
* 4.1.465 TabWidth as Integer	149
* 4.1.466 TargetEnd as Integer	150
* 4.1.467 TargetEndVirtualSpace as Integer	150
* 4.1.468 TargetSpan as ScintillaSpanMBS	150
* 4.1.469 TargetStart as Integer	150
* 4.1.470 TargetStartVirtualSpace as Integer	151
* 4.1.471 TargetText as String	151
* 4.1.472 Technology as Integer	151
* 4.1.473 Text as String	151
* 4.1.474 TextLength as Integer	152
* 4.1.475 UndoCollection as Boolean	152
* 4.1.476 UseTabs as Boolean	152
* 4.1.477 ViewEOL as Boolean	152
* 4.1.478 ViewWS as Integer	153
* 4.1.479 VirtualSpaceOptions as Integer	153
* 4.1.480 VScrollBar as Boolean	154
* 4.1.481 WhitespaceChars as String	154
* 4.1.482 WhitespaceSize as Integer	154
* 4.1.483 WordChars as String	154
* 4.1.484 WrapIndentMode as Integer	155

* 4.1.485 WrapMode as Integer	155
* 4.1.486 WrapStartIndent as Integer	156
* 4.1.487 WrapVisualFlags as Integer	156
* 4.1.488 WrapVisualFlagsLocation as Integer	156
* 4.1.489 XOffset as Integer	156
* 4.1.490 Zoom as Integer	157
* 4.1.491 AnnotationStyle(line as Integer) as ScintillaStyleMBS	157
* 4.1.492 AnnotationStyles(line as Integer) as MemoryBlock	157
* 4.1.493 AnnotationText(line as Integer) as String	158
* 4.1.494 ElementColour(element as Integer) as Color	158
* 4.1.495 EOLAnnotationStyle(line as Integer) as ScintillaStyleMBS	158
* 4.1.496 EOLAnnotationText(line as Integer) as String	158
* 4.1.497 FoldExpanded(line as Integer) as Boolean	159
* 4.1.498 FoldLevel(line as Integer) as Integer	159
* 4.1.499 KeyWords(keyWordSet as Integer) as String	160
* 4.1.500 LineIndentation(line as Integer) as Integer	160
* 4.1.501 LineState(Line as Integer) as Integer	160
* 4.1.502 MarginStyle(Line as Integer) as ScintillaStyleMBS	161
* 4.1.503 MarginStyles(line as Integer) as MemoryBlock	161
* 4.1.504 MarginText(line as Integer) as String	162
* 4.1.505 PropertyValue(Key as String) as String	162
* 4.1.506 Representation(encodedCharacter as String) as String	163
* 4.1.507 RepresentationAppearance(encodedCharacter as String) as Integer	164
* 4.1.508 RepresentationColour(encodedCharacter as String) as Color	164
* 4.1.509 SelectionNAnchor(selection as Integer) as Integer	164
* 4.1.510 SelectionNAnchorVirtualSpace(selection as Integer) as Integer	164
* 4.1.511 SelectionNCaret(selection as Integer) as Integer	164
* 4.1.512 SelectionNCaretVirtualSpace(selection as Integer) as Integer	165
* 4.1.513 SelectionNEnd(selection as Integer) as Integer	165
* 4.1.514 SelectionNStart(selection as Integer) as Integer	165
* 4.1.516 AutoCompleteCancelled	165
* 4.1.517 AutoCompleteCharacterDeleted	165
* 4.1.518 AutoCompleteCompleted(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)	166
* 4.1.519 AutoCompleteSelection(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)	166
* 4.1.520 AutoCompleteSelectionChange(Position as Integer, Text as String, listType as Integer)	167
* 4.1.521 CallTipClick(Position as Integer)	167
* 4.1.522 CharacterAdded(Character as Integer, CharacterSource as Integer)	167
* 4.1.523 DoubleClick(Position as Integer, line as integer, modifiers as Integer)	168
* 4.1.524 DWellEnd(Position as Integer, X as Integer, Y as Integer)	168

* 4.1.525 DWellStart(Position as Integer, X as Integer, Y as Integer)	168
* 4.1.526 FocusIn	168
* 4.1.527 FocusLost	169
* 4.1.528 FocusOut	169
* 4.1.529 FocusReceived	169
* 4.1.530 FolderToggled(Line as Integer, Position as Integer, Margin as ScintillaMarginMBS)	169
* 4.1.531 HotSpotClick(Position as Integer, modifiers as Integer)	170
* 4.1.532 HotSpotDoubleClick(Position as Integer, modifiers as Integer)	170
* 4.1.533 HotspotReleaseClick(Position as Integer, modifiers as Integer)	170
* 4.1.534 IndicatorClick(Position as Integer, modifiers as Integer)	170
* 4.1.535 IndicatorRelease(Position as Integer, modifiers as Integer)	170
* 4.1.536 Key(Character as Integer, modifiers as Integer)	171
* 4.1.537 MacroRecord(Message as Integer, wParam as Integer, lParam as Integer)	171
* 4.1.538 MarginClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)	171
* 4.1.539 MarginRightClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)	172
* 4.1.540 MenuBarSelected	172
* 4.1.541 Modified(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer, foldLevelNow as Integer, foldLevelPrev as Integer, token as Integer, annotationLinesAdded as Integer)	173
* 4.1.542 ModifyAttemptReadOnly	173
* 4.1.543 NeedsShown(Position as Integer, length as Integer)	174
* 4.1.544 Painted	174
* 4.1.545 Prepare	174
* 4.1.546 SavePointLeft	175
* 4.1.547 SavePointReached	175
* 4.1.548 ScaleFactorChanged(NewFactor as double)	175
* 4.1.549 SelectionChanged(updated as Integer)	175
* 4.1.550 StyleNeeded(Position as Integer)	175
* 4.1.551 TextChanged(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer)	176
* 4.1.552 UpdateUI(updated as Integer)	177
* 4.1.553 URIDropped(text as String)	177
* 4.1.554 UserListSelection(Position as Integer, Character as Integer, Text as String, listType as Integer, listCompletionMethod as Integer)	177
* 4.1.555 Zoom	178

	17
• 4 Scintilla	39
– 4.2.1 control ScintillaControlMBS	194
* 4.2.3 AddSelection(caret as Integer, anchor as Integer)	194
* 4.2.4 AddStyledText(StyledText as MemoryBlock)	195
* 4.2.5 AddTabStop(line as Integer, x as Integer)	195
* 4.2.6 AddText(Text as String)	195
* 4.2.7 AddUndoAction(token as Integer, UndoFlags as Integer)	195
* 4.2.8 AllocateBytes(bytes as Integer)	196
* 4.2.9 AllocateLineCharacterIndex(lineCharacterIndex as Integer)	196
* 4.2.10 AllocateLines(line as Integer)	196
* 4.2.11 AnnotationClearAll	196
* 4.2.12 AnnotationLines(line as Integer) as Integer	197
* 4.2.13 AppendText(Text as String)	197
* 4.2.14 AssignCmdKey(keyDefinition as Integer, sciCommand as Integer)	197
* 4.2.15 AutoComplete	198
* 4.2.16 AutoCompleteCancel	198
* 4.2.17 AutoCompletePosStart as Integer	198
* 4.2.18 AutoCompleteSelect(Value as String)	198
* 4.2.19 AutoCompleteSetFillUps(characterSet as String)	199
* 4.2.20 AutoCompleteShow(lengthEntered as Integer, itemList as String)	199
* 4.2.21 AutoCompleteStops(characterSet as String)	199
* 4.2.22 BackTab	199
* 4.2.23 BeginUndoAction	199
* 4.2.24 BraceBadLight(pos as Integer)	200
* 4.2.25 BraceBadLightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)	200
* 4.2.26 BraceHighlight(posA as Integer, posB as Integer)	200
* 4.2.27 BraceHighlightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)	200
* 4.2.28 BraceMatch(pos as Integer, maxReStyle as Integer) as Integer	201
* 4.2.29 BraceMatchNext(pos as Integer, startPos as Integer) as Integer	201
* 4.2.30 CallTipCancel	201
* 4.2.31 CallTipSetBackColor(backColor as Color)	201
* 4.2.32 CallTipSetForeColor(foreColor as Color)	202
* 4.2.33 CallTipSetForeColorHighlight(foreColor as Color)	202
* 4.2.34 CallTipSetHighlight(highlightStart as Integer, highlightEnd as Integer)	202
* 4.2.35 CallTipSetPosition(above as Boolean)	202
* 4.2.36 CallTipShow(pos as Integer, definition as String)	202
* 4.2.37 CallTipUseStyle(tabSize as Integer)	203
* 4.2.38 Cancel	204
* 4.2.39 ChangeInsertion(text as String)	204

* 4.2.40	ChangeLexerState(start as Integer, ende as Integer) as Integer	204
* 4.2.41	Character(position as Integer) as Integer	204
* 4.2.42	CharacterString(position as Integer, byref Length as Integer) as String	204
* 4.2.43	CharLeft	205
* 4.2.44	CharLeftExtend	205
* 4.2.45	CharLeftRectExtend	205
* 4.2.46	CharPositionFromPoint(x as Integer, y as Integer) as Integer	205
* 4.2.47	CharPositionFromPointClose(x as Integer, y as Integer) as Integer	205
* 4.2.48	CharRight	205
* 4.2.49	CharRightExtend	206
* 4.2.50	CharRightRectExtend	206
* 4.2.51	ChooseCaretX	206
* 4.2.52	Clear	206
* 4.2.53	ClearAll	206
* 4.2.54	ClearAllCmdKeys	207
* 4.2.55	ClearAllRepresentations	207
* 4.2.56	ClearCmdKey(keyDefinition as Integer)	207
* 4.2.57	ClearDocumentStyle	207
* 4.2.58	ClearRegisteredImages	207
* 4.2.59	ClearRepresentation(encodedCharacter as String)	207
* 4.2.60	ClearSelections	208
* 4.2.61	ClearTabStops(line as Integer)	208
* 4.2.62	Colourise(start as Integer, ende as Integer = -1)	208
* 4.2.63	ColouriseAll	208
* 4.2.64	Column(pos as Integer) as Integer	208
* 4.2.65	ContractedFoldNext(lineStart as Integer) as Integer	209
* 4.2.66	ConvertEOLs(EndOfLineMode as Integer)	209
* 4.2.67	Copy	209
* 4.2.68	CopyAllowLine	209
* 4.2.69	CopyRange(RangeStart as Integer, RangeEnd as Integer)	210
* 4.2.70	CopyText(Text as String)	210
* 4.2.71	CountCharacters(start as Integer, ende as Integer) as Integer	210
* 4.2.72	CountCodeUnits(start as Integer, ende as Integer) as Integer	210
* 4.2.73	CreateLoader(bytes as Integer = 1000000, documentOptions as Integer = 0) as ScintillaLoaderMBS	210
* 4.2.74	Cut	211
* 4.2.75	DeleteBack	211
* 4.2.76	DeleteBackNotLine	211
* 4.2.77	DeleteRange(start as Integer, lengthDelete as Integer)	211
* 4.2.78	DelLineLeft	211
* 4.2.79	DelLineRight	212
* 4.2.80	DelWordLeft	212

	19
* 4.2.81 DelWordRight	212
* 4.2.82 DelWordRightEnd	212
* 4.2.83 DescribeProperty(Key as String) as String	212
* 4.2.84 DocLineFromVisible(line as Integer) as Integer	213
* 4.2.85 DocumentEnd	213
* 4.2.86 DocumentEndExtend	213
* 4.2.87 DocumentStart	213
* 4.2.88 DocumentStartExtend	213
* 4.2.89 DropSelectionN(selection as Integer)	214
* 4.2.90 EditToggleOvertyp	214
* 4.2.91 ElementAllowsTranslucent(element as Integer) as Boolean	214
* 4.2.92 ElementBaseColour(element as Integer) as Color	214
* 4.2.93 ElementIsSet(element as Integer) as Boolean	215
* 4.2.94 EmptyUndoBuffer	215
* 4.2.95 EndStyled as Integer	215
* 4.2.96 EndUndoAction	215
* 4.2.97 EnsureVisible(line as Integer)	215
* 4.2.98 EnsureVisibleEnforcePolicy(line as Integer)	216
* 4.2.99 EOLAnnotationClearAll	216
* 4.2.100 ExpandChildren(Line as Integer, FoldLevel as Integer)	216
* 4.2.101 FindColumn(line as Integer, column as Integer) as Integer	216
* 4.2.102 FindIndicatorFlash(start as Integer, ende as Integer)	217
* 4.2.103 FindIndicatorHide	218
* 4.2.104 FindIndicatorShow(start as Integer, ende as Integer)	218
* 4.2.105 FindText(searchFlags as Integer, Text as String, byref RangeStart as Integer, byref RangeEnd as Integer) as Integer	218
* 4.2.106 FoldAll(FoldAction as Integer)	218
* 4.2.107 FoldChildren(Line as Integer, FoldAction as Integer)	219
* 4.2.108 FoldLine(Line as Integer, FoldAction as Integer)	219
* 4.2.109 FoldParent(line as Integer) as Integer	220
* 4.2.110 FormatRange(draw as boolean, range as ScintillaRangeToFormatMBS) as Integer	220
* 4.2.111 FormFeed	221
* 4.2.112 GetLineSelEndPosition(line as Integer) as Integer	221
* 4.2.113 GetLineSelStartPosition(line as Integer) as Integer	221
* 4.2.114 GetNextTabStop(line as Integer, x as Integer) as Integer	221
* 4.2.115 GetStyledText(RangeStart as Integer, RangeEnd as Integer, byref Styledtext as MemoryBlock) as Integer	222
* 4.2.116 GetTextRange(RangeStart as Integer, RangeEnd as Integer, byref Text as String) as Integer	222
* 4.2.117 GotoLine(line as Integer)	222
* 4.2.118 GotoPos(pos as Integer)	222
* 4.2.119 GrabFocus	223

* 4.2.120 HideLines(lineStart as Integer, lineEnd as Integer)	223
* 4.2.121 HideSelection(hide as Boolean)	223
* 4.2.122 Home	223
* 4.2.123 HomeDisplay	223
* 4.2.124 HomeDisplayExtend	224
* 4.2.125 HomeExtend	224
* 4.2.126 HomeRectExtend	224
* 4.2.127 HomeWrap	224
* 4.2.128 HomeWrapExtend	224
* 4.2.129 IndexPositionFromLine(line as Integer, lineCharacterIndex as Integer) as Integer	224
* 4.2.130 Indicator(index as Integer) as ScintillaIndicatorMBS	225
* 4.2.131 IndicatorAllOnFor(pos as Integer) as Integer	225
* 4.2.132 IndicatorClearRange(start as Integer, lengthClear as Integer)	225
* 4.2.133 IndicatorFillRange(start as Integer, lengthFill as Integer)	225
* 4.2.134 InitializeLexer(Lexer as String)	225
* 4.2.135 InsertText(Text as String, atPosition as Integer = -1)	226
* 4.2.136 IsRangeWord(start as Integer, ende as Integer) as Boolean	226
* 4.2.137 LastChild(line as Integer, level as Integer) as Integer	226
* 4.2.138 LexerNameFromID(ID as Integer) as String	227
* 4.2.139 LexerNames as String()	227
* 4.2.140 lexillaLibraryLoaded as boolean	227
* 4.2.141 Line(line as Integer) as String	227
* 4.2.142 LineCopy	228
* 4.2.143 LineCut	228
* 4.2.144 LineDelete	228
* 4.2.145 LineDown	228
* 4.2.146 LineDownExtend	228
* 4.2.147 LineDownRectExtend	229
* 4.2.148 LineDuplicate	229
* 4.2.149 LineEnd	229
* 4.2.150 LineEnd(line as Integer) as Integer	229
* 4.2.151 LineEndDisplay	229
* 4.2.152 LineEndDisplayExtend	230
* 4.2.153 LineEndExtend	230
* 4.2.154 LineEndPosition(line as Integer) as Integer	230
* 4.2.155 LineEndRectExtend	230
* 4.2.156 LineEndWrap	230
* 4.2.157 LineEndWrapExtend	230
* 4.2.158 LineFromIndexPosition(pos as Integer, lineCharacterIndex as Integer) as Integer	231
* 4.2.159 LineFromPosition(pos as Integer) as Integer	231
* 4.2.160 LineIndentPosition(line as Integer) as Integer	231
* 4.2.161 LineLength(line as Integer) as Integer	231

* 4.2.162 LineReverse	231
* 4.2.163 LineScroll(columns as Integer, lines as Integer)	232
* 4.2.164 LineScrollDown	232
* 4.2.165 LineScrollUp	232
* 4.2.166 LinesJoin	232
* 4.2.167 LinesSplit(pixelWidth as Integer)	232
* 4.2.168 LineStart(line as Integer) as Integer	233
* 4.2.169 LineTranspose	233
* 4.2.170 LineUp	233
* 4.2.171 LineUpExtend	233
* 4.2.172 LineUpRectExtend	233
* 4.2.173 LineVisible(line as Integer) as Boolean	234
* 4.2.174 LoadFramework(path as folderitem) as boolean	234
* 4.2.175 LoadLibrary(path as folderitem) as boolean	234
* 4.2.176 LowerCase	234
* 4.2.177 Margin(index as Integer) as ScintillaMarginMBS	234
* 4.2.178 MarginTextClearAll	234
* 4.2.179 Marker(index as Integer) as ScintillaMarkerMBS	235
* 4.2.180 MarkerAdd(Line as Integer, markerNumber as Integer) as Integer	235
* 4.2.181 MarkerAddSet(line as Integer, markerSet as Integer)	235
* 4.2.182 MarkerDefineRGBAIImage(markerNumber as Integer, Width as Integer, Height as Integer, ScalePercent as Integer = 100, Pixels as MemoryBlock)	235
* 4.2.183 MarkerDelete(Line as Integer, markerNumber as Integer)	236
* 4.2.184 MarkerDeleteAll(markerNumber as Integer)	237
* 4.2.185 MarkerDeleteHandle(markerHandle as Integer)	237
* 4.2.186 MarkerEnableHighlight(enabled as Boolean)	237
* 4.2.187 MarkerGet(Line as Integer) as Integer	237
* 4.2.188 MarkerHandleFromLine(line as Integer, which as Integer) as Integer	237
* 4.2.189 MarkerLineFromHandle(markerHandle as Integer) as Integer	238
* 4.2.190 MarkerNext(lineStart as Integer, markerMask as Integer) as Integer	238
* 4.2.191 MarkerNumberFromLine(line as Integer, which as Integer) as Integer	238
* 4.2.192 MarkerPrevious(lineStart as Integer, markerMask as Integer) as Integer	238
* 4.2.193 MoveCaretInsideView	239
* 4.2.194 MoveSelectedLinesDown	239
* 4.2.195 MoveSelectedLinesUp	239
* 4.2.196 MultiEdgeAddLine(column as Integer, edgeColour as Color)	239
* 4.2.197 MultiEdgeClearAll	239
* 4.2.198 MultiEdgeColumn(which as Integer) as Integer	240
* 4.2.199 MultipleSelectAddEach	240
* 4.2.200 MultipleSelectAddNext	240
* 4.2.201 NewLine	240
* 4.2.202 PageDown	240

* 4.2.203 PageDownExtend	241
* 4.2.204 PageDownRectExtend	241
* 4.2.205 PageUp	241
* 4.2.206 PageUpExtend	241
* 4.2.207 PageUpRectExtend	241
* 4.2.208 ParaDown	241
* 4.2.209 ParaDownExtend	242
* 4.2.210 ParaUp	242
* 4.2.211 ParaUpExtend	242
* 4.2.212 Paste	242
* 4.2.213 PointXFromPosition(pos as Integer) as Integer	242
* 4.2.214 PointYFromPosition(pos as Integer) as Integer	243
* 4.2.215 PositionAfter(pos as Integer) as Integer	243
* 4.2.216 PositionBefore(pos as Integer) as Integer	243
* 4.2.217 PositionFromLine(line as Integer) as Integer	243
* 4.2.218 PositionFromPoint(x as Integer, y as integer) as integer	243
* 4.2.219 PositionFromPointClose(x as Integer, y as integer) as integer	244
* 4.2.220 PositionRelative(pos as Integer, relative as Integer) as Integer	244
* 4.2.221 PositionRelativeCodeUnits(pos as Integer, relative as Integer) as Integer	244
* 4.2.222 PropertyInt(name as String, defaultValue as Integer = 0) as Integer	244
* 4.2.223 PropertyType(name as String) as Integer	244
* 4.2.224 Redo	245
* 4.2.225 RegisterRGBAImage(type as Integer, Width as Integer, Height as Integer, Pixels as MemoryBlock)	245
* 4.2.226 ReleaseAllExtendedStyles	246
* 4.2.227 ReleaseLineCharacterIndex(lineCharacterIndex as Integer)	246
* 4.2.228 ReplaceRectangular(length as Integer, text as String)	246
* 4.2.229 ReplaceSelection(text as string)	247
* 4.2.230 ReplaceTarget(text as string) as Integer	247
* 4.2.231 ReplaceTargetRE(text as string) as Integer	247
* 4.2.232 ResetElementColour(element as Integer)	247
* 4.2.233 RotateSelection	247
* 4.2.234 scintillaLibraryLoaded as boolean	248
* 4.2.235 ScrollCaret	248
* 4.2.236 ScrollRange(secondary as Integer, primary as Integer)	248
* 4.2.237 ScrollToEnd	248
* 4.2.238 ScrollToStart	248
* 4.2.239 SearchAnchor	249
* 4.2.240 SearchInTarget(text as string) as Integer	249
* 4.2.241 SearchNext(searchFlags as Integer, text as String) as Integer	249
* 4.2.242 SearchPrev(searchFlags as Integer, text as String) as Integer	250
* 4.2.243 SelectAll	250

* 4.2.244 SelectionDuplicate	251
* 4.2.245 SelectionNEndVirtualSpace(selection as Integer) as Integer	251
* 4.2.246 SelectionNStartVirtualSpace(selection as Integer) as Integer	251
* 4.2.247 SetAdditionalSelBackColor(value as Color)	251
* 4.2.248 SetAdditionalSelForeColor(value as Color)	251
* 4.2.249 SetCharsDefault	252
* 4.2.250 SetDocument(otherControl as Variant)	252
* 4.2.251 SetEmptySelection(caret as Integer)	252
* 4.2.252 SetFoldFlags(FoldFlags as Integer)	252
* 4.2.253 SetFoldMarginColor(useSetting as boolean, value as Color)	253
* 4.2.254 SetFoldMarginHighlightColor(useSetting as boolean, value as Color)	253
* 4.2.255 SetHotspotActiveBackColor(useSetting as boolean, value as Color)	253
* 4.2.256 SetHotspotActiveForeColor(useSetting as boolean, value as Color)	253
* 4.2.257 SetSavePoint	254
* 4.2.258 SetSel(anchor as Integer, caret as Integer)	254
* 4.2.259 SetSelBackColor(useSetting as boolean, value as Color)	254
* 4.2.260 SetSelection(caret as Integer, anchor as Integer)	255
* 4.2.261 SetSelForeColor(useSetting as boolean, value as Color)	255
* 4.2.262 setStatusText(Text as String)	255
* 4.2.263 SetStyling(length as Integer, style as ScintillaStyleMBS)	255
* 4.2.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS)	255
* 4.2.265 SetStylingEx(Styles as MemoryBlock)	256
* 4.2.266 SetTargetRange(start as Integer, ende as Integer)	256
* 4.2.267 SetVisiblePolicy(visiblePolicy as Integer, visibleSlop as Integer)	256
* 4.2.268 SetWhitespaceBackColor(useSetting as boolean, value as Color)	256
* 4.2.269 SetWhitespaceForeColor(useSetting as boolean, value as Color)	257
* 4.2.270 SetXCaretPolicy(caretPolicy as Integer, caretSlop as Integer)	257
* 4.2.271 SetYCaretPolicy(caretPolicy as Integer, caretSlop as Integer)	257
* 4.2.272 ShowLines(lineStart as Integer, lineEnd as Integer)	258
* 4.2.273 StartRecord	258
* 4.2.274 StartStyling(start as Integer)	258
* 4.2.275 StopRecord	258
* 4.2.276 StringOfSpan(Span as ScintillaSpanMBS) as String	258
* 4.2.277 StutteredPageDown	259
* 4.2.278 StutteredPageDownExtend	259
* 4.2.279 StutteredPageUp	259
* 4.2.280 StutteredPageUpExtend	259
* 4.2.281 Style(index as Integer) as ScintillaStyleMBS	259
* 4.2.282 StyleAt(position as Integer) as ScintillaStyleMBS	260
* 4.2.283 StyleClearAll	260
* 4.2.284 StyleResetDefault	260
* 4.2.285 SupportsFeature(feature as Integer) as Boolean	260

* 4.2.286 SwapMainAnchorCaret	261
* 4.2.287 Tab	261
* 4.2.288 Tag(tagNumber as Integer) as String	261
* 4.2.289 TargetFromSelection	261
* 4.2.290 TargetWholeDocument	261
* 4.2.291 TextHeight(line as Integer) as Integer	261
* 4.2.292 ToggleCaretSticky	262
* 4.2.293 ToggleFold(line as Integer)	262
* 4.2.294 ToggleFoldShowText(Line as Integer, text as String)	262
* 4.2.295 Undo	263
* 4.2.296 UpperCase	263
* 4.2.297 UsePopUp(popUpMode as Integer)	263
* 4.2.298 UserListShow(listType as Integer, itemList as string)	263
* 4.2.299 VCHome	264
* 4.2.300 VCHomeDisplay	264
* 4.2.301 VCHomeDisplayExtend	264
* 4.2.302 VCHomeExtend	264
* 4.2.303 VCHomeRectExtend	265
* 4.2.304 VCHomeWrap	265
* 4.2.305 VCHomeWrapExtend	265
* 4.2.306 VerticalCentreCaret	265
* 4.2.307 VisibleFromDocLine(line as Integer) as Integer	265
* 4.2.308 WordEndPosition(pos as Integer, onlyWordCharacters as boolean) as Integer	266
* 4.2.309 WordLeft	266
* 4.2.310 WordLeftEnd	266
* 4.2.311 WordLeftEndExtend	266
* 4.2.312 WordLeftExtend	266
* 4.2.313 WordPartLeft	267
* 4.2.314 WordPartLeftExtend	267
* 4.2.315 WordPartRight	267
* 4.2.316 WordPartRightExtend	267
* 4.2.317 WordRight	267
* 4.2.318 WordRightEnd	268
* 4.2.319 WordRightEndExtend	268
* 4.2.320 WordRightExtend	268
* 4.2.321 WordStartPosition(pos as Integer, onlyWordCharacters as boolean) as Integer	268
* 4.2.322 WrapCount(line as Integer) as Integer	269
* 4.2.323 ZoomIn	269
* 4.2.324 ZoomOut	269
* 4.2.326 Accessibility as Integer	269
* 4.2.327 AdditionalCaretForeColor as Color	269
* 4.2.328 AdditionalCaretsBlink as Boolean	270

	25
* 4.2.329 AdditionalCaretVisible as Boolean	270
* 4.2.330 AdditionalSelAlpha as Integer	270
* 4.2.331 AdditionalSelectionTyping as Boolean	270
* 4.2.332 AllLinesVisible as Boolean	270
* 4.2.333 Anchor as Integer	271
* 4.2.334 AnnotationVisible as Integer	271
* 4.2.335 AutoCompleteActive as Boolean	271
* 4.2.336 AutoCompleteAutoHide as Boolean	271
* 4.2.337 AutoCompleteCancelAtStart as Boolean	271
* 4.2.338 AutoCompleteCaseInsensitiveBehaviour as Integer	272
* 4.2.339 AutoCompleteChooseSingle as Boolean	272
* 4.2.340 AutoCompleteCurrent as Integer	272
* 4.2.341 AutoCompleteCurrentText as String	272
* 4.2.342 AutoCompleteDropRestOfWord as Boolean	273
* 4.2.343 AutoCompleteIgnoreCase as Boolean	273
* 4.2.344 AutoCompleteMaxHeight as Integer	273
* 4.2.345 AutoCompleteMaxWidth as Integer	273
* 4.2.346 AutoCompleteMulti as Integer	274
* 4.2.347 AutoCompleteOptions as Integer	274
* 4.2.348 AutoCompleteOrder as Integer	274
* 4.2.349 AutoCompleteSeparator as Integer	274
* 4.2.350 AutoCompleteTypeSeparator as Integer	275
* 4.2.351 AutomaticFold as Integer	275
* 4.2.352 BackSpaceUnIndents as Boolean	275
* 4.2.353 Bidirectional as Integer	276
* 4.2.354 CallTipActive as Boolean	276
* 4.2.355 CallTipPosStart as Integer	276
* 4.2.356 CanPaste as Boolean	277
* 4.2.357 CanRedo as Boolean	277
* 4.2.358 CanUndo as Boolean	277
* 4.2.359 CaretForeColor as Color	277
* 4.2.360 CaretLineBackAlpha as Integer	278
* 4.2.361 CaretLineBackColor as Color	278
* 4.2.362 CaretLineFrame as Integer	278
* 4.2.363 CaretLineHighlightSubLine as Boolean	278
* 4.2.364 CaretLineLayer as Integer	278
* 4.2.365 CaretLineVisible as Boolean	279
* 4.2.366 CaretLineVisibleAlways as Boolean	279
* 4.2.367 CaretPeriod as Integer	279
* 4.2.368 CaretSticky as Integer	279
* 4.2.369 CaretStyle as Integer	280
* 4.2.370 CaretWidth as Integer	280

* 4.2.371 CharacterCategoryOptimization as Integer	281
* 4.2.372 ControlCharSymbol as Integer	281
* 4.2.373 CurrentLine as String	281
* 4.2.374 Cursor as Integer	282
* 4.2.375 DefaultFoldDisplayText as String	282
* 4.2.376 DescribeKeyWordSets as String	282
* 4.2.377 DocumentOptions as Integer	282
* 4.2.378 EdgeColor as Color	283
* 4.2.379 EdgeColumn as Integer	283
* 4.2.380 EdgeMode as Integer	283
* 4.2.381 EndAtLastLine as Boolean	283
* 4.2.382 EOLAnnotationVisible as Integer	283
* 4.2.383 EOLMode as Integer	284
* 4.2.384 ExtraAscent as Integer	284
* 4.2.385 ExtraDescent as Integer	285
* 4.2.386 FirstVisibleLine as Integer	285
* 4.2.387 Focus as Boolean	285
* 4.2.388 FoldDisplayTextStyle as Integer	285
* 4.2.389 FontLocale as String	286
* 4.2.390 FontQuality as Integer	286
* 4.2.391 HasBorder as Boolean	286
* 4.2.392 HighlightGuide as Integer	286
* 4.2.393 HotspotActiveBack as Color	286
* 4.2.394 HotspotActiveFore as Color	287
* 4.2.395 HotspotActiveUnderline as Boolean	287
* 4.2.396 HotspotSingleLine as Boolean	287
* 4.2.397 HScrollBar as Boolean	287
* 4.2.398 IdleStyling as Integer	287
* 4.2.399 IMEInteraction as Integer	288
* 4.2.400 Indent as Integer	288
* 4.2.401 IndentationGuides as Integer	289
* 4.2.402 IndicatorCurrent as ScintillaIndicatorMBS	289
* 4.2.403 IndicatorValue as Integer	289
* 4.2.404 LayoutCache as Integer	290
* 4.2.405 Length as Integer	290
* 4.2.406 LexerLanguage as String	290
* 4.2.407 LibraryError as String	290
* 4.2.408 LineCharacterIndex as Integer	290
* 4.2.409 LineCount as Integer	290
* 4.2.410 LineEndTypesActive as Integer	291
* 4.2.411 LineEndTypesAllowed as Integer	291
* 4.2.412 LineEndTypesSupported as Integer	291

* 4.2.413 LinesOnScreen as Integer	292
* 4.2.414 MainSelection as Integer	292
* 4.2.415 MarginLeft as Integer	292
* 4.2.416 MarginOptions as Integer	292
* 4.2.417 MarginRight as Integer	293
* 4.2.418 Margins as Integer	293
* 4.2.419 MaxLineState as Integer	293
* 4.2.420 ModEventMask as Integer	293
* 4.2.421 Modify as Boolean	293
* 4.2.422 MouseDownCaptures as Boolean	294
* 4.2.423 MouseDwellTime as Integer	294
* 4.2.424 MouseSelectionRectangularSwitch as Boolean	294
* 4.2.425 MouseWheelCaptures as Boolean	294
* 4.2.426 MoveExtendsSelection as Boolean	295
* 4.2.427 MultiPaste as Integer	295
* 4.2.428 MultipleSelection as Boolean	295
* 4.2.429 NamedStyles as Integer	296
* 4.2.430 NSView as Variant	296
* 4.2.431 Overtyping as Boolean	296
* 4.2.432 PasteConvertEndings as Boolean	296
* 4.2.433 Position as Integer	297
* 4.2.434 PositionCache as Integer	297
* 4.2.435 PrintColourMode as Integer	297
* 4.2.436 PrintMagnification as Integer	297
* 4.2.437 PrintWrapMode as Integer	298
* 4.2.438 PropertyNames as String	298
* 4.2.439 PunctuationChars as String	298
* 4.2.440 ReadOnly as Boolean	298
* 4.2.441 RectangularSelectionAnchor as Integer	298
* 4.2.442 RectangularSelectionAnchorVirtualSpace as Integer	299
* 4.2.443 RectangularSelectionCaret as Integer	299
* 4.2.444 RectangularSelectionCaretVirtualSpace as Integer	300
* 4.2.445 RectangularSelectionModifier as Integer	300
* 4.2.446 ScrollWidth as Integer	300
* 4.2.447 ScrollWidthTracking as Boolean	300
* 4.2.448 SearchFlags as Integer	301
* 4.2.449 SelAlpha as Integer	301
* 4.2.450 SelectedText as String	301
* 4.2.451 SelectionEmpty as Boolean	301
* 4.2.452 SelectionEnd as Integer	301
* 4.2.453 SelectionIsRectangle as Boolean	302
* 4.2.454 SelectionLayer as Integer	302

* 4.2.455 SelectionMode as Integer	302
* 4.2.456 Selections as Integer	302
* 4.2.457 SelectionSpan as ScintillaSpanMBS	303
* 4.2.458 SelectionStart as Integer	303
* 4.2.459 SelEOLFilled as Boolean	303
* 4.2.460 ShowInfoBar as Boolean	303
* 4.2.461 Status as Integer	303
* 4.2.462 TabDrawMode as Integer	304
* 4.2.463 TabIndents as Boolean	304
* 4.2.464 TabMinimumWidth as Integer	304
* 4.2.465 TabWidth as Integer	304
* 4.2.466 TargetEnd as Integer	305
* 4.2.467 TargetEndVirtualSpace as Integer	305
* 4.2.468 TargetSpan as ScintillaSpanMBS	305
* 4.2.469 TargetStart as Integer	305
* 4.2.470 TargetStartVirtualSpace as Integer	306
* 4.2.471 TargetText as String	306
* 4.2.472 Technology as Integer	306
* 4.2.473 Text as String	306
* 4.2.474 TextLength as Integer	307
* 4.2.475 UndoCollection as Boolean	307
* 4.2.476 UseTabs as Boolean	307
* 4.2.477 ViewEOL as Boolean	307
* 4.2.478 ViewWS as Integer	308
* 4.2.479 VirtualSpaceOptions as Integer	308
* 4.2.480 VScrollBar as Boolean	309
* 4.2.481 WhitespaceChars as String	309
* 4.2.482 WhitespaceSize as Integer	309
* 4.2.483 WordChars as String	309
* 4.2.484 WrapIndentMode as Integer	310
* 4.2.485 WrapMode as Integer	310
* 4.2.486 WrapStartIndent as Integer	311
* 4.2.487 WrapVisualFlags as Integer	311
* 4.2.488 WrapVisualFlagsLocation as Integer	311
* 4.2.489 XOffset as Integer	311
* 4.2.490 Zoom as Integer	312
* 4.2.491 AnnotationStyle(line as Integer) as ScintillaStyleMBS	312
* 4.2.492 AnnotationStyles(line as Integer) as MemoryBlock	312
* 4.2.493 AnnotationText(line as Integer) as String	313
* 4.2.494 ElementColour(element as Integer) as Color	313
* 4.2.495 EOLAnnotationStyle(line as Integer) as ScintillaStyleMBS	313
* 4.2.496 EOLAnnotationText(line as Integer) as String	313

* 4.2.497 FoldExpanded(line as Integer) as Boolean	314
* 4.2.498 FoldLevel(line as Integer) as Integer	314
* 4.2.499 KeyWords(keyWordSet as Integer) as String	315
* 4.2.500 LineIndentation(line as Integer) as Integer	315
* 4.2.501 LineState(Line as Integer) as Integer	315
* 4.2.502 MarginStyle(Line as Integer) as ScintillaStyleMBS	316
* 4.2.503 MarginStyles(line as Integer) as MemoryBlock	316
* 4.2.504 MarginText(line as Integer) as String	317
* 4.2.505 PropertyValue(Key as String) as String	317
* 4.2.506 Representation(encodedCharacter as String) as String	318
* 4.2.507 RepresentationAppearance(encodedCharacter as String) as Integer	319
* 4.2.508 RepresentationColour(encodedCharacter as String) as Color	319
* 4.2.509 SelectionNAnchor(selection as Integer) as Integer	319
* 4.2.510 SelectionNAnchorVirtualSpace(selection as Integer) as Integer	319
* 4.2.511 SelectionNCaret(selection as Integer) as Integer	319
* 4.2.512 SelectionNCaretVirtualSpace(selection as Integer) as Integer	320
* 4.2.513 SelectionNEnd(selection as Integer) as Integer	320
* 4.2.514 SelectionNStart(selection as Integer) as Integer	320
* 4.2.516 AutoCompleteCancelled	320
* 4.2.517 AutoCompleteCharacterDeleted	320
* 4.2.518 AutoCompleteCompleted(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)	321
* 4.2.519 AutoCompleteSelection(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)	321
* 4.2.520 AutoCompleteSelectionChange(Position as Integer, Text as String, listType as Integer)	322
* 4.2.521 CallTipClick(Position as Integer)	322
* 4.2.522 CharacterAdded(Character as Integer, CharacterSource as Integer)	322
* 4.2.523 Close	323
* 4.2.524 ConstructContextualMenu(base as MenuItem, x as Integer, y as Integer) as Boolean	323
* 4.2.525 ContextualMenuAction(hitItem as MenuItem) as Boolean	323
* 4.2.526 DoubleClick(Position as Integer, line as integer, modifiers as Integer)	324
* 4.2.527 DWellEnd(Position as Integer, X as Integer, Y as Integer)	324
* 4.2.528 DWellStart(Position as Integer, X as Integer, Y as Integer)	324
* 4.2.529 EnableMenuItems	324
* 4.2.530 FocusIn	324
* 4.2.531 FocusOut	325
* 4.2.532 FolderToggled(Line as Integer, Position as Integer, Margin as ScintillaMarginMBS)	325
* 4.2.533 GotFocus	325
* 4.2.534 HotSpotClick(Position as Integer, modifiers as Integer)	325

* 4.2.535 HotSpotDoubleClick(Position as Integer, modifiers as Integer)	325
* 4.2.536 HotspotReleaseClick(Position as Integer, modifiers as Integer)	326
* 4.2.537 IndicatorClick(Position as Integer, modifiers as Integer)	326
* 4.2.538 IndicatorRelease(Position as Integer, modifiers as Integer)	326
* 4.2.539 Key(Character as Integer, modifiers as Integer)	326
* 4.2.540 LostFocus	327
* 4.2.541 MacroRecord(Message as Integer, wParam as Integer, lParam as Integer)	327
* 4.2.542 MarginClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)	327
* 4.2.543 MarginRightClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)	327
* 4.2.544 Modified(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer, foldLevelNow as Integer, foldLevelPrev as Integer, token as Integer, annotationLinesAdded as Integer)	328
* 4.2.545 ModifyAttemptReadOnly	328
* 4.2.546 NeedsShown(Position as Integer, length as Integer)	329
* 4.2.547 Open	330
* 4.2.548 Painted	330
* 4.2.549 Prepare	330
* 4.2.550 SavePointLeft	330
* 4.2.551 SavePointReached	331
* 4.2.552 ScaleFactorChanged(NewFactor as double)	331
* 4.2.553 SelectionChanged(updated as Integer)	331
* 4.2.554 StyleNeeded(Position as Integer)	331
* 4.2.555 TextChanged(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer)	332
* 4.2.556 UpdateUI(updated as Integer)	332
* 4.2.557 URIDropped(text as String)	333
* 4.2.558 UserListSelection(Position as Integer, Character as Integer, Text as String, listType as Integer, listCompletionMethod as Integer)	333
* 4.2.559 Zoom	333
– 4.4.1 class ScintillaIndicatorMBS	351
* 4.4.3 Constructor	351
* 4.4.4 IndicatorEnd(pos as Integer) as Integer	351
* 4.4.5 IndicatorStart(pos as Integer) as Integer	351
* 4.4.6 IndicatorValueAt(pos as Integer) as Integer	351
* 4.4.8 Alpha as Integer	352
* 4.4.9 Flags as Integer	352
* 4.4.10 ForeColor as Color	352
* 4.4.11 HoverForeColor as Color	353
* 4.4.12 HoverStyle as Integer	353
* 4.4.13 Indicator as Integer	353

	31
* 4.4.14 OutlineAlpha as Integer	353
* 4.4.15 Parent as Variant	354
* 4.4.16 StrokeWidth as Integer	354
* 4.4.17 Style as Integer	354
* 4.4.18 Tag as Variant	354
* 4.4.19 Under as Boolean	355
– 4.5.1 class ScintillaLoaderMBS	358
* 4.5.3 AddData(data as MemoryBlock) as Integer	358
* 4.5.4 AddData(data as String) as Integer	358
* 4.5.5 Constructor	359
* 4.5.6 Finished as boolean	359
* 4.5.8 Handle as Integer	359
* 4.5.9 Parent as Variant	359
* 4.5.10 Tag as Variant	359
– 4.6.1 class ScintillaMarginMBS	360
* 4.6.3 Constructor	360
* 4.6.5 BackColor as Color	360
* 4.6.6 Cursor as Integer	360
* 4.6.7 Layer as Integer	361
* 4.6.8 Margin as Integer	361
* 4.6.9 Mask as Integer	361
* 4.6.10 Parent as Variant	361
* 4.6.11 Sensitive as Boolean	362
* 4.6.12 Tag as Variant	362
* 4.6.13 Type as Integer	362
* 4.6.14 Width as Integer	362
– 4.7.1 class ScintillaMarkerMBS	364
* 4.7.3 Constructor	364
* 4.7.5 Alpha as Integer	364
* 4.7.6 BackColor as Color	364
* 4.7.7 BackColorSelected as Color	364
* 4.7.8 ForeColor as Color	365
* 4.7.9 Layer as Integer	365
* 4.7.10 Marker as Integer	365
* 4.7.11 Parent as Variant	365
* 4.7.12 StrokeWidth as Integer	366
* 4.7.13 Symbol as Integer	366
* 4.7.14 Tag as Variant	366
– 4.8.1 class ScintillaRangeToFormatMBS	368
* 4.8.3 Constructor	368
* 4.8.4 Constructor(other as ScintillaRangeToFormatMBS)	368

* 4.8.6 AreaBottom as Integer	368
* 4.8.7 AreaLeft as Integer	369
* 4.8.8 AreaRight as Integer	369
* 4.8.9 AreaTop as Integer	369
* 4.8.10 CharacterRangeEnd as Integer	369
* 4.8.11 CharacterRangePosition as Integer	369
* 4.8.12 PageBottom as Integer	370
* 4.8.13 PageHeight as Integer	370
* 4.8.14 PageLeft as Integer	370
* 4.8.15 PageRight as Integer	370
* 4.8.16 PageTop as Integer	370
* 4.8.17 PageWidth as Integer	370
* 4.8.18 PrinterHandle as Integer	371
* 4.8.19 TargetHandle as Integer	371
– 4.9.1 class ScintillaSpanMBS	372
* 4.9.3 Constructor(Location as Integer, Length as Integer)	372
* 4.9.4 Constructor(other as ScintillaSpanMBS)	372
* 4.9.5 Equal(other as ScintillaSpanMBS) as boolean	372
* 4.9.7 EndPosition as Integer	372
* 4.9.8 Length as Integer	373
* 4.9.9 StartPosition as Integer	373
– 4.10.1 class ScintillaStyleMBS	374
* 4.10.3 Constructor	374
* 4.10.4 TextWidth(style as Integer, text as String) as Integer	374
* 4.10.6 BackColor as Color	374
* 4.10.7 Bold as Boolean	375
* 4.10.8 CaseVisible as Integer	375
* 4.10.9 Changeable as Boolean	375
* 4.10.10 CheckMonospaced as Boolean	375
* 4.10.11 Description as String	376
* 4.10.12 EOLFilled as Boolean	376
* 4.10.13 Font as String	376
* 4.10.14 ForeColor as Color	377
* 4.10.15 HotSpot as Boolean	377
* 4.10.16 Identifiers as String	377
* 4.10.17 Italic as Boolean	377
* 4.10.18 Name as String	378
* 4.10.19 Parent as Variant	378
* 4.10.20 Size as Integer	378
* 4.10.21 SizeFractional as Integer	378
* 4.10.22 Style as Integer	378

	33
* 4.10.23 Tag as Variant	379
* 4.10.24 Tags as String	379
* 4.10.25 Underline as Boolean	379
* 4.10.26 Visible as Boolean	379
* 4.10.27 Weight as Integer	379

Chapter 2

List of all classes

• ScintillaFailureExceptionMBS	350
• ScintillaIndicatorMBS	351
• ScintillaLoaderMBS	358
• ScintillaMarginMBS	360
• ScintillaMarkerMBS	364
• ScintillaRangeToFormatMBS	368
• ScintillaSpanMBS	372
• ScintillaStyleMBS	374

Chapter 3

List of all controls

- DesktopScintillaControlMBS 39
- ScintillaControlMBS 194

Chapter 4

Scintilla

4.1 control DesktopScintillaControlMBS

4.1.1 control DesktopScintillaControlMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Xojo control to host Scintilla editor.

Blog Entries

- [Custom styles in Scintilla Control](#)
- [News from the MBS Xojo Plugins Version 23.3](#)
- [News from the MBS Xojo Plugins Version 23.2](#)
- [The Top 10 from the MBS Xojo Plugins in 2022](#)
- [Scintilla in Xojo for Linux 64-bit on ARM](#)
- [Xojo 2022r1](#)
- [Contextual Menus in Scintilla](#)
- [Configure Scintilla Control for HTML](#)
- [News from the MBS Xojo Plugins Version 22.0](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 22.0](#)

Videos

- [Scintilla for Xojo](#)

Xojo Developer Magazine

- [21.4, page 10: News](#)
- [20.6, page 9: News](#)
- [20.2, page 9: News](#)

4.1.2 Methods

4.1.3 AddSelection(caret as Integer, anchor as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Add a new selection from anchor to caret as the main selection retaining all other selections as additional selections.

Notes: Since there is always at least one selection, to set a list of selections, the first selection should be added with SetSelection() and later selections added with AddSelection().

4.1.4 AddStyledText(StyledText as MemoryBlock)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This behaves just like AddText, but inserts styled text.

Notes: See GetStyledText function.

4.1.5 AddTabStop(line as Integer, x as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds an explicit tabstop at the specified distance from the left (in pixels).

Notes: Changing tab stops produces a ChangeTabStops event.

4.1.6 AddText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This inserts the first length characters from the string text at the current position.

Notes: This will include any 0's in the string that you might have expected to stop the insert operation. The current position is set at the end of the inserted text, but it is not scrolled into view.

4.1.7 AddUndoAction(token as Integer, UndoFlags as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds an undo action.

Notes: The container can add its own actions into the undo stack by calling AddUndoAction and an Modify event will be sent to the container with the KModificationFlagsContainer flag when it is time to undo (PerformedUndo) or redo (PerformedRedo) the action. The token argument supplied is returned in the token field of the notification.

For example, if the container wanted to allow undo and redo of a 'toggle bookmark' command then it could call AddUndoAction(line, 0) each time the command is performed. Then when it receives a notification to undo or redo it toggles a bookmark on the line given by the token field. If there are different types of commands or parameters that need to be stored into the undo stack then the container should maintain a stack of its own for the document and use the current position in that stack as the argument to AddUndoAction(line). AddUndoAction commands are not combined together into a single undo transaction unless grouped with BeginUndoAction and EndUndoAction.

The flags argument can be KUndoFlagsMayCoalesce (1) if the container action may be coalesced along with any insertion and deletion actions into a single compound action, otherwise kUndoFlagsNone (0). Coalescing treats coalescible container actions as transparent so will still only group together insertions that look like typing or deletions that look like multiple uses of the Backspace or Delete keys.

4.1.8 AllocateBytes(bytes as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate a document buffer large enough to store a given number of bytes.

Notes: The document will not be made smaller than its current contents.

4.1.9 AllocateLineCharacterIndex(lineCharacterIndex as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate one or more indexes.

Notes: Most Scintilla APIs use byte positions but some applications want to use positions based on counting (UTF-32) characters or (UTF-16) code units or need to communicate with other code written in terms of characters or code units. With only byte positions, this may require examining many bytes to count characters or code units in the document but this may be sped up in some cases by indexing the line starts by character or code unit.

Different aspects of an application may need indexes for different periods and should allocate for those periods. Indexes use additional memory so releasing them can help minimize memory but they also take time to recalculate. Scintilla may also allocate indexes to support features like accessibility or input method editors.

Only one index of each type is created for a document at a time.

4.1.10 AllocateLines(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate line indices to match the lines argument.

Notes: This is an optimization that can prevent multiple reallocations of the indices as text is inserted if the application can estimate the number of lines in the document. The number of lines will not be reduced by this call.

4.1.11 AnnotationClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all annotations.

Notes: All the lines can be cleared of annotations with AnnotationClearAll which is equivalent to clearing each line (setting to "") and then deleting other memory used for this feature.

4.1.12 AnnotationLines(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The number of lines annotating a line can be retrieved with AnnotationLines.

4.1.13 AppendText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This adds the text to the end of the document.

Notes: This will include any 0's in the string that you might have expected to stop the operation. The current selection is not changed and the new text is not scrolled into view.

4.1.14 AssignCmdKey(keyDefinition as Integer, sciCommand as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This assigns the given key definition to a Scintilla command identified by sciCommand.

Notes: sciCommand can be any SCI_* command that has no arguments.

There is a default binding of keys to commands that is defined in the Scintilla library. You can change the mapping to suit your own requirements.

`keyDefinition`,^Å: a key definition contains the key code in the low 16-bits and the key modifiers in the high 16-bits. To combine `keyCode` and `keyMod` set:^Å,^Å

```
keyDefinition = keyCode + Bitwise.ShiftLeft(keyMod, 16)
```

The key code is a visible or control character or a key from the `kKeys*` enumeration, which contains:
^Å`kKeysAdd`, `kKeysBack`, `kKeysDelete`, `kKeysDivide`, `kKeysDown`, `kKeysEnd`, `kKeysEscape`, `kKeysHome`,
`kKeysInsert`, `kKeysLeft`, `kKeysMenu`, `kKeysNext` (Page Down), `kKeysPrior` (Page Up), `kKeysReturn`, `kKeysRight`,
`kKeysRWin`, `kKeysSubtract`, `kKeysTab`, `kKeysUp`, and `kKeysWin`.

The modifiers are a combination of zero or more of `kKeyModAlt`, `kKeyModCtrl`, `kKeyModShift`, `kKeyModMeta`, and `kKeyModSuper`. On OS X, the Command key is mapped to `kKeyModCtrl` and the Control key to `kKeyModMeta`. `kKeyModSuper` is only available on GTK which is commonly the Windows key. If you are building a table, you might want to use `kKeyModNorm`, which has the value 0, to mean no modifiers.

On Win32, the numeric keypad with Alt pressed can be used to enter characters by number. This can produce unexpected results in non-numlock mode when function keys are assigned so potentially problematic keys are ignored. For example, setting `kKeyModAlt`, `kKeysUP` will only be active for the Up key on the main cursor keys, not the numeric keypad.

4.1.15 AutoComplete

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method triggers autocompletion.

Notes: This has the same effect as the tab key.

4.1.16 AutoCompleteCancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cancels any displayed auto completion list.

Notes: When in auto completion mode, the list should disappear when the user types a character that can not be part of the auto completion, such as `;`, `'` or `[` when typing an identifier. A set of characters that will cancel autocompletion can be specified with `AutoCompleteStops`.

4.1.17 `AutoCompletePosStart` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the value of the current position when `AutoCompleteShow` started display of the list.

4.1.18 `AutoCompleteSelect(Value as String)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method selects an item in the autocompletion list.

Notes: It searches the list of words for the first that matches `select`. By default, comparisons are case sensitive, but you can change this with `AutoCIgnoreCase`. The match is character by character for the length of the `select` string. That is, if `select` is "Fred" it will match "Frederick" if this is the first item in the list that begins with "Fred". If an item is found, it is selected. If the item is not found, the autocompletion list closes if `auto-hide` is true (see `AutoCAutoHide`).

The current selection index can be retrieved with `AutoCompleteCurrent`.

4.1.19 `AutoCompleteSetFillUps(characterSet as String)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If a fillup character is typed with an auto completion list active, the currently selected item in the list is added into the document, then the fillup character is added.

Notes: Common fillup characters are `'`, `[` and `'` but others are possible depending on the language. By default, no fillup characters are set.

4.1.20 `AutoCompleteShow(lengthEntered as Integer, itemList as String)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method causes a list to be displayed.

Notes: `lengthEntered` is the number of characters of the word already entered and `itemList` is the list of words separated by separator characters. The initial separator character is a space but this can be set or got with `AutoCompleteSeparator` property.

With default settings, the list of words should be in sorted order. If set to ignore case mode with `AutoCompleteIgnoreCase`, then strings are matched after being converted to upper case. One result of this is that the list should be sorted with the punctuation characters `'` `[`, `'\'`, `'`, `'^'`, `'_'`, and `'"` sorted after letters. Alternative handling of list order may be specified with `AutoCompleteOrder` property.

4.1.21 AutoCompleteStops(characterSet as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The characterSet argument is a string containing a list of characters that will automatically cancel the auto completion list.

Notes: When you start the editor, this list is empty.

4.1.22 BackTab

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.23 BeginUndoAction

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Starts a composed undo action.

Notes: Call BeginUndoAction to mark the beginning and EndUndoAction to end of a set of operations that you want to undo all as one operation but that you have to generate as several operations. Alternatively, you can use these to mark a set of operations that you do not want to have combined with the preceding or following operations if they are undone.

4.1.24 BraceBadLight(pos as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Shows bad brace highlight.

Notes: If there is no matching brace then the brace badlighting style, style kStylesCommonBraceBad (35), can be used to show the brace that is unmatched. Using a position of kInvalidPosition (-1) removes the highlight.

4.1.25 BraceBadLightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use specified indicator to highlight non matching brace instead of changing its style

4.1.26 BraceHighlight(posA as Integer, posB as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Up to two characters can be highlighted in a 'brace highlighting style', which is defined as style number BraceHighlight (34).

Notes: If you have enabled indent guides, you may also wish to highlight the indent that corresponds with the brace. You can locate the column with Column() and highlight the indent with HighlightGuide.

4.1.27 BraceHighlightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use specified indicator to highlight matching braces instead of changing their style.

4.1.28 BraceMatch(pos as Integer, maxReStyle as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The BraceMatch method finds a corresponding matching brace given pos, the position of one brace.

Notes: The brace characters handled are '(', ')', '[', ']', '{', '}', '<', and '>'. The search is forwards from an opening brace and backwards from a closing brace. If the character at position is not a brace character, or a matching brace cannot be found, the return value is -1. Otherwise, the return value is the position of the matching brace.

A match only occurs if the style of the matching brace is the same as the starting brace or the matching brace is beyond the end of styling. Nested braces are handled correctly. The maxReStyle parameter must currently be 0 - it may be used in the future to limit the length of brace searches.

4.1.29 BraceMatchNext(pos as Integer, startPos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Similar to BraceMatch, but matching starts at the explicit start position startPos instead of the implicitly next position $\text{pos} \mp 1$.

4.1.30 CallTipCancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method cancels any displayed call tip.

Notes: Scintilla will also cancel call tips for you if you use any keyboard commands that are not compatible with editing the argument list of a function. Call tips are cancelled if you delete back past the position where the caret was when the tip was triggered.

4.1.31 CallTipSetBackColor(backColor as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The background colour of call tips can be set with this property;

Notes: The default colour is white. It is not a good idea to set a dark colour as the background as the default colour for normal calltip text is mid grey and the default colour for highlighted text is dark blue. This also sets the background colour of kStylesCommonCallTip.

4.1.32 CallTipSetForeColor(foreColor as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of call tip text can be set with this method.

Notes: The default colour is mid grey.

This also sets the foreground colour of kStylesCommonCallTip.

4.1.33 CallTipSetForeColorHighlight(foreColor as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of highlighted call tip text can be set with this method.

Notes: The default colour is dark blue.

4.1.34 CallTipSetHighlight(highlightStart as Integer, highlightEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This sets the region of the call tips text to display in a highlighted style.

Notes: highlightStart is the zero-based index into the string of the first character to highlight and highlightEnd is the index of the first character after the highlight. highlightEnd must be greater than highlightStart; highlightEnd-highlightStart is the number of characters to highlight. Highlights can extend over line ends if this is required.

Unhighlighted text is drawn in a mid grey. Selected text is drawn in a dark blue. The background is white. These can be changed with CallTipSetBackColor, CallTipSetForeColor, and CallTipSetForeColorHighlight.

4.1.35 CallTipSetPosition(above as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default the calltip is displayed below the text, setting above to true will display it above the text.

4.1.36 CallTipShow(pos as Integer, definition as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method starts the process by displaying the call tip window.

Notes: If a call tip is already active, this has no effect.

pos is the position in the document at which to align the call tip. The call tip text is aligned to start 1 line below this character unless you have included up and/or down arrows in the call tip text in which case the tip is aligned to the right-hand edge of the rightmost arrow. The assumption is that you will start the text with something like "\001 1 of 3 \002".

definition is the call tip text. This can contain multiple lines separated by '\n' (Line Feed, ASCII code 10) characters. Do not include Carriage Return (ASCII code 13), as this will most likely print as an empty box. Tab (ASCII code 9) is supported if you set a tabsize with CallTipUseStyle.

The position of the caret is remembered here so that the call tip can be cancelled automatically if subsequent deletion moves the caret before this position.

Call tips are small windows displaying the arguments to a function and are displayed after the user has typed the name of the function. They normally display characters using the font facename, size and character set defined by kStylesCommonDefault. You can choose to use kStylesCommonCallTip to define the facename, size, foreground and background colours and character set with CallTipUseStyle. This also enables support for Tab characters. There is some interaction between call tips and autocompletion lists in that showing a call tip cancels any active autocompletion list, and vice versa.

Call tips can highlight part of the text within them. You could use this to highlight the current argument to a function by counting the number of commas (or whatever separator your language uses).

The mouse may be clicked on call tips and this causes a CallTipClick event to be sent to the container. Small up and down arrows may be displayed within a call tip by, respectively, including the characters '\001', or '\002'. This is useful for showing that there are overloaded variants of one function name and that the user can click on the arrows to cycle through the overloads.

Alternatively, call tips can be displayed when you leave the mouse pointer for a while over a word in response to the DWellStart event and cancelled in response to DWellEnd. This method could be used in a debugger to give the value of a variable, or during editing to give information about the word under the pointer.

4.1.37 CallTipUseStyle(tabSize as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method changes the style used for call tips from KStylesCommonDefault to KStylesCommonCallTip and sets a tab size in screen pixels.

Notes: If tabsize is less than 1, Tab characters are not treated specially. Once this call has been used, the call tip foreground and background colours are also taken from the style.

4.1.38 Cancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cancels autocompletion and calltip display and drops any additional selections.

4.1.39 ChangeInsertion(text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Changes insert.

Notes: This may only be called from a kModificationFlagsInsertCheck in Modify event handler and will change the text being inserted to that provided.

4.1.40 ChangeLexerState(start as Integer, ende as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Indicate that the internal state of a lexer has changed over a range and therefore there may be a need to redraw.

4.1.41 Character(position as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the character at pos in the document or 0 if pos is negative or past the end of the document.

4.1.42 `CharacterString(position as Integer, byref Length as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This queries character at given position.

Notes: If the position has a multi byte UTF-8 character, we take multiple characters and return length in bytes via `Length` parameter.

Otherwise character is returned for 1 byte and then length is set to 1.

See also `Character()` to get individual bytes.

4.1.43 `CharLeft`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.44 `CharLeftExtend`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.45 `CharLeftRectExtend`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.46 `CharPositionFromPoint(x as Integer, y as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character to a point.

4.1.47 CharPositionFromPointClose(x as Integer, y as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character to a point.

Notes: Returns -1 if the point is outside the window or not close to any characters. This is similar to the previous CharPositionFromPoint method but finds characters rather than inter-character positions.

4.1.48 CharRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.49 CharRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.50 CharRightRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.51 ChooseCaretX

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scintilla remembers the x value of the last position horizontally moved to explicitly by the user and this value is then used when moving vertically such as by using the up and down keys.

Notes: This message sets the current x position of the caret as the remembered value.

4.1.52 Clear

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears text from current selection.

4.1.53 ClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Unless the document is read-only, this deletes all the text.

4.1.54 ClearAllCmdKeys

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This command removes all keyboard command mapping by setting an empty mapping table.

4.1.55 ClearAllRepresentations

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reset representations to defaults.

4.1.56 ClearCmdKey(keyDefinition as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This makes the given key definition do nothing by assigning the action Null to it.

Example:

```
dim c as DesktopScintillaControlMBS
// disable tab key for editor
c.ClearCmdKey c.kKeysTab
```

4.1.57 ClearDocumentStyle

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When wanting to completely restyle the document, for example after choosing a lexer, the ClearDocumentStyle method can be used to clear all styling information and reset the folding state.

4.1.58 ClearRegisteredImages

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all registered images.

4.1.59 ClearRepresentation(encodedCharacter as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reset this representation to default.

4.1.60 ClearSelections

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a single empty selection at 0 as the only selection.

4.1.61 ClearTabStops(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears explicit tabstops on a line.

Notes: Changing tab stops produces a ChangeTabStops event.

4.1.62 Colourise(start as Integer, ende as Integer = -1)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This requests the current lexer or the container (if the lexer is set to nil) to style the document between start and end.

Notes: If end is -1, the document is styled from start to the end. If the "fold" property is set to "1" and your lexer or container supports folding, fold levels are also set. This method causes a redraw.

4.1.63 ColouriseAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This requests the current lexer or the container (if the lexer is set to nil) to style the document.

Notes: If the "fold" property is set to "1" and your lexer or container supports folding, fold levels are also

set. This method causes a redraw.

4.1.64 Column(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the column number of a position pos within the document taking the width of tabs into account.

Notes: This returns the column number of the last tab on the line before pos, plus the number of characters between the last tab and pos. If there are no tab characters on the line, the return value is the number of characters up to the position on the line. In both cases, double byte characters count as a single character. This is probably only useful with monospaced fonts.

4.1.65 ContractedFoldNext(lineStart as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that are contracted fold headers.

Notes: This is useful when saving the user's folding when switching documents or saving folding with a file. The search starts at line number lineStart and continues forwards to the end of the file. lineStart is returned if it is a contracted fold header otherwise the next contracted fold header is returned. If there are no more contracted fold headers then -1 is returned.

4.1.66 ConvertEOLs(EndOfLineMode as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Converts end of line characters for the document.

Notes: Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRLF in Windows and LF in Unix, but this can be changed with the EOLMode property. You can also convert the entire document to one of these line endings with ConvertEOLs. Finally, you can choose to display the line endings with ViewEOL.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.

4.1.67 Copy

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copy current text selection and puts text on the clipboard.

4.1.68 CopyAllowLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Works the same as Copy() except that if the selection is empty then the current line is copied.

Notes: On Windows, an extra "MSDEVLineSelect" marker is added to the clipboard which is then used in SCI_PASTE to paste the whole line before the current line.

4.1.69 CopyRange(RangeStart as Integer, RangeEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copies a range of text from the document to the system clipboard.

4.1.70 CopyText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copies a supplied piece of text to the system clipboard.

4.1.71 CountCharacters(start as Integer, end as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the number of whole characters between two positions.

4.1.72 CountCodeUnits(start as Integer, end as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the number of whole characters between two positions.

Notes: This counts in UTF-16 code units.

4.1.73 CreateLoader(bytes as Integer = 1000000, documentOptions as Integer = 0) as ScintillaLoaderMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Creates a loader object.

Notes: An application can load all of a file into a buffer it allocates on a background thread and then add the data in that buffer into a Scintilla document on the user interface thread. That technique uses extra memory to store a complete copy of the file and also means that the time that Scintilla takes to perform initial line end discovery blocks the user interface.

To avoid these issues, a loader object may be created and used to load the file.

Returns an object that supports the ScintillaLoaderMBS interface which can be used to load data and then be turned into a Scintilla document object for attachment to a view object. The bytes argument determines the initial memory allocation for the document as it is more efficient to allocate once rather than rely on the buffer growing as data is added. If CreateLoader fails then nil is returned.

See kDocumentOption* constants.

4.1.74 Cut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cuts current text selection and puts text on the clipboard.

4.1.75 DeleteBack

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.76 DeleteBackNotLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.77 DeleteRange(start as Integer, lengthDelete as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Deletes a range of text in the document.

4.1.78 DelLineLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.79 DelLineRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.80 DelWordLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.81 DelWordRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.82 DelWordRightEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.83 DescribeProperty(Key as String) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Information may be retrieved about the properties that can be set for the current lexer.

4.1.84 DocLineFromVisible(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When some lines are hidden and/or annotations are displayed, then a particular line in the document may be displayed at a different position to its document position.

Notes: This method returns the document line number that corresponds to a display line (counting the display line of the first line in the document as 0). If displayLine is less than or equal to 0, the result is 0. If displayLine is greater than or equal to the number of displayed lines, the result is the number of lines in the document.

4.1.85 DocumentEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.86 DocumentEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.87 DocumentStart

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.88 DocumentStartExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.89 DropSelectionN(selection as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If there are multiple selections, remove the indicated selection.

Notes: If this was the main selection then make the previous selection the main and if it was the first then the last selection becomes main. If there is only one selection, or there is no selection selection, then there is no effect.

4.1.90 EditToggleOvertyp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.91 ElementAllowsTranslucent(element as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true when the element currently allows translucent drawing when an alpha component is included.

Notes: This may change based on circumstances - different platforms or graphics technologies may implement translucency and newer versions of Scintilla may implement translucency for elements that did not previously support it.

4.1.92 ElementBaseColour(element as Integer) as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the default colour of an element.

Notes: This may be a value defined by Scintilla or it may be derived from the operating system or platform. Which values are set from the operating system may differ between operating systems and operating system versions. When undefined the return value is 0 which is equivalent to completely transparent black. These colours may be useful when defining styles with similarities such as synthesizing dark mode styles that use

the same colours as the system.

On Win32, autocompletion list colours like `kElementList` are currently provided by the platform layer and on Cocoa, selection background colours like `kElementSelectionBack` are provided.

4.1.93 `ElementIsSet(element as Integer)` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true when an element colour has been set.

Notes: When false indicates that a default colour or set of colours is displayed.

4.1.94 `EmptyUndoBuffer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This command tells Scintilla to forget any saved undo or redo history.

Notes: It also sets the save point to the start of the undo buffer, so the document will appear to be unmodified. This does not cause the `SavePointReached` event to be sent to the container.

4.1.95 `EndStyled` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End styling.

Notes: Scintilla keeps a record of the last character that is likely to be styled correctly. This is moved forwards when characters after it are styled and moved backwards if changes are made to the text of the document before it. Before drawing text, this position is checked to see if any styling is needed and, if so, a `StyleNeeded` event is sent to the container. The container can send `EndStyled` to work out where it needs to start styling. Scintilla will always ask to style whole lines.

4.1.96 `EndUndoAction`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Ends a composed undo action.

Notes: Call `BeginUndoAction` to mark the beginning and `EndUndoAction` to end of a set of operations that you want to undo all as one operation but that you have to generate as several operations. Alternatively, you can use these to mark a set of operations that you do not want to have combined with the preceding or following operations if they are undone.

4.1.97 EnsureVisible(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A line may be hidden because more than one of its parent lines is contracted.

Notes: Both these message travels up the fold hierarchy, expanding any contracted folds until they reach the top level. The line will then be visible. If you use EnsureVisibleEnforcePolicy(), the vertical caret policy set by VisiblePolicy() is then applied.

4.1.98 EnsureVisibleEnforcePolicy(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A line may be hidden because more than one of its parent lines is contracted.

Notes: Both these message travels up the fold hierarchy, expanding any contracted folds until they reach the top level. The line will then be visible. If you use EnsureVisibleEnforcePolicy(), the vertical caret policy set by VisiblePolicy() is then applied.

4.1.99 EOLAnnotationClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all EOL annotations.

Notes: All the lines can be cleared of end of line annotations with EOLAnnotationClearAll which is equivalent to clearing each line (setting to 0) and then deleting other memory used for this feature.

4.1.100 ExpandChildren(Line as Integer, FoldLevel as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This is used to respond to a change to a line causing its fold level or whether it is a header to change, perhaps when adding or removing a ' { '.

Notes: By the time the container has received the notification that the line has changed, the fold level has already been set, so the container has to use the previous level in this call so that any range hidden underneath this line can be shown.

4.1.101 FindColumn(line as Integer, column as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position of a column on a line taking the width of tabs into account.

Notes: It treats a multi-byte character as a single column. Column numbers, like lines start at 0.

4.1.102 FindIndicatorFlash(start as Integer, end as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Show and animate the find indicator.

Notes: The indicator remains visible with FindIndicatorShow and fades out after showing for half a second with FindIndicatorFlash. FindIndicatorShow behaves similarly to the OS X TextEdit and Safari applications and is best suited to editing documentation where the search target is often a word. FindIndicatorFlash is similar to Xcode and is suited to editing source code where the match will often be located next to operators which would otherwise be hidden under the indicator's padding.

4.1.103 FindIndicatorHide

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Hides the find indicator.

4.1.104 FindIndicatorShow(start as Integer, ende as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Show and animate the find indicator.

Notes: The indicator remains visible with FindIndicatorShow and fades out after showing for half a second with FindIndicatorFlash. FindIndicatorShow behaves similarly to the OS X TextEdit and Safari applications and is best suited to editing documentation where the search target is often a word. FindIndicatorFlash is similar to Xcode and is suited to editing source code where the match will often be located next to operators which would otherwise be hidden under the indicator's padding.

4.1.105 FindText(searchFlags as Integer, Text as String, byref RangeStart as Integer, byref RangeEnd as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Searches for text in the document.

Notes: It does not use or move the current selection. The searchFlags argument controls the search type, which includes regular expression searches.

See kFindOption* constants.

You can search backwards to find the previous occurrence of a search string by setting the end of the search range before the start.

RangeStart and RangeEnd provide the range of positions in the document to search. You can search backwards by setting RangeEnd less than RangeStart. The text parameter holds the search pattern. If your language makes the use of `_TextToFind` difficult, you should consider using `SearchInTarget` instead.

The return value is -1 if the search fails or the position of the start of the found text if it succeeds. The RangeStart and RangeEnd parameters of `TextToFind` are filled in with the start and end positions of the found text.

4.1.106 FoldAll(FoldAction as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles all lines.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.1.107 `FoldChildren(Line as Integer, FoldAction as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles children.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.1.108 `FoldLine(Line as Integer, FoldAction as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles one line.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.1.109 FoldParent(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the line number of the first line before line that is marked as a fold point with `kFoldLevelHeaderFlag` and has a fold level less than the line.

Notes: If no line is found, or if the header flags and fold levels are inconsistent, the return value is -1.

4.1.110 FormatRange(draw as boolean, range as ScintillaRangeToFormatMBS) as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: `FormatRange` can be used to draw the text onto a display surface which can include a printer display surface.

Notes: Printed output shows text styling as on the screen, but it hides all margins except a line number margin. Markers do not appear in a margin but will change line background colour. The selection and caret are hidden.

Different platforms use different display surface ID types to print on. On Windows, these are HDCs., on GTK 3.x `cairo_t *`, and on Cocoa `CGContextRef` is used.

For macOS use `Integer(g.Handle(Graphics.HandleTypes.CGContextRef))`, for windows use `Integer(g.Handle(Graphics.HandleTypes.HDC))`, for Linux use `Integer(g.Handle(Graphics.HandleTypes.CairoContext))` to get the handle.

This call renders a range of text into a device context. If you use this for printing, you will probably want to arrange a page header and footer; Scintilla does not do this for you. Each use of this message renders a range of text into a rectangular area and returns the position in the document of the next character to print.

The `draw` parameter controls if any output is done. Set this to false if you are paginating.

On Windows, `hdc` and `hdcTarget` should both be set to the device context handle of the output device (usually a printer). If you print to a metafile these will not be the same as Windows metafiles (unlike extended metafiles) do not implement the full API for returning information. In this case, set `hdcTarget` to the screen DC.

`Page*` properties define the rectangle `{ 0, 0, maxX, maxY }` where `maxX+1` and `maxY+1` are the number of physically printable pixels in x and y.

`Area*` properties define the rectangle to render the text in (which will, of course, fit within the rectangle defined by `Page*`).

`CharacterRangePosition` and `CharacterRangeEnd` define the start position and maximum position of characters to output. All of each line within this character range is drawn.

On Cocoa, the surface IDs for printing (draw=1) should be the graphics port of the current context (CGContextRef) when the view's drawRect method is called. The Surface IDs are not really used for measurement (draw=0) but can be set to a bitmap context to avoid runtime warnings.

On GTK, the surface IDs to use can be found from the printing context.

CharacterRangePosition and CharacterRangeEnd define the start position and maximum position of characters to output. All of each line within this character range is drawn.

When printing, the most tedious part is always working out what the margins should be to allow for the non-printable area of the paper and printing a header and footer. If you look at the printing code in SciTE, you will find that most of it is taken up with this. The loop that causes Scintilla to render text is quite simple if you strip out all the margin, non-printable area, header and footer code.

4.1.111 FormFeed

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.112 GetLineSelEndPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the position of the end of the selection at the given line with -1 returned if no selection on this line.

4.1.113 GetLineSelStartPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the position of the start of the selection at the given line with -1 returned if no selection on this line.

4.1.114 GetNextTabStop(line as Integer, x as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Gets the next explicit tabstop position set after the given x position, or zero if there aren't any.

4.1.115 **GetStyledText(RangeStart as Integer, RangeEnd as Integer, byref StyledText as MemoryBlock) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This collects styled text into a buffer using two bytes for each cell, with the character at the lower address of each pair and the style byte at the upper address.

Notes: Characters between the positions RangeStart and RangeEnd are copied to new MemoryBlock and put into Styledtext.

Positions outside the document return character codes and style bytes of 0.

4.1.116 **GetTextRange(RangeStart as Integer, RangeEnd as Integer, byref Text as String) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This collects the text between the positions RangeStart and RangeEnd and returns it in Text parameter.

Notes: If RangeEnd is -1, text is returned to the end of the document.

The return value is the length of the returned text.

4.1.117 **GotoLine(line as Integer)**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection and sets the caret at the start of line number line and scrolls the view (if needed) to make it visible.

Notes: The anchor position is set the same as the current position. If line is outside the lines in the document (first line is 0), the line set is the first or last.

4.1.118 **GotoPos(pos as Integer)**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection, sets the caret at caret and scrolls the view to make the caret visible, if necessary.

Notes: It is equivalent to SetSel(caret, caret). The anchor position is set the same as the current position.

4.1.119 GrabFocus

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scintilla can be told to grab the focus with GrabFocus.

Notes: This is needed more on GTK where focus handling is more complicated than on Windows.

4.1.120 HideLines(lineStart as Integer, lineEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Marks a range of lines as invisible and then redraw the display.

Notes: If kElementHiddenLine is set then a horizontal line is drawn in that colour to indicate that there are hidden lines.

A fold line drawn in that position overrides the hidden line indicator.

4.1.121 HideSelection(hide as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The normal state is to make the selection visible by drawing it as set by SetSelForeColor and SetSelBackColor.

Notes: However, if you hide the selection, it is drawn as normal text.

4.1.122 Home

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.123 HomeDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.124 HomeDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.125 HomeExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.126 HomeRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.127 HomeWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.128 HomeWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.129 IndexPositionFromLine(line as Integer, lineCharacterIndex as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries position from line via index.

Notes: The document line of a particular character or code unit may be found by calling `LineFromIndexPosition` with one of `kLineCharacterIndexTypeUtf32` (1) or `kLineCharacterIndexTypeUtf16` (2). The inverse action, finds the starting position of a document line either in characters or code units from the document start by calling `IndexPositionFromLine` with the same `lineCharacterIndex` argument.

4.1.130 `Indicator(index as Integer) as ScintillaIndicatorMBS`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries indicator with given index.

Notes: Index is from 0 to 35.

4.1.131 `IndicatorAllOnFor(pos as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve a bitmap value representing which indicators are non-zero at a position.

Notes: Only the first 32 indicators are represented in the result so no IME indicators are included.

4.1.132 `IndicatorClearRange(start as Integer, lengthClear as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears a range for the current indicator.

4.1.133 `IndicatorFillRange(start as Integer, lengthFill as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Fills a range with the current indicator.

Notes: See `IndicatorValue` property.

4.1.134 `InitializeLexer(Lexer as String)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Initializes the lexer.

Notes: To style files in different languages, different 'lexers' are used. These are objects that are called by Scintilla with a range of text and some context information and which then set styles and folding information

for that range. Lexers for Scintilla are now provided by the Lexilla project.

Current list of built-in lexers is:

a68k, abaqus, ada, apdl, as, asm, asn1, asy, au3, ave, avs, baan, bash, batch, bib, blitzbasic, bullant, caml, cil, clarion, clarionnocase, cmake, COBOL, coffeescript, conf, cpp, cppnocase, csound, css, d, dataflex, diff, DMAP, DMIS, ecl, edifact, eiffel, eiffelkw, erlang, errorlist, escript, f77, flagship, forth, fortran, freebasic, fsharp, gap, gui4cli, haskell, hollywood, hypertext, ihex, indent, inno, json, julia, kix, kvirc, latex, lisp, literatehaskell, lot, lout, lua, magiksf, makefile, markdown, matlab, maxima, metapost, mmixal, modula, mssql, mysql, nim, nimrod, nncrontab, nsis, null, octave, opal, oscrypt, pascal, powerbasic, perl, phpscript, PL/M, po, pov, powerpro, powershell, abl, props, ps, purebasic, python, r, raku, rebol, registry, ruby, rust, sas, scriptol, smalltalk, SML, sorcins, specman, spice, sql, srec, stata, fcST, TACL, tads3, TAL, tcl, tcmd, tehex, tex, txt2tags, vb, vbscript, verilog, vhdl, visualprolog, x12, xml, yaml, xoyo

4.1.135 InsertText(Text as String, atPosition as Integer = -1)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This inserts the text string at position pos or at the current position if pos is -1.

Notes: If the current position is after the insertion point then it is moved along with its surrounding text but no scrolling is performed.

4.1.136 IsRangeWord(start as Integer, ende as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Is the range start..end a word or set of words?

Notes: This message checks that start is at a word start transition and that end is at a word end transition. It does not check whether there are any spaces inside the range.

4.1.137 LastChild(line as Integer, level as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Searches last child.

Notes: Searches for the next line after line, that has a folding level that is less than or equal to level and then returns the previous line number. If you set level to -1, level is set to the folding level of line line. If from is a fold point, LastChild(from, -1) returns the last line that would be in made visible or hidden by toggling the fold state.

4.1.138 LexerNameFromID(ID as Integer) as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries name of lexer with given ID.

Example:

```
// constants in LexerConstants.txt in our examples folder
Const SCLEX_HTML = 4
```

```
Dim s As String = DesktopScintillaControlMBS.LexerNameFromID(SCLEX_HTML)
MessageBox s
```

4.1.139 LexerNames as String()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries list of built-in lexers.

Notes: Current list is:

a68k, abaqus, ada, apdl, as, asm, asn1, asy, au3, ave, avs, baan, bash, batch, bib, blitzbasic, bullant, caml, cil, clarion, clarionnocase, cmake, COBOL, coffeescript, conf, cpp, cppnocase, csound, css, d, dataflex, diff, DMAP, DMIS, ecl, edifact, eiffel, eiffelkw, erlang, errorlist, escript, f77, flagship, forth, fortran, freebasic, fsharp, gap, gui4cli, haskell, hollywood, hypertext, ihex, indent, inno, json, julia, kix, kvirc, latex, lisp, literatehaskell, lot, lout, lua, magiksf, makefile, markdown, matlab, maxima, metapost, mmixal, modula, mssql, mysql, nim, nimrod, nncrontab, nsis, null, octave, opal, oscript, pascal, powerbasic, perl, phpscript, PL/M, po, pov, powerpro, powershell, abl, props, ps, purebasic, python, r, raku, rebol, registry, ruby, rust, sas, scriptol, smalltalk, SML, sorcins, specman, spice, sql, srec, stata, fcST, TACL, tads3, TAL, tcl, tcmd, tehex, tex, txt2tags, vb, vbscript, verilog, vhdl, visualprolog, x12, xml, yaml, xojo.

4.1.140 lexillaLibraryLoaded as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether the lexilla library got loaded.

Notes: Returns true if you loaded lexilla dylib/dll/so file.

4.1.141 Line(line as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries text of a line.

Notes: Index is zero based.

4.1.142 LineCopy

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.143 LineCut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.144 LineDelete

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.145 LineDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.146 LineDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.147 LineDownRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.148 LineDuplicate

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.149 LineEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

See also:

- 4.1.150 LineEnd(line as Integer) as Integer

74

4.1.150 LineEnd(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line end position for the given line.

See also:

- 4.1.149 LineEnd

74

4.1.151 LineEndDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.152 LineEndDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.153 LineEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.154 LineEndPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the position at the end of the line, before any line end characters.

Notes: If line is the last line in the document (which does not have any end of line characters) or greater, the result is the size of the document. If line is negative the result is undefined.

4.1.155 LineEndRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.156 LineEndWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.157 LineEndWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.158 **LineFromIndexPosition(pos as Integer, lineCharacterIndex as Integer) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line from position via index.

Notes: The document line of a particular character or code unit may be found by calling `LineFromIndexPosition` with one of `kLineCharacterIndexTypeUtf32` (1) or `kLineCharacterIndexTypeUtf16` (2). The inverse action, finds the starting position of a document line either in characters or code units from the document start by calling `IndexPositionFromLine` with the same `lineCharacterIndex` argument.

4.1.159 **LineFromPosition(pos as Integer) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the line that contains the position `pos` in the document.

Notes: The return value is 0 if `pos <= 0`.

The return value is the last line if `pos` is beyond the end of the document.

4.1.160 **LineIndentPosition(line as Integer) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The position at the end of indentation of a line.

4.1.161 **LineLength(line as Integer) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the length of the line, including any line end characters.

Notes: If `line` is negative or beyond the last line in the document, the result is 0. If you want the length of the line not including any end of line characters, use `LineEndPosition(line) - PositionFromLine(line)`.

4.1.162 **LineReverse**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.163 LineScroll(columns as Integer, lines as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This will attempt to scroll the display by the number of columns and lines that you specify.

Notes: Positive line values increase the line number at the top of the screen (i.e. they move the text upwards as far as the user is concerned), Negative line values do the reverse.

The column measure is the width of a space in the default style. Positive values increase the column at the left edge of the view (i.e. they move the text leftwards as far as the user is concerned). Negative values do the reverse.

4.1.164 LineScrollDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.165 LineScrollUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.166 LinesJoin

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Join a range of lines indicated by the target into one line by removing line end characters.

Notes: Where this would lead to no space between words, an extra space is inserted.

4.1.167 LinesSplit(pixelWidth as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Split a range of lines indicated by the target into lines that are at most pixelWidth wide.

Notes: Splitting occurs on word boundaries wherever possible in a similar manner to line wrapping. When pixelWidth is 0 then the width of the window is used.

4.1.168 LineStart(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line start position for the given line.

4.1.169 LineTranspose

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.170 LineUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.171 LineUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.172 LineUpRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.173 LineVisible(line as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports on the visible state of a line and returns true if it is visible and false if it is not visible.

Notes: This method has no effect on fold levels or fold flags.

4.1.174 LoadFramework(path as folderitem) as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Loads the framework.

Notes: You can load Scintilla framework on macOS.

Returns true on success.

4.1.175 LoadLibrary(path as folderitem) as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Loads the library.

Notes: You can load lexer and scintilla libraries here.

Returns true on success.

4.1.176 LowerCase

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.177 Margin(index as Integer) as ScintillaMarginMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries margin with given index.

Notes: Index ranges from 0 to 5.

4.1.178 MarginTextClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all texts for margin.

4.1.179 Marker(index as Integer) as ScintillaMarkerMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries marker with given index.

Notes: Index ranges from 0 to 35.

4.1.180 MarkerAdd(Line as Integer, markerNumber as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This function searches the document for the marker with this handle and deletes the marker if it is found.

Notes: The markerHandle argument is an identifier for a marker returned by MarkerAdd.

4.1.181 MarkerAddSet(line as Integer, markerSet as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Add one or more markers to a line with a single call.

Notes: Add one or more markers to a line with a single call, specified in the same "one-bit-per-marker" 32-bit integer format returned by Marker() (and used by the mask-based marker search functions MarkerNext() and MarkerPrevious()). As with MarkerAdd, no check is made to see if any of the markers are already present on the targeted line.

4.1.182 MarkerDefineRGBImage(markerNumber as Integer, Width as Integer, Height as Integer, ScalePercent as Integer = 100, Pixels as MemoryBlock)

Plugin Version: 23.3, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a translucent pixmap to be used to draw the marker.

Example:

```
dim c as DesktopScintillaControlMBS // your control
```

```
// define red dot for breakpoints
```

```
Const size = 18
```

```

Dim r As New Picture(size, size) // red dot
Dim m As New Picture(size, size) // mask, a white dot on black, black is transparent
Dim rg As Graphics = r.Graphics
Dim mg As Graphics = m.Graphics

// we draw the image and the mask one
rg.DrawingColor = &c000000
rg.FillRectangle 0, 0, size, size
rg.DrawingColor = &cFF0000
rg.FillOval 0, 0, size, size
mg.DrawingColor = &c000000
mg.FillRectangle 0, 0, size, size
mg.DrawingColor = &cFFFFFF
mg.FillOval 0, 0, size, size

// now we convert to memoryblock
Dim rr As RGBSurface = r.RGBSurface
Dim mr As RGBSurface = m.RGBSurface

Dim pixels As New MemoryBlock(size * size * 4)
Dim PixelPtr As ptr = pixels
Dim o As Integer = 0
For y As Integer = 0 To size-1
For x As Integer = 0 To size-1
Dim mc As Color = mr.Pixel(x,y)
Dim rc As Color = rr.Pixel(x,y)
PixelPtr.UInt8(o+0) = rc.Red
PixelPtr.UInt8(o+1) = rc.Green
PixelPtr.UInt8(o+2) = rc.Blue
PixelPtr.UInt8(o+3) = mc.Green
o = o + 4
Next
Next

// and define the marker
c.Marker(1).Symbol = ScintillaMarkerMBS.kMarkerSymbolPixmap
c.MarkerDefineRGBAImage(1, size, size, 100, pixels)

```

Notes: Please pass the marker number, the size of the picture, it's scale in percent and the pixels memory-block.

4.1.183 MarkerDelete(Line as Integer, markerNumber as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This searches the given line number for the given marker number and deletes it if it is present.

Notes: If you added the same marker more than once to the line, this will delete one copy each time it is used. If you pass in a marker number of -1, all markers are deleted from the line.

4.1.184 MarkerDeleteAll(markerNumber as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes markers of the given number from all lines.

Notes: If markerNumber is -1, it deletes all markers from all lines.

4.1.185 MarkerDeleteHandle(markerHandle as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Deletes a marker.

Notes: The markerHandle argument is an identifier for a marker returned by MarkerAdd.

This function searches the document for the marker with this handle and deletes the marker if it is found.

4.1.186 MarkerEnableHighlight(enabled as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method allows to enable/disable the highlight folding block when it is selected.

Notes: (i.e. block that contains the caret)

4.1.187 MarkerGet(Line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns a 32-bit integer that indicates which markers were present on the line.

Notes: Bit 0 is set if marker 0 is present, bit 1 for marker 1 and so on.

4.1.188 MarkerHandleFromLine(line as Integer, which as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the Nth marker handle in a given line.

Notes: Handles are returned by MarkerAdd. If which is greater or equal to the number of markers on a line, this returns -1;

4.1.189 MarkerLineFromHandle(markerHandle as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This function searches the document for the marker with this handle and returns the line number that contains it or -1 if it is not found.

Notes: The markerHandle argument is an identifier for a marker returned by MarkerAdd.

4.1.190 MarkerNext(lineStart as Integer, markerMask as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that include a given set of markers.

Notes: The search starts at line number lineStart and continues forwards to the end of the file (MarkerNext) or backwards to the start of the file (MarkerPrevious).

The markerMask argument should have one bit set for each marker you wish to find. Set bit 0 to find marker 0, bit 1 for marker 1 and so on. The message returns the line number of the first line that contains one of the markers in markerMask or -1 if no marker is found.

4.1.191 MarkerNumberFromLine(line as Integer, which as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the Nth marker number in a given line.

Notes: Handles are returned by MarkerAdd. If which is greater or equal to the number of markers on a line, this returns -1;

4.1.192 MarkerPrevious(lineStart as Integer, markerMask as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that include a given set of markers.

Notes: The search starts at line number lineStart and continues forwards to the end of the file (MarkerNext) or backwards to the start of the file (MarkerPrevious).

The markerMask argument should have one bit set for each marker you wish to find. Set bit 0 to find marker 0, bit 1 for marker 1 and so on. The message returns the line number of the first line that contains one of the markers in markerMask or -1 if no marker is found.

4.1.193 MoveCaretInsideView

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If the caret is off the top or bottom of the view, it is moved to the nearest line that is visible to its current position.

Notes: Any selection is lost.

4.1.194 MoveSelectedLinesDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Move the selected lines down one line, shifting the line below before the selection.

Notes: The selection will be automatically extended to the beginning of the selection's first line and the end of the selection's last line. If nothing was selected, the line the cursor is currently at will be selected.

4.1.195 MoveSelectedLinesUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Move the selected lines up one line, shifting the line above after the selection.

Notes: The selection will be automatically extended to the beginning of the selection's first line and the end of the selection's last line. If nothing was selected, the line the cursor is currently at will be selected.

4.1.196 MultiEdgeAddLine(column as Integer, edgeColour as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds a new vertical edge to the view.

Notes: The edge will be displayed at the given column number. The resulting edge position depends on the metric of a space character in `STYLE_DEFAULT`. All the edges can be cleared with `MultiEdgeClearAll`. `MultiEdgeColumn` returns the column of the Nth vertical edge (indexed from 0). If which is greater or equal to the number of vertical edges, this returns -1.

4.1.197 MultiEdgeClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: All the edges can be cleared with `MultiEdgeClearAll`.

4.1.198 MultiEdgeColumn(which as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: MultiEdgeColumn returns the column of the Nth vertical edge (indexed from 0).

Notes: If which is greater or equal to the number of vertical edges, this returns -1.

4.1.199 MultipleSelectAddEach

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: MultipleSelectAddEach is similar to MultipleSelectAddNext but adds multiple occurrences instead of just one.

4.1.200 MultipleSelectAddNext

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds the next occurrence of the main selection within the target to the set of selections as main.

Notes: If the current selection is empty then select word around caret. The current searchFlags are used so the application may choose case sensitivity and word search options.

4.1.201 NewLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.202 PageDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.203 PageDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.204 PageDownRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.205 PageUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.206 PageUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.207 PageUpRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.208 ParaDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.209 ParaDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.210 ParaUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.211 ParaUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.212 Paste

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Performs the paste operation from clipboard.

4.1.213 PointXFromPosition(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the x display pixel location of text at position pos in the document.

4.1.214 PointYFromPosition(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the y display pixel location of text at position pos in the document.

4.1.215 PositionAfter(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position after another position in the document taking into account the current code page.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If called with a position within a multi byte character will return the position of the start/end of that character.

4.1.216 PositionBefore(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position before another position in the document taking into account the current code page.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If called with a position within a multi byte character will return the position of the start/end of that character.

4.1.217 PositionFromLine(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the document position that corresponds with the start of the line.

Notes: If line is negative, the position of the line holding the start of the selection is returned. If line is greater than the lines in the document, the return value is -1. If line is equal to the number of lines in the document (i.e. 1 line past the last line), the return value is the end of the document.

4.1.218 PositionFromPoint(x as Integer, y as integer) as integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character position to a point.

4.1.219 PositionFromPointClose(x as Integer, y as integer) as integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character position to a point.

Notes: Returns -1 if the point is outside the window or not close to any characters.

4.1.220 PositionRelative(pos as Integer, relative as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Count a number of whole characters before or after the argument position and return that position.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If the position goes past the document end then 0 is returned.

4.1.221 PositionRelativeCodeUnits(pos as Integer, relative as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Count a number of whole characters before or after the argument position and return that position.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If the position goes past the document end then 0 is returned.

These is the UTF-16 versions of PositionRelative() working in terms of UTF-16 code units

4.1.222 PropertyInt(name as String, defaultValue as Integer = 0) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Lookup a keyword:value pair using the specified key; if found, interpret the value as an integer and return it.

Notes: If not found (or the value is an empty string) then return the supplied default. If the keyword:value pair is found but is not a number, then return 0.

4.1.223 PropertyType(name as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries property type.

Notes: See `kTypeProperty*` constants.

4.1.224 Redo

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Undoes the effect of the last Undo operation.

4.1.225 RegisterRGBAImage(type as Integer, Width as Integer, Height as Integer, Pixels as MemoryBlock)

Plugin Version: 23.3, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Registers an icon for auto completion.

Example:

```
// register red dot for auto complete later
Const size = 18

Dim r As New Picture(size, size) // red dot
Dim m As New Picture(size, size) // mask, a white dot on black, black is transparent
Dim rg As Graphics = r.Graphics
Dim mg As Graphics = m.Graphics

// we draw the image and the mask one
rg.DrawingColor = &c000000
rg.FillRectangle 0, 0, size, size
rg.DrawingColor = &cFF0000
rg.FillOval 0, 0, size, size
mg.DrawingColor = &c000000
mg.FillRectangle 0, 0, size, size
mg.DrawingColor = &cFFFFFF
mg.FillOval 0, 0, size, size

// now we convert to memoryblock
Dim rr As RGBSurface = r.RGBSurface
Dim mr As RGBSurface = m.RGBSurface

dim pixels As New MemoryBlock(size * size * 4)
Dim PixelPtr As ptr = pixels
Dim o As Integer = 0
For y As Integer = 0 To size-1
For x As Integer = 0 To size-1
Dim mc As Color = mr.Pixel(x,y)
```

```

Dim rc As Color = rr.Pixel(x,y)
PixelPtr.UInt8(o+0) = rc.Red
PixelPtr.UInt8(o+1) = rc.Green
PixelPtr.UInt8(o+2) = rc.Blue
PixelPtr.UInt8(o+3) = mc.Green
o = o + 4
Next
Next

```

```
c.RegisterRGBAImage(1, size, size, pixels)
```

Notes: Autocompletion list items may display an image as well as text. Each image is first registered with an integer type. Then this integer is included in the text of the list separated by a '?' from the text. For example, "fclose?2 fopen" displays image 2 before the string "fclose" and no image before "fopen". The images are in RGBA format and set with RegisterRGBAImage.

The set of registered images can be cleared with ClearRegisteredImages method and the '?' separator changed with AutoCompleteSeparator property.

4.1.226 ReleaseAllExtendedStyles

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Releases any extended styles allocated by the container.

4.1.227 ReleaseLineCharacterIndex(lineCharacterIndex as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Release one or more indexes.

Notes: Different aspects of an application may need indexes for different periods and should allocate for those periods. Indexes use additional memory so releasing them can help minimize memory but they also take time to recalculate. Scintilla may also allocate indexes to support features like accessibility or input method editors. Only one index of each type is created for a document at a time.

4.1.228 ReplaceRectangular(length as Integer, text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Replaces the selected text or empty selection with the given text.

Notes: The insertion is performed similarly to rectangular pastes: new lines in the given text are interpreted as moving to the next line without inserting new lines unless at the end of the document.

4.1.229 ReplaceSelection(text as string)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The currently selected text between the anchor and the current position is replaced by the text string.

Notes: If the anchor and current position are the same, the text is inserted at the caret position. The caret is positioned after the inserted text and the caret is scrolled into view.

4.1.230 ReplaceTarget(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Replace target area with new text.

Notes: After replacement, the target range refers to the replacement text. The return value is the length of the replacement string.

Note that the recommended way to delete text in the document is to set the target to the text to be removed, and to perform a replace target with an empty string.

4.1.231 ReplaceTargetRE(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This replaces the target using regular expressions.

Notes: If length is -1, text is a zero terminated string, otherwise length is the number of characters to use. The replacement string is formed from the text string with any sequences of \1 through \9 replaced by tagged matches from the most recent regular expression search. \0 is replaced with all the matched text from the most recent search. After replacement, the target range refers to the replacement text. The return value is the length of the replacement string.

4.1.232 ResetElementColour(element as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes the element colour returning to the default colour or set of colours.

4.1.233 RotateSelection

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Makes the next selection be the main selection.

4.1.234 `scintillaLibraryLoaded` as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether the scintilla library got loaded.

Notes: Returns true on MacOS when you loaded the Scintilla.framework before.
Returns true if you loaded Scintilla.dll on Windows or Scintilla.so on Linux.

4.1.235 `ScrollCaret`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If the current position (this is the caret if there is no selection) is not visible, the view is scrolled to make it visible according to the current caret policy.

4.1.236 `ScrollRange(secondary as Integer, primary as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scroll the argument positions and the range between them into view giving priority to the primary position then the secondary position.

Notes: The behaviour is similar to `ScrollCaret` with the primary position used instead of the caret. An effort is then made to ensure that the secondary position and range between are also visible. This may be used to make a search match visible.

4.1.237 `ScrollToEnd`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The `ScrollToEnd` commands scroll the document to the end without changing the selection. These commands match OS X platform conventions for the behaviour of the home and end keys. Scintilla can be made to match OS X applications by binding the home and end keys to these commands.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.238 `ScrollToStart`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The ScrollToStart commands scroll the document to the start without changing the selection. These commands match OS X platform conventions for the behaviour of the home and end keys. Scintilla can be made to match OS X applications by binding the home and end keys to these commands.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.239 SearchAnchor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the search start point used by SearchNext and SearchPrev to the start of the current selection, that is, the end of the selection that is nearer to the start of the document.

Notes: You should always call this before calling either of SearchNext or SearchPrev.

4.1.240 SearchInTarget(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This searches for the first occurrence of a text string in the target defined by TargetStart and TargetEnd.

Notes: The search is modified by the search flags set by SearchFlags property. If the search succeeds, the target is set to the found text and the return value is the position of the start of the matching text. If the search fails, the result is -1.

See Tag() for regular expression results.

4.1.241 SearchNext(searchFlags as Integer, text as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: SearchNext and SearchPrev search for the next and previous occurrence of the search string pointed at by text.

Notes: The search is modified by the searchFlags.

See kFindOption* constants.

The return value is -1 if nothing is found, otherwise the return value is the start position of the matching text. The selection is updated to show the matched text, but is not scrolled into view.

Character	Description
.	Matches any character
\(This marks the start of a region for tagging a match.
\)	This marks the end of a tagged region.
\n	Where n is 1 through 9 refers to the first through ninth tagged region when replacing. For example, if the search string was Fred\([1-9]\)XXX and the replace string was Sam\1YYY, when applied to Fred2XXX this would generate Sam2YYY. \0 refers to all of the matching text.
<	This matches the start of a word using Scintilla's definitions of words.
>	This matches the end of a word using Scintilla's definition of words.
\x	This allows you to use a character x that would otherwise have a special meaning. For example, \[would be interpreted as [and not as the start of a character set.
[...]	This indicates a set of characters, for example, [abc] means any of the characters a, b or c. You can also use ranges, for example [a-z] for any lower case character.
[^...]	The complement of the characters in the set. For example, [^A-Za-z] means any character except an alphabetic character.
^	This matches the start of a line (unless used inside a set, see above).
\$	This matches the end of a line.
*	This matches 0 or more times. For example, Sa*m matches Sm, Sam, Saam, Saaam and so on.
+	This matches 1 or more times. For example, Sa+m matches Sam, Saam, Saaam and so on.

4.1.242 SearchPrev(searchFlags as Integer, text as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: SearchNext and SearchPrev search for the next and previous occurrence of the search string pointed at by text.

Notes: The search is modified by the searchFlags.
See kFindOption* constants.

The return value is -1 if nothing is found, otherwise the return value is the start position of the matching text. The selection is updated to show the matched text, but is not scrolled into view.

4.1.243 SelectAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This selects all the text in the document.

Notes: The current position is not scrolled into view.

4.1.244 SelectionDuplicate

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.245 SelectionNEndVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Query the virtual space at start and end of each selection.

Notes: Selection parameter is zero based.

4.1.246 SelectionNStartVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Query the virtual space at start and end of each selection.

Notes: Selection parameter is zero based.

4.1.247 SetAdditionalSelBackColor(value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

4.1.248 SetAdditionalSelForeColor(value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

4.1.249 SetCharsDefault

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use the default sets of word and whitespace characters.

Notes: This sets whitespace to space, tab and other characters with codes less than &h20, with word characters set to alphanumeric and ' _'.

4.1.250 SetDocument(otherControl as Variant)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets document for this control to be same as the other control.

Notes: Using this method you can allow multiple controls to share same document, e.g. for split views.

Pass nil to create new empty document.

This method does the following:

1. It removes the current window from the list held by the current document.
2. It reduces the reference count of the current document by 1.
3. If the reference count reaches 0, the document is deleted.
4. doc is set as the new document for the window.
5. If doc was 0, a new, empty document is created and attached to the window.
6. If doc was not 0, its reference count is increased by 1.

Please pass either DesktopScintillaControlMBS or DesktopDesktopScintillaControlMBS here to point to new control.

After you assigned new document, please configure styles as needed.

4.1.251 SetEmptySelection(caret as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection and sets the caret at caret.

Notes: The caret is not scrolled into view.

4.1.252 SetFoldFlags(FoldFlags as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets folder flags.

Notes: In addition to showing markers in the folding margin, you can indicate folds to the user by drawing lines in the text area. The lines are drawn in the `kElementFoldLine` colour if set. If it is not set then the foreground colour set for `kStylesCommonDefault` is used.

4.1.253 `SetFoldMarginColor`(`useSetting` as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the fold margin.

Example:

```
// turn folder margin to red
c.SetFoldMarginColor(True, Color.red)
```

Notes: Defaults to system color for this.

The `FoldMarginColor` and the `FoldMarginHighlightColor` colors are used together to draw the chequerboard pattern in the folder margin.

4.1.254 `SetFoldMarginHighlightColor`(`useSetting` as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the fold margin highlight.

Notes: Defaults to system color for this.

The `FoldMarginColor` and the `FoldMarginHighlightColor` colors are used together to draw the chequerboard pattern in the folder margin.

4.1.255 `SetHotspotActiveBackColor`(`useSetting` as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for hotspot.

Notes: While the cursor hovers over text in a style with the hotspot attribute set, the default colouring can be modified and an underline drawn with these settings.

4.1.256 SetHotspotActiveForeColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for hotspot.

Notes: While the cursor hovers over text in a style with the hotspot attribute set, the default colouring can be modified and an underline drawn with these settings.

4.1.257 SetSavePoint

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method tells Scintilla that the current state of the document is unmodified.

Notes: This is usually done when the file is saved or loaded, hence the name "save point". As Scintilla performs undo and redo operations, it notifies the container that it has entered or left the save point with SavePointReached and SavePointLeft events, allowing the container to know if the file should be considered dirty or not.

See also: EmptyUndoBuffer or Modify property.

4.1.258 SetSel(anchor as Integer, caret as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets both the anchor and the current position.

Notes: If caret is negative, it means the end of the document. If anchor is negative, it means remove any selection (i.e. set the anchor to the same position as caret). The caret is scrolled into view after this operation.

4.1.259 SetSelBackColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to override the default selection colouring.

Example:

```
// use highlight color for selection and white text
```

```
dim c as DesktopScintillaControlMBS // your control
c.SetSelBackColor(True, Color.HighlightColor)
c.SetSelForeColor(True, Color.White)
```

Notes: With the method, the colour you provide is used if you set useSetting to true. If it is set to false, the default styled colouring is used and the fore or back argument has no effect.

4.1.260 SetSelection(caret as Integer, anchor as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a single selection from anchor to caret as the only selection.

4.1.261 SetSelForeColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to override the default selection colouring.

Example:

```
// use highlight color for selection and white text
```

```
dim c as DesktopScintillaControlMBS // your control
c.SetSelBackColor(True, Color.HighlightColor)
c.SetSelForeColor(True, Color.White)
```

Notes: With the method, the colour you provide is used if you set useSetting to true. If it is set to false, the default styled colouring is used and the fore or back argument has no effect.

4.1.262 setStatusText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Targets: Desktop only.

Function: Sets message of status field.

4.1.263 SetStyling(length as Integer, style as ScintillaStyleMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the style of length characters starting at the styling position and then increases the styling position by length, ready for the next call.

Notes: StartStyling should be called before the first call to this.

See also:

- 4.1.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS) 100

4.1.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the style of length characters starting at the styling position and then increases the styling position by length, ready for the next call.

Notes: StartStyling should be called before the first call to this.

See also:

- 4.1.263 SetStyling(length as Integer, style as ScintillaStyleMBS) 100

4.1.265 SetStylingEx(Styles as MemoryBlock)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styling for a range of text.

Notes: As an alternative to SetStyling, which applies the same style to each byte, you can use this method which specifies the styles for each of length bytes from the styling position and then increases the styling position by length, ready for the next call. StartStyling should be called before the first call to this.

4.1.266 SetTargetRange(start as Integer, ende as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the start and end of the target.

4.1.267 SetVisiblePolicy(visiblePolicy as Integer, visibleSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This determines how the vertical positioning is determined when EnsureVisibleEnforcePolicy is called.

Notes: It takes kVisiblePolicySlop and kVisiblePolicyStrict flags for the visiblePolicy parameter. It is similar in operation to SetYCaretPolicy.

4.1.268 SetWhitespaceBackColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for white space.

Notes: By default, the colour of visible white space is determined by the lexer in use. The foreground and/or background colour of all visible white space can be set globally, overriding the lexer's colours.

4.1.269 SetWhitespaceForeColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for white space.

Notes: By default, the colour of visible white space is determined by the lexer in use. The foreground and/or background colour of all visible white space can be set globally, overriding the lexer's colours.

4.1.270 SetXCaretPolicy(caretPolicy as Integer, caretSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the caret policy.

Notes: See kCaretPolicy* constants.

slop strict jumps even Caret can go to the margin "On reaching limit (going out of visibility

or going into the UZ) display is..."

0	0	0	0	Yes		moved to put caret on top/on right
0	0	0	1	Yes		moved by one position
0	0	1	0	Yes		moved to put caret on top/on right
0	0	1	1	Yes		centred on the caret
0	1	-	0	Caret is always on top/on right of display	-	
0	1	-	1	No, caret is always centred	-	
1	0	0	0	Yes		moved to put caret out of the asymmetrical UZ
1	0	0	1	Yes		moved to put caret out of the UZ
1	0	1	0	Yes		moved to put caret at 3UZ of the top or right margin
1	0	1	1	Yes		moved to put caret at 3UZ of the margin
1	1	-	0	Caret is always at UZ of top/right margin	-	
1	1	0	1	No, kept out of UZ		moved by one position
1	1	1	0	No, kept out of UZ		moved to put caret at 3UZ of the margin

4.1.271 SetYCaretPolicy(caretPolicy as Integer, caretSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the caret policy.

Notes: See kCaretPolicy* constants.

slop strict jumps even Caret can go to the margin "On reaching limit (going out of visibility

or going into the UZ) display is..."

0	0	0	0	Yes	moved to put caret on top/on right
0	0	0	1	Yes	moved by one position
0	0	1	0	Yes	moved to put caret on top/on right
0	0	1	1	Yes	centred on the caret
0	1	-	0	Caret is always on top/on right of display	-
0	1	-	1	No, caret is always centred	-
1	0	0	0	Yes	moved to put caret out of the asymmetrical UZ
1	0	0	1	Yes	moved to put caret out of the UZ
1	0	1	0	Yes	moved to put caret at 3UZ of the top or right margin
1	0	1	1	Yes	moved to put caret at 3UZ of the margin
1	1	-	0	Caret is always at UZ of top/right margin	-
1	1	0	1	No, kept out of UZ	moved by one position
1	1	1	0	No, kept out of UZ	moved to put caret at 3UZ of the margin

4.1.272 ShowLines(lineStart as Integer, lineEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Marks a range of lines as visible and then redraw the display.

4.1.273 StartRecord

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Turn macro recording on.

4.1.274 StartStyling(start as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This prepares for styling by setting the styling position start to start at.

Notes: After StartStyling, send multiple SetStyling messages for each lexical entity to style or send SetStylingEX to style in blocks.

4.1.275 StopRecord

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Turn macro recording off.

4.1.276 StringOfSpan(Span as ScintillaSpanMBS) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries text for given span.

4.1.277 StutteredPageDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.278 StutteredPageDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.279 StutteredPageUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.280 StutteredPageUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.281 Style(index as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries style with given index.

Notes: Index ranges from 0 to 255.

4.1.282 StyleAt(position as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the style at pos in the document, or 0 if pos is negative or past the end of the document.

4.1.283 StyleClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This message sets all styles to have the same attributes as the default style.

Notes: If you are setting up Scintilla for syntax colouring, it is likely that the lexical styles you set will be very similar. One way to set the styles is to:

1. Set kStylesCommonDefault to the common features of all styles.
2. Use StyleClearAll to copy this to all styles.
3. Set the style attributes that make your lexical styles different.

4.1.284 StyleResetDefault

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This message resets default style (kStylesCommonDefault) to its state when Scintilla was initialised.

4.1.285 SupportsFeature(feature as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Different platforms support different features and SupportsFeature can be used to check which are currently available.

Notes: For example, on Win32, Direct2D supports drawing translucent lines but GDI does not so SupportsFeature(kSupportsTranslucentStroke) will return 1 for Direct2D and 0 for GDI. Its possible that translucent line drawing will be implemented in a future revision to the GDI platform layer or will be implemented on particular Windows versions. This call allows applications to tailor their settings: perhaps displaying a box with translucent coloured fill on Direct2D but a hollow box on GDI.

See kSupport* constants.

4.1.286 SwapMainAnchorCaret

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Moves the caret to the opposite end of the main selection.

4.1.287 Tab

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.288 Tag(tagNumber as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Discover what text was matched by tagged expressions in a regular expression search.

Notes: This is useful if the application wants to interpret the replacement string itself.

4.1.289 TargetFromSelection

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the target start and end to the start and end positions of the selection.

4.1.290 TargetWholeDocument

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the target start to the start of the document and target end to the end of the document.

4.1.291 TextHeight(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the height in pixels of a particular line.

Notes: Currently all lines are the same height.

4.1.292 ToggleCaretSticky

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: These method set, get or toggle the caretSticky setting which controls when the last position of the caret on the line is saved.

Notes: When set to kCaretStickyOff (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.

When set to kCaretStickyOn (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).

When set to kCaretStickyWhiteSpace (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

ToggleCaretSticky switches from kCaretStickyOn and kCaretStickyWhiteSpace to kCaretStickyOff and from kCaretStickyOff to kCaretStickyOn.

4.1.293 ToggleFold(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Toggle a folder at the given line.

Notes: Each fold point may be either expanded, displaying all its child lines, or contracted, hiding all the child lines. This method toggle the folding state of the given line as long as it has the kFoldLevelHeaderFlag set. This method take care of folding or expanding all the lines that depend on the line. The display updates after this method.

4.1.294 ToggleFoldShowText(Line as Integer, text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Toggle a folder at the given line with hsowing text.

Notes: Each fold point may be either expanded, displaying all its child lines, or contracted, hiding all the child lines. This method toggle the folding state of the given line as long as it has the kFoldLevelHeaderFlag set. This method take care of folding or expanding all the lines that depend on the line. The display updates after this method.

An optional text tag may be shown to the right of the folded text with the text argument to ToggleFoldShowText. The default text for all header lines can be set with DefaultFoldDisplayText. The text is drawn with the kStylesCommonFoldDisplayText style.

4.1.295 Undo

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Undoes one action.

Notes: Or if the undo buffer has reached a `EndUndoAction` point, all the actions back to the corresponding `BeginUndoAction`.

Scintilla has multiple level undo and redo. It will continue to collect undoable actions until memory runs out. Scintilla saves actions that change the document. Scintilla does not save caret and selection movements, view scrolling and the like. Sequences of typing or deleting are compressed into single transactions to make it easier to undo and redo at a sensible level of detail. Sequences of actions can be combined into transactions that are undone as a unit. These sequences occur between `BeginUndoAction` and `EndUndoAction` messages. These transactions can be nested and only the top-level sequences are undone as units.

4.1.296 UpperCase

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.297 UsePopUp(popUpMode as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clicking the wrong button on the mouse pops up a short default editing menu.

Notes: This may be turned off with `UsePopup(kPopUpNever)`. If you turn it off, context menu commands (in Windows, `WM_CONTEXTMENU`) will not be handled by Scintilla, so the parent of the Scintilla window will have the opportunity to handle the message.

4.1.298 UserListShow(listType as Integer, itemList as string)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Shows an user list.

Notes: User lists use the same internal mechanisms as autocompletion lists, and all the calls listed for autocompletion work on them; you cannot display a user list at the same time as an autocompletion list is active. They differ in the following respects:

- The `AutoCChooseSingle` method has no effect.,Ä®

- When the user makes a selection you are sent a `UserListSelection` event rather than `AutoCompleteSelection`.

BEWARE: if you have set fillup characters or stop characters, these will still be active with the user list, and may result in items being selected or the user list cancelled due to the user typing into the editor.

The `listType` parameter is carried to the events. It must be greater than 0 as this is how Scintilla tells the difference between an autocompletion list and a user list. If you have different types of list, for example a list of buffers and a list of macros, you can use `listType` to tell which one has returned a selection.

4.1.299 VCHome

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.300 VCHomeDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.301 VCHomeDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.302 VCHomeExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.303 VCHomeRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.304 VCHomeWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.305 VCHomeWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.306 VerticalCentreCaret

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.307 VisibleFromDocLine(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When some lines are hidden and/or annotations are displayed, then a particular line in the document may be displayed at a different position to its document position.

Notes: If no lines are hidden and there are no annotations, this method returns docLine. Otherwise, this returns the display line (counting the very first visible line as 0). The display line of an invisible line is the same as the previous visible line. The display line number of the first line in the document is 0. If lines are hidden and docLine is outside the range of lines in the document, the return value is -1. Lines can occupy more than one display line if they wrap.

4.1.308 WordEndPosition(pos as Integer, onlyWordCharacters as boolean) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the end of words using the same definition of words as used internally within Scintilla.

Notes: You can set your own list of characters that count as words with WordChars. The position sets the start or the search, which is forwards when searching for the end and backwards when searching for the start.

4.1.309 WordLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.310 WordLeftEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.311 WordLeftEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.312 WordLeftExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.313 WordPartLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.314 WordPartLeftExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.315 WordPartRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.316 WordPartRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.317 WordRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.318 WordRightEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.319 WordRightEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.320 WordRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.1.321 WordStartPosition(pos as Integer, onlyWordCharacters as boolean) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the start of words using the same definition of words as used internally within Scintilla.

Notes: You can set your own list of characters that count as words with WordChars. The position sets the start or the search, which is forwards when searching for the end and backwards when searching for the start.

4.1.322 WrapCount(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Document lines can occupy more than one display line if they wrap and this returns the number of display lines needed to wrap a document line.

4.1.323 ZoomIn

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Increases the zoom factor by one point if the current zoom factor is less than 20 points.

4.1.324 ZoomOut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Decreases the zoom factor by one point if the current zoom factor is greater than -10 points.

4.1.325 Properties

4.1.326 Accessibility as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable accessibility status.

Notes: Can be set to kAccessibilityEnabled to enable.

(Read and Write property)

4.1.327 AdditionalCaretForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Modify the appearance of additional carets so that they can be differentiated from the main caret which has its appearance.

Notes: (Read and Write property)

4.1.328 AdditionalCaretBlink as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Modify the appearance of additional carets so that they can be differentiated from the main caret which has its appearance.

Notes: (Read and Write property)

4.1.329 AdditionalCaretVisible as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Determine whether to show additional carets (defaults to true).

Notes: (Read and Write property)

4.1.330 AdditionalSelAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets alpha for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

(Read and Write property)

4.1.331 AdditionalSelectionTyping as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether typing, new line, cursor left/right/up/down, backspace, delete, home, and end work with multiple selections simultaneously.

Notes: Also allows selection and word and line deletion commands.

(Read and Write property)

4.1.332 AllLinesVisible as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true if all lines are visible and false if some lines are hidden.

Notes: (Read only property)

4.1.333 Anchor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current anchor position.

Notes: This sets the anchor position and creates a selection between the anchor position and the current position. The caret is not scrolled into view.

(Read and Write property)

4.1.334 AnnotationVisible as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Annotations can be made visible in a view and there is a choice of display style when visible.

Notes: See kAnnotationVisible* constants.

(Read and Write property)

4.1.335 AutoCompleteActive as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true if there is an active auto completion list and false if there is not.

Notes: (Read only property)

4.1.336 AutoCompleteAutoHide as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, the list is cancelled if there are no viable matches (the user has typed characters that no longer match a list entry).

Notes: If you want to keep displaying the original list, set autoHide to false. This also effects AutoCompleteSelect.

(Read and Write property)

4.1.337 AutoCompleteCancelAtStart as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The default behaviour is for the list to be cancelled if the caret moves to the location it was at when the list was displayed.

Notes: By calling this message with a false argument, the list is not cancelled until the caret moves at least one character before the word being completed.

(Read and Write property)

4.1.338 `AutoCompleteCaseInsensitiveBehaviour` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to ignore case on auto completion.

Notes: When auto completion is set to ignore case (`kCaseInsensitiveBehaviourIgnoreCase`), by default it will nonetheless select the first list member that matches in a case sensitive way to entered characters. This corresponds to a behaviour property of `kCaseInsensitiveBehaviourRespectCase` (0). If you want auto completion to ignore case at all, choose `kCaseInsensitiveBehaviourIgnoreCase` (1).

(Read and Write property)

4.1.339 `AutoCompleteChooseSingle` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to choose single item directly.

Notes: If you use `AutoCompleteChooseSingle(1)` and a list has only one item, it is automatically added and no list is displayed. The default is to display the list even if there is only a single item.

(Read and Write property)

4.1.340 `AutoCompleteCurrent` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set to select an item in the autocompletion list.

Notes: It searches the list of words for the first that matches select. By default, comparisons are case sensitive, but you can change this with `AutoCIgnoreCase`. The match is character by character for the length of the select string. That is, if select is "Fred" it will match "Frederick" if this is the first item in the list that begins with "Fred". If an item is found, it is selected. If the item is not found, the autocompletion list closes if auto-hide is true (see `AutoCAutoHide`).

The current selection index can be retrieved with `AutoCompleteCurrent`.

(Read only property)

4.1.341 `AutoCompleteCurrentText` as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieves the current selected text in the autocompletion list.

Notes: Normally the `AutoCompletion` event is used instead.

The value is copied to the text buffer or if not found, an empty string is returned.
(Read only property)

4.1.342 `AutoCompleteDropRestOfWord` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When an item is selected, any word characters following the caret are first erased if `dropRestOfWord` is set true.

Notes: The default is false.
(Read and Write property)

4.1.343 `AutoCompleteIgnoreCase` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, matching of characters to list members is case sensitive.

Notes: These method let you set and get case sensitivity.
(Read and Write property)

4.1.344 `AutoCompleteMaxHeight` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the maximum number of rows that will be visible in an auto completion list.

Notes: If there are more rows in the list, then a vertical scrollbar is shown. The default is 5.
(Read and Write property)

4.1.345 `AutoCompleteMaxWidth` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the maximum width of an auto completion list expressed as the number of characters in the longest item that will be totally visible.

Notes: If zero (the default) then the list's width is calculated to fit the item with the most characters. Any items that cannot be fully displayed within the available width are indicated by the presence of ellipsis.
(Read and Write property)

4.1.346 AutoCompleteMulti as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to auto complete multiple selections.

Notes: When auto completing with multiple selections present, the auto completed text can go into just the main selection with `kMultiAutoCompleteOnce` (0) or into each selection with `kMultiAutoCompleteEach` (1). The default is `kMultiAutoCompleteOnce`.

(Read and Write property)

4.1.347 AutoCompleteOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set options for auto completion.

Notes: See `kAutoCompleteOption*` constants.

(Read and Write property)

4.1.348 AutoCompleteOrder as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The default setting `kOrderingPreSorted` (0) requires that the list be provided in alphabetical sorted order.

Notes: Sorting the list can be done by Scintilla instead of the application with `kOrderingPerformSort` (1). This will take additional time.

Applications that wish to prioritize some values and show the list in order of priority instead of alphabetical order can use `kOrderingCustom` (2). This requires extra processing in `AutoCompleteShow` to create a sorted index.

Setting the order should be done before calling `AutoCompleteShow`.

(Read and Write property)

4.1.349 AutoCompleteSeparator as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the separator character used to separate words in the `AutoCompleteShow` list.

Notes: The default is the space character.

(Read and Write property)

4.1.350 `AutoCompleteTypeSeparator` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or get the type separator for auto complete.

Notes: (Read and Write property)

4.1.351 `AutomaticFold` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The automatic folding behavior.

Notes: The fundamental operation in folding is making lines invisible or visible. Line visibility is a property of the view rather than the document so each view may be displaying a different set of lines. From the point of view of the user, lines are hidden and displayed using fold points. Generally, the fold points of a document are based on the hierarchical structure of the document contents. In Python, the hierarchy is determined by indentation and in C++ by brace characters. This hierarchy can be represented within a Scintilla document object by attaching a numeric "fold level" to each line. The fold level is most easily set by a lexer, but you can also set it with method.

It is up to your code to set the connection between user actions and folding and unfolding. The best way to see how this is done is to search the SciTE source code for the methods used in this section of the documentation and see how they are used. You will also need to use markers and a folding margin to complete your folding implementation. The "fold" property should be set to "1" with `SetProperty("fold", "1")` to enable folding.

Instead of implementing all the logic for handling folding in the container, Scintilla can provide behaviour that is adequate for many applications. The `automaticFold` argument is a bit set defining which of the 3 pieces of folding implementation should be enabled. Most applications should be able to use the `kAutomaticFoldShow` and `kAutomaticFoldChange` flags unless they wish to implement quite different behaviour such as defining their own fold structure. `kAutomaticFoldClick` is more likely to be set off when an application would like to add or change click behaviour such as showing method headers only when Shift+Alt is used in conjunction with a click.

(Read and Write property)

4.1.352 `BackSpaceUnIndents` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether backspace unindents.

Notes: Inside indentation white space, the tab and backspace keys can be made to indent and unindent rather than insert a tab character or delete a character with the `TabIndents` and `BackSpaceUnIndents` functions.

(Read and Write property)

4.1.353 Bidirectional as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or queries bidirectional support.

Notes: The bidirectional features in Scintilla are experimental and incomplete.

Some languages, like Arabic and Hebrew, are written from right to left instead of from left to right as English is. Documents that use multiple languages may contain both directions and this is termed "bidirectional". The default text direction may be right to left or left to right. Scintilla only correctly displays bidirectional text on some platforms. Currently, there is experimental support for bidirectional text on Win32 using DirectWrite and on macOS using Cocoa. Only UTF-8 documents will show bidirectional behaviour and only in `kBidirectionalL2R` mode. Some features, such as virtual space may not work with bidirectional text or may work only in some circumstances. `kBidirectionalR2L` may be implemented in the future.

There are additional processing and storage costs to bidirectional text. As some applications may not want to pay the costs, bidirectional support must be explicitly enabled by calling `Bidirectional = kBidirectionalL2R` (1) which chooses left to right as the default direction or `Bidirectional = kBidirectionalR2L` (2) for default right to left.

On Win32, this should be done after setting the technology to `kTechnologyDirectWrite`, `kTechnologyDirectWriteRetain`, or `kTechnologyDirectWriteDC`.

If the call succeeded `Bidirectional` query will return the same value otherwise `kBidirectionalDisabled` (0) is returned.

(Read and Write property)

4.1.354 CallTipActive as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if a call tip is active and false if it is not active.

Notes: (Read only property)

4.1.355 CallTipPosStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This property returns or sets the value of the current position when `CallTipShow` started to display the tip.

Notes: (Read and Write property)

4.1.356 CanPaste as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether clipboard has text and paste can be performed.

Notes: Returns false if document is read only or selection contains protected text.
(Read only property)

4.1.357 CanRedo as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether Undo was performed and a Redo step is possible.

Notes: You could typically use the result of this property to enable/disable the Edit menu Redo command.
(Read only property)

4.1.358 CanUndo as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether undo stack contains data and can be used to undo.

Notes: You would typically use the result of this property to enable/disable the Edit menu Undo command.
(Read only property)

4.1.359 CaretForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the caret.

Example:

```
dim ScintillaEditor as DesktopScintillaControlMBS // your control
```

```
// set cursor width and color
```

```
ScintillaEditor.CaretForeColor = Color.HighlightColor  
ScintillaEditor.CaretWidth = 8
```

Notes: (Read and Write property)

4.1.360 CaretLineBackAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The caret line be drawn translucently which allows other background colours to show through.

Notes: hTis is done by setting the alpha (translucency) value by calling CaretLineBackAlpha. When the alpha is not kAlphaNoAlpha, the caret line is drawn after all other features so will affect the colour of all other features.

(Read and Write property)

4.1.361 CaretLineBackColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The background colour of the line containing the caret different

Notes: Set the desired background colour with CaretLineBackColor, then use CaretLineVisible = true to enable the effect. You can cancel the effect with CaretLineVisible = false.

(Read and Write property)

4.1.362 CaretLineFrame as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: can be used to display the caret line framed instead of filling the whole background.

Notes: Set width <>0 to enable this option and width = 0 to disable it.

(Read and Write property)

4.1.363 CaretLineHighlightSubLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Choose to highlight only the subline containing the caret instead of the whole line.

Notes: Default behaviour CaretLineHighlightSubLine = false the whole caret line is highlighted.

(Read and Write property)

4.1.364 CaretLineLayer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to make the background colour of the line containing the caret.

Notes: This effect may be drawn translucently over the text or opaquely on the base layer with CaretLineLayer. Background colouring has highest priority when a line has markers that would otherwise change

the background colour. When drawn translucently other background colours can show through.

See `kLayer*` constants.
(Read and Write property)

4.1.365 CaretLineVisible as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether caret line is visible.

Notes: Set the desired background colour with `CaretLineBackColor`, then use `CaretLineVisible = true` to enable the effect. You can cancel the effect with `CaretLineVisible = false`.

(Read and Write property)

4.1.366 CaretLineVisibleAlways as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Choose to make the caret line always visible even when the window is not in focus.

Notes: Default behaviour false the caret line is only visible when the window is in focus.

(Read and Write property)

4.1.367 CaretPeriod as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The rate at which the caret blinks.

Notes: The rate at which the caret blinks can be set with `CaretPeriod` which determines the time in milliseconds that the caret is visible or invisible before changing state. Setting the period to 0 stops the caret blinking. The default value is 500 milliseconds.

(Read and Write property)

4.1.368 CaretSticky as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set, get or toggle the `caretSticky` setting which controls when the last position of the caret on the line is saved.

Notes: These messages set, get or toggle the `caretSticky` setting which controls when the last position of the caret on the line is saved.

When set to `kCaretStickyOff` (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.

When set to `kCaretStickyOn` (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).

When set to `kCaretStickyWhiteSpace` (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

`SCI_TOGGLECARETSTICKY` switches from `kCaretStickyOn` and `kCaretStickyWhiteSpace` to `kCaretStickyOff` and from `kCaretStickyOff` to `kCaretStickyOn`.
(Read and Write property)

4.1.369 CaretStyle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The style of the caret.

Notes: There are separate styles for insert mode (lower 4-bits, `kCaretStyleInsMask`) and overtype mode (bit 4).

See `kCaretStyle*` constants.

The block caret draws most combining and multibyte character sequences successfully, though some fonts like Thai Fonts (and possibly others) can sometimes appear strange when the cursor is positioned at these characters, which may result in only drawing a part of the cursor character sequence. This is most notable on Windows platforms.

(Read and Write property)

4.1.370 CaretWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The width of the line caret.

Example:

```
dim ScintillaEditor as DesktopScintillaControlMBS // your control
```

```
// set cursor width and color
```

```
ScintillaEditor.CaretForeColor = Color.HighlightColor  
ScintillaEditor.CaretWidth = 8
```

Notes: can be set to a value of between 0 and 20 pixels. The default width is 1 pixel.

A width of 0 makes the caret invisible, similar to setting the caret style to `kCaretStyleInvisible` (though not interchangeable). This setting only affects the width of the cursor when the cursor style is set to line caret mode, it does not affect the width for a block caret.
(Read and Write property)

4.1.371 CharacterCategoryOptimization as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Optimize speed of character category features like determining whether a character is a space or number at the expense of memory.

Notes: Mostly used for Unicode documents. The `countCharacters` parameter determines how many character starting from 0 are added to a look-up table with one byte used for each character. It is reasonable to cover the set of characters likely to be used in a document so `&h100` for simple Roman text, `&h1000` to cover most simple alphabets, `&h10000` to cover most of East Asian languages, and `&h110000` to cover all possible characters.
(Read and Write property)

4.1.372 ControlCharSymbol as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The mnemonics may be replaced by a nominated symbol with an ASCII code in the range 32 to 255.

Notes: If you set a symbol value less than 32, all control characters are displayed as mnemonics. The symbol you set is rendered in the font of the style set for the character.

The default symbol value is 0.
(Read and Write property)

4.1.373 CurrentLine as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This retrieves the text of the line containing the caret and returns the position within the line of the caret.

Notes: (Read only property)

4.1.374 Cursor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current mouse cursor.

Notes: The cursor is normally chosen in a context sensitive way, so it will be different over the margin than when over the text. When performing a slow action, you may wish to change to a wait cursor. You set the cursor type with assignment to this property.

See `kCursorShape*` constants.

Cursor values 1 through 7 have defined cursors, but only `kCursorShapeWait` is usefully controllable. Other values of `cursorType` cause a pointer to be displayed. Reading the cursor property returns the last cursor type you set, or `kCursorShapeNormal` (-1) if you have not set a cursor type.

(Read and Write property)

4.1.375 DefaultFoldDisplayText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the default text displayed at the right of the folded text.

Notes: (Read and Write property)

4.1.376 DescribeKeywordSets as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A description of all of the keyword sets separated by LF.

Notes: (Read only property)

4.1.377 DocumentOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The documentation options used to create the document.

Notes: (Read only property)

4.1.378 EdgeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the colour of the marker used to show that a line has exceeded the length set by EdgeColumn property.

Notes: (Read and Write property)

4.1.379 EdgeColumn as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the column number at which to display the long line marker.

Notes: When drawing lines, the column sets a position in units of the width of a space character in kStyle-sCommonDefault. When setting the background colour, the column is a character count (allowing for tabs) into the line.

(Read and Write property)

4.1.380 EdgeMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the mode used to display long lines.

Notes: You can choose to mark lines that exceed a given length by drawing a vertical line or by colouring the background of characters that exceed the set length.

See kEdgeVisualStyle* constants.

(Read and Write property)

4.1.381 EndAtLastLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: EndAtLastLine sets the scroll range so that maximum scroll position has the last line at the bottom of the view (default).

Notes: Setting this to false allows scrolling one page below the last line.

(Read and Write property)

4.1.382 EOLAnnotationVisible as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the annotation display mode.

Notes: End of Line Annotations can be made visible in a view and there is a choice of display style when visible.

See `kEOLEAnnotationVisible*` constants.
(Read and Write property)

4.1.383 EOLMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the characters that are added into the document when the user presses the Enter key.

Notes: You can set `eolMode` to one of `kEndOfLineCRLF` (0), `kEndOfLineCR` (1), or `kEndOfLineLF` (2).

Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRL+LF in Windows and LF in Unix, but this can be changed with the `EOLMode` property. You can also convert the entire document to one of these line endings with `ConvertEOLs`. Finally, you can choose to display the line endings with `ViewEOL`.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.

(Read and Write property)

4.1.384 ExtraAscent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The extra ascent.

Notes: Text is drawn with the base of each character on a 'baseline'. The height of a line is found from the maximum that any style extends above the baseline (its 'ascent'), added to the maximum that any style extends below the baseline (its 'descent'). Space may be added to the maximum ascent (`ExtraAscent`) and the maximum descent (`ExtraDescent`) to allow for more space between lines. This may done to make the text easier to read or to accommodate underlines or highlights.

The extra ascent and descent values can be negative but that should be done with care as it may lead to unexpected interference when lines share space.

(Read and Write property)

4.1.385 ExtraDescent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The extra descent.

Notes: Text is drawn with the base of each character on a 'baseline'. The height of a line is found from the maximum that any style extends above the baseline (its 'ascent'), added to the maximum that any style extends below the baseline (its 'descent'). Space may be added to the maximum ascent (ExtraAscent) and the maximum descent (ExtraDescent) to allow for more space between lines. This may done to make the text easier to read or to accommodate underlines or highlights.

The extra ascent and descent values can be negative but that should be done with care as it may lead to unexpected interference when lines share space.

(Read and Write property)

4.1.386 FirstVisibleLine as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve or set the line number of the first visible line in the Scintilla view.

Notes: The first line in the document is numbered 0. The value is a visible line rather than a document line.

(Read and Write property)

4.1.387 Focus as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether we have focus.

Notes: Scintilla can be told to grab the focus with GrabFocus. This is needed more on GTK where focus handling is more complicated than on Windows.

The internal focus flag can be set with Focus. This is used by clients that have complex focus requirements such as having their own window that gets the real focus but with the need to indicate that Scintilla has the logical focus.

(Read and Write property)

4.1.388 FoldDisplayTextStyle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Changes the appearance of fold text tags.

Notes: (Read and Write property)

4.1.389 FontLocale as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the locale used for font selection with language-dependent glyphs.

Notes: It may, depending on platform and other circumstances influence the display of text, so setting "zh-Hant" may result in traditional Chinese display and "zh-Hans" may result in simplified Chinese display. It is currently only implemented for Win32 using DirectWrite where the value is passed as the localeName argument to CreateTextFormat. The default value is US English "en-us".

(Read and Write property)

4.1.390 FontQuality as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Manage font quality (antialiasing method).

Notes: See kFontQualityQuality* constants.

(Read and Write property)

4.1.391 HasBorder as Boolean

Plugin Version: 22.4, Platform: Windows, Targets: Desktop only.

Function: Enable/disable border for Windows.

Notes: If this flag is set before the control is constructed, you get the control instated on Windows with a border line.

(Read and Write property)

4.1.392 HighlightGuide as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When brace highlighting occurs, the indentation guide corresponding to the braces may be highlighted with the brace highlighting style, kStylesCommonBraceLight (34).

Notes: Set column to 0 to cancel this highlight.

(Read and Write property)

4.1.393 HotspotActiveBack as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries background color for hotspot.

Notes: (Read only property)

4.1.394 HotspotActiveFore as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries foreground color for hotspot.

Notes: (Read only property)

4.1.395 HotspotActiveUnderline as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: While the cursor hovers over text in a style with the hotspot attribute set, this option shows underline.

Notes: (Read and Write property)

4.1.396 HotspotSingleLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Single line mode stops a hotspot from wrapping onto next line.

Notes: (Read and Write property)

4.1.397 HScrollBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The horizontal scroll bar is only displayed if it is needed for the assumed width.

Notes: If you never wish to see it, call `HScrollBar = false`. Use `HScrollBar = true` to enable it again. Querying `HScrollBar` returns the current state. The default state is to display it when needed.

(Read and Write property)

4.1.398 IdleStyling as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The idel styling setting.

Notes: By default, `kIdleStylingNone (0)`, syntax styling is performed for all the currently visible text before

displaying it. On very large files, this may make scrolling down slow. With `kIdleStylingToVisible` (1), a small amount of styling is performed before display and then further styling is performed incrementally in the background as an idle-time task. This may result in the text initially appearing uncoloured and then, some time later, it is coloured. Text after the currently visible portion may be styled in the background with `kIdleStylingAfterVisible` (2). To style both before and after the visible text in the background use `kIdleStylingAll` (3).

Since wrapping also needs to perform styling and also uses idle time, this setting has no effect when the document is displayed wrapped.

(Read and Write property)

4.1.399 IMEInteraction as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Configures IME interaction.

Notes: When entering text in Chinese, Japanese, or Korean an Input Method Editor (IME) may be displayed. The IME may be an extra window appearing above Scintilla or may be displayed by Scintilla itself as text. On some platforms there is a choice between the two techniques. A windowed IME `kIMEInteractionWindowed` (0) may be more similar in appearance and behaviour to the IME in other applications. An inline IME `kIMEInteractionInline` (1) may work better with some Scintilla features such as rectangular and multiple selection.

The windowed behaviour can be chosen with `IMEInteraction = kIMEInteractionWindowed` and the inline behaviour with `IMEInteraction = kIMEInteractionInline`. Scintilla may ignore this call in some cases. For example, the inline behaviour might only be supported for some languages.

When the inline IME mode is active, characters are added tentatively before being finalised and an `CharacterAdded` event (with `characterSource` set to `kCharacterSourceTentativeInput`) is sent for each character.

(Read and Write property)

4.1.400 Indent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the size of indentation in terms of the width of a space in `KStylesCommonDefault`.

Notes: If you set a width of 0, the indent size is the same as the tab size. There are no limits on indent sizes, but values less than 0 or large values may have undesirable effects.

Indentation (the white space at the start of a line) is often used by programmers to clarify program structure and in some languages, for example Python, it may be part of the language syntax. Tabs are normally used in editors to insert a tab character or to pad text with spaces up to the next tab.

When Scintilla is laying out a section of text, text after a tab character will usually be displayed at the next multiple of `TabWidth` columns from the left. However, it is also possible to explicitly set `tabstops` in pixels for each line.

Scintilla can be set to treat tab and backspace in the white space at the start of a line in a special way: inserting a tab indents the line to the next indent position rather than just inserting a tab at the current

character position and backspace unindents the line rather than deleting a character. Scintilla can also display indentation guides (vertical lines) to help you to generate code.
(Read and Write property)

4.1.401 IndentationGuides as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Indentation guides are dotted vertical lines that appear within indentation white space every indent size columns.

Notes: They make it easy to see which constructs line up especially when they extend over multiple pages. Style `kStylesCommonIndentGuide` (37) is used to specify the foreground and background colour of the indentation guides.

There are 4 indentation guide views. `kIndentViewNone` turns the feature off but the other 3 states determine how far the guides appear on empty lines.

(Read and Write property)

4.1.402 IndicatorCurrent as ScintillaIndicatorMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current indicator.

Notes: (Read and Write property)

4.1.403 IndicatorValue as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the value that will be set by calls to `IndicatorFillRange`.

Notes: (Read and Write property)

4.1.404 LayoutCache as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable layout cache.

Notes: (Read and Write property)

4.1.405 Length as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The length of the document in bytes.

Notes: (Read only property)

4.1.406 LexerLanguage as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the name of the current lexer.

Notes: (Read only property)

4.1.407 LibraryError as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The error message from loading the library.

Notes: (Read only property)

4.1.408 LineCharacterIndex as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns which if any indexes are active.

Notes: (Read only property)

4.1.409 LineCount as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the number of lines in the document.

Notes: An empty document contains 1 line. A document holding only an end of line sequence has 2 lines.
(Read only property)

4.1.410 LineEndTypesActive as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports the set of line ends currently interpreted by Scintilla.

Notes: It is LineEndTypesSupported and LineEndTypesAllowed.

See kLineEndType* constants.

(Read only property)

4.1.411 LineEndTypesAllowed as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, only the ASCII line ends are interpreted.

Notes: Unicode line ends may be requested with LineEndTypesAllowed = kLineEndTypeUnicode but this will be ineffective unless the lexer also allows you Unicode line ends.

See kLineEndType* constants.

(Read and Write property)

4.1.412 LineEndTypesSupported as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports the different types of line ends supported by the current lexer.

Notes: This is a bit set although there is currently only a single choice with either kLineEndTypeDefault (0) or kLineEndTypeUnicode (1). These values are also used by the other messages concerned with Unicode line ends.

See kLineEndType* constants.

(Read only property)

4.1.413 LinesOnScreen as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the number of complete lines visible on the screen.

Notes: With a constant line height, this is the vertical space available divided by the line separation. Unless you arrange to size your window to an integral number of lines, there may be a partial line visible at the bottom of the view.

(Read only property)

4.1.414 MainSelection as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries index of main selection.

Notes: One of the selections is the main selection which is used to determine what range of text is automatically visible. The main selection may be displayed in different colours or with a differently styled caret. Only an already existing selection can be made main.

(Read and Write property)

4.1.415 MarginLeft as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the width of the blank margin on left side of the text in pixels.

Notes: The default is to one pixel on each side.

(Read and Write property)

4.1.416 MarginOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Define margin options by enabling appropriate bit flags.

Notes: At the moment, only one flag is available `kMarginOptionSubLineSelect = 1`, which controls how wrapped lines are selected when clicking on margin in front of them. If `kMarginOptionSubLineSelect` is set only sub line of wrapped line is selected, otherwise whole wrapped line is selected. Margin options are set to `kMarginOptionNone=0` by default.

(Read and Write property)

4.1.417 MarginRight as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the width of the blank margin on right side of the text in pixels.

Notes: The default is to one pixel on each side.

(Read and Write property)

4.1.418 Margins as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate the number of margins or find the number of margins currently allocated.

Notes: (Read and Write property)

4.1.419 MaxLineState as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the last line that has any line state.

Notes: (Read only property)

4.1.420 ModEventMask as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The modification event masks.

Notes: Set and get an event mask that determines which document change events are notified to the container with Modify event. For example, a container may decide to see only notifications about changes to text and not styling changes by setting `ModEventMask = kModificationFlagsInsertText + kModificationFlagsDeleteText`.

(Read and Write property)

4.1.421 Modify as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if the document is modified and false if it is unmodified.

Notes: The modified status of a document is determined by the undo position relative to the save point. The save point is set by `SetSavePoint`, usually when you have saved data to a file.

If you need to be notified when the document becomes modified, Scintilla notifies the container that it has entered or left the save point with the `SavePointReached` and `SavePointLeft` notification messages.

(Read only property)

4.1.422 MouseDownCaptures as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When the mouse is pressed inside Scintilla, it is captured so future mouse movement events are sent to Scintilla.

Notes: This behaviour may be turned off with `MouseDownCaptures = false`.
(Read and Write property)

4.1.423 MouseDwellTime as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The time the mouse must sit still, in milliseconds, to generate a `DWellStart` event.

Notes: If set to `kTimeForever`, the default, no dwell events are generated.
(Read and Write property)

4.1.424 MouseSelectionRectangularSwitch as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable the ability to switch to rectangular selection mode while making a selection with the mouse.

Notes: When this option is turned on, mouse selections in stream mode can be switched to rectangular mode by pressing the corresponding modifier key. They then stick to rectangular mode even when the modifier key is released again. When this option is turned off, mouse selections will always stick to the mode the selection was started in. It is off by default.

(Read and Write property)

4.1.425 MouseWheelCaptures as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to capture mouse wheel events.

Notes: On Windows, Scintilla captures all `WM_MOUSEWHEEL` messages if it has the focus, even if the mouse pointer is nowhere near the Scintilla editor window. This behaviour can be changed with `MouseWheelCaptures = false` so that Scintilla passes the `WM_MOUSEWHEEL` messages to its parent window. Scintilla will still react to the mouse wheel if the mouse pointer is over the editor window.

(Read and Write property)

4.1.426 MoveExtendsSelection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if regular caret moves will extend or reduce the selection, false if not.

Notes: SetSelectionMode toggles this setting between on and off.

(Read only property)

4.1.427 MultiPaste as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: How to do paste with multiple selection.

Notes: When pasting into multiple selections, the pasted text can go into just the main selection with kMultiPasteOnce=0 or into each selection with kMultiPasteEach=1. kMultiPasteOnce is the default.

(Read and Write property)

4.1.428 MultipleSelection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable multiple selection.

Notes: When multiple selection is disabled, it is not possible to select multiple ranges by holding down the Ctrl key while dragging with the mouse.

There may be multiple selections active at one time. More selections are made by holding down the Ctrl key while dragging with the mouse. The most recent selection is the main selection and determines which part of the document is shown automatically. Any selection apart from the main selection is called an additional selection. The calls in the previous section operate on the main selection. There is always at least one selection. The selection can be simplified down to just the main selection by Cancel which is normally mapped to the Esc key.

Rectangular selections are handled as multiple selections although the original rectangular range is remembered so that subsequent operations may be handled differently for rectangular selections. For example, pasting a rectangular selection places each piece in a vertical column.

Virtual space is space beyond the end of each line. The caret may be moved into virtual space but no real space will be added to the document until there is some text typed or some other text insertion command

is used.

When discontinuous selections are copied to the clipboard, each selection is added to the clipboard text in order with no delimiting characters. For rectangular selections the document's line end is added after each line's text. Rectangular selections are always copied from top line to bottom, not in the in order of selection. Virtual space is not copied.

(Read and Write property)

4.1.429 NamedStyles as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the number of named styles for the lexer.

Notes: (Read only property)

4.1.430 NSView as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Cocoa view for macOS.

Notes: Object is from NSViewMBS class.

(Read only property)

4.1.431 Overtyping as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When overtyping is enabled, each typed character replaces the character to the right of the text caret.

Notes: When overtyping is disabled, characters are inserted at the caret. Returns true if overtyping is active, otherwise false will be returned.

(Read and Write property)

4.1.432 PasteConvertEndings as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to match end of line on pasting.

Notes: If this property is set then when text is pasted any line ends are converted to match the document's end of line mode as set with EOLMode. Defaults to true.

(Read and Write property)

4.1.433 Position as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current position.

Notes: This sets the current position and creates a selection between the anchor and the current position. The caret is not scrolled into view.

(Read and Write property)

4.1.434 PositionCache as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size in entries of the position cache.

Notes: The position cache stores position information for short runs of text so that their layout can be determined more quickly if the run recurs.

(Read and Write property)

4.1.435 PrintColourMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the method used to render coloured text on a printer that is probably using white paper.

Notes: It is especially important to consider the treatment of colour if you use a dark or black screen background. Printing white on black uses up toner and ink very many times faster than the other way around. See `kPrintOption*` constants.

(Read and Write property)

4.1.436 PrintMagnification as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Lets you to print at a different size than the screen font.

Notes: magnification is the number of points to add to the size of each screen font. A value of -3 or -4 gives reasonably small print.

(Read and Write property)

4.1.437 PrintWrapMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get and set the printer wrap mode.

Notes: wrapMode can be set to kWrapNone (0) or kWrapWord (1). The default is kWrapWord, which wraps printed output so that all characters fit into the print rectangle. If you set kWrapNone, each line of text generates one line of output and the line is truncated if it is too long to fit into the print area.

kWrapWord tries to wrap only between words as indicated by white space or style changes although if a word is longer than a line, it will be wrapped before the line end.

kWrapChar is not supported for printing.

(Read and Write property)

4.1.438 PropertyNames as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns a string with all of the valid properties separated by LF.

Notes: If the lexer does not support this call then an empty string is returned.

(Read only property)

4.1.439 PunctuationChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Similar to WordChars and WhiteSpaceChars, this message allows the user to define which chars Scintilla considers as punctuation.

Notes: (Read and Write property)

4.1.440 ReadOnly as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the read-only flag for the document.

Notes: If you mark a document as read only, attempts to modify the text cause the ModifyAttemptRead-Only event.

(Read and Write property)

4.1.441 RectangularSelectionAnchor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position for the anchor of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.1.442 RectangularSelectionAnchorVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.1.443 RectangularSelectionCaret as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position for the caret of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

There may be multiple selections active at one time. More selections are made by holding down the Ctrl key while dragging with the mouse. The most recent selection is the main selection and determines which part of the document is shown automatically. Any selection apart from the main selection is called an additional selection. The calls in the previous section operate on the main selection. There is always at least one selection. The selection can be simplified down to just the main selection by Cancel which is normally mapped to the Esc key.

Rectangular selections are handled as multiple selections although the original rectangular range is remembered so that subsequent operations may be handled differently for rectangular selections. For example, pasting a rectangular selection places each piece in a vertical column.

Virtual space is space beyond the end of each line. The caret may be moved into virtual space but no real space will be added to the document until there is some text typed or some other text insertion command is used.

When discontinuous selections are copied to the clipboard, each selection is added to the clipboard text in order with no delimiting characters. For rectangular selections the document's line end is added after each line's text. Rectangular selections are always copied from top line to bottom, not in the in order of selection. Virtual space is not copied.

(Read and Write property)

4.1.444 RectangularSelectionCaretVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.1.445 RectangularSelectionModifier as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: On GTK and Qt, the key used to indicate that a rectangular selection should be created when combined with a mouse drag can be set.

Notes: The three possible values are `kKeyModCtrl=2`, `kKeyModAlt=4` (default) or `kKeyModSuper=8`. Since `kKeyModAlt` may already be used by a window manager, the window manager may need configuring to allow this choice. `kKeyModSuper` is often a system dependent modifier key such as the Left Windows key on a Windows keyboard or the Command key on a Mac.

(Read and Write property)

4.1.446 ScrollWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: For performance, Scintilla does not measure the display width of the document to determine the properties of the horizontal scroll bar.

Notes: Instead, an assumed width is used. These messages set and get the document width in pixels assumed by Scintilla. The default value is 2000. To ensure the width of the currently visible lines can be scrolled use `ScrollWidthTracking`.

(Read and Write property)

4.1.447 ScrollWidthTracking as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If scroll width tracking is enabled then the scroll width is adjusted to ensure that all of the lines currently displayed can be completely scrolled.

Notes: This mode never adjusts the scroll width to be narrower.

(Read and Write property)

4.1.448 SearchFlags as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: These get and set the searchFlags used by SearchInTarget.

Notes: There are several option flags including a simple regular expression search. See kFindOption* constants.
(Read and Write property)

4.1.449 SelAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or gets selection alpha value.

Notes: (Read and Write property)

4.1.450 SelectedText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This copies the currently selected text.

Notes: This allows for rectangular and discontinuous selections as well as simple selections. See Multiple Selection for information on how multiple and rectangular selections and virtual space are copied.
(Read only property)

4.1.451 SelectionEmpty as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return true if every selected range is empty else false.

Notes: This can be used as CanCopy or CanCut for building menu.
(Read only property)

4.1.452 SelectionEnd as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The end position of the selection.

Notes: SelectionStart and SelectionEnd return the start and end of the selection without regard to which end is the current position and which is the anchor. SelectionStart returns the smaller of the current position or the anchor position. SelectionEnd returns the larger of the two values.

Assign new value to set the selection based on the assumption that the anchor position is less than the current position.

(Read and Write property)

4.1.453 SelectionIsRectangle as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if the current selection is in rectangle mode, false if not.

Notes: (Read only property)

4.1.454 SelectionLayer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection background can be drawn translucently over the text or opaquely on the base layer.

Notes: See kLayer* constants.

(Read and Write property)

4.1.455 SelectionMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection mode.

Notes: Can be stream (kSelectionModeStream=0) or rectangular (kSelectionModeRectangle=1) or by lines (kSelectionModeLines=2) or thin rectangular (kSelectionModeThin=3). When set in these modes, regular caret moves will extend or reduce the selection, until the mode is cancelled by a call with same value or with Cancel. The get function returns the current mode even if the selection was made by mouse or with regular extended moves. SC_SEL_THIN is the mode after a rectangular selection has been typed into and ensures that no characters are selected.

(Read and Write property)

4.1.456 Selections as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the number of selections currently active.

Notes: There is always at least one selection.

(Read only property)

4.1.457 SelectionSpan as ScintillaSpanMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries selection start and end as a span object.

Notes: (Read only property)

4.1.458 SelectionStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The start position of the selection.

Notes: SelectionStart and SelectionEnd return the start and end of the selection without regard to which end is the current position and which is the anchor. SelectionStart returns the smaller of the current position or the anchor position. SelectionEnd returns the larger of the two values.

Assign new value to set the selection based on the assumption that the anchor position is less than the current position.

(Read and Write property)

4.1.459 SEEOFilled as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection can be drawn up to the right hand border by setting this property.

Notes: (Read and Write property)

4.1.460 ShowInfoBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to show info bar on macOS.

Notes: Defaults to true.

The info bar allows you to show a status message and to do zoom levels.

(Read and Write property)

4.1.461 Status as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If an error occurs, Scintilla may set an internal error number that can be retrieved with this property.

Notes: To clear the error status call `SCI_SETSTATUS(0)`. Status values from 1 to 999 are errors and status `kStatusWarnStart` (1000) and above are warnings.

See `kStatus*` constants.

(Read and Write property)

4.1.462 TabDrawMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get and set how tab characters are drawn when white space is visible.

Notes: See `kTabDrawMode*` constants.

(Read and Write property)

4.1.463 TabIndents as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether tab indents.

Notes: Inside indentation white space, the tab and backspace keys can be made to indent and unindent rather than insert a tab character or delete a character with the `TabIndents` and `BackSpaceUnIndents` functions.

(Read and Write property)

4.1.464 TabMinimumWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The minimum size of a tab in pixels to ensure that the tab can be seen.

Notes: The default value is 2. This is particularly useful with proportional fonts with fractional widths where the character before the tab may end a fraction of a pixel before a tab stop, causing the tab to only be a fraction of a pixel wide without this setting. Where displaying a miniaturized version of the document, setting this to 0 may make the miniaturized version lay out more like the normal size version.

(Read and Write property)

4.1.465 TabWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size of a tab as a multiple of the size of a space character in `kStylesCommonDefault`.

Notes: The default tab width is 8 characters. There are no limits on tab sizes, but values less than 1 or large values may have undesirable effects.
(Read and Write property)

4.1.466 TargetEnd as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End of target selection in text.

Notes: (Read and Write property)

4.1.467 TargetEndVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End of the virtual space of target selection in text.

Notes: This allows text to be inserted in virtual space more easily.

(Read and Write property)

4.1.468 TargetSpan as ScintillaSpanMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries target start and end as a span object.

Notes: (Read and Write property)

4.1.469 TargetStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Start of the virtual space of target selection in text.

Notes: This allows text to be inserted in virtual space more easily.

When searching you can set start greater than end to find the last matching text in the target rather than the first matching text.

The target is also set by a successful by SearchInTarget.

(Read and Write property)

4.1.470 TargetStartVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Start of target selection in text.

Notes: When searching you can set start greater than end to find the last matching text in the target rather than the first matching text.

(Read and Write property)

4.1.471 TargetText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the value in the target.

Notes: (Read only property)

4.1.472 Technology as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The technology property allows choosing between different drawing APIs and options.

Notes: On most platforms, the only choice is `kTechnologyDefault` (0). On Windows Vista or later, `kTechnologyDirectWrite` (1), `kTechnologyDirectWriteRetain` (2), or `kTechnologyDirectWriteDC` (3) can be chosen to use the Direct2D and DirectWrite APIs for higher quality antialiased drawing. `kTechnologyDirectWriteRetain` differs from `kTechnologyDirectWrite` by requesting that the frame is retained after being presented which may prevent drawing failures on some cards and drivers. `kTechnologyDirectWriteDC` differs from `kTechnologyDirectWrite` by using DirectWrite to draw into a GDI DC.

On Win32, buffered drawing is set to a reasonable value for the technology: on for GDI and off for Direct2D as Direct2D performs its own buffering. This can be changed after setting technology with `BufferDraw` property.

When using DirectWrite, you can use `FontLocale` to set an appropriate font locale to draw text with expected language-dependent glyphs.

(Read and Write property)

4.1.473 Text as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the text of the document.

Notes: (Read and Write property)

4.1.474 TextLength as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The length of the document in bytes.

Notes: (Read only property)

4.1.475 UndoCollection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can control whether Scintilla collects undo information.

Notes: Set to true to collect information and false to stop collecting. If you stop collection, you should also use EmptyUndoBuffer to avoid the undo buffer being unsynchronized with the data in the buffer.

You might wish to turn off saving undo information if you use the Scintilla to store text generated by a program (a Log view) or in a display window where text is often deleted and regenerated.
(Read and Write property)

4.1.476 UseTabs as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Determines whether indentation should be created out of a mixture of tabs and spaces or be based purely on spaces.

Notes: Set useTabs to false (0) to create all tabs and indents out of spaces. The default is true. You can use Column() to get the column of a position taking the width of a tab into account.
(Read and Write property)

4.1.477 ViewEOL as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Normally, the end of line characters are hidden, but ViewEOL allows you to display (or hide) them by setting visible true (or false).

Notes: The visible rendering of the end of line characters is similar to (CR), (LF), or (CR+LF).

Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRL+LF in Windows and LF in Unix, but this can be changed with the EOLMode property. You can also convert

the entire document to one of these line endings with ConvertEOLs. Finally, you can choose to display the line endings with ViewEOL.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.
(Read and Write property)

4.1.478 ViewWS as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: White space can be made visible which may be useful for languages in which white space is significant, such as Python.

Example:

```
dim c as DesktopScintillaControlMBS // your control

// show white space
c.ViewWS = c.kWhiteSpaceVisibleAlways
```

Notes: Space characters appear as small centred dots and tab characters as light arrows pointing to the right. There are also ways to control the display of end of line characters. The two messages set and get the white space display mode.

See kWhiteSpaceVisible* constants.

(Read and Write property)

4.1.479 VirtualSpaceOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Virtual space can be enabled or disabled for rectangular selections or in other circumstances or in both.

Notes: There are three bit flags kVirtualSpaceRectangularSelection=1, kVirtualSpaceUserAccessible=2, and kVirtualSpaceNoWrapLineStart=4 which can be set independently.

kVirtualSpaceNone=0, the default, disables all use of virtual space.

kVirtualSpaceNoWrapLineStart prevents left arrow movement and selection from wrapping to the previous line. This is most commonly desired in conjunction with virtual space but is an independent setting so works without virtual space.

(Read and Write property)

4.1.480 VScrollBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, the vertical scroll bar is always displayed when required.

Notes: You can choose to hide or show it with VScrollBar property and get the current state with VScrollBar.

(Read and Write property)

4.1.481 WhitespaceChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The white space characters.

Notes: Similar to WordChars, this property allows the user to define which chars Scintilla considers as whitespace. Setting the whitespace chars allows the user to fine-tune Scintilla's behaviour doing such things as moving the cursor to the start or end of a word; for example, by defining punctuation chars as whitespace, they will be skipped over when the user presses ctrl+left or ctrl+right. This function should be called after WordChars as it will reset the whitespace characters to the default set. WhiteSpaceChars behaves similarly to WordChars.

(Read and Write property)

4.1.482 WhitespaceSize as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the size of the dots used for mark space characters.

Notes: The value 0 is valid and makes the dots invisible.

(Read and Write property)

4.1.483 WordChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Defines which characters are members of the word category.

Notes: The character categories are set to default values before processing this function. For example, if you don't allow ' _ ' in your set of characters use:

```
WordChars = "abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789"
```

This fills the characters parameter with all the characters included in words.

The characters parameter must be large enough to hold all of the characters. If the characters parameter is 0 then the length that should be allocated to store the entire set is returned.

For multi-byte encodings, this API will not return meaningful values for € and above.

(Read and Write property)

4.1.484 WrapIndentMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Wrapped sublines can be indented to the position of their first subline or one more indent level.

Notes: The default is kWrapIndentModeFixed.

(Read and Write property)

4.1.485 WrapMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The wrap mode.

Notes: Set wrapMode to kWrapWord (1) to enable wrapping on word or style boundaries, kWrapChar (2) to enable wrapping between any characters, kWrapWhiteSpace (3) to enable wrapping on whitespace, and kWrapNone (0) to disable line wrapping. kWrapChar is preferred for Asian languages where there is no white space between words.

By default, Scintilla does not wrap lines of text. If you enable line wrapping, lines wider than the window width are continued on the following lines. Lines are broken after space or tab characters or between runs of different styles. If this is not possible because a word in one style is wider than the window then the break occurs after the last character that completely fits on the line. The horizontal scroll bar does not appear when wrap mode is on.

For wrapped lines Scintilla can draw visual flags (little arrows) at end of a a subline of a wrapped line and at begin of the next subline. These can be enabled individually, but if Scintilla draws the visual flag at the beginning of the next subline this subline will be indented by one char. Independent from drawing a visual flag at the begin the subline can have an indentation.

Much of the time used by Scintilla is spent on laying out and drawing text. The same text layout calculations may be performed many times even when the data used in these calculations does not change. To avoid these unnecessary calculations in some circumstances, the line layout cache can store the results of the calculations. The cache is invalidated whenever the underlying data, such as the contents or styling of the document changes. Caching the layout of the whole document has the most effect, making dynamic line wrap as much as 20 times faster but this requires 7 times the memory required by the document contents plus around 80 bytes per line.

Wrapping is not performed immediately there is a change but is delayed until the display is redrawn. This delay improves performance by allowing a set of changes to be performed and then wrapped and displayed once. Because of this, some operations may not occur as expected. If a file is read and the scroll position

moved to a particular line in the text, such as occurs when a container tries to restore a previous editing session, then the scroll position will have been determined before wrapping so an unexpected range of text will be displayed. To scroll to the position correctly, delay the scroll until the wrapping has been performed by waiting for an initial Painted event.

(Read and Write property)

4.1.486 WrapStartIndent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size of indentation of sublines for wrapped lines.

Notes: WrapStartIndent sets the size of indentation of sublines for wrapped lines in terms of the average character width in kStylesCommonDefault. There are no limits on indent sizes, but values less than 0 or large values may have undesirable effects.

The indentation of sublines is independent of visual flags, but if kWrapVisualFlagStart is set an indent of at least 1 is used.

(Read and Write property)

4.1.487 WrapVisualFlags as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can enable the drawing of visual flags to indicate a line is wrapped.

Notes: Bits set in wrapVisualFlags determine which visual flags are drawn.

See kWrapVisualFlag* constants.

(Read and Write property)

4.1.488 WrapVisualFlagsLocation as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can set whether the visual flags to indicate a line is wrapped are drawn near the border or near the text.

Notes: Bits set in wrapVisualFlagsLocation set the location to near the text for the corresponding visual flag.

See kWrapVisualLocation* constants.

(Read and Write property)

4.1.489 XOffset as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The xOffset is the horizontal scroll position in pixels of the start of the text view.

Notes: A value of 0 is the normal position with the first text column visible at the left of the view.

See FirstVisibleLine property for vertical position.
(Read and Write property)

4.1.490 Zoom as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The zoom factor directly.

Notes: There is no limit set on the factors you can set, so limiting yourself to -10 to +20 to match the incremental zoom functions is a good idea.

Scintilla incorporates a "zoom factor" that lets you make all the text in the document larger or smaller in steps of one point. The displayed point size never goes below 2, whatever zoom factor you set. You can set zoom factors in the range -10 to +20 points.

(Read and Write property)

See also:

- 4.1.555 Zoom

4.1.491 AnnotationStyle(line as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styles for a line.

Notes: The whole of the text annotation on a line may be displayed in a particular style with AnnotationStyle or each character may be individually styled with AnnotationStyles which uses an array of bytes with each byte setting the style of the corresponding text byte similar to SetStylingEx. The text must be set first as it specifies how long the annotation is so how many bytes of styling to read. Setting an annotation will cause a ChangeAnnotation event to be sent.

Only some style attributes are active in annotations: font, size/sizeFractional, bold/weight, italics, fore, back, and characterSet.

(Read and Write computed property)

4.1.492 AnnotationStyles(line as Integer) as MemoryBlock

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styles for a line.

Notes: The whole of the text annotation on a line may be displayed in a particular style with `AnnotationStyle` or each character may be individually styled with `AnnotationStyles` which uses an array of bytes with each byte setting the style of the corresponding text byte similar to `SetStylingEX`. The text must be set first as it specifies how long the annotation is so how many bytes of styling to read. Setting an annotation will cause a `ChangeAnnotation` event to be sent.

Only some style attributes are active in annotations: `font`, `size/sizeFractional`, `bold/weight`, `italics`, `fore`, `back`, and `characterSet`.
(Read and Write computed property)

4.1.493 `AnnotationText(line as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A different string may be set for each line with `AnnotationText`.

Notes: Set to empty string to clear it.

(Read and Write computed property)

4.1.494 `ElementColour(element as Integer) as Color`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This changes the colour of the indicated visual element overriding any current colour.

Notes: If the element supports translucency, then the alpha portion of the value is used. An opaque alpha value (&hff) should always be included when an opaque colour is desired as the value 0 is completely transparent and thus invisible.

(Read and Write computed property)

4.1.495 `EOLAnnotationStyle(line as Integer) as ScintillaStyleMBS`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Gets or sets the style to use for the EOL annotation.

Notes: (Read and Write computed property)

4.1.496 `EOLAnnotationText(line as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A different string may be set for each line with `EOLAnnotationText`.

Notes: To clear end of line annotations assign `EOLAnnotationText` with a empty string. The whole of the

text EOLANNOTATION on a line may be displayed in a particular style with `EOLAnnotationStyle()`. Setting an end of line annotation will cause a `kModificationFlagsChangeEOLAnnotation` notification to be sent.

Only some style attributes are active in end of line annotations: `font`, `size/sizeFractional`, `bold/weight`, `italics`, `fore`, `back`, and `characterSet`.

End of Line Annotations are read-only lines of text at the end of each line of editable text. End of Line Annotations can be used to display an assembler version of code for debugging or to show diagnostic messages inline or to line up different versions of text in a merge tool.

(Read and Write computed property)

4.1.497 `FoldExpanded(line as Integer)` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the expanded state of a single line.

Notes: The set message has no effect on the visible state of the line or any lines that depend on it. It does change the markers in the folding margin. If you ask for the expansion state of a line that is outside the document, the result is false (0).

If you just want to toggle the fold state of one line and handle all the lines that are dependent on it, it is much easier to use `ToggleFold`. You would use the `FolderExpanded()` method to process many folds without updating the display until you had finished. See `FoldAll()` and `Expand()` for examples of the use of these methods.

(Read and Write computed property)

4.1.498 `FoldLevel(line as Integer)` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get a 32-bit value that contains the fold level of a line and some flags associated with folding.

Notes: The fold level is a number in the range 0 to `kFoldLevelNumberMask` (&h0FFF). However, the initial fold level is set to `kFoldLevelBase` (&h400) to allow unsigned arithmetic on folding levels. There are two addition flag bits. `kFoldLevelWhiteFlag` indicates that the line is blank and allows it to be treated slightly different than its level may indicate. For example, blank lines should generally not be fold points and will be considered part of the preceding section even though they may have a lesser fold level. `kFoldLevelHeaderFlag` indicates that the line is a header (fold point). `kFoldLevelNone` is a default level that may occur before folding.

Use `FoldLevel(line) AND kFoldLevelNumberMask` to get the fold level of a line. Likewise, use `FoldLevel(line) AND kFoldLevelNumber*Flag` to get the state of the flags. To set the fold level you must or in the associated flags. For instance, to set the level to `thisLevel` and mark a line as being a fold point use: `FoldLevel(line) = thisLevel OR kFoldLevelHeaderFlag`.

This method causes the display to redraw.
(Read and Write computed property)

4.1.499 KeyWords(keyWordSet as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The keyword list.

Notes: You can set up to 9 lists of keywords for use by the current lexer. keyWordSet can be 0 to 8 (actually 0 to KEYWORDSET_MAX) and selects which keyword list to replace. keyWords is a list of keywords separated by spaces, tabs, "\n" or "\r" or any combination of these. It is expected that the keywords will be composed of standard ASCII printing characters, but there is nothing to stop you using any non-separator character codes from 1 to 255 (except common sense).

How these keywords are used is entirely up to the lexer. Some languages, such as HTML may contain embedded languages, VBScript and JavaScript are common for HTML. For HTML, key word set 0 is for HTML, 1 is for JavaScript and 2 is for VBScript, 3 is for Python, 4 is for PHP and 5 is for SGML and DTD keywords. Review the lexer code to see examples of keyword list. A fully conforming lexer sets the fourth argument of the LexerModule constructor to be a list of strings that describe the uses of the keyword lists. Alternatively, you might use set 0 for general keywords, set 1 for keywords that cause indentation and set 2 for keywords that cause unindentation. Yet again, you might have a simple lexer that colours keywords and you could change languages by changing the keywords in set 0. There is nothing to stop you building your own keyword lists into the lexer, but this means that the lexer must be rebuilt if more keywords are added.
(Read and Write computed property)

4.1.500 LineIndentation(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The amount of indentation on a line.

Notes: The indentation is measured in character columns, which correspond to the width of space characters.

(Read and Write computed property)

4.1.501 LineState(Line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The state for each line.

Notes: As well as the 8 bits of lexical state stored for each character there is also an integer stored for each line. This can be used for longer lived parse states such as what the current scripting language is in an ASP page. Assign to LineState to set the integer value and query LineState() to get the value. Changing the

value produces a ChangeLineState event.
(Read and Write computed property)

4.1.502 MarginStyle(Line as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tyle for the margin on this line.

Notes: The style to use for the margin.
(Read and Write computed property)

4.1.503 MarginStyles(line as Integer) as MemoryBlock

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The styles for the margin on this line.

Notes: The MemoryBlock contains an array of bytes with each byte setting the style of the corresponding text byte similar to style index.
(Read and Write computed property)

4.1.504 `MarginText(line as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The text for the margin on this line.

Notes: Text margins are created with the type `kMarginTypeText` or `kMarginTypeRText`. A different string may be set for each line with `MarginText()`. The whole of the text margin on a line may be displayed in a particular style with `MarginStyle()` or each character may be individually styled with `MarginStyles()` which uses an array of bytes with each byte setting the style of the corresponding text byte similar to `style index`. Setting a text margin will cause a `kModificationFlagsChangeMargin` notification to be sent.

Only some style attributes are active in text margins: `font`, `size/sizeFractional`, `bold/weight`, `italics`, `fore`, `back`, and `characterSet`.

(Read and Write computed property)

4.1.505 `PropertyValue(Key as String) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or get properties.

Notes: Lookup a keyword:value pair using the specified key; if found, copy the value to the user-supplied buffer and return the length (not including the terminating 0). If not found, copy an empty string to the buffer and return 0.

If the value argument is 0 then the length that should be allocated to store the value is returned; again, the terminating 0 is not included.

You can communicate settings to lexers with keyword:value string pairs. There is no limit to the number of keyword pairs you can set, other than available memory. `key` is a case sensitive keyword, `value` is a string that is associated with the keyword. If there is already a value string associated with the keyword, it is replaced. If you pass a zero length string, the method does nothing. Both key and value are used without modification; extra spaces at the beginning or end of key are significant.

The value string can no longer refer to other keywords as was possible in older releases of Scintilla.

Lexers may only store values for keywords they support.

Currently the "fold" property is defined for most of the lexers to set the fold structure if set to "1". `SCLEX_PYTHON` understands "tab.timmy.whinge.level" as a setting that determines how to indicate bad indentation. Most keywords have values that are interpreted as integers. Search the lexer sources for `GetPropertyInt` to see how properties are used.

There is a convention for naming properties used by lexers so that the set of properties can be found by scripts. Property names should start with "lexer.<lexer>." or "fold.<lexer>." when they apply to one lexer or start with "lexer." or "fold." if they apply to multiple lexers.

Applications may discover the set of properties used by searching the source code of lexers for lines that contain `GetProperty` or `DefineProperty` and a double quoted string and extract the value of the double

quoted string as the property name. The `lexilla/scripts/LexillaData.py` script does this and can be used as an example. Documentation for the property may be located above the call as a multi-line comment starting with `,Ä@// property <property-name>`
(Read and Write computed property)

4.1.506 Representation(encodedCharacter as String) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or gets a representation.

Notes: Some characters, such as control characters and invalid bytes, do not have a visual glyph or use a glyph that is hard to distinguish.

Control characters (characters with codes less than 32, or between 128 and 159 in some encodings) are displayed by Scintilla using their mnemonics inverted in a rounded rectangle. These mnemonics come from the early days of signalling, though some are still used (LF = Line Feed, BS = Back Space, CR = Carriage Return, for example).

For the low 'C0' values: "NUL", "SOH", "STX", "ETX", "EOT", "ENQ", "ACK", "BEL", "BS", "HT", "LF", "VT", "FF", "CR", "SO", "SI", "DLE", "DC1", "DC2", "DC3", "DC4", "NAK", "SYN", "ETB", "CAN", "EM", "SUB", "ESC", "FS", "GS", "RS", "US".

For the high 'C1' values: "PAD", "HOP", "BPH", "NBH", "IND", "NEL", "SSA", "ESA", "HTS", "HTJ", "VTS", "PLD", "PLU", "RI", "SS2", "SS3", "DCS", "PU1", "PU2", "STS", "CCH", "MW", "SPA", "EPA", "SOS", "SGCI", "SCI", "CSI", "ST", "OSC", "PM", "APC".

Invalid bytes are shown in a similar way with an 'x' followed by their value in hexadecimal, like "xFE".

Any character, including those normally displayed as mnemonics may be represented by a Unicode string inverted in a rounded rectangle.

For example, the Ohm sign ,Ñ¶ U+2126 looks very similar to the Greek Omega character €© U+03C9 so, for the UTF-8 encoding, to distinguish the Ohm sign as "U+2126 ,Ñ¶" this call could be made: `Representation(",Ñ¶", "U+2126 ,Ñ¶")`

The `encodedCharacter` parameter is a string of the bytes for one character in the current encoding. This can not be used to set a representation for multiple-character strings.

The `representation` parameter is an UTF-8 string with a maximum length of 200 bytes.

One exception to the single character restriction is that the two character sequence "CRLF" (Carriage Return + Line Feed) can have a representation that is visible in line end viewing (ViewEOL property) mode. If there is no representation for "CRLF" then the individual 'CR' and 'LF' representations will be seen.

The NULL (0) character is a special case and specified as an empty string.
(Read and Write computed property)

4.1.507 RepresentationAppearance(encodedCharacter as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The appearance may be changed using these flags.

Notes: If a colour is set and the appearance is set without RepresentationColour() then the representation will show in the colour of the underlying text.

(Read and Write computed property)

4.1.508 RepresentationColour(encodedCharacter as String) as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour and translucency of a representation may be set.

Notes: (Read and Write computed property)

4.1.509 SelectionNAnchor(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the anchor of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.1.510 SelectionNAnchorVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.1.511 SelectionNCaret(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.1.512 SelectionNCaretVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.1.513 SelectionNEnd(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: et or query the end position of each already existing selection.

Notes: Mostly of use to query each range for its text. The selection parameter is zero-based.

(Read and Write computed property)

4.1.514 SelectionNStart(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the start position of each already existing selection.

Notes: Mostly of use to query each range for its text. The selection parameter is zero-based.

(Read and Write computed property)

4.1.515 Events

4.1.516 AutoCompleteCancelled

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Auto complete was cancelled.

4.1.517 AutoCompleteCharacterDeleted

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user deleted a character while autocompletion list was active.

4.1.518 `AutoCompleteCompleted(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated after an autocompletion has inserted its text.

Notes:

Parameter	Description
position	The start position of the word being completed.
text	The text of the selection.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred. See the table below.

Symbol	Value	Meaning
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.

4.1.519 `AutoCompleteSelection(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user has selected an item in an autocompletion list.

Notes: The event is sent before the selection is inserted. Automatic insertion can be cancelled by calling `AutoCCancel` method before returning from the event.

Parameter	Description
position	The start position of the word being completed.
text	The text of the selection.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred. See the table below.

Symbol	Value	Meaning
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.

4.1.520 AutoCompleteSelectionChange(Position as Integer, Text as String, listType as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is sent when items are highlighted in an autocompletion or user list.

Notes:

Field	Usage
listType	This is set to the listType parameter from the SCI_USERLISTSHOW message or 0 for an autocompletion.
text	The text of the selection.
position	The position the list was displayed at.

4.1.521 CallTipClick(Position as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated when the user clicks on a calltip.

Notes: This event can be used to display the next function prototype when a function name is overloaded with different arguments. The position field is set to 1 if the click is in an up arrow, 2 if in a down arrow, and 0 if elsewhere.

4.1.522 CharacterAdded(Character as Integer, CharacterSource as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This is sent when the user types an ordinary text character (as opposed to a command character) that is entered into the text.

Notes: The container can use this to decide to display a call tip or an auto completion list.

For single byte character sets, this is the byte value of the character; for UTF-8, it is the Unicode code point; for DBCS, it is (first byte * 256 + second byte) for 2 byte characters and the byte value for 1 byte characters. This notification is sent before the character has been styled so processing that depends on styling should instead be performed in the UpdateUI event.

Symbol	Value	Meaning
kCharacterSourceDirectInput	0	Direct input characters, including characters generated by calling keyboard commands like NewLine method.
kCharacterSourceTentativeInput	1	Tentative input characters. They are used by IME (inline mode, see IMEInteraction) to composite final string, normally different from final composited string (which is the string that has been truly added into current document), and may be withdrawn when the user cancels typing (e.g. by pressing Esc key). Some system (at least Cocoa) also use tentative input for non-IME features like using dead key to composite diacritical marks (grave accent, etc.). These characters are not added to macro recording. Most applications can simply ignore the notification when this value is set.
kCharacterSourceImeResult	2	IME (either inline or windowed mode) full composited string. Modern IME is able to composite English word or sentence, when this value is set, current character may not a Chinese, Japanese or Korean character. Currently, this is only set on Windows.

4.1.523 DoubleClick(Position as Integer, line as integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The mouse button was double clicked in editor.

Notes: The position parameter is set to the text position of the double click, the line parameter is set to the line of the double click, and the modifiers parameter is set to the key modifiers held down in a similar manner to Key event.

4.1.524 DWellEnd(Position as Integer, X as Integer, Y as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: DWellEnd is generated after a DWellStart and the mouse is moved or other activity such as key press indicates the dwell is over.

4.1.525 DWellStart(Position as Integer, X as Integer, Y as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: DWellStart is generated when the user keeps the mouse in one position for the dwell period (see MouseDwellTime).

4.1.526 FocusIn

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is raised when Scintilla receives focus.

Notes: While the control can have a focus from the Xojo point of view, this event informs you that the actual text control part got focus.

So the Xojo wrapper control can have a focus and within it the text control can then have a focus and there are two different states.

4.1.527 FocusLost

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control lost focus.

In older Xojo versions, this event is named LostFocus.

4.1.528 FocusOut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is raised when it loses focus.

4.1.529 FocusReceived

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control got focus.

In older Xojo versions, this event is named GotFocus.

4.1.530 FolderToggled(Line as Integer, Position as Integer, Margin as Scintilla-MarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: A folder was toggled due to a mouse click.

Notes: This is called when a folder is hit.

MarginClicked event will also be raised.

4.1.531 HotSpotClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user clicks on text that is in a style with the hotspot attribute set.

Notes: This event can be used to link to variable definitions or web pages. In the notification handler, you should avoid calling any function that modifies the current selection or caret position. The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key event. Only the state of the Ctrl key is reported for HotspotReleaseClick.

4.1.532 HotSpotDoubleClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user double clicks on text that is in a style with the hotspot attribute set.

Notes: This event can be used to link to variable definitions or web pages. In the notification handler, you should avoid calling any function that modifies the current selection or caret position. The position parameter is set the text position of the double click and the modifiers field set to the key modifiers held down in a similar manner to Key event. Only the state of the Ctrl key is reported for HotspotReleaseClick.

4.1.533 HotspotReleaseClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user clicks on text that is in a style with the hotspot attribute set.

4.1.534 IndicatorClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event is generated when the user clicks the mouse on text that has an indicator.

Notes: The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key.

4.1.535 IndicatorRelease(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event is generated when the user releases the mouse on text that has an indicator.

Notes: The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key.

4.1.536 Key(Character as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Reports all keys pressed but not consumed by Scintilla.

Notes: Used on GTK because of some problems with keyboard focus and is not sent by the Windows version. Character holds the key code and modifiers holds the modifier flags. This notification is sent if the modifiers include kKeyModAlt or kKeyModCtrl and the key code is less than 256.

4.1.537 MacroRecord(Message as Integer, wParam as Integer, lParam as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event for a new macro step to record.

Notes: The StartRecord and StopRecord method enable and disable macro recording. When enabled, each time a recordable change occurs, the MacroRecord event is sent to the container. It is up to the container to record the action. To see the complete list of SCI_* messages that are recordable, search the Scintilla source Editor.cxx for Editor::NotifyMacroRecord.

Field	Usage
message	The SCI_* message that caused the notification.
wParam	The value of wParam in the SCI_* message.
lParam	The value of lParam in the SCI_* message.

4.1.538 MarginClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event tell the container that the mouse was left clicked inside a margin that was marked as sensitive.

Notes: This can be used to perform folding or to place breakpoints.

Field	Usage
modifiers	The appropriate combination of <code>kKeyModShift</code> , <code>kKeyModCtrl</code> and <code>kKeyModAlt</code> to indicate the keys that were held down at the time of the margin click.
position	The position of the start of the line in the document that corresponds to the margin click.
margin	The margin number that was clicked.

4.1.539 MarginRightClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event tell the container that the mouse was right clicked inside a margin that was marked as sensitive.

Notes: This can be used to perform folding or to place breakpoints.

Field	Usage
modifiers	The appropriate combination of <code>kKeyModShift</code> , <code>kKeyModCtrl</code> and <code>kKeyModAlt</code> to indicate the keys that were held down at the time of the margin click.
position	The position of the start of the line in the document that corresponds to the margin click.
margin	The margin number that was clicked.

4.1.540 MenuBarSelected

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The event where you can enable menu items.

In older Xojo versions, this event is named `EnableMenuItems`.

4.1.541 Modified(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer, foldLevelNow as Integer, foldLevelPrev as Integer, token as Integer, annotationLine- sAdded as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This notification is sent when the text or styling of the document changes or is about to change.
Notes: You can set a mask for the notifications that are sent to the container with ModEventMask. The parameters contains information about what changed, how the change occurred and whether this changed the number of lines in the document. No modifications may be performed while in a Modified event.

Parameter	Usage
modificationType	A set of flags that identify the change(s) made. See the next table.
position	Start position of a text or styling change. Set to 0 if not used.
length	Length of the change in bytes when the text or styling changes. Set to 0 if not used.
linesAdded	Number of added lines. If negative, the number of deleted lines. Set to 0 if not used or no lines added or deleted.
text	Valid for text changes, not for style changes. If we are collecting undo information this holds a pointer to the text that is handed to the Undo system, otherwise it is zero. For user performed SC_MOD_BEFOREDELETE the text field is 0.
line	The line number at which a fold level or marker change occurred. This is 0 if unused and may be -1 if more than one line changed.
foldLevelNow	The new fold level applied to the line or 0 if this parameter is unused.
foldLevelPrev	The previous folding level of the line or 0 if this parameter is unused.

The modificationType field has bits set to tell you what has been done. The kModificationFlags* constants bits correspond to actions. They tell you if the action was done by the user, or the result of Undo or Redo of a previous action.

Symbol	Value	Meaning	Parameters
MSModificationFlagNone	0	None other with an 8-bit value. Will not occur but is useful in tests.	
MSModificationFlagText	1	Text has been inserted into the document.	position, length, text, line, lineAdded
MSModificationFlagDelete	2	Text has been removed from the document.	position, length, text, line, lineAdded
MSModificationFlagChangeStyle	4	A style change has occurred.	position, length
MSModificationFlagStyleDeleted	8	A styling change was removed.	line, lineAdded, line, lineDeleted, line
MSModificationFlagLine	16	Information: the operation was done by the user.	None
MSModificationFlagUndo	32	Information: this was the result of a Undo.	None
MSModificationFlagRedo	64	Information: this was the result of a Redo.	None
MSModificationFlagAnnotationAdded	128	This is part of an applying Undo or Redo transaction.	position, length
MSModificationFlagAnnotationDeleted	256	This is part of an applying Undo or Redo transaction.	position, length
MSModificationFlagAnnotationStyle	512	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1024	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2048	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4096	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	8192	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	16384	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	32768	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	65536	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	131072	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	262144	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	524288	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1048576	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2097152	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4194304	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	8388608	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	16777216	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	33554432	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	67108864	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	134217728	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	268435456	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	536870912	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1073741824	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2147483648	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4294967296	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	8589934592	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	17179869184	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	34359738368	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	68719476736	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	137438953472	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	274877906944	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	549755813888	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1099511627776	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2199023255552	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4398046511104	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	8796093022208	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	17592186044416	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	35184372088832	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	70368744177664	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	140737488355328	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	281474976710656	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	562949953421312	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1125899906842624	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2251799813685248	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4503599627370496	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	9007199254740992	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	18014398509481984	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	36028797018963968	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	72057594037927936	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	144115188075855872	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	288230376151711744	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	576460752303423488	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1152921504606846976	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2305843009213693952	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4611686018427387904	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	9223372036854775808	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	18446744073709551616	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	36893488147419103232	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	73786976294838206464	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	147573952589676412928	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	295147905179352825856	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	590295810358705651712	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1180591620717411303424	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2361183241434822606848	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4722366482869645213696	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	9444732965739290427392	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	18889465931478580854784	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	37778931862957161709568	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	75557863725914323419136	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	151115727451828646838272	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	302231454903657293676544	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	604462909807314587353088	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1208925819614629174706176	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2417851639229258349412352	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4835703278458516698824704	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	9671406556917033397649408	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	19342813113834066795298816	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	38685626227668133590597632	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	77371252455336267181195264	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	154742504910672534362390528	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	309485009821345068724781056	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	618970019642690137449562112	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1237940039285380274899124224	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2475880078570760549798248448	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	4951760157141521099596496896	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	9903520314283042199193993792	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	19807040628566084398387987584	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	39614081257132168796775975168	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	79228162514264337593551950336	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	158456325028528675187103900672	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	316912650057057350374207801344	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	633825300114114700748415602688	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1267650600228229401496831205376	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2535301200456458802993662410752	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	5070602400912917605987324821504	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	10141204801825835211974649643008	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	20282409603651670423949299286016	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	40564819207303340847898598572032	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	81129638414606681695797197144064	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	162259276833213363391594384288128	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	324518553666426726783188768576256	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	649037107332853453566377537152512	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1298074214665706907132755074300224	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2596148429331413814265510148600448	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	5192296858662827628531020297200896	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	10384593717325655257062041194401792	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	20769187434651310514124082388803584	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	41538374869302621028248164777607168	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	83076749738605242056496329555214336	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	166153499477210484112992659110428672	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	332306998954420968225985318220857344	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	664613997908841936451970636441714688	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	1329227995817683872903941272883429376	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	265845599163536774580788254576685872	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	531691198327073549161576509153371744	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	1063382396654147098323153018306735008	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	2126764793308294196646306036613470016	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	4253529586616588393292612073226940032	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	8507059173233176786585224146453880064	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	17014118346466353573170448292907760128	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	34028236692932707146340896585815520256	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	68056473385865414292681793171631040512	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	13611294677173082858536358634326081024	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	27222589353546165717072717268652162048	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	54445178707092331434145434537304324096	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	108890357414184662868290869074608648192	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	217780714828369325736581738149217396384	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	435561429656738651473163476298434792768	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	871122859313477302946326952596869585536	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	1742245718626954645892653905193739171104	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	3484491437253909291785307810387478342208	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	6968982874507818583570615620774956684416	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	13937965749015637167141231241549913368832	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	2787593149803127433428246248309982677664	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	5575186299606254866856492496619965355328	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	11150372599212509733712984993239931110656	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	22300745198425019467425969986479862221312	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	4460149039685003893485193997295972444224	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	8920298079370007786970387994591944888448	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	17840596158740015573940775989183889777888	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	35681192317480031147881551978367795555776	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	713623846349600622957630395767355911111552	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	14272476926992012459152607915347118222304	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	28544953853984024918305215830694236444608	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	57089907707968049836610431661388473889216	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	114179815415936099673220863322774777744	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	22835963083187219934644172664554955488896	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded	45671926166374439869288345329109110977792	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleDeleted	91343852332748879738576690658218221955584	One or more markers has changed in a line.	position, length
MSModificationFlagAnnotationStyleAdded			

text.

Notes: This can be used to check the document out of a version control system. You can set the read-only state of a document with ReadOnly property.

4.1.543 NeedsShown(Position as Integer, length as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Scintilla has determined that a range of lines that is currently invisible should be made visible.

Example:

```
sub NeedsShown(Position as Integer)
dim firstLine as Integer = LineFromPosition(me.position)
dim lastLine as Integer = LineFromPosition(me.position+me.length-1)
for line as integer = firstLine to lastLine
me.EnsureVisible(line)
next
end sub
```

Notes: An example of where this may be needed is if the end of line of a contracted fold point is deleted. This message is sent to the container in case it wants to make the line visible in some unusual way such as making the whole document visible. Most containers will just ensure each line in the range is visible by calling EnsureVisible. The position and length fields of SCNnotification indicate the range of the document that should be made visible.

The container code will be similar to the following code skeleton in the example above. If the event is not implemented, we do similar automatically.

4.1.544 Painted

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Painting has just been done.

Notes: Useful when you want to update some other widgets based on a change in Scintilla, but want to have the paint occur first to appear more responsive.

4.1.545 Prepare

Plugin Version: 22.4, Platforms: macOS, Linux, Windows, Targets: .

Function: The prepare event.

Notes: Called before we create the control, so you can change properties like HasBorder.

4.1.546 SavePointLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Sent to the container when the save point is entered or left, allowing the container to display a "document dirty" indicator and change its menus.

4.1.547 SavePointReached

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Sent to the container when the save point is entered or left, allowing the container to display a "document dirty" indicator and change its menus.

4.1.548 ScaleFactorChanged(NewFactor as double)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.1.549 SelectionChanged(updated as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Selection changed.

Notes: If content is changed or selection, this event is fired.

The UpdateUI event will also be called.

4.1.550 StyleNeeded(Position as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Queries you to provide style information.

Example:

```

// sample event to color digits

Sub StyleNeeded(Position as Integer) Handles StyleNeeded
#pragma BackgroundTasks false

Dim startPos As Integer = Me.EndStyled
Dim lineNumber As Integer = Me.LineFromPosition(startPos)
Dim LineStartPos As Integer = Me.PositionFromLine(lineNumber)

System.DebugLog "Style at "+Position.ToString+" from "+LineStartPos.ToString+" to "+position.ToString

Dim t As String = Me.Text
Dim pos As Integer = LineStartPos

While pos < position

Dim ch As Integer = t.Middle(pos, 1).Asc

If ch >= 48 And ch <= 57 Then
// digit
Me.SetStyling(pos, 1, Me.Style(2))
end if

pos = pos + 1
Wend
End Sub

```

Notes: If you used no explicit lexer to make the container act as the lexer, you will receive this notification when Scintilla is about to display or print text that requires styling.

You are required to style the text from the line that contains the position returned by `EndStyled` up to the position passed in `position`. Symbolically, you need code of the form:

```

startPos = me.EndStyled
lineNumber = LineFromPosition(startPos)
startPos = PositionFromLine(lineNumber)
ApplyStyles(startPos, position)

```

4.1.551 TextChanged(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Text changed.

Notes: Our plugin calls this to inform you about a text change. No modifications may be performed while in a Modified event. Modified event will also be raised.

4.1.552 UpdateUI(updated as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Either the text or styling of the document has changed or the selection range or scroll position may have changed.

Notes: Now would be a good time to update any container UI elements that depend on document or view state. As it is sometimes difficult to determine whether a change has occurred, these events may also fire when there has been no actual change. The updated field is set to the bit set of things changed since the previous notification.

See kUpdate* constants.

4.1.553 URIDropped(text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Indicates that the user has dragged a URI such as a file name or Web address onto Scintilla.

Notes: The container could interpret this as a request to open the file.

4.1.554 UserListSelection(Position as Integer, Character as Integer, Text as String, listType as Integer, listCompletionMethod as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user has selected an item in a user list.

Notes:

Field	Usage
listType	This is set to the listType parameter from the UserListShow message that initiated the list.
text	The text of the selection.
position	The position the list was displayed at.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred.

4.1.555 Zoom

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated when the user zooms the display using the keyboard or the Zoom method is called.

Notes: This event can be used to recalculate positions, such as the width of the line number margin to maintain sizes in terms of characters rather than pixels.

See also:

- 4.1.490 Zoom as Integer

157

4.1.556 Constants

Constants

Constant	Value	Description
kAlphaOpaque	255	One of the alpha channel constants. Opaque color.
kAlphaTransparent	0	One of the alpha channel constants. Full transparency.
kInvalidPosition	-1	Invalid position constant.
kMaskFolders	&hFE000000	The mask for folder flags.
kTimeForever	10000000	The constant for MouseDwellTime to mean forever in duration.

Accessibility Status

Constant	Value	Description
kAccessibilityDisabled	0	Accessibility is disabled.
kAccessibilityEnabled	1	Accessibility is enabled.

Alpha

Constant	Value	Description
kAlphaNoAlpha	256	Special value to indicate no alpha.

Annotation Visibility

Constant	Value	Description
kAnnotationVisibleBoxed	2	Annotations are indented to match the text and are surrounded by a box.
kAnnotationVisibleHidden	0	Annotations are not displayed.
kAnnotationVisibleIndented	3	Annotations are indented to match the text.
kAnnotationVisibleStandard	1	Annotations are drawn left justified with no adornment.

Auto Completion Flags

Constant	Value	Description
kAutoCompleteOptionFixedSize	1	On Win32 only, use a fixed size list instead of one that can be resized by the user. This also avoids a header rectangle above the list.
kAutoCompleteOptionNormal	0	Display autocompletion using default settings.

Automatic Folding

Constant	Value	Description
kAutomaticFoldChange	&h0004	Show lines as needed when fold structure is changed. The Modified notification is still sent unless it is disabled by the container.
kAutomaticFoldClick	&h0002	Handle clicks in fold margin automatically. This avoids sending the MarginClick event for folding margins.
kAutomaticFoldNone	&h0000	Value with no automatic behaviour.
kAutomaticFoldShow	&h0001	Automatically show lines as needed. This avoids sending the NeedsShown notification.

Bidirectional Modes

Constant	Value	Description
kBidirectionalDisabled	0	Disabled
kBidirectionalL2R	1	Left to Right
kBidirectionalR2L	2	Right to Left

Caret Policy

Constant	Value	Description
kCaretPolicyEven	&h08	If not set, instead of having symmetrical UZs, the left and bottom UZs are extended up to right and top UZs respectively. This way, we favour the displaying of useful information: the beginning of lines, where most code reside, and the lines after the caret, for example, the body of a function.
kCaretPolicyJumps	&h10	If set, the display is moved more energetically so the caret can move in the same direction longer before the policy is applied again. '3UZ' notation is used to indicate three time the size of the UZ as a distance to the margin.
kCaretPolicySlop	&h01	If set, we can define a slop value: caretSlop. This value defines an unwanted zone (UZ) where the caret is... unwanted. This zone is defined as a number of pixels near the vertical margins, and as a number of lines near the horizontal margins. By keeping the caret away from the edges, it is seen within its context. This makes it likely that the identifier that the caret is on can be completely seen, and that the current line is seen with some of the lines following it, which are often dependent on that line.
kCaretPolicyStrict	&h04	If set, the policy set by kCaretPolicySlop is enforced... strictly. The caret is centred on the display if caretSlop is not set, and cannot go in the UZ if caretSlop is set.

Caret Sticky

Constant	Value	Description
kCaretStickyOff	0	When set to kCaretStickyOff (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.
kCaretStickyOn	1	When set to kCaretStickyOn (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).
kCaretStickyWhiteSpace	2	When set to kCaretStickyWhiteSpace (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

Caret Styles

Constant	Value	Description
kCaretStyleBlock	2	Draws insertion carets as blocks.
kCaretStyleBlockAfter	&h100	When the caret end of a range is at the end and a block caret style is chosen, draws the block outside the selection instead of inside. This can be ored with kCaretStyleBlock or kCaretStyleBlockCurses.
kCaretStyleInsMask	&hF	The mask to only get the bits for insert mode.
kCaretStyleInvisible	0	Carets are not drawn at all.
kCaretStyleLine	1	Draws insertion carets as lines. This is the default.
kCaretStyleOverstrikeBar	0	Draws an overstrike caret as a bar. This is the default.
kCaretStyleOverstrikeBlock	&h10	Draws an overstrike caret as a block. This should be ored with one of the first three styles.

Case Insensitive Behavior Flags

Constant	Value	Description
kCaseInsensitiveBehaviourIgnoreCase	1	Ignore Case
kCaseInsensitiveBehaviourRespectCase	0	Respect Case

Character Sets

Constant	Value	Description
kCharacterSetAnsi	0	ANSI
kCharacterSetArabic	178	Arabic
kCharacterSetBaltic	186	Baltic
kCharacterSetChineseBig5	136	Chinese Big 5
kCharacterSetCyrillic	1251	Cyrillic
kCharacterSetDefault	1	Default one
kCharacterSetEastEurope	238	East Europe
kCharacterSetGB2312	134	GB 2312
kCharacterSetGreek	161	Greek
kCharacterSetHangul	129	Hangul
kCharacterSetHebrew	177	Hebrew
kCharacterSetIso8859_15	1000	ISO 8859-15
kCharacterSetJohab	130	Johab
kCharacterSetMac	77	Mac
kCharacterSetOem	255	OEM
kCharacterSetOem866	866	OEM 866
kCharacterSetRussian	204	Russian
kCharacterSetShiftJis	128	ShiftJis
kCharacterSetSymbol	2	Symbol
kCharacterSetThai	222	Thai
kCharacterSetTurkish	162	Turkish
kCharacterSetVietnamese	163	Vietnamese

Character Sources

Constant	Value	Description
kCharacterSourceDirectInput	0	Direct input characters, including characters generated by calling keyboard commands like NewLine method.
kCharacterSourceImeResult	2	IME (either inline or windowed mode) full composited string. Modern IME is able to composite English word or sentence, when this value is set, current character may not a Chinese, Japanese or Korean character. Currently, this is only set on Windows.
kCharacterSourceTentativeInput	1	Tentative input characters. They are used by IME (inline mode, see IMEInteraction) to composite final string, normally different from final composited string (which is the string that has been truly added into current document), and may be withdrawn when the user cancels typing (e.g. by pressing Esc key). Some system (at least Cocoa) also use tentative input for non-IME features like using dead key to composite diacritical marks (grave accent, etc.). These characters are not added to macro recording. Most applications can simply ignore the notification when this value is set.

Completion Methods

Constant	Value	Description
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.

Cursor Shapes

Constant	Value	Description
kCursorShapeArrow	2	Normal arrow.
kCursorShapeNormal	-1	The normal cursor is displayed.
kCursorShapeReverseArrow	7	Reverse arrow.
kCursorShapeWait	4	The wait cursor is displayed when the mouse is over or owned by the Scintilla window.

Document Option

Constant	Value	Description
kDocumentOptionDefault	0	Standard options.
kDocumentOptionStylesNone	&h1	Stops allocation of memory to style characters which saves significant memory, often 40% with the whole document treated as being style 0.
kDocumentOptionTextLarge	&h100	Accommodates documents larger than 2 GigaBytes in 64-bit executables.

Long line display modes

Constant	Value	Description
kEdgeVisualStyleBackground	2	The background colour of characters after the column limit is changed to the colour set by EdgeColor property. This is recommended for proportional fonts.
kEdgeVisualStyleLine	1	A vertical line is drawn at the column number set by EdgeColumn(). This works well for monospaced fonts. The line is drawn at a position based on the width of a space character in kStylesCommonDefault, so it may not work very well if your styles use proportional fonts or if your style have varied font sizes or you use a mixture of bold, italic and normal text.
kEdgeVisualStyleMultiLine	3	This is similar to kEdgeVisualStyleLine but in contrary to showing only one single line a configurable set of vertical lines can be shown simultaneously. This edgeMode uses a completely independent dataset that can only be configured by using the MultiEdge* methods.
kEdgeVisualStyleNone	0	Long lines are not marked. This is the default state.

Elements

Constant	Value	Description
kElementCaret	40	Colour of caret for main selection
kElementCaretAdditional	41	Colour of caret for additional selections
kElementCaretLineBack	50	Colour of caret line background
kElementFoldLine	80	Colour of fold lines
kElementHiddenLine	81	Colour of line drawn to show there are lines hidden at that point
kElementHotSpotActive	70	Text colour of active hot spot
kElementHotSpotActiveBack	71	Background colour of active hot spot
kElementList	0	Text colour in autocompletion lists
kElementListBack	1	Background colour of autocompletion lists
kElementListSelected	2	Text colour of selected item in autocompletion lists
kElementListSelectedBack	3	Background colour of selected item in autocompletion lists
kElementSelectionAdditionalBack	13	Background colour of additional selections
kElementSelectionAdditionalText	12	Text colour of additional selections
kElementSelectionBack	11	Background colour of main selection
kElementSelectionInactiveBack	17	Background colour of selections when another window has focus
kElementSelectionInactiveText	16	Text colour of selections when another window has focus
kElementSelectionSecondaryBack	15	Background colour of selections when another window contains the primary selection
kElementSelectionSecondaryText	14	Text colour of selections when another window contains the primary selection
kElementSelectionText	10	Text colour of main selection
kElementWhiteSpace	60	Colour of visible white space
kElementWhiteSpaceBack	61	Colour of visible white space background

End Of Line

Constant	Value	Description
kEndOfLineCR	1	CR, the old Mac line ending.
kEndOfLineCRLF	0	CRLF, the Windows line ending.
kEndOfLineLF	2	LF, the unix line ending.

End of Line Annotation

Constant	Value	Description
kEOLAnnotationVisibleAngleCircle	&h102	Surround with a ,óÑshape,óó with angled left end and curved right end.
kEOLAnnotationVisibleAngleFlat	&h112	Surround with a ,óÑshape with angled left end and flat right end.
kEOLAnnotationVisibleAngles	&h122	Surround with a ,óÑshape,ñ with angles on each end.
kEOLAnnotationVisibleBoxed	&h2	End of Line Annotations are indented to match the text and are surrounded by a box.
kEOLAnnotationVisibleCircleAngle	&h120	Surround with a ,óñshape,ñ with curved left end and angled right end.
kEOLAnnotationVisibleCircleFlat	&h110	Surround with a ,óñshape with curved left end and flat right end.
kEOLAnnotationVisibleFlatAngle	&h121	Surround with a shape,ñ with flat left end and angled right end.
kEOLAnnotationVisibleFlatCircle	&h101	Surround with a shape,óó with flat left end and curved right end.
kEOLAnnotationVisibleFlats	&h111	Surround with a shape with flat ends.
kEOLAnnotationVisibleHidden	&h0	End of Line Annotations are not displayed.
kEOLAnnotationVisibleStadium	&h100	Surround with a ,óñstadium,óó - a rectangle with rounded ends.
kEOLAnnotationVisibleStandard	&h1	End of Line Annotations are drawn left justified with no adornment.

Search Flags

Constant	Value	Description
kFindOptionCxx11Regex	&h00800000	This flag may be set to use C++11 <regex> instead of Scintilla's basic regular expressions. If the regular expression is invalid then -1 is returned and status is set to SC_STATUS_WARN_REGEX. The ECMAScript flag is set on the regex object and UTF-8 documents will exhibit Unicode-compliant behaviour. For MSVC, where wchar_t is 16-bits, the regular expression "." will match a single astral-plane character. There may be other differences between compilers. Must also have kFindOptionRegExp set.
kFindOptionMatchCase	&h4	A match only occurs with text that matches the case of the search string.
kFindOptionNone	&h0	Default setting is case-insensitive literal match.
kFindOptionPosix	&h00400000	Treat regular expression in a more POSIX compatible manner by interpreting bare (and) for tagged sections rather than \ (and \). Has no effect when kFindOptionCxx11Regex is set.
kFindOptionRegExp	&h00200000	The search string should be interpreted as a regular expression. Uses Scintilla's base implementation unless combined with kFindOptionCxx11Regex.
kFindOptionWholeWord	&h2	A match only occurs if the characters before and after are not word characters as defined by WordChars property.
kFindOptionWordStart	&h00100000	A match only occurs if the character before is not a word character as defined by WordChars.

Folder Actions

Constant	Value	Description
kFoldActionContract	0	Contract.
kFoldActionExpand	1	Expand.
kFoldActionToggle	2	Toggle between contracted and expanded.

Folder Display Text Style

Constant	Value	Description
kFoldDisplayTextStyleBoxed	2	Display the text tags with a box drawn around them.
kFoldDisplayTextStyleHidden	0	Do not display the text tags. This is the default.
kFoldDisplayTextStyleStandard	1	Display the text tags.

Folder Flags

Constant	Value	Description
kFoldFlagLevelNumbers	&h0040	Display hexadecimal fold levels in line margin to aid debugging of folding. The appearance of this feature may change in the future.
kFoldFlagLineAfterContracted	&h0010	Draw below if not expanded
kFoldFlagLineAfterExpanded	&h0008	Draw below if expanded
kFoldFlagLineBeforeContracted	&h0004	Draw above if not expanded
kFoldFlagLineBeforeExpanded	&h0002	Draw above if expanded
kFoldFlagLineStyle	&h0080	Display hexadecimal line state in line margin to aid debugging of lexing and folding. May not be used at the same time as kFoldFlagLevelNumbers.
kFoldFlagNone	&h0000	Default value.

Folder Levels

Constant	Value	Description
kFoldLevelBase	&h400	The initial fold level.
kFoldLevelHeaderFlag	&h2000	Indicates that the line is a header (fold point).
kFoldLevelNone	&h0	Default level that may occur before folding.
kFoldLevelNumberMask	&h0FFF	The mask for numbers.
kFoldLevelWhiteFlag	&h1000	Indicates that the line is blank and allows it to be treated slightly different then its level may indicate.

Font Quality with Antialiasing

Constant	Value	Description
kFontQualityQualityAntialiased	2	Antialiased
kFontQualityQualityDefault	0	Default.
kFontQualityQualityLcdOptimized	3	LCD Optimized
kFontQualityQualityMask	&hF	In case it is necessary to squeeze more options into this property, only a limited number of bits defined by kFontQualityQualityMask will be used for quality.
kFontQualityQualityNonAntialiased	1	Non Antialiased

Idle Styling

Constant	Value	Description
kIdleStylingAfterVisible	2	Text after the currently visible portion may be styled in the background.
kIdleStylingAll	3	Style both before and after the visible text.
kIdleStylingNone	0	Syntax styling is performed for all the currently visible text before displaying it.
kIdleStylingToVisible	1	A small amount of styling is performed before display and then further styling is performed incrementally in the background as an idle-time task.

IME Interaction Mode

Constant	Value	Description
kIMEInteractionInline	1	Show inline.
kIMEInteractionWindowed	0	Show on window.

Indentation Guides

Constant	Value	Description
kIndentViewLookBoth	3	Indentation guides are shown beyond the actual indentation up to the level of the next non-empty line or previous non-empty line whichever is the greater. This setting is good for most languages.
kIndentViewLookForward	2	Indentation guides are shown beyond the actual indentation up to the level of the next non-empty line. If the previous non-empty line was a fold header then indentation guides are shown for one more level of indent than that line. This setting is good for Python.
kIndentViewNone	0	No indentation guides are shown.
kIndentViewReal	1	Indentation guides are shown inside real indentation white space.

Modifier Keys

Constant	Value	Description
kKeyModAlt	4	Alt key. (named Option on MacOS usually)
kKeyModCtrl	2	Control key (the Command key on Mac, the Ctrl key on other platforms).
kKeyModMeta	16	Meta key (the Ctrl key on Mac, the Windows key on other platforms).
kKeyModNorm	0	No modifier key.
kKeyModShift	1	Shift Key
kKeyModSuper	8	This is the same as kKeyModMeta on all platforms.

Keys

Constant	Value	Description
kKeysAdd	310	
kKeysBack	8	
kKeysDelete	308	
kKeysDivide	312	
kKeysDown	300	
kKeysEnd	305	
kKeysEscape	7	
kKeysHome	304	
kKeysInsert	309	
kKeysLeft	302	
kKeysMenu	315	
kKeysNext	307	
kKeysPrior	306	
kKeysReturn	13	
kKeysRight	303	
kKeysRWin	314	
kKeysSubtract	311	
kKeysTab	9	
kKeysUp	301	
kKeysWin	313	

Layers

Constant	Value	Description
kLayerBase	0	Draw the selection background opaquely on the base layer
kLayerOverText	2	Draw the selection background translucently over the text.
kLayerUnderText	1	Draw the selection background translucently under the text. This will not work in single phase drawing mode as there is no under-text phase.

Layout line cache modes

Constant	Value	Description
kLineCacheCaret	1	One line is cached. This is the default.
kLineCacheDocument	3	All lines in the document.
kLineCacheNone	0	No lines are cached.
kLineCachePage	2	Visible lines plus the line containing the caret.

Line Character Index Types

Constant	Value	Description
kLineCharacterIndexTypeNone	0	Bytewise.
kLineCharacterIndexTypeUtf16	2	UTF-16 code units are indexed.
kLineCharacterIndexTypeUtf32	1	Whole characters are indexed.

Line End Types

Constant	Value	Description
kLineEndTypeDefault	0	
kLineEndTypeUnicode	1	

Margin Options

Constant	Value	Description
kMarginOptionNone	0	Whole wrapped line is selected.
kMarginOptionSubLineSelect	1	Only sub line of wrapped line is selected.

Modification Flags

Constant	Value	Description
kModificationFlagsBeforeDelete	&h800	Text is about to be deleted from the document.
kModificationFlagsBeforeInsert	&h400	Text is about to be inserted into the document.
kModificationFlagsChangeAnnotation	&h20000	An annotation has changed.
kModificationFlagsChangeEOLAnnotation	&h400000	An annotation has changed.
kModificationFlagsChangeFold	&h8	A folding change has occurred.
kModificationFlagsChangeIndicator	&h4000	An indicator has been added or removed from a range of text.
kModificationFlagsChangeLineState	&h8000	A line state has changed because SCI_SETLINESTATE was called.
kModificationFlagsChangeMargin	&h10000	A text margin has changed.
kModificationFlagsChangeMarker	&h200	One or more markers has changed in a line.
kModificationFlagsChangeStyle	&h4	A style change has occurred.
kModificationFlagsChangeTabStops	&h200000	The explicit tab stops on a line have changed because ClearTabStops or SetTabStops was called.
kModificationFlagsContainer	&h40000	This is set on for actions that the container stored into the Undo/Redo stack. This is used by AddUndoAction.
kModificationFlagsDeleteText	&h2	Text has been removed from the document.
kModificationFlagsEventMaskAll	&h7FFFFFFF	This is a mask for all valid flags. This is the default mask stored in the container's eventMask.
kModificationFlagsInsertCheck	&h100000	Text is about to be inserted. The handler may change the text to be inserted by calling ChangeInsertion method. No other modifications should be made by this handler.
kModificationFlagsInsertText	&h1	Text has been inserted into the document.
kModificationFlagsLastStepInUndoRedo	&h100	This is the final step in an Undo or Redo transaction.
kModificationFlagsLexerState	&h80000	The internal state of a lexer has changed over a range.
kModificationFlagsMultilineUndoRedo	&h1000	This is part of an Undo or Redo with multi-line changes.
kModificationFlagsMultiStepUndoRedo	&h80	This is part of a multi-step Undo or Redo transaction.
kModificationFlagsNone	&h0	Base value with no fields valid. Will not occur but is useful in some cases.
kModificationFlagsRedo	&h40	Information: this was the result of a Redo.
kModificationFlagsStartAction	&h2000	This is set on a kModificationFlagsUser action when it is the first action in an undo transaction. This can be used to integrate the Scintilla with an undo stack in the container application by adding a StartAction method to the container's stack for the currently opened container transaction. This will start a new container transaction if there is no open container transaction.
kModificationFlagsUndo	&h20	Information: this was the result of an Undo.
kModificationFlagsUser	&h10	Information: the operation was done by the user.

Auto Completion for Multiple Selections

Constant	Value	Description
kMultiAutoCompleteEach	1	Each selection.
kMultiAutoCompleteOnce	0	Only first selection.

Multi Paste Options

Constant	Value	Description
kMultiPasteEach	1	The paste text can go into each selection.
kMultiPasteOnce	0	The pasted text can go into just the main selection.

Ordering Options

Constant	Value	Description
kOrderingCustom	2	Custom sorting.
kOrderingPerformSort	1	The control will sort for you.
kOrderingPreSorted	0	You pass list pre-sorted.

Popup Modi

Constant	Value	Description
kPopUpAll	1	Show default editing menu if clicking on scintilla.
kPopUpNever	0	Never show default editing menu.
kPopUpText	2	Show default editing menu only if clicking on text area.

Print Options

Constant	Value	Description
kPrintOptionBlackOnWhite	2	Print all text as black on a white background.
kPrintOptionColourOnWhite	3	Everything prints in its own colour on a white background.
kPrintOptionColourOnWhiteDefaultBG	4	Everything prints in its own foreground colour but all styles up to and including kStylesCommonLineNumber will print on a white background.
kPrintOptionInvertLight	1	If you use a dark screen background this saves ink by inverting the lightness of all colours and printing on a white background.
kPrintOptionNormal	0	Print using the current screen colours with the exception of line number margins which print on a white background. This is the default.
kPrintOptionScreenColours	5	Print using the current screen colours for both foreground and background. This is the only mode that does not set the background colour of the line number margin to white.

Representation Appearance

Constant	Value	Description
kRepresentationAppearanceBlob	1	Draw the representation text inverted in a rounded rectangle. This is the default appearance.
kRepresentationAppearanceColour	&h10	Draw the representation in the colour set with RepresentationColour() instead of in the colour of the style of the text being represented.
kRepresentationAppearancePlain	0	Draw the representation text with no decorations.

Selection Mode

Constant	Value	Description
kSelectionModeLines	2	Line selection.
kSelectionModeRectangle	1	Rectangular
kSelectionModeStream	0	Stream
kSelectionModeThin	3	Thin rectangular selection

Status Codes

Constant	Value	Description
kStatusBadAlloc	2	Memory is exhausted.
kStatusFailure	1	Generic failure.
kStatusOk	0	No failures.
kStatusRegEx	1001	Regular expression is invalid.
kStatusWarnStart	1000	Warnings start with this value.

Support

Constant	Value	Description
kSupportsFractionalStrokeWidth	2	Can lines be drawn with fractional widths like 1.5 or 0.5 pixels?
kSupportsLineDrawsFinal	0	Whether drawing a line draws its final position. Only false on Win32 GDI.
kSupportsPixelDivisions	1	Are logical pixels larger than physical pixels? Currently only true for macOS Cocoa with 'retina' displays. When true, creating pixmaps at twice the resolution can produce clearer output with less blur.
kSupportsPixelModification	4	Can individual pixels be modified? This is false for character cell platforms like curses.
kSupportsTranslucentStroke	3	Can translucent lines, polygons, ellipses, and text be drawn?

Tab Draw Modes

Constant	Value	Description
kTabDrawModeLongArrow	0	
kTabDrawModeStrikeOut	1	

Drawing Technology

Constant	Value	Description
kTechnologyDefault	0	Default
kTechnologyDirectWrite	1	Use DirectWrite API.
kTechnologyDirectWriteDC	3	DirectWrite to draw into a GDI DC.
kTechnologyDirectWriteRetain	2	Use DirectWrite API with retaining frame.

Property Types

Constant	Value	Description
kTypePropertyBoolean	0	Property is a boolean.
kTypePropertyInteger	1	Property is an integer.
kTypePropertyString	2	Property is a string.

Undo Flags

Constant	Value	Description
kUndoFlagsMayCoalesce	1	If the container action may be coalesced along with any insertion and deletion actions into a single compound action.
kUndoFlagsNone	0	Coalescing treats coalescible container actions as transparent so will still only group together insertions that look like typing or deletions that look like multiple uses of the Backspace or Delete keys.

Update Flags

Constant	Value	Description
kUpdateContent	&h1	Contents, styling or markers may have been changed.
kUpdateHScroll	&h8	May have scrolled horizontally.
kUpdateNone	&h0	Value without any changes.
kUpdateSelection	&h2	Selection may have been changed.
kUpdateVScroll	&h4	May have scrolled vertically.

Virtual Space Flags

Constant	Value	Description
kVirtualSpaceNone	0	Disables all use of virtual space.
kVirtualSpaceNoWrapLineStart	4	Prevents left arrow movement and selection from wrapping to the previous line. This is most commonly desired in conjunction with virtual space but as an independent setting so works without virtual space.
kVirtualSpaceRectangularSelection	1	Rectangular selection.
kVirtualSpaceUserAccessible	2	User accessible.

Visibility Policy

Constant	Value	Description
kVisiblePolicySlop	&h01	If set, we can define a slop value: caretSlop. This value defines an unwanted zone (UZ) where the caret is... unwanted. This zone is defined as a number of pixels near the vertical margins, and as a number of lines near the horizontal margins. By keeping the caret away from the edges, it is seen within its context. This makes it likely that the identifier that the caret is on can be completely seen, and that the current line is seen with some of the lines following it, which are often dependent on that line.
kVisiblePolicyStrict	&h04	If set, the policy set by slop is kVisiblePolicySlop... strictly. The caret is centred on the display if caretSlop is not set, and cannot go in the UZ if caretSlop is set.

White Space Visibility

Constant	Value	Description
kWhiteSpaceInvisible	0	The normal display mode with white space displayed as an empty background colour.
kWhiteSpaceVisibleAfterIndent	2	White space used for indentation is displayed normally but after the first visible character, it is shown as dots and arrows.
kWhiteSpaceVisibleAlways	1	White space characters are drawn as dots and arrows,
kWhiteSpaceVisibleOnlyInIndent	3	White space used for indentation is displayed as dots and arrows.

Wrap Modes

Constant	Value	Description
kWrapChar	2	Enable wrapping between any characters.
kWrapNone	0	Disable line wrapping.
kWrapWhiteSpace	3	Enable wrapping on whitespace.
kWrapWord	1	Enable wrapping on word or style boundaries.

Wrap Indent Mode

Constant	Value	Description
kWrapIndentModeDeepIndent	3	Wrapped sublines are aligned to first subline indent plus two more levels of indentation
kWrapIndentModeFixed	0	Wrapped sublines aligned to left of window plus amount set by WrapStartIndent.
kWrapIndentModeIndent	2	Wrapped sublines are aligned to first subline indent plus one more level of indentation
kWrapIndentModeSame	1	Wrapped sublines are aligned to first subline indent

Wrap Visual Flags

Constant	Value	Description
kWrapVisualFlagEnd	&h0001	Visual flag at end of subline of a wrapped line.
kWrapVisualFlagMargin	&h0004	Visual flag in line number margin.
kWrapVisualFlagNone	&h0000	No visual flags
kWrapVisualFlagStart	&h0002	Visual flag at begin of subline of a wrapped line. Subline is indented by at least 1 to make room for the flag.

Wrap Visual Location

Constant	Value	Description
kWrapVisualLocationDefault	&h0000	Visual flags drawn near border
kWrapVisualLocationEndByText	&h0001	Visual flag at end of subline drawn near text
kWrapVisualLocationStartByText	&h0002	Visual flag at beginning of subline drawn near text

4.2 control ScintillaControlMBS

4.2.1 control ScintillaControlMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Xojo control to host Scintilla editor.

Blog Entries

- [News from the MBS Xojo Plugins Version 23.2](#)
- [More Scintilla questions](#)
- [Scintilla in Xojo for Linux 64-bit on ARM](#)
- [News from the MBS Xojo Plugins Version 22.4](#)
- [MBS Xojo Plugins in version 22.4](#)
- [Scintilla in Xojo with Search and Replace](#)
- [Configure Scintilla Control for HTML](#)
- [News from the MBS Xojo Plugins Version 22.0](#)
- [One year Xojo MVP](#)
- [Adding a Scintilla based control to Xojo](#)

Videos

- [Scintilla for Xojo](#)

Xojo Developer Magazine

- [21.4, page 10: News](#)
- [20.6, page 9: News](#)
- [20.2, page 9: News](#)

4.2.2 Methods

4.2.3 AddSelection(caret as Integer, anchor as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Add a new selection from anchor to caret as the main selection retaining all other selections as additional selections.

Notes: Since there is always at least one selection, to set a list of selections, the first selection should be added with `SetSelection()` and later selections added with `AddSelection()`.

4.2.4 AddStyledText(StyledText as MemoryBlock)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This behaves just like AddText, but inserts styled text.

Notes: See GetStyledText function.

4.2.5 AddTabStop(line as Integer, x as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds an explicit tabstop at the specified distance from the left (in pixels).

Notes: Changing tab stops produces a ChangeTabStops event.

4.2.6 AddText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This inserts the first length characters from the string text at the current position.

Notes: This will include any 0's in the string that you might have expected to stop the insert operation. The current position is set at the end of the inserted text, but it is not scrolled into view.

4.2.7 AddUndoAction(token as Integer, UndoFlags as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds an undo action.

Notes: The container can add its own actions into the undo stack by calling AddUndoAction and an Modify event will be sent to the container with the KModificationFlagsContainer flag when it is time to undo (PerformedUndo) or redo (PerformedRedo) the action. The token argument supplied is returned in the token field of the notification.

For example, if the container wanted to allow undo and redo of a 'toggle bookmark' command then it could call AddUndoAction(line, 0) each time the command is performed. Then when it receives a notification to undo or redo it toggles a bookmark on the line given by the token field. If there are different types of commands or parameters that need to be stored into the undo stack then the container should maintain a stack of its own for the document and use the current position in that stack as the argument to AddUndoAction(line). AddUndoAction commands are not combined together into a single undo transaction unless grouped with BeginUndoAction and EndUndoAction.

The flags argument can be KUndoFlagsMayCoalesce (1) if the container action may be coalesced along with any insertion and deletion actions into a single compound action, otherwise kUndoFlagsNone (0). Coalescing treats coalescible container actions as transparent so will still only group together insertions that look like

typing or deletions that look like multiple uses of the Backspace or Delete keys.

4.2.8 AllocateBytes(bytes as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate a document buffer large enough to store a given number of bytes.

Notes: The document will not be made smaller than its current contents.

4.2.9 AllocateLineCharacterIndex(lineCharacterIndex as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate one or more indexes.

Notes: Most Scintilla APIs use byte positions but some applications want to use positions based on counting (UTF-32) characters or (UTF-16) code units or need to communicate with other code written in terms of characters or code units. With only byte positions, this may require examining many bytes to count characters or code units in the document but this may be sped up in some cases by indexing the line starts by character or code unit.

Different aspects of an application may need indexes for different periods and should allocate for those periods. Indexes use additional memory so releasing them can help minimize memory but they also take time to recalculate. Scintilla may also allocate indexes to support features like accessibility or input method editors. Only one index of each type is created for a document at a time.

4.2.10 AllocateLines(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate line indices to match the lines argument.

Notes: This is an optimization that can prevent multiple reallocations of the indices as text is inserted if the application can estimate the number of lines in the document. The number of lines will not be reduced by this call.

4.2.11 AnnotationClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all annotations.

Notes: All the lines can be cleared of annotations with AnnotationClearAll which is equivalent to clearing

each line (setting to `""`) and then deleting other memory used for this feature.

4.2.12 AnnotationLines(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The number of lines annotating a line can be retrieved with AnnotationLines.

4.2.13 AppendText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This adds the text to the end of the document.

Notes: This will include any 0's in the string that you might have expected to stop the operation. The current selection is not changed and the new text is not scrolled into view.

4.2.14 AssignCmdKey(keyDefinition as Integer, sciCommand as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This assigns the given key definition to a Scintilla command identified by sciCommand.

Notes: sciCommand can be any SCI_* command that has no arguments.

There is a default binding of keys to commands that is defined in the Scintilla library. You can change the mapping to suit your own requirements.

keyDefinition,Ä@: a key definition contains the key code in the low 16-bits and the key modifiers in the high 16-bits. To combine keyCode and keyMod set:,Ä@,Ä@

keyDefinition = keyCode + Bitwise.ShiftLeft(keyMod, 16)

The key code is a visible or control character or a key from the kKeys* enumeration, which contains:

,Ä@kKeysAdd, kKeysBack, kKeysDelete, kKeysDivide, kKeysDown, kKeysEnd, kKeysEscape, kKeysHome, kKeysInsert, kKeysLeft, kKeysMenu, kKeysNext (Page Down), kKeysPrior (Page Up), kKeysReturn, kKeysRight, kKeysRWin, kKeysSubtract, kKeysTab, kKeysUp, and kKeysWin.

The modifiers are a combination of zero or more of kKeyModAlt, kKeyModCtrl, kKeyModShift, kKeyModMeta, and kKeyModSuper. On OS X, the Command key is mapped to kKeyModCtrl and the Control key to kKeyModMeta. kKeyModSuper is only available on GTK which is commonly the Windows key. If

you are building a table, you might want to use `kKeyModNorm`, which has the value 0, to mean no modifiers.

On Win32, the numeric keypad with Alt pressed can be used to enter characters by number. This can produce unexpected results in non-numlock mode when function keys are assigned so potentially problematic keys are ignored. For example, setting `kKeyModAlt`, `kKeysUP` will only be active for the Up key on the main cursor keys, not the numeric keypad.

4.2.15 AutoComplete

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method triggers autocompletion.

Notes: This has the same effect as the tab key.

4.2.16 AutoCompleteCancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cancels any displayed auto completion list.

Notes: When in auto completion mode, the list should disappear when the user types a character that can not be part of the auto completion, such as `?`, `'` or `[` when typing an identifier. A set of characters that will cancel autocompletion can be specified with `AutoCompleteStops`.

4.2.17 AutoCompletePosStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the value of the current position when `AutoCompleteShow` started display of the list.

4.2.18 AutoCompleteSelect(Value as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method selects an item in the autocompletion list.

Notes: It searches the list of words for the first that matches `select`. By default, comparisons are case sensitive, but you can change this with `AutoCIgnoreCase`. The match is character by character for the length of the `select` string. That is, if `select` is "Fred" it will match "Frederick" if this is the first item in the list that begins with "Fred". If an item is found, it is selected. If the item is not found, the autocompletion list closes if `auto-hide` is true (see `AutoCAutoHide`).

The current selection index can be retrieved with `AutoCompleteCurrent`.

4.2.19 AutoCompleteSetFillUps(characterSet as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If a fillup character is typed with an auto completion list active, the currently selected item in the list is added into the document, then the fillup character is added.

Notes: Common fillup characters are '(', '[' and '' but others are possible depending on the language. By default, no fillup characters are set.

4.2.20 AutoCompleteShow(lengthEntered as Integer, itemList as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method causes a list to be displayed.

Notes: lengthEntered is the number of characters of the word already entered and itemList is the list of words separated by separator characters. The initial separator character is a space but this can be set or got with AutoCompleteSeparator property.

With default settings, the list of words should be in sorted order. If set to ignore case mode with AutoCompleteIgnoreCase, then strings are matched after being converted to upper case. One result of this is that the list should be sorted with the punctuation characters ' [', '\', '] ', '^', '_ ', and '' sorted after letters. Alternative handling of list order may be specified with AutoCompleteOrder property.

4.2.21 AutoCompleteStops(characterSet as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The characterSet argument is a string containing a list of characters that will automatically cancel the auto completion list.

Notes: When you start the editor, this list is empty.

4.2.22 BackTab

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.23 BeginUndoAction

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Starts a composed undo action.

Notes: Call `BeginUndoAction` to mark the beginning and `EndUndoAction` to end of a set of operations that you want to undo all as one operation but that you have to generate as several operations. Alternatively, you can use these to mark a set of operations that you do not want to have combined with the preceding or following operations if they are undone.

4.2.24 `BraceBadLight(pos as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Shows bad brace highlight.

Notes: If there is no matching brace then the brace badlighting style, style `kStylesCommonBraceBad (35)`, can be used to show the brace that is unmatched. Using a position of `kInvalidPosition (-1)` removes the highlight.

4.2.25 `BraceBadLightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use specified indicator to highlight non matching brace instead of changing its style

4.2.26 `BraceHighlight(posA as Integer, posB as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Up to two characters can be highlighted in a 'brace highlighting style', which is defined as style number `BraceHighlight (34)`.

Notes: If you have enabled indent guides, you may also wish to highlight the indent that corresponds with the brace. You can locate the column with `Column()` and highlight the indent with `HighlightGuide`.

4.2.27 `BraceHighlightIndicator(useSetting as Boolean, indicator as ScintillaIndicatorMBS)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use specified indicator to highlight matching braces instead of changing their style.

4.2.28 BraceMatch(pos as Integer, maxReStyle as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The BraceMatch method finds a corresponding matching brace given pos, the position of one brace.

Notes: The brace characters handled are '(', ')', '[', ']', '{', '}', '<', and '>'. The search is forwards from an opening brace and backwards from a closing brace. If the character at position is not a brace character, or a matching brace cannot be found, the return value is -1. Otherwise, the return value is the position of the matching brace.

A match only occurs if the style of the matching brace is the same as the starting brace or the matching brace is beyond the end of styling. Nested braces are handled correctly. The maxReStyle parameter must currently be 0 - it may be used in the future to limit the length of brace searches.

4.2.29 BraceMatchNext(pos as Integer, startPos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Similar to BraceMatch, but matching starts at the explicit start position startPos instead of the implicitly next position $\text{pos} \mp 1$.

4.2.30 CallTipCancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method cancels any displayed call tip.

Notes: Scintilla will also cancel call tips for you if you use any keyboard commands that are not compatible with editing the argument list of a function. Call tips are cancelled if you delete back past the position where the caret was when the tip was triggered.

4.2.31 CallTipSetBackColor(backColor as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The background colour of call tips can be set with this property;

Notes: The default colour is white. It is not a good idea to set a dark colour as the background as the default colour for normal calltip text is mid grey and the default colour for highlighted text is dark blue. This also sets the background colour of kStylesCommonCallTip.

4.2.32 CallTipSetForeColor(*foreColor* as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of call tip text can be set with this method.

Notes: The default colour is mid grey.

This also sets the foreground colour of `kStylesCommonCallTip`.

4.2.33 CallTipSetForeColorHighlight(*foreColor* as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of highlighted call tip text can be set with this method.

Notes: The default colour is dark blue.

4.2.34 CallTipSetHighlight(*highlightStart* as Integer, *highlightEnd* as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This sets the region of the call tips text to display in a highlighted style.

Notes: `highlightStart` is the zero-based index into the string of the first character to highlight and `highlightEnd` is the index of the first character after the highlight. `highlightEnd` must be greater than `highlightStart`; `highlightEnd-highlightStart` is the number of characters to highlight. Highlights can extend over line ends if this is required.

Unhighlighted text is drawn in a mid grey. Selected text is drawn in a dark blue. The background is white. These can be changed with `CallTipSetBackColor`, `CallTipSetForeColor`, and `CallTipSetForeColorHighlight`.

4.2.35 CallTipSetPosition(*above* as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default the calltip is displayed below the text, setting `above` to true will display it above the text.

4.2.36 CallTipShow(*pos* as Integer, *definition* as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method starts the process by displaying the call tip window.

Notes: If a call tip is already active, this has no effect.

pos is the position in the document at which to align the call tip. The call tip text is aligned to start 1 line below this character unless you have included up and/or down arrows in the call tip text in which case the tip is aligned to the right-hand edge of the rightmost arrow. The assumption is that you will start the text with something like “\001 1 of 3 \002”.

definition is the call tip text. This can contain multiple lines separated by '\n' (Line Feed, ASCII code 10) characters. Do not include Carriage Return (ASCII code 13), as this will most likely print as an empty box. Tab (ASCII code 9) is supported if you set a tabsize with CallTipUseStyle.

The position of the caret is remembered here so that the call tip can be cancelled automatically if subsequent deletion moves the caret before this position.

Call tips are small windows displaying the arguments to a function and are displayed after the user has typed the name of the function. They normally display characters using the font facename, size and character set defined by kStylesCommonDefault. You can choose to use kStylesCommonCallTip to define the facename, size, foreground and background colours and character set with CallTipUseStyle. This also enables support for Tab characters. There is some interaction between call tips and autocompletion lists in that showing a call tip cancels any active autocompletion list, and vice versa.

Call tips can highlight part of the text within them. You could use this to highlight the current argument to a function by counting the number of commas (or whatever separator your language uses).

The mouse may be clicked on call tips and this causes a CallTipClick event to be sent to the container. Small up and down arrows may be displayed within a call tip by, respectively, including the characters '\001', or '\002'. This is useful for showing that there are overloaded variants of one function name and that the user can click on the arrows to cycle through the overloads.

Alternatively, call tips can be displayed when you leave the mouse pointer for a while over a word in response to the DWellStart event and cancelled in response to DWellEnd. This method could be used in a debugger to give the value of a variable, or during editing to give information about the word under the pointer.

4.2.37 CallTipUseStyle(tabSize as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method changes the style used for call tips from KStylesCommonDefault to KStylesCommonCallTip and sets a tab size in screen pixels.

Notes: If tabsize is less than 1, Tab characters are not treated specially. Once this call has been used, the call tip foreground and background colours are also taken from the style.

4.2.38 Cancel

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cancels autocompletion and calltip display and drops any additional selections.

4.2.39 ChangeInsertion(text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Changes insert.

Notes: This may only be called from a `kModificationFlagsInsertCheck` in `Modify` event handler and will change the text being inserted to that provided.

4.2.40 ChangeLexerState(start as Integer, ende as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Indicate that the internal state of a lexer has changed over a range and therefore there may be a need to redraw.

4.2.41 Character(position as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the character at `pos` in the document or 0 if `pos` is negative or past the end of the document.

4.2.42 CharacterString(position as Integer, byref Length as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This queries character at given position.

Notes: If the position has a multi byte UTF-8 character, we take multiple characters and return length in bytes via `Length` parameter.

Otherwise character is returned for 1 byte and then length is set to 1.

See also `Character()` to get individual bytes.

4.2.43 CharLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.44 CharLeftExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.45 CharLeftRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.46 CharPositionFromPoint(x as Integer, y as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character to a point.

4.2.47 CharPositionFromPointClose(x as Integer, y as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character to a point.

Notes: Returns -1 if the point is outside the window or not close to any characters. This is similar to the previous CharPositionFromPoint method but finds characters rather than inter-character positions.

4.2.48 CharRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.49 CharRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.50 CharRightRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.51 ChooseCaretX

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scintilla remembers the x value of the last position horizontally moved to explicitly by the user and this value is then used when moving vertically such as by using the up and down keys.

Notes: This message sets the current x position of the caret as the remembered value.

4.2.52 Clear

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears text from current selection.

4.2.53 ClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Unless the document is read-only, this deletes all the text.

4.2.54 ClearAllCmdKeys

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This command removes all keyboard command mapping by setting an empty mapping table.

4.2.55 ClearAllRepresentations

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reset representations to defaults.

4.2.56 ClearCmdKey(keyDefinition as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This makes the given key definition do nothing by assigning the action Null to it.

Example:

```
dim c as ScintillaControlMBS
// disable tab key for editor
c.ClearCmdKey c.kKeysTab
```

4.2.57 ClearDocumentStyle

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When wanting to completely restyle the document, for example after choosing a lexer, the ClearDocumentStyle method can be used to clear all styling information and reset the folding state.

4.2.58 ClearRegisteredImages

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all registered images.

4.2.59 ClearRepresentation(encodedCharacter as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reset this representation to default.

4.2.60 ClearSelections

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a single empty selection at 0 as the only selection.

4.2.61 ClearTabStops(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears explicit tabstops on a line.

Notes: Changing tab stops produces a ChangeTabStops event.

4.2.62 Colourise(start as Integer, ende as Integer = -1)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This requests the current lexer or the container (if the lexer is set to nil) to style the document between start and end.

Notes: If end is -1, the document is styled from start to the end. If the "fold" property is set to "1" and your lexer or container supports folding, fold levels are also set. This method causes a redraw.

4.2.63 ColouriseAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This requests the current lexer or the container (if the lexer is set to nil) to style the document.

Notes: If the "fold" property is set to "1" and your lexer or container supports folding, fold levels are also set. This method causes a redraw.

4.2.64 Column(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the column number of a position pos within the document taking the width of tabs into account.

Notes: This returns the column number of the last tab on the line before pos, plus the number of characters between the last tab and pos. If there are no tab characters on the line, the return value is the number of

characters up to the position on the line. In both cases, double byte characters count as a single character. This is probably only useful with monospaced fonts.

4.2.65 ContractedFoldNext(lineStart as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that are contracted fold headers.

Notes: This is useful when saving the user's folding when switching documents or saving folding with a file. The search starts at line number lineStart and continues forwards to the end of the file. lineStart is returned if it is a contracted fold header otherwise the next contracted fold header is returned. If there are no more contracted fold headers then -1 is returned.

4.2.66 ConvertEOLs(EndOfLineMode as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Converts end of line characters for the document.

Notes: Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRL+LF in Windows and LF in Unix, but this can be changed with the EOLMode property. You can also convert the entire document to one of these line endings with ConvertEOLs. Finally, you can choose to display the line endings with ViewEOL.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.

4.2.67 Copy

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copy current text selection and puts text on the clipboard.

4.2.68 CopyAllowLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Works the same as Copy() except that if the selection is empty then the current line is copied.
Notes: On Windows, an extra "MSDEVLineSelect" marker is added to the clipboard which is then used in SCI_PASTE to paste the whole line before the current line.

4.2.69 CopyRange(RangeStart as Integer, RangeEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copies a range of text from the document to the system clipboard.

4.2.70 CopyText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copies a supplied piece of text to the system clipboard.

4.2.71 CountCharacters(start as Integer, ende as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the number of whole characters between two positions.

4.2.72 CountCodeUnits(start as Integer, ende as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the number of whole characters between two positions.

Notes: This counts in UTF-16 code units.

4.2.73 CreateLoader(bytes as Integer = 1000000, documentOptions as Integer = 0) as ScintillaLoaderMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Creates a loader object.

Notes: An application can load all of a file into a buffer it allocates on a background thread and then add the data in that buffer into a Scintilla document on the user interface thread. That technique uses extra memory to store a complete copy of the file and also means that the time that Scintilla takes to perform initial line end discovery blocks the user interface.

To avoid these issues, a loader object may be created and used to load the file.

Returns an object that supports the ScintillaLoaderMBS interface which can be used to load data and then be turned into a Scintilla document object for attachment to a view object. The bytes argument determines the initial memory allocation for the document as it is more efficient to allocate once rather than rely on the buffer growing as data is added. If CreateLoader fails then nil is returned.

See kDocumentOption* constants.

4.2.74 Cut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Cuts current text selection and puts text on the clipboard.

4.2.75 DeleteBack

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.76 DeleteBackNotLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.77 DeleteRange(start as Integer, lengthDelete as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Deletes a range of text in the document.

4.2.78 DelLineLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.79 DelLineRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.80 DelWordLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.81 DelWordRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.82 DelWordRightEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.83 DescribeProperty(Key as String) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Information may be retrieved about the properties that can be set for the current lexer.

4.2.84 DocLineFromVisible(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When some lines are hidden and/or annotations are displayed, then a particular line in the document may be displayed at a different position to its document position.

Notes: This method returns the document line number that corresponds to a display line (counting the display line of the first line in the document as 0). If displayLine is less than or equal to 0, the result is 0. If displayLine is greater than or equal to the number of displayed lines, the result is the number of lines in the document.

4.2.85 DocumentEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.86 DocumentEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.87 DocumentStart

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.88 DocumentStartExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.89 DropSelectionN(selection as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If there are multiple selections, remove the indicated selection.

Notes: If this was the main selection then make the previous selection the main and if it was the first then the last selection becomes main. If there is only one selection, or there is no selection selection, then there is no effect.

4.2.90 EditToggleOvertyp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.91 ElementAllowsTranslucent(element as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true when the element currently allows translucent drawing when an alpha component is included.

Notes: This may change based on circumstances - different platforms or graphics technologies may implement translucency and newer versions of Scintilla may implement translucency for elements that did not previously support it.

4.2.92 ElementBaseColour(element as Integer) as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the default colour of an element.

Notes: This may be a value defined by Scintilla or it may be derived from the operating system or platform. Which values are set from the operating system may differ between operating systems and operating system versions. When undefined the return value is 0 which is equivalent to completely transparent black. These colours may be useful when defining styles with similarities such as synthesizing dark mode styles that use the same colours as the system.

On Win32, autocompletion list colours like `kElementList` are currently provided by the platform layer and on Cocoa, selection background colours like `kElementSelectionBack` are provided.

4.2.93 ElementIsSet(element as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true when an element colour has been set.

Notes: When false indicates that a default colour or set of colours is displayed.

4.2.94 EmptyUndoBuffer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This command tells Scintilla to forget any saved undo or redo history.

Notes: It also sets the save point to the start of the undo buffer, so the document will appear to be unmodified. This does not cause the SavePointReached event to be sent to the container.

4.2.95 EndStyled as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End styling.

Notes: Scintilla keeps a record of the last character that is likely to be styled correctly. This is moved forwards when characters after it are styled and moved backwards if changes are made to the text of the document before it. Before drawing text, this position is checked to see if any styling is needed and, if so, a StyleNeeded event is sent to the container. The container can send EndStyled to work out where it needs to start styling. Scintilla will always ask to style whole lines.

4.2.96 EndUndoAction

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Ends a composed undo action.

Notes: Call BeginUndoAction to mark the beginning and EndUndoAction to end of a set of operations that you want to undo all as one operation but that you have to generate as several operations. Alternatively, you can use these to mark a set of operations that you do not want to have combined with the preceding or following operations if they are undone.

4.2.97 EnsureVisible(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A line may be hidden because more than one of its parent lines is contracted.

Notes: Both these message travels up the fold hierarchy, expanding any contracted folds until they reach

the top level. The line will then be visible. If you use `EnsureVisibleEnforcePolicy()`, the vertical caret policy set by `VisiblePolicy()` is then applied.

4.2.98 `EnsureVisibleEnforcePolicy(line as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A line may be hidden because more than one of its parent lines is contracted.

Notes: Both these message travels up the fold hierarchy, expanding any contracted folds until they reach the top level. The line will then be visible. If you use `EnsureVisibleEnforcePolicy()`, the vertical caret policy set by `VisiblePolicy()` is then applied.

4.2.99 `EOLAnnotationClearAll`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all EOL annotations.

Notes: All the lines can be cleared of end of line annotations with `EOLAnnotationClearAll` which is equivalent to clearing each line (setting to 0) and then deleting other memory used for this feature.

4.2.100 `ExpandChildren(Line as Integer, FoldLevel as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This is used to respond to a change to a line causing its fold level or whether it is a header to change, perhaps when adding or removing a ' { '.

Notes: By the time the container has received the notification that the line has changed, the fold level has already been set, so the container has to use the previous level in this call so that any range hidden underneath this line can be shown.

4.2.101 `FindColumn(line as Integer, column as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position of a column on a line taking the width of tabs into account.

Notes: It treats a multi-byte character as a single column. Column numbers, like lines start at 0.

4.2.102 FindIndicatorFlash(start as Integer, end as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Show and animate the find indicator.

Notes: The indicator remains visible with FindIndicatorShow and fades out after showing for half a second with FindIndicatorFlash. FindIndicatorShow behaves similarly to the OS X TextEdit and Safari applications and is best suited to editing documentation where the search target is often a word. FindIndicatorFlash is similar to Xcode and is suited to editing source code where the match will often be located next to operators which would otherwise be hidden under the indicator's padding.

4.2.103 FindIndicatorHide

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Hides the find indicator.

4.2.104 FindIndicatorShow(start as Integer, ende as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Show and animate the find indicator.

Notes: The indicator remains visible with FindIndicatorShow and fades out after showing for half a second with FindIndicatorFlash. FindIndicatorShow behaves similarly to the OS X TextEdit and Safari applications and is best suited to editing documentation where the search target is often a word. FindIndicatorFlash is similar to Xcode and is suited to editing source code where the match will often be located next to operators which would otherwise be hidden under the indicator's padding.

4.2.105 FindText(searchFlags as Integer, Text as String, byref RangeStart as Integer, byref RangeEnd as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Searches for text in the document.

Notes: It does not use or move the current selection. The searchFlags argument controls the search type, which includes regular expression searches.

See kFindOption* constants.

You can search backwards to find the previous occurrence of a search string by setting the end of the search range before the start.

RangeStart and RangeEnd provide the range of positions in the document to search. You can search backwards by setting RangeEnd less than RangeStart. The text parameter holds the search pattern. If your language makes the use of `_TextToFind` difficult, you should consider using `SearchInTarget` instead.

The return value is -1 if the search fails or the position of the start of the found text if it succeeds. The RangeStart and RangeEnd parameters of `TextToFind` are filled in with the start and end positions of the found text.

4.2.106 FoldAll(FoldAction as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles all lines.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.2.107 `FoldChildren(Line as Integer, FoldAction as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles children.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.2.108 `FoldLine(Line as Integer, FoldAction as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Contracts, expands or toggles one line.

Notes: Provides a higher-level approach to folding instead of setting expanded flags and showing or hiding individual lines.

An individual fold can be contracted/expanded/toggled with `FoldLine()`. To affect all child folds as well call `FoldChildren()`.

To affect the entire document call `FoldAll()`. With `kFoldActionToggle` the first fold header in the document is examined to decide whether to expand or contract.

4.2.109 FoldParent(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the line number of the first line before line that is marked as a fold point with `kFoldLevelHeaderFlag` and has a fold level less than the line.

Notes: If no line is found, or if the header flags and fold levels are inconsistent, the return value is -1.

4.2.110 FormatRange(draw as boolean, range as ScintillaRangeToFormatMBS) as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: `FormatRange` can be used to draw the text onto a display surface which can include a printer display surface.

Notes: Printed output shows text styling as on the screen, but it hides all margins except a line number margin. Markers do not appear in a margin but will change line background colour. The selection and caret are hidden.

Different platforms use different display surface ID types to print on. On Windows, these are HDCs., on GTK 3.x `cairo_t *`, and on Cocoa `CGContextRef` is used.

For macOS use `Integer(g.Handle(Graphics.HandleTypes.CGContextRef))`, for windows use `Integer(g.Handle(Graphics.HandleTypes.HDC))`, for Linux use `Integer(g.Handle(Graphics.HandleTypes.CairoContext))` to get the handle.

This call renders a range of text into a device context. If you use this for printing, you will probably want to arrange a page header and footer; Scintilla does not do this for you. Each use of this message renders a range of text into a rectangular area and returns the position in the document of the next character to print.

The `draw` parameter controls if any output is done. Set this to false if you are paginating.

On Windows, `hdc` and `hdcTarget` should both be set to the device context handle of the output device (usually a printer). If you print to a metafile these will not be the same as Windows metafiles (unlike extended metafiles) do not implement the full API for returning information. In this case, set `hdcTarget` to the screen DC.

`Page*` properties define the rectangle `{ 0, 0, maxX, maxY }` where `maxX+1` and `maxY+1` are the number of physically printable pixels in x and y.

`Area*` properties define the rectangle to render the text in (which will, of course, fit within the rectangle defined by `Page*`).

`CharacterRangePosition` and `CharacterRangeEnd` define the start position and maximum position of characters to output. All of each line within this character range is drawn.

On Cocoa, the surface IDs for printing (draw=1) should be the graphics port of the current context (CGContextRef) when the view's drawRect method is called. The Surface IDs are not really used for measurement (draw=0) but can be set to a bitmap context to avoid runtime warnings.

On GTK, the surface IDs to use can be found from the printing context.

CharacterRangePosition and CharacterRangeEnd define the start position and maximum position of characters to output. All of each line within this character range is drawn.

When printing, the most tedious part is always working out what the margins should be to allow for the non-printable area of the paper and printing a header and footer. If you look at the printing code in SciTE, you will find that most of it is taken up with this. The loop that causes Scintilla to render text is quite simple if you strip out all the margin, non-printable area, header and footer code.

4.2.111 FormFeed

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.112 GetLineSelEndPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the position of the end of the selection at the given line with -1 returned if no selection on this line.

4.2.113 GetLineSelStartPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the position of the start of the selection at the given line with -1 returned if no selection on this line.

4.2.114 GetNextTabStop(line as Integer, x as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Gets the next explicit tabstop position set after the given x position, or zero if there aren't any.

4.2.115 **GetStyledText(RangeStart as Integer, RangeEnd as Integer, byref StyledText as MemoryBlock) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This collects styled text into a buffer using two bytes for each cell, with the character at the lower address of each pair and the style byte at the upper address.

Notes: Characters between the positions RangeStart and RangeEnd are copied to new MemoryBlock and put into Styledtext.

Positions outside the document return character codes and style bytes of 0.

4.2.116 **GetTextRange(RangeStart as Integer, RangeEnd as Integer, byref Text as String) as Integer**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This collects the text between the positions RangeStart and RangeEnd and returns it in Text parameter.

Notes: If RangeEnd is -1, text is returned to the end of the document.

The return value is the length of the returned text.

4.2.117 **GotoLine(line as Integer)**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection and sets the caret at the start of line number line and scrolls the view (if needed) to make it visible.

Notes: The anchor position is set the same as the current position. If line is outside the lines in the document (first line is 0), the line set is the first or last.

4.2.118 **GotoPos(pos as Integer)**

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection, sets the caret at caret and scrolls the view to make the caret visible, if necessary.

Notes: It is equivalent to SetSel(caret, caret). The anchor position is set the same as the current position.

4.2.119 GrabFocus

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scintilla can be told to grab the focus with GrabFocus.

Notes: This is needed more on GTK where focus handling is more complicated than on Windows.

4.2.120 HideLines(lineStart as Integer, lineEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Marks a range of lines as invisible and then redraw the display.

Notes: If kElementHiddenLine is set then a horizontal line is drawn in that colour to indicate that there are hidden lines.

A fold line drawn in that position overrides the hidden line indicator.

4.2.121 HideSelection(hide as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The normal state is to make the selection visible by drawing it as set by SetSelForeColor and SetSelBackColor.

Notes: However, if you hide the selection, it is drawn as normal text.

4.2.122 Home

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.123 HomeDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.124 HomeDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.125 HomeExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.126 HomeRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.127 HomeWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.128 HomeWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.129 IndexPositionFromLine(line as Integer, lineCharacterIndex as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries position from line via index.

Notes: The document line of a particular character or code unit may be found by calling `LineFromIndexPosition` with one of `kLineCharacterIndexTypeUtf32` (1) or `kLineCharacterIndexTypeUtf16` (2). The inverse action, finds the starting position of a document line either in characters or code units from the document start by calling `IndexPositionFromLine` with the same `lineCharacterIndex` argument.

4.2.130 `Indicator(index as Integer) as ScintillaIndicatorMBS`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries indicator with given index.

Notes: Index is from 0 to 35.

4.2.131 `IndicatorAllOnFor(pos as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve a bitmap value representing which indicators are non-zero at a position.

Notes: Only the first 32 indicators are represented in the result so no IME indicators are included.

4.2.132 `IndicatorClearRange(start as Integer, lengthClear as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears a range for the current indicator.

4.2.133 `IndicatorFillRange(start as Integer, lengthFill as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Fills a range with the current indicator.

Notes: See `IndicatorValue` property.

4.2.134 `InitializeLexer(Lexer as String)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Initializes the lexer.

Notes: To style files in different languages, different 'lexers' are used. These are objects that are called by Scintilla with a range of text and some context information and which then set styles and folding information

for that range. Lexers for Scintilla are now provided by the Lexilla project.

Current list of built-in lexers is:

a68k, abaqus, ada, apdl, as, asm, asn1, asy, au3, ave, avs, baan, bash, batch, bib, blitzbasic, bullant, caml, cil, clarion, clarionnocase, cmake, COBOL, coffeescript, conf, cpp, cppnocase, csound, css, d, dataflex, diff, DMAP, DMIS, ecl, edifact, eiffel, eiffelkw, erlang, errorlist, escript, f77, flagship, forth, fortran, freebasic, fsharp, gap, gui4cli, haskell, hollywood, hypertext, ihex, indent, inno, json, julia, kix, kvirc, latex, lisp, literatehaskell, lot, lout, lua, magiksf, makefile, markdown, matlab, maxima, metapost, mmixal, modula, mssql, mysql, nim, nimrod, nncrontab, nsis, null, octave, opal, oscript, pascal, powerbasic, perl, phpscript, PL/M, po, pov, powerpro, powershell, abl, props, ps, purebasic, python, r, raku, rebol, registry, ruby, rust, sas, scriptol, smalltalk, SML, sorcins, specman, spice, sql, srec, stata, fcST, TACL, tads3, TAL, tcl, tcmd, tehex, tex, txt2tags, vb, vbscript, verilog, vhdl, visualprolog, x12, xml, yaml, xojo

4.2.135 InsertText(Text as String, atPosition as Integer = -1)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This inserts the text string at position pos or at the current position if pos is -1.

Notes: If the current position is after the insertion point then it is moved along with its surrounding text but no scrolling is performed.

4.2.136 IsRangeWord(start as Integer, ende as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Is the range start..end a word or set of words?

Notes: This message checks that start is at a word start transition and that end is at a word end transition. It does not check whether there are any spaces inside the range.

4.2.137 LastChild(line as Integer, level as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Searches last child.

Notes: Searches for the next line after line, that has a folding level that is less than or equal to level and then returns the previous line number. If you set level to -1, level is set to the folding level of line line. If from is a fold point, LastChild(from, -1) returns the last line that would be in made visible or hidden by toggling the fold state.

4.2.138 LexerNameFromID(ID as Integer) as String

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries name of lexer with given ID.

Example:

```
// constants in LexerConstants.txt in our examples folder
Const SCLEX_HTML = 4
```

```
Dim s As String = ScintillaControlMBS.LexerNameFromID(SCLEX_HTML)
MessageBox s
```

4.2.139 LexerNames as String()

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries list of built-in lexers.

Notes: Current list is:

a68k, abaqus, ada, apdl, as, asm, asn1, asy, au3, ave, avs, baan, bash, batch, bib, blitzbasic, bullant, caml, cil, clarion, clarionnocase, cmake, COBOL, coffeescript, conf, cpp, cppnocase, csound, css, d, dataflex, diff, DMAP, DMIS, ecl, edifact, eiffel, eiffelkw, erlang, errorlist, escript, f77, flagship, forth, fortran, freebasic, fsharp, gap, gui4cli, haskell, hollywood, hypertext, ihex, indent, inno, json, julia, kix, kvirc, latex, lisp, literatehaskell, lot, lout, lua, magiksf, makefile, markdown, matlab, maxima, metapost, mmixal, modula, mssql, mysql, nim, nimrod, nncrontab, nsis, null, octave, opal, oscript, pascal, powerbasic, perl, phpscript, PL/M, po, pov, powerpro, powershell, abl, props, ps, purebasic, python, r, raku, rebol, registry, ruby, rust, sas, scriptol, smalltalk, SML, sorcins, specman, spice, sql, srec, stata, fcST, TACL, tads3, TAL, tcl, tcmd, tehex, tex, txt2tags, vb, vbscript, verilog, vhdl, visualprolog, x12, xml, yaml, xojo.

4.2.140 lexillaLibraryLoaded as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether the lexilla library got loaded.

Notes: Returns true if you loaded lexilla dylib/dll/so file.

4.2.141 Line(line as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries text of a line.

Notes: Index is zero based.

4.2.142 LineCopy

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.143 LineCut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.144 LineDelete

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.145 LineDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.146 LineDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.147 LineDownRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.148 LineDuplicate

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.149 LineEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

See also:

- 4.2.150 LineEnd(line as Integer) as Integer

229

4.2.150 LineEnd(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line end position for the given line.

See also:

- 4.2.149 LineEnd

229

4.2.151 LineEndDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.152 LineEndDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.153 LineEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.154 LineEndPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the position at the end of the line, before any line end characters.

Notes: If line is the last line in the document (which does not have any end of line characters) or greater, the result is the size of the document. If line is negative the result is undefined.

4.2.155 LineEndRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.156 LineEndWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.157 LineEndWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.158 LineFromIndexPosition(pos as Integer, lineCharacterIndex as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line from position via index.

Notes: The document line of a particular character or code unit may be found by calling LineFromIndexPosition with one of kLineCharacterIndexTypeUtf32 (1) or kLineCharacterIndexTypeUtf16 (2). The inverse action, finds the starting position of a document line either in characters or code units from the document start by calling IndexPositionFromLine with the same lineCharacterIndex argument.

4.2.159 LineFromPosition(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method returns the line that contains the position pos in the document.

Notes: The return value is 0 if pos <= 0.

The return value is the last line if pos is beyond the end of the document.

4.2.160 LineIndentPosition(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The position at the end of indentation of a line.

4.2.161 LineLength(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the length of the line, including any line end characters.

Notes: If line is negative or beyond the last line in the document, the result is 0. If you want the length of the line not including any end of line characters, use LineEndPosition(line) - PositionFromLine(line).

4.2.162 LineReverse

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.163 LineScroll(columns as Integer, lines as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This will attempt to scroll the display by the number of columns and lines that you specify.

Notes: Positive line values increase the line number at the top of the screen (i.e. they move the text upwards as far as the user is concerned), Negative line values do the reverse.

The column measure is the width of a space in the default style. Positive values increase the column at the left edge of the view (i.e. they move the text leftwards as far as the user is concerned). Negative values do the reverse.

4.2.164 LineScrollDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.165 LineScrollUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.166 LinesJoin

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Join a range of lines indicated by the target into one line by removing line end characters.

Notes: Where this would lead to no space between words, an extra space is inserted.

4.2.167 LinesSplit(pixelWidth as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Split a range of lines indicated by the target into lines that are at most pixelWidth wide.

Notes: Splitting occurs on word boundaries wherever possible in a similar manner to line wrapping. When pixelWidth is 0 then the width of the window is used.

4.2.168 LineStart(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries line start position for the given line.

4.2.169 LineTranspose

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.170 LineUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.171 LineUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.172 LineUpRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.173 LineVisible(line as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports on the visible state of a line and returns true if it is visible and false if it is not visible.

Notes: This method has no effect on fold levels or fold flags.

4.2.174 LoadFramework(path as folderitem) as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Loads the framework.

Notes: You can load Scintilla framework on macOS.

Returns true on success.

4.2.175 LoadLibrary(path as folderitem) as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Loads the library.

Notes: You can load lexer and scintilla libraries here.

Returns true on success.

4.2.176 LowerCase

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.177 Margin(index as Integer) as ScintillaMarginMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries margin with given index.

Notes: Index ranges from 0 to 5.

4.2.178 MarginTextClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clears all texts for margin.

4.2.179 Marker(index as Integer) as ScintillaMarkerMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries marker with given index.

Notes: Index ranges from 0 to 35.

4.2.180 MarkerAdd(Line as Integer, markerNumber as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This function searches the document for the marker with this handle and deletes the marker if it is found.

Notes: The markerHandle argument is an identifier for a marker returned by MarkerAdd.

4.2.181 MarkerAddSet(line as Integer, markerSet as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Add one or more markers to a line with a single call.

Notes: Add one or more markers to a line with a single call, specified in the same "one-bit-per-marker" 32-bit integer format returned by Marker() (and used by the mask-based marker search functions MarkerNext() and MarkerPrevious()). As with MarkerAdd, no check is made to see if any of the markers are already present on the targeted line.

4.2.182 MarkerDefineRGBImage(markerNumber as Integer, Width as Integer, Height as Integer, ScalePercent as Integer = 100, Pixels as MemoryBlock)

Plugin Version: 23.3, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a translucent pixmap to be used to draw the marker.

Example:

```
dim c as ScintillaControlMBS // your control
```

```
// define red dot for breakpoints
```

```
Const size = 18
```

```

Dim r As New Picture(size, size) // red dot
Dim m As New Picture(size, size) // mask, a white dot on black, black is transparent
Dim rg As Graphics = r.Graphics
Dim mg As Graphics = m.Graphics

// we draw the image and the mask one
rg.DrawingColor = &c000000
rg.FillRectangle 0, 0, size, size
rg.DrawingColor = &cFF0000
rg.FillOval 0, 0, size, size
mg.DrawingColor = &c000000
mg.FillRectangle 0, 0, size, size
mg.DrawingColor = &cFFFFFF
mg.FillOval 0, 0, size, size

// now we convert to memoryblock
Dim rr As RGBSurface = r.RGBSurface
Dim mr As RGBSurface = m.RGBSurface

Dim pixels As New MemoryBlock(size * size * 4)
Dim PixelPtr As ptr = pixels
Dim o As Integer = 0
For y As Integer = 0 To size-1
For x As Integer = 0 To size-1
Dim mc As Color = mr.Pixel(x,y)
Dim rc As Color = rr.Pixel(x,y)
PixelPtr.UInt8(o+0) = rc.Red
PixelPtr.UInt8(o+1) = rc.Green
PixelPtr.UInt8(o+2) = rc.Blue
PixelPtr.UInt8(o+3) = mc.Green
o = o + 4
Next
Next

// and define the marker
c.Marker(1).Symbol = ScintillaMarkerMBS.kMarkerSymbolPixmap
c.MarkerDefineRGBAImage(1, size, size, 100, pixels)

```

Notes: Please pass the marker number, the size of the picture, it's scale in percent and the pixels memory-block.

4.2.183 MarkerDelete(Line as Integer, markerNumber as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This searches the given line number for the given marker number and deletes it if it is present.

Notes: If you added the same marker more than once to the line, this will delete one copy each time it is used. If you pass in a marker number of -1, all markers are deleted from the line.

4.2.184 MarkerDeleteAll(markerNumber as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes markers of the given number from all lines.

Notes: If markerNumber is -1, it deletes all markers from all lines.

4.2.185 MarkerDeleteHandle(markerHandle as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Deletes a marker.

Notes: The markerHandle argument is an identifier for a marker returned by MarkerAdd.

This function searches the document for the marker with this handle and deletes the marker if it is found.

4.2.186 MarkerEnableHighlight(enabled as Boolean)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method allows to enable/disable the highlight folding block when it is selected.

Notes: (i.e. block that contains the caret)

4.2.187 MarkerGet(Line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns a 32-bit integer that indicates which markers were present on the line.

Notes: Bit 0 is set if marker 0 is present, bit 1 for marker 1 and so on.

4.2.188 MarkerHandleFromLine(line as Integer, which as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the Nth marker handle in a given line.

Notes: Handles are returned by MarkerAdd. If which is greater or equal to the number of markers on a line, this returns -1;

4.2.189 `MarkerLineFromHandle(markerHandle as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This function searches the document for the marker with this handle and returns the line number that contains it or -1 if it is not found.

Notes: The `markerHandle` argument is an identifier for a marker returned by `MarkerAdd`.

4.2.190 `MarkerNext(lineStart as Integer, markerMask as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that include a given set of markers.

Notes: The search starts at line number `lineStart` and continues forwards to the end of the file (`MarkerNext`) or backwards to the start of the file (`MarkerPrevious`).

The `markerMask` argument should have one bit set for each marker you wish to find. Set bit 0 to find marker 0, bit 1 for marker 1 and so on. The message returns the line number of the first line that contains one of the markers in `markerMask` or -1 if no marker is found.

4.2.191 `MarkerNumberFromLine(line as Integer, which as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the Nth marker number in a given line.

Notes: Handles are returned by `MarkerAdd`. If `which` is greater or equal to the number of markers on a line, this returns -1;

4.2.192 `MarkerPrevious(lineStart as Integer, markerMask as Integer) as Integer`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Search efficiently for lines that include a given set of markers.

Notes: The search starts at line number `lineStart` and continues forwards to the end of the file (`MarkerNext`) or backwards to the start of the file (`MarkerPrevious`).

The `markerMask` argument should have one bit set for each marker you wish to find. Set bit 0 to find marker 0, bit 1 for marker 1 and so on. The message returns the line number of the first line that contains one of the markers in `markerMask` or -1 if no marker is found.

4.2.193 MoveCaretInsideView

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If the caret is off the top or bottom of the view, it is moved to the nearest line that is visible to its current position.

Notes: Any selection is lost.

4.2.194 MoveSelectedLinesDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Move the selected lines down one line, shifting the line below before the selection.

Notes: The selection will be automatically extended to the beginning of the selection's first line and the end of the selection's last line. If nothing was selected, the line the cursor is currently at will be selected.

4.2.195 MoveSelectedLinesUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Move the selected lines up one line, shifting the line above after the selection.

Notes: The selection will be automatically extended to the beginning of the selection's first line and the end of the selection's last line. If nothing was selected, the line the cursor is currently at will be selected.

4.2.196 MultiEdgeAddLine(column as Integer, edgeColour as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds a new vertical edge to the view.

Notes: The edge will be displayed at the given column number. The resulting edge position depends on the metric of a space character in STYLE_DEFAULT. All the edges can be cleared with MultiEdgeClearAll. MultiEdgeColumn returns the column of the Nth vertical edge (indexed from 0). If which is greater or equal to the number of vertical edges, this returns -1.

4.2.197 MultiEdgeClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: All the edges can be cleared with MultiEdgeClearAll.

4.2.198 MultiEdgeColumn(which as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: MultiEdgeColumn returns the column of the Nth vertical edge (indexed from 0).

Notes: If which is greater or equal to the number of vertical edges, this returns -1.

4.2.199 MultipleSelectAddEach

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: MultipleSelectAddEach is similar to MultipleSelectAddNext but adds multiple occurrences instead of just one.

4.2.200 MultipleSelectAddNext

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Adds the next occurrence of the main selection within the target to the set of selections as main.

Notes: If the current selection is empty then select word around caret. The current searchFlags are used so the application may choose case sensitivity and word search options.

4.2.201 NewLine

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.202 PageDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.203 PageDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.204 PageDownRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.205 PageUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.206 PageUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.207 PageUpRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.208 ParaDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.209 ParaDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.210 ParaUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.211 ParaUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.212 Paste

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Performs the paste operation from clipboard.

4.2.213 PointXFromPosition(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the x display pixel location of text at position pos in the document.

4.2.214 PointYFromPosition(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the y display pixel location of text at position pos in the document.

4.2.215 PositionAfter(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position after another position in the document taking into account the current code page.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If called with a position within a multi byte character will return the position of the start/end of that character.

4.2.216 PositionBefore(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the position before another position in the document taking into account the current code page.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If called with a position within a multi byte character will return the position of the start/end of that character.

4.2.217 PositionFromLine(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the document position that corresponds with the start of the line.

Notes: If line is negative, the position of the line holding the start of the selection is returned. If line is greater than the lines in the document, the return value is -1. If line is equal to the number of lines in the document (i.e. 1 line past the last line), the return value is the end of the document.

4.2.218 PositionFromPoint(x as Integer, y as integer) as integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character position to a point.

4.2.219 PositionFromPointClose(x as Integer, y as integer) as integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finds the closest character position to a point.

Notes: Returns -1 if the point is outside the window or not close to any characters.

4.2.220 PositionRelative(pos as Integer, relative as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Count a number of whole characters before or after the argument position and return that position.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If the position goes past the document end then 0 is returned.

4.2.221 PositionRelativeCodeUnits(pos as Integer, relative as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Count a number of whole characters before or after the argument position and return that position.

Notes: The minimum position returned is 0 and the maximum is the last position in the document. If the position goes past the document end then 0 is returned.

These is the UTF-16 versions of PositionRelative() working in terms of UTF-16 code units

4.2.222 PropertyInt(name as String, defaultValue as Integer = 0) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Lookup a keyword:value pair using the specified key; if found, interpret the value as an integer and return it.

Notes: If not found (or the value is an empty string) then return the supplied default. If the keyword:value pair is found but is not a number, then return 0.

4.2.223 PropertyType(name as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries property type.

Notes: See kTypeProperty* constants.

4.2.224 Redo

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Undoes the effect of the last Undo operation.

4.2.225 RegisterRGBAImage(type as Integer, Width as Integer, Height as Integer, Pixels as MemoryBlock)

Plugin Version: 23.3, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Registers an icon for auto completion.

Example:

```
// register red dot for auto complete later
Const size = 18

Dim r As New Picture(size, size) // red dot
Dim m As New Picture(size, size) // mask, a white dot on black, black is transparent
Dim rg As Graphics = r.Graphics
Dim mg As Graphics = m.Graphics

// we draw the image and the mask one
rg.DrawingColor = &c000000
rg.FillRectangle 0, 0, size, size
rg.DrawingColor = &cFF0000
rg.FillOval 0, 0, size, size
mg.DrawingColor = &c000000
mg.FillRectangle 0, 0, size, size
mg.DrawingColor = &cFFFFFF
mg.FillOval 0, 0, size, size

// now we convert to memoryblock
Dim rr As RGBSurface = r.RGBSurface
Dim mr As RGBSurface = m.RGBSurface

dim pixels As New MemoryBlock(size * size * 4)
Dim PixelPtr As ptr = pixels
Dim o As Integer = 0
For y As Integer = 0 To size-1
For x As Integer = 0 To size-1
Dim mc As Color = mr.Pixel(x,y)
```

```
Dim rc As Color = rr.Pixel(x,y)
PixelPtr.UInt8(o+0) = rc.Red
PixelPtr.UInt8(o+1) = rc.Green
PixelPtr.UInt8(o+2) = rc.Blue
PixelPtr.UInt8(o+3) = mc.Green
o = o + 4
Next
Next
```

```
c.RegisterRGBAImage(1, size, size, pixels)
```

Notes: Autocompletion list items may display an image as well as text. Each image is first registered with an integer type. Then this integer is included in the text of the list separated by a '?' from the text. For example, "fclose?2 fopen" displays image 2 before the string "fclose" and no image before "fopen". The images are in RGBA format and set with RegisterRGBAImage.

The set of registered images can be cleared with ClearRegisteredImages method and the '?' separator changed with AutoCompleteSeparator property.

4.2.226 ReleaseAllExtendedStyles

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Releases any extended styles allocated by the container.

4.2.227 ReleaseLineCharacterIndex(lineCharacterIndex as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Release one or more indexes.

Notes: Different aspects of an application may need indexes for different periods and should allocate for those periods. Indexes use additional memory so releasing them can help minimize memory but they also take time to recalculate. Scintilla may also allocate indexes to support features like accessibility or input method editors. Only one index of each type is created for a document at a time.

4.2.228 ReplaceRectangular(length as Integer, text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Replaces the selected text or empty selection with the given text.

Notes: The insertion is performed similarly to rectangular pastes: new lines in the given text are interpreted as moving to the next line without inserting new lines unless at the end of the document.

4.2.229 ReplaceSelection(text as string)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The currently selected text between the anchor and the current position is replaced by the text string.

Notes: If the anchor and current position are the same, the text is inserted at the caret position. The caret is positioned after the inserted text and the caret is scrolled into view.

4.2.230 ReplaceTarget(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Replace target area with new text.

Notes: After replacement, the target range refers to the replacement text. The return value is the length of the replacement string.

Note that the recommended way to delete text in the document is to set the target to the text to be removed, and to perform a replace target with an empty string.

4.2.231 ReplaceTargetRE(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This replaces the target using regular expressions.

Notes: If length is -1, text is a zero terminated string, otherwise length is the number of characters to use. The replacement string is formed from the text string with any sequences of \1 through \9 replaced by tagged matches from the most recent regular expression search. \0 is replaced with all the matched text from the most recent search. After replacement, the target range refers to the replacement text. The return value is the length of the replacement string.

4.2.232 ResetElementColour(element as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes the element colour returning to the default colour or set of colours.

4.2.233 RotateSelection

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Makes the next selection be the main selection.

4.2.234 `scintillaLibraryLoaded` as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether the scintilla library got loaded.

Notes: Returns true on MacOS when you loaded the Scintilla.framework before.
Returns true if you loaded Scintilla.dll on Windows or Scintilla.so on Linux.

4.2.235 `ScrollCaret`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If the current position (this is the caret if there is no selection) is not visible, the view is scrolled to make it visible according to the current caret policy.

4.2.236 `ScrollRange(secondary as Integer, primary as Integer)`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Scroll the argument positions and the range between them into view giving priority to the primary position then the secondary position.

Notes: The behaviour is similar to `ScrollCaret` with the primary position used instead of the caret. An effort is then made to ensure that the secondary position and range between are also visible. This may be used to make a search match visible.

4.2.237 `ScrollToEnd`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The `ScrollToEnd` commands scroll the document to the end without changing the selection. These commands match OS X platform conventions for the behaviour of the home and end keys. Scintilla can be made to match OS X applications by binding the home and end keys to these commands.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.238 `ScrollToStart`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The ScrollToStart commands scroll the document to the start without changing the selection. These commands match OS X platform conventions for the behaviour of the home and end keys. Scintilla can be made to match OS X applications by binding the home and end keys to these commands.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.239 SearchAnchor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the search start point used by SearchNext and SearchPrev to the start of the current selection, that is, the end of the selection that is nearer to the start of the document.

Notes: You should always call this before calling either of SearchNext or SearchPrev.

4.2.240 SearchInTarget(text as string) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This searches for the first occurrence of a text string in the target defined by TargetStart and TargetEnd.

Notes: The search is modified by the search flags set by SearchFlags property. If the search succeeds, the target is set to the found text and the return value is the position of the start of the matching text. If the search fails, the result is -1.

See Tag() for regular expression results.

4.2.241 SearchNext(searchFlags as Integer, text as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: SearchNext and SearchPrev search for the next and previous occurrence of the search string pointed at by text.

Notes: The search is modified by the searchFlags.

See kFindOption* constants.

The return value is -1 if nothing is found, otherwise the return value is the start position of the matching text. The selection is updated to show the matched text, but is not scrolled into view.

Character	Description
.	Matches any character
\(This marks the start of a region for tagging a match.
\)	This marks the end of a tagged region.
\n	Where n is 1 through 9 refers to the first through ninth tagged region when replacing. For example, if the search string was Fred\([1-9]\)XXX and the replace string was Sam\1YYY, when applied to Fred2XXX this would generate Sam2YYY. \0 refers to all of the matching text.
\<	This matches the start of a word using Scintilla's definitions of words.
\>	This matches the end of a word using Scintilla's definition of words.
\x	This allows you to use a character x that would otherwise have a special meaning. For example, \[would be interpreted as [and not as the start of a character set.
[...]	This indicates a set of characters, for example, [abc] means any of the characters a, b or c. You can also use ranges, for example [a-z] for any lower case character.
[^...]	The complement of the characters in the set. For example, [^A-Za-z] means any character except an alphabetic character.
^	This matches the start of a line (unless used inside a set, see above).
\$	This matches the end of a line.
*	This matches 0 or more times. For example, Sa*m matches Sm, Sam, Saam, Saaam and so on.
+	This matches 1 or more times. For example, Sa+m matches Sam, Saam, Saaam and so on.

4.2.242 SearchPrev(searchFlags as Integer, text as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: SearchNext and SearchPrev search for the next and previous occurrence of the search string pointed at by text.

Notes: The search is modified by the searchFlags.
See kFindOption* constants.

The return value is -1 if nothing is found, otherwise the return value is the start position of the matching text. The selection is updated to show the matched text, but is not scrolled into view.

4.2.243 SelectAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This selects all the text in the document.

Notes: The current position is not scrolled into view.

4.2.244 SelectionDuplicate

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.245 SelectionNEndVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Query the virtual space at start and end of each selection.

Notes: Selection parameter is zero based.

4.2.246 SelectionNStartVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Query the virtual space at start and end of each selection.

Notes: Selection parameter is zero based.

4.2.247 SetAdditionalSelBackColor(value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

4.2.248 SetAdditionalSelForeColor(value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

4.2.249 SetCharsDefault

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Use the default sets of word and whitespace characters.

Notes: This sets whitespace to space, tab and other characters with codes less than &h20, with word characters set to alphanumeric and ' _'.

4.2.250 SetDocument(otherControl as Variant)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets document for this control to be same as the other control.

Notes: Using this method you can allow multiple controls to share same document, e.g. for split views.

Pass nil to create new empty document.

This method does the following:

1. It removes the current window from the list held by the current document.
2. It reduces the reference count of the current document by 1.
3. If the reference count reaches 0, the document is deleted.
4. doc is set as the new document for the window.
5. If doc was 0, a new, empty document is created and attached to the window.
6. If doc was not 0, its reference count is increased by 1.

Please pass either ScintillaControlMBS or DesktopScintillaControlMBS here to point to new control.

After you assigned new document, please configure styles as needed.

4.2.251 SetEmptySelection(caret as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This removes any selection and sets the caret at caret.

Notes: The caret is not scrolled into view.

4.2.252 SetFoldFlags(FoldFlags as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets folder flags.

Notes: In addition to showing markers in the folding margin, you can indicate folds to the user by drawing lines in the text area. The lines are drawn in the `kElementFoldLine` colour if set. If it is not set then the foreground colour set for `kStylesCommonDefault` is used.

4.2.253 `SetFoldMarginColor`(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the fold margin.

Example:

```
// turn folder margin to red
c.SetFoldMarginColor(True, Color.red)
```

Notes: Defaults to system color for this.

The `FoldMarginColor` and the `FoldMarginHighlightColor` colors are used together to draw the chequerboard pattern in the folder margin.

4.2.254 `SetFoldMarginHighlightColor`(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the fold margin highlight.

Notes: Defaults to system color for this.

The `FoldMarginColor` and the `FoldMarginHighlightColor` colors are used together to draw the chequerboard pattern in the folder margin.

4.2.255 `SetHotspotActiveBackColor`(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for hotspot.

Notes: While the cursor hovers over text in a style with the hotspot attribute set, the default colouring can be modified and an underline drawn with these settings.

4.2.256 `SetHotspotActiveForeColor`(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for hotspot.

Notes: While the cursor hovers over text in a style with the hotspot attribute set, the default colouring can be modified and an underline drawn with these settings.

4.2.257 SetSavePoint

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This method tells Scintilla that the current state of the document is unmodified.

Notes: This is usually done when the file is saved or loaded, hence the name "save point". As Scintilla performs undo and redo operations, it notifies the container that it has entered or left the save point with SavePointReached and SavePointLeft events, allowing the container to know if the file should be considered dirty or not.

See also: EmptyUndoBuffer or Modify property.

4.2.258 SetSel(anchor as Integer, caret as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets both the anchor and the current position.

Notes: If caret is negative, it means the end of the document. If anchor is negative, it means remove any selection (i.e. set the anchor to the same position as caret). The caret is scrolled into view after this operation.

4.2.259 SetSelBackColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to override the default selection colouring.

Example:

```
// use highlight color for selection and white text
```

```
dim c as ScintillaControlMBS // your control
c.SetSelBackColor(True, Color.HighlightColor)
c.SetSelForeColor(True, Color.White)
```

Notes: With the method, the colour you provide is used if you set useSetting to true. If it is set to false, the default styled colouring is used and the fore or back argument has no effect.

4.2.260 SetSelection(caret as Integer, anchor as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set a single selection from anchor to caret as the only selection.

4.2.261 SetSelForeColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to override the default selection colouring.

Example:

```
// use highlight color for selection and white text
```

```
dim c as ScintillaControlMBS // your control
c.SetSelBackColor(True, Color.HighlightColor)
c.SetSelForeColor(True, Color.White)
```

Notes: With the method, the colour you provide is used if you set useSetting to true. If it is set to false, the default styled colouring is used and the fore or back argument has no effect.

4.2.262 setStatusText(Text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Targets: Desktop only.

Function: Sets message of status field.

4.2.263 SetStyling(length as Integer, style as ScintillaStyleMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the style of length characters starting at the styling position and then increases the styling position by length, ready for the next call.

Notes: StartStyling should be called before the first call to this.

See also:

- 4.2.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS)

255

4.2.264 SetStyling(start as Integer, length as Integer, style as ScintillaStyleMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the style of length characters starting at the styling position and then increases the styling position by length, ready for the next call.

Notes: StartStyling should be called before the first call to this.

See also:

- 4.2.263 SetStyling(length as Integer, style as ScintillaStyleMBS) 255

4.2.265 SetStylingEx(Styles as MemoryBlock)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styling for a range of text.

Notes: As an alternative to SetStyling, which applies the same style to each byte, you can use this method which specifies the styles for each of length bytes from the styling position and then increases the styling position by length, ready for the next call. StartStyling should be called before the first call to this.

4.2.266 SetTargetRange(start as Integer, ende as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the start and end of the target.

4.2.267 SetVisiblePolicy(visiblePolicy as Integer, visibleSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This determines how the vertical positioning is determined when EnsureVisibleEnforcePolicy is called.

Notes: It takes kVisiblePolicySlop and kVisiblePolicyStrict flags for the visiblePolicy parameter. It is similar in operation to SetYCaretPolicy.

4.2.268 SetWhitespaceBackColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets background color for white space.

Notes: By default, the colour of visible white space is determined by the lexer in use. The foreground and/or background colour of all visible white space can be set globally, overriding the lexer's colours.

4.2.269 SetWhitespaceForeColor(useSetting as boolean, value as Color)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets foreground color for white space.

Notes: By default, the colour of visible white space is determined by the lexer in use. The foreground and/or background colour of all visible white space can be set globally, overriding the lexer's colours.

4.2.270 SetXCaretPolicy(caretPolicy as Integer, caretSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the caret policy.

Notes: See kCaretPolicy* constants.

slop strict jumps even Caret can go to the margin "On reaching limit (going out of visibility

or going into the UZ) display is..."

0	0	0	0	Yes	moved to put caret on top/on right
0	0	0	1	Yes	moved by one position
0	0	1	0	Yes	moved to put caret on top/on right
0	0	1	1	Yes	centred on the caret
0	1	-	0	Caret is always on top/on right of display	-
0	1	-	1	No, caret is always centred	-
1	0	0	0	Yes	moved to put caret out of the asymmetrical UZ
1	0	0	1	Yes	moved to put caret out of the UZ
1	0	1	0	Yes	moved to put caret at 3UZ of the top or right margin
1	0	1	1	Yes	moved to put caret at 3UZ of the margin
1	1	-	0	Caret is always at UZ of top/right margin	-
1	1	0	1	No, kept out of UZ	moved by one position
1	1	1	0	No, kept out of UZ	moved to put caret at 3UZ of the margin

4.2.271 SetYCaretPolicy(caretPolicy as Integer, caretSlop as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the caret policy.

Notes: See kCaretPolicy* constants.

slop strict jumps even Caret can go to the margin "On reaching limit (going out of visibility

or going into the UZ) display is..."

0	0	0	0	Yes	moved to put caret on top/on right
0	0	0	1	Yes	moved by one position
0	0	1	0	Yes	moved to put caret on top/on right
0	0	1	1	Yes	centred on the caret
0	1	-	0	Caret is always on top/on right of display	-
0	1	-	1	No, caret is always centred	-
1	0	0	0	Yes	moved to put caret out of the asymmetrical UZ
1	0	0	1	Yes	moved to put caret out of the UZ
1	0	1	0	Yes	moved to put caret at 3UZ of the top or right margin
1	0	1	1	Yes	moved to put caret at 3UZ of the margin
1	1	-	0	Caret is always at UZ of top/right margin	-
1	1	0	1	No, kept out of UZ	moved by one position
1	1	1	0	No, kept out of UZ	moved to put caret at 3UZ of the margin

4.2.272 ShowLines(lineStart as Integer, lineEnd as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Marks a range of lines as visible and then redraw the display.

4.2.273 StartRecord

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Turn macro recording on.

4.2.274 StartStyling(start as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This prepares for styling by setting the styling position start to start at.

Notes: After StartStyling, send multiple SetStyling messages for each lexical entity to style or send SetStylingEX to style in blocks.

4.2.275 StopRecord

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Turn macro recording off.

4.2.276 StringOfSpan(Span as ScintillaSpanMBS) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries text for given span.

4.2.277 StutteredPageDown

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.278 StutteredPageDownExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.279 StutteredPageUp

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.280 StutteredPageUpExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.281 Style(index as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries style with given index.

Notes: Index ranges from 0 to 255.

4.2.282 StyleAt(position as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the style at pos in the document, or 0 if pos is negative or past the end of the document.

4.2.283 StyleClearAll

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This message sets all styles to have the same attributes as the default style.

Notes: If you are setting up Scintilla for syntax colouring, it is likely that the lexical styles you set will be very similar. One way to set the styles is to:

1. Set kStylesCommonDefault to the common features of all styles.
2. Use StyleClearAll to copy this to all styles.
3. Set the style attributes that make your lexical styles different.

4.2.284 StyleResetDefault

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This message resets default style (kStylesCommonDefault) to its state when Scintilla was initialised.

4.2.285 SupportsFeature(feature as Integer) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Different platforms support different features and SupportsFeature can be used to check which are currently available.

Notes: For example, on Win32, Direct2D supports drawing translucent lines but GDI does not so SupportsFeature(kSupportsTranslucentStroke) will return 1 for Direct2D and 0 for GDI. Its possible that translucent line drawing will be implemented in a future revision to the GDI platform layer or will be implemented on particular Windows versions. This call allows applications to tailor their settings: perhaps displaying a box with translucent coloured fill on Direct2D but a hollow box on GDI.

See kSupport* constants.

4.2.286 SwapMainAnchorCaret

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Moves the caret to the opposite end of the main selection.

4.2.287 Tab

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.288 Tag(tagNumber as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Discover what text was matched by tagged expressions in a regular expression search.

Notes: This is useful if the application wants to interpret the replacement string itself.

4.2.289 TargetFromSelection

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the target start and end to the start and end positions of the selection.

4.2.290 TargetWholeDocument

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the target start to the start of the document and target end to the end of the document.

4.2.291 TextHeight(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the height in pixels of a particular line.

Notes: Currently all lines are the same height.

4.2.292 ToggleCaretSticky

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: These method set, get or toggle the caretSticky setting which controls when the last position of the caret on the line is saved.

Notes: When set to kCaretStickyOff (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.

When set to kCaretStickyOn (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).

When set to kCaretStickyWhiteSpace (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

ToggleCaretSticky switches from kCaretStickyOn and kCaretStickyWhiteSpace to kCaretStickyOff and from kCaretStickyOff to kCaretStickyOn.

4.2.293 ToggleFold(line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Toggle a folder at the given line.

Notes: Each fold point may be either expanded, displaying all its child lines, or contracted, hiding all the child lines. This method toggle the folding state of the given line as long as it has the kFoldLevelHeaderFlag set. This method take care of folding or expanding all the lines that depend on the line. The display updates after this method.

4.2.294 ToggleFoldShowText(Line as Integer, text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Toggle a folder at the given line with hsowing text.

Notes: Each fold point may be either expanded, displaying all its child lines, or contracted, hiding all the child lines. This method toggle the folding state of the given line as long as it has the kFoldLevelHeaderFlag set. This method take care of folding or expanding all the lines that depend on the line. The display updates after this method.

An optional text tag may be shown to the right of the folded text with the text argument to ToggleFoldShowText. The default text for all header lines can be set with DefaultFoldDisplayText. The text is drawn with the kStylesCommonFoldDisplayText style.

4.2.295 Undo

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Undoes one action.

Notes: Or if the undo buffer has reached a EndUndoAction point, all the actions back to the corresponding BeginUndoAction.

Scintilla has multiple level undo and redo. It will continue to collect undoable actions until memory runs out. Scintilla saves actions that change the document. Scintilla does not save caret and selection movements, view scrolling and the like. Sequences of typing or deleting are compressed into single transactions to make it easier to undo and redo at a sensible level of detail. Sequences of actions can be combined into transactions that are undone as a unit. These sequences occur between BeginUndoAction and EndUndoAction messages. These transactions can be nested and only the top-level sequences are undone as units.

4.2.296 UpperCase

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.297 UsePopUp(popUpMode as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Clicking the wrong button on the mouse pops up a short default editing menu.

Notes: This may be turned off with UsePopup(kPopUpNever). If you turn it off, context menu commands (in Windows, WM_CONTEXTMENU) will not be handled by Scintilla, so the parent of the Scintilla window will have the opportunity to handle the message.

4.2.298 UserListShow(listType as Integer, itemList as string)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Shows an user list.

Notes: User lists use the same internal mechanisms as autocompletion lists, and all the calls listed for autocompletion work on them; you cannot display a user list at the same time as an autocompletion list is active. They differ in the following respects:

- The AutoCChooseSingle method has no effect.

- When the user makes a selection you are sent a `UserListSelection` event rather than `AutoCompleteSelection`.

BEWARE: if you have set fillup characters or stop characters, these will still be active with the user list, and may result in items being selected or the user list cancelled due to the user typing into the editor.

The `listType` parameter is carried to the events. It must be greater than 0 as this is how Scintilla tells the difference between an autocompletion list and a user list. If you have different types of list, for example a list of buffers and a list of macros, you can use `listType` to tell which one has returned a selection.

4.2.299 VCHome

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.300 VCHomeDisplay

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.301 VCHomeDisplayExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.302 VCHomeExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.303 VCHomeRectExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.304 VCHomeWrap

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.305 VCHomeWrapExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.306 VerticalCentreCaret

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.307 VisibleFromDocLine(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When some lines are hidden and/or annotations are displayed, then a particular line in the document may be displayed at a different position to its document position.

Notes: If no lines are hidden and there are no annotations, this method returns docLine. Otherwise, this returns the display line (counting the very first visible line as 0). The display line of an invisible line is the same as the previous visible line. The display line number of the first line in the document is 0. If lines are hidden and docLine is outside the range of lines in the document, the return value is -1. Lines can occupy more than one display line if they wrap.

4.2.308 WordEndPosition(pos as Integer, onlyWordCharacters as boolean) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the end of words using the same definition of words as used internally within Scintilla.

Notes: You can set your own list of characters that count as words with WordChars. The position sets the start or the search, which is forwards when searching for the end and backwards when searching for the start.

4.2.309 WordLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.310 WordLeftEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.311 WordLeftEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.312 WordLeftExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.313 WordPartLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.314 WordPartLeftExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.315 WordPartRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.316 WordPartRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The WordPart** commands are used to move between word segments marked by capitalisation (aCamelCaseIdentifier) or underscores (an_under_bar_ident).

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.317 WordRight

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.318 WordRightEnd

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.319 WordRightEndExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: The *End methods move between word ends instead of word starts.

This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.320 WordRightExtend

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The method to perform the action when this key is pressed.

Notes: This action extends the selection.

You can call it directly to perform this action if needed, e.g. from toolbar or menu command.

4.2.321 WordStartPosition(pos as Integer, onlyWordCharacters as boolean) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the start of words using the same definition of words as used internally within Scintilla.

Notes: You can set your own list of characters that count as words with WordChars. The position sets the start or the search, which is forwards when searching for the end and backwards when searching for the start.

4.2.322 WrapCount(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Document lines can occupy more than one display line if they wrap and this returns the number of display lines needed to wrap a document line.

4.2.323 ZoomIn

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Increases the zoom factor by one point if the current zoom factor is less than 20 points.

4.2.324 ZoomOut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Decreases the zoom factor by one point if the current zoom factor is greater than -10 points.

4.2.325 Properties

4.2.326 Accessibility as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable accessibility status.

Notes: Can be set to kAccessibilityEnabled to enable.

(Read and Write property)

4.2.327 AdditionalCaretForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Modify the appearance of additional carets so that they can be differentiated from the main caret which has its appearance.

Notes: (Read and Write property)

4.2.328 `AdditionalCaretBlink` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Modify the appearance of additional carets so that they can be differentiated from the main caret which has its appearance.

Notes: (Read and Write property)

4.2.329 `AdditionalCaretVisible` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Determine whether to show additional carets (defaults to true).

Notes: (Read and Write property)

4.2.330 `AdditionalSelAlpha` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets alpha for additional selection.

Notes: Modify the appearance of additional selections so that they can be differentiated from the main selection.

(Read and Write property)

4.2.331 `AdditionalSelectionTyping` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether typing, new line, cursor left/right/up/down, backspace, delete, home, and end work with multiple selections simultaneously.

Notes: Also allows selection and word and line deletion commands.

(Read and Write property)

4.2.332 `AllLinesVisible` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true if all lines are visible and false if some lines are hidden.

Notes: (Read only property)

4.2.333 Anchor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current anchor position.

Notes: This sets the anchor position and creates a selection between the anchor position and the current position. The caret is not scrolled into view.

(Read and Write property)

4.2.334 AnnotationVisible as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Annotations can be made visible in a view and there is a choice of display style when visible.

Notes: See kAnnotationVisible* constants.

(Read and Write property)

4.2.335 AutoCompleteActive as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns true if there is an active auto completion list and false if there is not.

Notes: (Read only property)

4.2.336 AutoCompleteAutoHide as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, the list is cancelled if there are no viable matches (the user has typed characters that no longer match a list entry).

Notes: If you want to keep displaying the original list, set autoHide to false. This also effects AutoCompleteSelect.

(Read and Write property)

4.2.337 AutoCompleteCancelAtStart as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The default behaviour is for the list to be cancelled if the caret moves to the location it was at when the list was displayed.

Notes: By calling this message with a false argument, the list is not cancelled until the caret moves at least one character before the word being completed.

(Read and Write property)

4.2.338 `AutoCompleteCaseInsensitiveBehaviour` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to ignore case on auto completion.

Notes: When auto completion is set to ignore case (`kCaseInsensitiveBehaviourIgnoreCase`), by default it will nonetheless select the first list member that matches in a case sensitive way to entered characters. This corresponds to a behaviour property of `kCaseInsensitiveBehaviourRespectCase` (0). If you want auto completion to ignore case at all, choose `kCaseInsensitiveBehaviourIgnoreCase` (1).

(Read and Write property)

4.2.339 `AutoCompleteChooseSingle` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to choose single item directly.

Notes: If you use `AutoCompleteChooseSingle(1)` and a list has only one item, it is automatically added and no list is displayed. The default is to display the list even if there is only a single item.

(Read and Write property)

4.2.340 `AutoCompleteCurrent` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set to select an item in the autocompletion list.

Notes: It searches the list of words for the first that matches select. By default, comparisons are case sensitive, but you can change this with `AutoCIgnoreCase`. The match is character by character for the length of the select string. That is, if select is "Fred" it will match "Frederick" if this is the first item in the list that begins with "Fred". If an item is found, it is selected. If the item is not found, the autocompletion list closes if auto-hide is true (see `AutoCAutoHide`).

The current selection index can be retrieved with `AutoCompleteCurrent`.

(Read only property)

4.2.341 `AutoCompleteCurrentText` as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieves the current selected text in the autocompletion list.

Notes: Normally the `AutoCompletion` event is used instead.

The value is copied to the text buffer or if not found, an empty string is returned.
(Read only property)

4.2.342 AutoCompleteDropRestOfWord as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When an item is selected, any word characters following the caret are first erased if dropRestOfWord is set true.

Notes: The default is false.
(Read and Write property)

4.2.343 AutoCompleteIgnoreCase as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, matching of characters to list members is case sensitive.

Notes: These method let you set and get case sensitivity.
(Read and Write property)

4.2.344 AutoCompleteMaxHeight as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the maximum number of rows that will be visible in an auto completion list.

Notes: If there are more rows in the list, then a vertical scrollbar is shown. The default is 5.
(Read and Write property)

4.2.345 AutoCompleteMaxWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the maximum width of an auto completion list expressed as the number of characters in the longest item that will be totally visible.

Notes: If zero (the default) then the list's width is calculated to fit the item with the most characters. Any items that cannot be fully displayed within the available width are indicated by the presence of ellipsis.
(Read and Write property)

4.2.346 `AutoCompleteMulti` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to auto complete multiple selections.

Notes: When auto completing with multiple selections present, the auto completed text can go into just the main selection with `kMultiAutoCompleteOnce` (0) or into each selection with `kMultiAutoCompleteEach` (1). The default is `kMultiAutoCompleteOnce`.

(Read and Write property)

4.2.347 `AutoCompleteOptions` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set options for auto completion.

Notes: See `kAutoCompleteOption*` constants.

(Read and Write property)

4.2.348 `AutoCompleteOrder` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The default setting `kOrderingPreSorted` (0) requires that the list be provided in alphabetical sorted order.

Notes: Sorting the list can be done by Scintilla instead of the application with `kOrderingPerformSort` (1). This will take additional time.

Applications that wish to prioritize some values and show the list in order of priority instead of alphabetical order can use `kOrderingCustom` (2). This requires extra processing in `AutoCompleteShow` to create a sorted index.

Setting the order should be done before calling `AutoCompleteShow`.

(Read and Write property)

4.2.349 `AutoCompleteSeparator` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the separator character used to separate words in the `AutoCompleteShow` list.

Notes: The default is the space character.

(Read and Write property)

4.2.350 AutoCompleteTypeSeparator as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or get the type separator for auto complete.

Notes: (Read and Write property)

4.2.351 AutomaticFold as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The automatic folding behavior.

Notes: The fundamental operation in folding is making lines invisible or visible. Line visibility is a property of the view rather than the document so each view may be displaying a different set of lines. From the point of view of the user, lines are hidden and displayed using fold points. Generally, the fold points of a document are based on the hierarchical structure of the document contents. In Python, the hierarchy is determined by indentation and in C++ by brace characters. This hierarchy can be represented within a Scintilla document object by attaching a numeric "fold level" to each line. The fold level is most easily set by a lexer, but you can also set it with method.

It is up to your code to set the connection between user actions and folding and unfolding. The best way to see how this is done is to search the SciTE source code for the methods used in this section of the documentation and see how they are used. You will also need to use markers and a folding margin to complete your folding implementation. The "fold" property should be set to "1" with SetProperty("fold", "1") to enable folding.

Instead of implementing all the logic for handling folding in the container, Scintilla can provide behaviour that is adequate for many applications. The automaticFold argument is a bit set defining which of the 3 pieces of folding implementation should be enabled. Most applications should be able to use the kAutomaticFoldShow and kAutomaticFoldChange flags unless they wish to implement quite different behaviour such as defining their own fold structure. kAutomaticFoldClick is more likely to be set off when an application would like to add or change click behaviour such as showing method headers only when Shift+Alt is used in conjunction with a click.

(Read and Write property)

4.2.352 BackSpaceUnIndents as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether backspace unindents.

Notes: Inside indentation white space, the tab and backspace keys can be made to indent and unindent rather than insert a tab character or delete a character with the TabIndents and BackSpaceUnIndents functions.

(Read and Write property)

4.2.353 Bidirectional as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or queries bidirectional support.

Notes: The bidirectional features in Scintilla are experimental and incomplete.

Some languages, like Arabic and Hebrew, are written from right to left instead of from left to right as English is. Documents that use multiple languages may contain both directions and this is termed "bidirectional". The default text direction may be right to left or left to right. Scintilla only correctly displays bidirectional text on some platforms. Currently, there is experimental support for bidirectional text on Win32 using DirectWrite and on macOS using Cocoa. Only UTF-8 documents will show bidirectional behaviour and only in `kBidirectionalL2R` mode. Some features, such as virtual space may not work with bidirectional text or may work only in some circumstances. `kBidirectionalR2L` may be implemented in the future.

There are additional processing and storage costs to bidirectional text. As some applications may not want to pay the costs, bidirectional support must be explicitly enabled by calling `Bidirectional = kBidirectionalL2R` (1) which chooses left to right as the default direction or `Bidirectional = kBidirectionalR2L` (2) for default right to left.

On Win32, this should be done after setting the technology to `kTechnologyDirectWrite`, `kTechnologyDirectWriteRetain`, or `kTechnologyDirectWriteDC`.

If the call succeeded `Bidirectional` query will return the same value otherwise `kBidirectionalDisabled` (0) is returned.

(Read and Write property)

4.2.354 CallTipActive as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if a call tip is active and false if it is not active.

Notes: (Read only property)

4.2.355 CallTipPosStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This property returns or sets the value of the current position when `CallTipShow` started to display the tip.

Notes: (Read and Write property)

4.2.356 CanPaste as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether clipboard has text and paste can be performed.

Notes: Returns false if document is read only or selection contains protected text.
(Read only property)

4.2.357 CanRedo as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether Undo was performed and a Redo step is possible.

Notes: You could typically use the result of this property to enable/disable the Edit menu Redo command.
(Read only property)

4.2.358 CanUndo as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether undo stack contains data and can be used to undo.

Notes: You would typically use the result of this property to enable/disable the Edit menu Undo command.
(Read only property)

4.2.359 CaretForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour of the caret.

Example:

```
dim ScintillaEditor as ScintillaControlMBS // your control
```

```
// set cursor width and color
```

```
ScintillaEditor.CaretForeColor = Color.HighlightColor  
ScintillaEditor.CaretWidth = 8
```

Notes: (Read and Write property)

4.2.360 CaretLineBackAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The caret line be drawn translucently which allows other background colours to show through.

Notes: hTis is done by setting the alpha (translucency) value by calling CaretLineBackAlpha. When the alpha is not kAlphaNoAlpha, the caret line is drawn after all other features so will affect the colour of all other features.

(Read and Write property)

4.2.361 CaretLineBackColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The background colour of the line containing the caret different

Notes: Set the desired background colour with CaretLineBackColor, then use CaretLineVisible = true to enable the effect. You can cancel the effect with CaretLineVisible = false.

(Read and Write property)

4.2.362 CaretLineFrame as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: can be used to display the caret line framed instead of filling the whole background.

Notes: Set width <>0 to enable this option and width = 0 to disable it.

(Read and Write property)

4.2.363 CaretLineHighlightSubLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Choose to highlight only the subline containing the caret instead of the whole line.

Notes: Default behaviour CaretLineHighlightSubLine = false the whole caret line is highlighted.

(Read and Write property)

4.2.364 CaretLineLayer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can choose to make the background colour of the line containing the caret.

Notes: This effect may be drawn translucently over the text or opaquely on the base layer with CaretLineLayer. Background colouring has highest priority when a line has markers that would otherwise change

the background colour. When drawn translucently other background colours can show through.

See `kLayer*` constants.

(Read and Write property)

4.2.365 CaretLineVisible as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether caret line is visible.

Notes: Set the desired background colour with `CaretLineBackColor`, then use `CaretLineVisible = true` to enable the effect. You can cancel the effect with `CaretLineVisible = false`.

(Read and Write property)

4.2.366 CaretLineVisibleAlways as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Choose to make the caret line always visible even when the window is not in focus.

Notes: Default behaviour false the caret line is only visible when the window is in focus.

(Read and Write property)

4.2.367 CaretPeriod as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The rate at which the caret blinks.

Notes: The rate at which the caret blinks can be set with `CaretPeriod` which determines the time in milliseconds that the caret is visible or invisible before changing state. Setting the period to 0 stops the caret blinking. The default value is 500 milliseconds.

(Read and Write property)

4.2.368 CaretSticky as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set, get or toggle the `caretSticky` setting which controls when the last position of the caret on the line is saved.

Notes: These messages set, get or toggle the `caretSticky` setting which controls when the last position of the caret on the line is saved.

When set to `kCaretStickyOff` (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.

When set to `kCaretStickyOn` (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).

When set to `kCaretStickyWhiteSpace` (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

`SCI_TOGGLECARETSTICKY` switches from `kCaretStickyOn` and `kCaretStickyWhiteSpace` to `kCaretStickyOff` and from `kCaretStickyOff` to `kCaretStickyOn`.

(Read and Write property)

4.2.369 CaretStyle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The style of the caret.

Notes: There are separate styles for insert mode (lower 4-bits, `kCaretStyleInsMask`) and overtype mode (bit 4).

See `kCaretStyle*` constants.

The block caret draws most combining and multibyte character sequences successfully, though some fonts like Thai Fonts (and possibly others) can sometimes appear strange when the cursor is positioned at these characters, which may result in only drawing a part of the cursor character sequence. This is most notable on Windows platforms.

(Read and Write property)

4.2.370 CaretWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The width of the line caret.

Example:

```
dim ScintillaEditor as ScintillaControlMBS // your control
```

```
// set cursor width and color
```

```
ScintillaEditor.CaretForeColor = Color.HighlightColor  
ScintillaEditor.CaretWidth = 8
```

Notes: can be set to a value of between 0 and 20 pixels. The default width is 1 pixel.

A width of 0 makes the caret invisible, similar to setting the caret style to `kCaretStyleInvisible` (though not interchangeable). This setting only affects the width of the cursor when the cursor style is set to line caret mode, it does not affect the width for a block caret.

(Read and Write property)

4.2.371 CharacterCategoryOptimization as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Optimize speed of character category features like determining whether a character is a space or number at the expense of memory.

Notes: Mostly used for Unicode documents. The `countCharacters` parameter determines how many character starting from 0 are added to a look-up table with one byte used for each character. It is reasonable to cover the set of characters likely to be used in a document so `&h100` for simple Roman text, `&h1000` to cover most simple alphabets, `&h10000` to cover most of East Asian languages, and `&h110000` to cover all possible characters.

(Read and Write property)

4.2.372 ControlCharSymbol as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The mnemonics may be replaced by a nominated symbol with an ASCII code in the range 32 to 255.

Notes: If you set a symbol value less than 32, all control characters are displayed as mnemonics. The symbol you set is rendered in the font of the style set for the character.

The default symbol value is 0.

(Read and Write property)

4.2.373 CurrentLine as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This retrieves the text of the line containing the caret and returns the position within the line of the caret.

Notes: (Read only property)

4.2.374 Cursor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current mouse cursor.

Notes: The cursor is normally chosen in a context sensitive way, so it will be different over the margin than when over the text. When performing a slow action, you may wish to change to a wait cursor. You set the cursor type with assignment to this property.

See `kCursorShape*` constants.

Cursor values 1 through 7 have defined cursors, but only `kCursorShapeWait` is usefully controllable. Other values of `cursorType` cause a pointer to be displayed. Reading the cursor property returns the last cursor type you set, or `kCursorShapeNormal` (-1) if you have not set a cursor type.

(Read and Write property)

4.2.375 DefaultFoldDisplayText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the default text displayed at the right of the folded text.

Notes: (Read and Write property)

4.2.376 DescribeKeywordSets as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A description of all of the keyword sets separated by LF.

Notes: (Read only property)

4.2.377 DocumentOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The documentation options used to create the document.

Notes: (Read only property)

4.2.378 EdgeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the colour of the marker used to show that a line has exceeded the length set by EdgeColumn property.

Notes: (Read and Write property)

4.2.379 EdgeColumn as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the column number at which to display the long line marker.

Notes: When drawing lines, the column sets a position in units of the width of a space character in kStyle-sCommonDefault. When setting the background colour, the column is a character count (allowing for tabs) into the line.

(Read and Write property)

4.2.380 EdgeMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the mode used to display long lines.

Notes: You can choose to mark lines that exceed a given length by drawing a vertical line or by colouring the background of characters that exceed the set length.

See kEdgeVisualStyle* constants.

(Read and Write property)

4.2.381 EndAtLastLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: EndAtLastLine sets the scroll range so that maximum scroll position has the last line at the bottom of the view (default).

Notes: Setting this to false allows scrolling one page below the last line.

(Read and Write property)

4.2.382 EOLAnnotationVisible as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the annotation display mode.

Notes: End of Line Annotations can be made visible in a view and there is a choice of display style when visible.

See `kEOLEAnnotationVisible*` constants.
(Read and Write property)

4.2.383 EOLMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the characters that are added into the document when the user presses the Enter key.

Notes: You can set `eolMode` to one of `kEndOfLineCRLF` (0), `kEndOfLineCR` (1), or `kEndOfLineLF` (2).

Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRLF in Windows and LF in Unix, but this can be changed with the `EOLMode` property. You can also convert the entire document to one of these line endings with `ConvertEOLs`. Finally, you can choose to display the line endings with `ViewEOL`.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.

(Read and Write property)

4.2.384 ExtraAscent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The extra ascent.

Notes: Text is drawn with the base of each character on a 'baseline'. The height of a line is found from the maximum that any style extends above the baseline (its 'ascent'), added to the maximum that any style extends below the baseline (its 'descent'). Space may be added to the maximum ascent (`ExtraAscent`) and the maximum descent (`ExtraDescent`) to allow for more space between lines. This may be done to make the text easier to read or to accommodate underlines or highlights.

The extra ascent and descent values can be negative but that should be done with care as it may lead to unexpected interference when lines share space.

(Read and Write property)

4.2.385 ExtraDescent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The extra descent.

Notes: Text is drawn with the base of each character on a 'baseline'. The height of a line is found from the maximum that any style extends above the baseline (its 'ascent'), added to the maximum that any style extends below the baseline (its 'descent'). Space may be added to the maximum ascent (ExtraAscent) and the maximum descent (ExtraDescent) to allow for more space between lines. This may be done to make the text easier to read or to accommodate underlines or highlights.

The extra ascent and descent values can be negative but that should be done with care as it may lead to unexpected interference when lines share space.

(Read and Write property)

4.2.386 FirstVisibleLine as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve or set the line number of the first visible line in the Scintilla view.

Notes: The first line in the document is numbered 0. The value is a visible line rather than a document line.

(Read and Write property)

4.2.387 Focus as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether we have focus.

Notes: Scintilla can be told to grab the focus with GrabFocus. This is needed more on GTK where focus handling is more complicated than on Windows.

The internal focus flag can be set with Focus. This is used by clients that have complex focus requirements such as having their own window that gets the real focus but with the need to indicate that Scintilla has the logical focus.

(Read and Write property)

4.2.388 FoldDisplayTextStyle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Changes the appearance of fold text tags.

Notes: (Read and Write property)

4.2.389 FontLocale as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set the locale used for font selection with language-dependent glyphs.

Notes: It may, depending on platform and other circumstances influence the display of text, so setting "zh-Hant" may result in traditional Chinese display and "zh-Hans" may result in simplified Chinese display. It is currently only implemented for Win32 using DirectWrite where the value is passed as the localeName argument to CreateTextFormat. The default value is US English "en-us".

(Read and Write property)

4.2.390 FontQuality as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Manage font quality (antialiasing method).

Notes: See kFontQualityQuality* constants.

(Read and Write property)

4.2.391 HasBorder as Boolean

Plugin Version: 22.4, Platform: Windows, Targets: Desktop only.

Function: Enable/disable border for Windows.

Notes: If this flag is set before the control is constructed, you get the control instated on Windows with a border line.

(Read and Write property)

4.2.392 HighlightGuide as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When brace highlighting occurs, the indentation guide corresponding to the braces may be highlighted with the brace highlighting style, kStylesCommonBraceLight (34).

Notes: Set column to 0 to cancel this highlight.

(Read and Write property)

4.2.393 HotspotActiveBack as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries background color for hotspot.

Notes: (Read only property)

4.2.394 HotspotActiveFore as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries foreground color for hotspot.

Notes: (Read only property)

4.2.395 HotspotActiveUnderline as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: While the cursor hovers over text in a style with the hotspot attribute set, this option shows underline.

Notes: (Read and Write property)

4.2.396 HotspotSingleLine as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Single line mode stops a hotspot from wrapping onto next line.

Notes: (Read and Write property)

4.2.397 HScrollBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The horizontal scroll bar is only displayed if it is needed for the assumed width.

Notes: If you never wish to see it, call HScrollBar = false. Use HScrollBar = true to enable it again. Querying HScrollBar returns the current state. The default state is to display it when needed.

(Read and Write property)

4.2.398 IdleStyling as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The idel styling setting.

Notes: By default, kIdleStylingNone (0), syntax styling is performed for all the currently visible text before

displaying it. On very large files, this may make scrolling down slow. With `kIdleStylingToVisible` (1), a small amount of styling is performed before display and then further styling is performed incrementally in the background as an idle-time task. This may result in the text initially appearing uncoloured and then, some time later, it is coloured. Text after the currently visible portion may be styled in the background with `kIdleStylingAfterVisible` (2). To style both before and after the visible text in the background use `kIdleStylingAll` (3).

Since wrapping also needs to perform styling and also uses idle time, this setting has no effect when the document is displayed wrapped.

(Read and Write property)

4.2.399 IMEInteraction as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Configures IME interaction.

Notes: When entering text in Chinese, Japanese, or Korean an Input Method Editor (IME) may be displayed. The IME may be an extra window appearing above Scintilla or may be displayed by Scintilla itself as text. On some platforms there is a choice between the two techniques. A windowed IME `kIMEInteractionWindowed` (0) may be more similar in appearance and behaviour to the IME in other applications. An inline IME `kIMEInteractionInline` (1) may work better with some Scintilla features such as rectangular and multiple selection.

The windowed behaviour can be chosen with `IMEInteraction = kIMEInteractionWindowed` and the inline behaviour with `IMEInteraction = kIMEInteractionInline`. Scintilla may ignore this call in some cases. For example, the inline behaviour might only be supported for some languages.

When the inline IME mode is active, characters are added tentatively before being finalised and an `CharacterAdded` event (with `characterSource` set to `kCharacterSourceTentativeInput`) is sent for each character.

(Read and Write property)

4.2.400 Indent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the size of indentation in terms of the width of a space in `KStylesCommonDefault`.

Notes: If you set a width of 0, the indent size is the same as the tab size. There are no limits on indent sizes, but values less than 0 or large values may have undesirable effects.

Indentation (the white space at the start of a line) is often used by programmers to clarify program structure and in some languages, for example Python, it may be part of the language syntax. Tabs are normally used in editors to insert a tab character or to pad text with spaces up to the next tab.

When Scintilla is laying out a section of text, text after a tab character will usually be displayed at the next multiple of `TabWidth` columns from the left. However, it is also possible to explicitly set `tabstops` in pixels for each line.

Scintilla can be set to treat tab and backspace in the white space at the start of a line in a special way: inserting a tab indents the line to the next indent position rather than just inserting a tab at the current

character position and backspace unindents the line rather than deleting a character. Scintilla can also display indentation guides (vertical lines) to help you to generate code.
(Read and Write property)

4.2.401 IndentationGuides as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Indentation guides are dotted vertical lines that appear within indentation white space every indent size columns.

Notes: They make it easy to see which constructs line up especially when they extend over multiple pages. Style `kStylesCommonIndentGuide` (37) is used to specify the foreground and background colour of the indentation guides.

There are 4 indentation guide views. `kIndentViewNone` turns the feature off but the other 3 states determine how far the guides appear on empty lines.

(Read and Write property)

4.2.402 IndicatorCurrent as ScintillaIndicatorMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current indicator.

Notes: (Read and Write property)

4.2.403 IndicatorValue as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the value that will be set by calls to `IndicatorFillRange`.

Notes: (Read and Write property)

4.2.404 LayoutCache as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable layout cache.

Notes: (Read and Write property)

4.2.405 Length as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The length of the document in bytes.

Notes: (Read only property)

4.2.406 LexerLanguage as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns the name of the current lexer.

Notes: (Read only property)

4.2.407 LibraryError as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The error message from loading the library.

Notes: (Read only property)

4.2.408 LineCharacterIndex as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns which if any indexes are active.

Notes: (Read only property)

4.2.409 LineCount as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the number of lines in the document.

Notes: An empty document contains 1 line. A document holding only an end of line sequence has 2 lines.
(Read only property)

4.2.410 LineEndTypesActive as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports the set of line ends currently interpreted by Scintilla.

Notes: It is LineEndTypesSupported and LineEndTypesAllowed.

See kLineEndType* constants.

(Read only property)

4.2.411 LineEndTypesAllowed as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, only the ASCII line ends are interpreted.

Notes: Unicode line ends may be requested with LineEndTypesAllowed = kLineEndTypeUnicode but this will be ineffective unless the lexer also allows you Unicode line ends.

See kLineEndType* constants.

(Read and Write property)

4.2.412 LineEndTypesSupported as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Reports the different types of line ends supported by the current lexer.

Notes: This is a bit set although there is currently only a single choice with either kLineEndTypeDefault (0) or kLineEndTypeUnicode (1). These values are also used by the other messages concerned with Unicode line ends.

See kLineEndType* constants.

(Read only property)

4.2.413 LinesOnScreen as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the number of complete lines visible on the screen.

Notes: With a constant line height, this is the vertical space available divided by the line separation. Unless you arrange to size your window to an integral number of lines, there may be a partial line visible at the bottom of the view.

(Read only property)

4.2.414 MainSelection as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries index of main selection.

Notes: One of the selections is the main selection which is used to determine what range of text is automatically visible. The main selection may be displayed in different colours or with a differently styled caret. Only an already existing selection can be made main.

(Read and Write property)

4.2.415 MarginLeft as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the width of the blank margin on left side of the text in pixels.

Notes: The default is to one pixel on each side.

(Read and Write property)

4.2.416 MarginOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Define margin options by enabling appropriate bit flags.

Notes: At the moment, only one flag is available `kMarginOptionSubLineSelect = 1`, which controls how wrapped lines are selected when clicking on margin in front of them. If `kMarginOptionSubLineSelect` is set only sub line of wrapped line is selected, otherwise whole wrapped line is selected. Margin options are set to `kMarginOptionNone=0` by default.

(Read and Write property)

4.2.417 MarginRight as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the width of the blank margin on right side of the text in pixels.

Notes: The default is to one pixel on each side.

(Read and Write property)

4.2.418 Margins as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Allocate the number of margins or find the number of margins currently allocated.

Notes: (Read and Write property)

4.2.419 MaxLineState as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns the last line that has any line state.

Notes: (Read only property)

4.2.420 ModEventMask as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The modification event masks.

Notes: Set and get an event mask that determines which document change events are notified to the container with Modify event. For example, a container may decide to see only notifications about changes to text and not styling changes by setting `ModEventMask = kModificationFlagsInsertText + kModificationFlagsDeleteText`.

(Read and Write property)

4.2.421 Modify as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if the document is modified and false if it is unmodified.

Notes: The modified status of a document is determined by the undo position relative to the save point. The save point is set by `SetSavePoint`, usually when you have saved data to a file.

If you need to be notified when the document becomes modified, Scintilla notifies the container that it has entered or left the save point with the `SavePointReached` and `SavePointLeft` notification messages.

(Read only property)

4.2.422 MouseDownCaptures as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When the mouse is pressed inside Scintilla, it is captured so future mouse movement events are sent to Scintilla.

Notes: This behaviour may be turned off with `MouseDownCaptures = false`.
(Read and Write property)

4.2.423 MouseDwellTime as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The time the mouse must sit still, in milliseconds, to generate a `DWellStart` event.

Notes: If set to `kTimeForever`, the default, no dwell events are generated.
(Read and Write property)

4.2.424 MouseSelectionRectangularSwitch as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable the ability to switch to rectangular selection mode while making a selection with the mouse.

Notes: When this option is turned on, mouse selections in stream mode can be switched to rectangular mode by pressing the corresponding modifier key. They then stick to rectangular mode even when the modifier key is released again. When this option is turned off, mouse selections will always stick to the mode the selection was started in. It is off by default.

(Read and Write property)

4.2.425 MouseWheelCaptures as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to capture mouse wheel events.

Notes: On Windows, Scintilla captures all `WM_MOUSEWHEEL` messages if it has the focus, even if the mouse pointer is nowhere near the Scintilla editor window. This behaviour can be changed with `MouseWheelCaptures = false` so that Scintilla passes the `WM_MOUSEWHEEL` messages to its parent window. Scintilla will still react to the mouse wheel if the mouse pointer is over the editor window.

(Read and Write property)

4.2.426 MoveExtendsSelection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if regular caret moves will extend or reduce the selection, false if not.

Notes: SetSelectionMode toggles this setting between on and off.

(Read only property)

4.2.427 MultiPaste as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: How to do paste with multiple selection.

Notes: When pasting into multiple selections, the pasted text can go into just the main selection with kMultiPasteOnce=0 or into each selection with kMultiPasteEach=1. kMultiPasteOnce is the default.

(Read and Write property)

4.2.428 MultipleSelection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Enable or disable multiple selection.

Notes: When multiple selection is disabled, it is not possible to select multiple ranges by holding down the Ctrl key while dragging with the mouse.

There may be multiple selections active at one time. More selections are made by holding down the Ctrl key while dragging with the mouse. The most recent selection is the main selection and determines which part of the document is shown automatically. Any selection apart from the main selection is called an additional selection. The calls in the previous section operate on the main selection. There is always at least one selection. The selection can be simplified down to just the main selection by Cancel which is normally mapped to the Esc key.

Rectangular selections are handled as multiple selections although the original rectangular range is remembered so that subsequent operations may be handled differently for rectangular selections. For example, pasting a rectangular selection places each piece in a vertical column.

Virtual space is space beyond the end of each line. The caret may be moved into virtual space but no real space will be added to the document until there is some text typed or some other text insertion command

is used.

When discontinuous selections are copied to the clipboard, each selection is added to the clipboard text in order with no delimiting characters. For rectangular selections the document's line end is added after each line's text. Rectangular selections are always copied from top line to bottom, not in the in order of selection. Virtual space is not copied.

(Read and Write property)

4.2.429 NamedStyles as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the number of named styles for the lexer.

Notes: (Read only property)

4.2.430 NSView as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Cocoa view for macOS.

Notes: Object is from NSViewMBS class.

(Read only property)

4.2.431 Overtyping as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: When overtyping is enabled, each typed character replaces the character to the right of the text caret.

Notes: When overtyping is disabled, characters are inserted at the caret. Returns true if overtyping is active, otherwise false will be returned.

(Read and Write property)

4.2.432 PasteConvertEndings as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to match end of line on pasting.

Notes: If this property is set then when text is pasted any line ends are converted to match the document's end of line mode as set with EOLMode. Defaults to true.

(Read and Write property)

4.2.433 Position as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The current position.

Notes: This sets the current position and creates a selection between the anchor and the current position. The caret is not scrolled into view.

(Read and Write property)

4.2.434 PositionCache as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size in entries of the position cache.

Notes: The position cache stores position information for short runs of text so that their layout can be determined more quickly if the run recurs.

(Read and Write property)

4.2.435 PrintColourMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the method used to render coloured text on a printer that is probably using white paper.

Notes: It is especially important to consider the treatment of colour if you use a dark or black screen background. Printing white on black uses up toner and ink very many times faster than the other way around. See kPrintOption* constants.

(Read and Write property)

4.2.436 PrintMagnification as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Lets you to print at a different size than the screen font.

Notes: magnification is the number of points to add to the size of each screen font. A value of -3 or -4 gives reasonably small print.

(Read and Write property)

4.2.437 PrintWrapMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get and set the printer wrap mode.

Notes: wrapMode can be set to kWrapNone (0) or kWrapWord (1). The default is kWrapWord, which wraps printed output so that all characters fit into the print rectangle. If you set kWrapNone, each line of text generates one line of output and the line is truncated if it is too long to fit into the print area.

kWrapWord tries to wrap only between words as indicated by white space or style changes although if a word is longer than a line, it will be wrapped before the line end.

kWrapChar is not supported for printing.

(Read and Write property)

4.2.438 PropertyNames as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Returns a string with all of the valid properties separated by LF.

Notes: If the lexer does not support this call then an empty string is returned.

(Read only property)

4.2.439 PunctuationChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Similar to WordChars and WhiteSpaceChars, this message allows the user to define which chars Scintilla considers as punctuation.

Notes: (Read and Write property)

4.2.440 ReadOnly as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the read-only flag for the document.

Notes: If you mark a document as read only, attempts to modify the text cause the ModifyAttemptRead-Only event.

(Read and Write property)

4.2.441 RectangularSelectionAnchor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position for the anchor of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.2.442 RectangularSelectionAnchorVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.2.443 RectangularSelectionCaret as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position for the caret of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

There may be multiple selections active at one time. More selections are made by holding down the Ctrl key while dragging with the mouse. The most recent selection is the main selection and determines which part of the document is shown automatically. Any selection apart from the main selection is called an additional selection. The calls in the previous section operate on the main selection. There is always at least one selection. The selection can be simplified down to just the main selection by Cancel which is normally mapped to the Esc key.

Rectangular selections are handled as multiple selections although the original rectangular range is remembered so that subsequent operations may be handled differently for rectangular selections. For example, pasting a rectangular selection places each piece in a vertical column.

Virtual space is space beyond the end of each line. The caret may be moved into virtual space but no real space will be added to the document until there is some text typed or some other text insertion command is used.

When discontinuous selections are copied to the clipboard, each selection is added to the clipboard text in order with no delimiting characters. For rectangular selections the document's line end is added after each line's text. Rectangular selections are always copied from top line to bottom, not in the in order of selection. Virtual space is not copied.

(Read and Write property)

4.2.444 RectangularSelectionCaretVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of the rectangular selection.

Notes: After setting the rectangular selection, this is broken down into multiple selections, one for each line.

(Read and Write property)

4.2.445 RectangularSelectionModifier as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: On GTK and Qt, the key used to indicate that a rectangular selection should be created when combined with a mouse drag can be set.

Notes: The three possible values are `kKeyModCtrl=2`, `kKeyModAlt=4` (default) or `kKeyModSuper=8`. Since `kKeyModAlt` may already be used by a window manager, the window manager may need configuring to allow this choice. `kKeyModSuper` is often a system dependent modifier key such as the Left Windows key on a Windows keyboard or the Command key on a Mac.

(Read and Write property)

4.2.446 ScrollWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: For performance, Scintilla does not measure the display width of the document to determine the properties of the horizontal scroll bar.

Notes: Instead, an assumed width is used. These messages set and get the document width in pixels assumed by Scintilla. The default value is 2000. To ensure the width of the currently visible lines can be scrolled use `ScrollWidthTracking`.

(Read and Write property)

4.2.447 ScrollWidthTracking as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If scroll width tracking is enabled then the scroll width is adjusted to ensure that all of the lines currently displayed can be completely scrolled.

Notes: This mode never adjusts the scroll width to be narrower.

(Read and Write property)

4.2.448 SearchFlags as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: These get and set the searchFlags used by SearchInTarget.

Notes: There are several option flags including a simple regular expression search. See kFindOption* constants.
(Read and Write property)

4.2.449 SelAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or gets selection alpha value.

Notes: (Read and Write property)

4.2.450 SelectedText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This copies the currently selected text.

Notes: This allows for rectangular and discontinuous selections as well as simple selections. See Multiple Selection for information on how multiple and rectangular selections and virtual space are copied.
(Read only property)

4.2.451 SelectionEmpty as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return true if every selected range is empty else false.

Notes: This can be used as CanCopy or CanCut for building menu.
(Read only property)

4.2.452 SelectionEnd as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The end position of the selection.

Notes: SelectionStart and SelectionEnd return the start and end of the selection without regard to which end is the current position and which is the anchor. SelectionStart returns the smaller of the current position or the anchor position. SelectionEnd returns the larger of the two values.

Assign new value to set the selection based on the assumption that the anchor position is less than the current position.

(Read and Write property)

4.2.453 SelectionIsRectangle as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This returns true if the current selection is in rectangle mode, false if not.

Notes: (Read only property)

4.2.454 SelectionLayer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection background can be drawn translucently over the text or opaquely on the base layer.

Notes: See `kLayer*` constants.

(Read and Write property)

4.2.455 SelectionMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection mode.

Notes: Can be stream (`kSelectionModeStream=0`) or rectangular (`kSelectionModeRectangle=1`) or by lines (`kSelectionModeLines=2`) or thin rectangular (`kSelectionModeThin=3`). When set in these modes, regular caret moves will extend or reduce the selection, until the mode is cancelled by a call with same value or with `Cancel`. The `get` function returns the current mode even if the selection was made by mouse or with regular extended moves. `SC_SEL_THIN` is the mode after a rectangular selection has been typed into and ensures that no characters are selected.

(Read and Write property)

4.2.456 Selections as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Return the number of selections currently active.

Notes: There is always at least one selection.

(Read only property)

4.2.457 SelectionSpan as ScintillaSpanMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries selection start and end as a span object.

Notes: (Read only property)

4.2.458 SelectionStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The start position of the selection.

Notes: SelectionStart and SelectionEnd return the start and end of the selection without regard to which end is the current position and which is the anchor. SelectionStart returns the smaller of the current position or the anchor position. SelectionEnd returns the larger of the two values.

Assign new value to set the selection based on the assumption that the anchor position is less than the current position.

(Read and Write property)

4.2.459 SEEOFilled as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The selection can be drawn up to the right hand border by setting this property.

Notes: (Read and Write property)

4.2.460 ShowInfoBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to show info bar on macOS.

Notes: Defaults to true.

The info bar allows you to show a status message and to do zoom levels.

(Read and Write property)

4.2.461 Status as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: If an error occurs, Scintilla may set an internal error number that can be retrieved with this property.

Notes: To clear the error status call `SCI_SETSTATUS(0)`. Status values from 1 to 999 are errors and status `kStatusWarnStart` (1000) and above are warnings.

See `kStatus*` constants.

(Read and Write property)

4.2.462 TabDrawMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get and set how tab characters are drawn when white space is visible.

Notes: See `kTabDrawMode*` constants.

(Read and Write property)

4.2.463 TabIndents as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether tab indents.

Notes: Inside indentation white space, the tab and backspace keys can be made to indent and unindent rather than insert a tab character or delete a character with the `TabIndents` and `BackSpaceUnIndents` functions.

(Read and Write property)

4.2.464 TabMinimumWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The minimum size of a tab in pixels to ensure that the tab can be seen.

Notes: The default value is 2. This is particularly useful with proportional fonts with fractional widths where the character before the tab may end a fraction of a pixel before a tab stop, causing the tab to only be a fraction of a pixel wide without this setting. Where displaying a miniaturized version of the document, setting this to 0 may make the miniaturized version lay out more like the normal size version.

(Read and Write property)

4.2.465 TabWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size of a tab as a multiple of the size of a space character in `kStylesCommonDefault`.

Notes: The default tab width is 8 characters. There are no limits on tab sizes, but values less than 1 or large values may have undesirable effects.
(Read and Write property)

4.2.466 TargetEnd as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End of target selection in text.

Notes: (Read and Write property)

4.2.467 TargetEndVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: End of the virtual space of target selection in text.

Notes: This allows text to be inserted in virtual space more easily.

(Read and Write property)

4.2.468 TargetSpan as ScintillaSpanMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Queries target start and end as a span object.

Notes: (Read and Write property)

4.2.469 TargetStart as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Start of the virtual space of target selection in text.

Notes: This allows text to be inserted in virtual space more easily.

When searching you can set start greater than end to find the last matching text in the target rather than the first matching text.

The target is also set by a successful by SearchInTarget.

(Read and Write property)

4.2.470 TargetStartVirtualSpace as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Start of target selection in text.

Notes: When searching you can set start greater than end to find the last matching text in the target rather than the first matching text.

(Read and Write property)

4.2.471 TargetText as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the value in the target.

Notes: (Read only property)

4.2.472 Technology as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The technology property allows choosing between different drawing APIs and options.

Notes: On most platforms, the only choice is `kTechnologyDefault` (0). On Windows Vista or later, `kTechnologyDirectWrite` (1), `kTechnologyDirectWriteRetain` (2), or `kTechnologyDirectWriteDC` (3) can be chosen to use the Direct2D and DirectWrite APIs for higher quality antialiased drawing. `kTechnologyDirectWriteRetain` differs from `kTechnologyDirectWrite` by requesting that the frame is retained after being presented which may prevent drawing failures on some cards and drivers. `kTechnologyDirectWriteDC` differs from `kTechnologyDirectWrite` by using DirectWrite to draw into a GDI DC.

On Win32, buffered drawing is set to a reasonable value for the technology: on for GDI and off for Direct2D as Direct2D performs its own buffering. This can be changed after setting technology with `BufferDraw` property.

When using DirectWrite, you can use `FontLocale` to set an appropriate font locale to draw text with expected language-dependent glyphs.

(Read and Write property)

4.2.473 Text as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Get or set the text of the document.

Notes: (Read and Write property)

4.2.474 TextLength as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The length of the document in bytes.

Notes: (Read only property)

4.2.475 UndoCollection as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can control whether Scintilla collects undo information.

Notes: Set to true to collect information and false to stop collecting. If you stop collection, you should also use EmptyUndoBuffer to avoid the undo buffer being unsynchronized with the data in the buffer.

You might wish to turn off saving undo information if you use the Scintilla to store text generated by a program (a Log view) or in a display window where text is often deleted and regenerated.
(Read and Write property)

4.2.476 UseTabs as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Determines whether indentation should be created out of a mixture of tabs and spaces or be based purely on spaces.

Notes: Set useTabs to false (0) to create all tabs and indents out of spaces. The default is true. You can use Column() to get the column of a position taking the width of a tab into account.
(Read and Write property)

4.2.477 ViewEOL as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Normally, the end of line characters are hidden, but ViewEOL allows you to display (or hide) them by setting visible true (or false).

Notes: The visible rendering of the end of line characters is similar to (CR), (LF), or (CR+LF).

Scintilla can handle the major line end conventions and, depending on settings and the current lexer also support additional Unicode line ends.

Scintilla can interpret any of the Macintosh (CR), Unix (LF) and Windows (CR+LF) line ends. When the user presses the Enter key, one of these line end strings is inserted into the buffer. The default is CRL+LF in Windows and LF in Unix, but this can be changed with the EOLMode property. You can also convert

the entire document to one of these line endings with ConvertEOLs. Finally, you can choose to display the line endings with ViewEOL.

For the UTF-8 encoding, three additional Unicode line ends, Next Line (NEL=U+0085), Line Separator (LS=U+2028), and Paragraph Separator (PS=U+2029) may optionally be interpreted when Unicode line ends is turned on and the current lexer also supports Unicode line ends.
(Read and Write property)

4.2.478 ViewWS as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: White space can be made visible which may be useful for languages in which white space is significant, such as Python.

Example:

```
dim c as ScintillaControlMBS // your control

// show white space
c.ViewWS = c.kWhiteSpaceVisibleAlways
```

Notes: Space characters appear as small centred dots and tab characters as light arrows pointing to the right. There are also ways to control the display of end of line characters. The two messages set and get the white space display mode.

See kWhiteSpaceVisible* constants.

(Read and Write property)

4.2.479 VirtualSpaceOptions as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Virtual space can be enabled or disabled for rectangular selections or in other circumstances or in both.

Notes: There are three bit flags kVirtualSpaceRectangularSelection=1, kVirtualSpaceUserAccessible=2, and kVirtualSpaceNoWrapLineStart=4 which can be set independently.

kVirtualSpaceNone=0, the default, disables all use of virtual space.

kVirtualSpaceNoWrapLineStart prevents left arrow movement and selection from wrapping to the previous line. This is most commonly desired in conjunction with virtual space but is an independent setting so works without virtual space.

(Read and Write property)

4.2.480 VScrollBar as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: By default, the vertical scroll bar is always displayed when required.

Notes: You can choose to hide or show it with VScrollBar property and get the current state with VScrollBar.

(Read and Write property)

4.2.481 WhitespaceChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The white space characters.

Notes: Similar to WordChars, this property allows the user to define which chars Scintilla considers as whitespace. Setting the whitespace chars allows the user to fine-tune Scintilla's behaviour doing such things as moving the cursor to the start or end of a word; for example, by defining punctuation chars as whitespace, they will be skipped over when the user presses ctrl+left or ctrl+right. This function should be called after WordChars as it will reset the whitespace characters to the default set. WhiteSpaceChars behaves similarly to WordChars.

(Read and Write property)

4.2.482 WhitespaceSize as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets the size of the dots used for mark space characters.

Notes: The value 0 is valid and makes the dots invisible.

(Read and Write property)

4.2.483 WordChars as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Defines which characters are members of the word category.

Notes: The character categories are set to default values before processing this function. For example, if you don't allow ' _ ' in your set of characters use:

```
WordChars = "abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789"
```

This fills the characters parameter with all the characters included in words.

The characters parameter must be large enough to hold all of the characters. If the characters parameter is 0 then the length that should be allocated to store the entire set is returned.

For multi-byte encodings, this API will not return meaningful values for € and above.

(Read and Write property)

4.2.484 WrapIndentMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Wrapped sublines can be indented to the position of their first subline or one more indent level.

Notes: The default is `kWrapIndentModeFixed`.

(Read and Write property)

4.2.485 WrapMode as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The wrap mode.

Notes: Set `wrapMode` to `kWrapWord` (1) to enable wrapping on word or style boundaries, `kWrapChar` (2) to enable wrapping between any characters, `kWrapWhiteSpace` (3) to enable wrapping on whitespace, and `kWrapNone` (0) to disable line wrapping. `kWrapChar` is preferred for Asian languages where there is no white space between words.

By default, Scintilla does not wrap lines of text. If you enable line wrapping, lines wider than the window width are continued on the following lines. Lines are broken after space or tab characters or between runs of different styles. If this is not possible because a word in one style is wider than the window then the break occurs after the last character that completely fits on the line. The horizontal scroll bar does not appear when wrap mode is on.

For wrapped lines Scintilla can draw visual flags (little arrows) at end of a a subline of a wrapped line and at begin of the next subline. These can be enabled individually, but if Scintilla draws the visual flag at the beginning of the next subline this subline will be indented by one char. Independent from drawing a visual flag at the begin the subline can have an indentation.

Much of the time used by Scintilla is spent on laying out and drawing text. The same text layout calculations may be performed many times even when the data used in these calculations does not change. To avoid these unnecessary calculations in some circumstances, the line layout cache can store the results of the calculations. The cache is invalidated whenever the underlying data, such as the contents or styling of the document changes. Caching the layout of the whole document has the most effect, making dynamic line wrap as much as 20 times faster but this requires 7 times the memory required by the document contents plus around 80 bytes per line.

Wrapping is not performed immediately there is a change but is delayed until the display is redrawn. This delay improves performance by allowing a set of changes to be performed and then wrapped and displayed once. Because of this, some operations may not occur as expected. If a file is read and the scroll position

moved to a particular line in the text, such as occurs when a container tries to restore a previous editing session, then the scroll position will have been determined before wrapping so an unexpected range of text will be displayed. To scroll to the position correctly, delay the scroll until the wrapping has been performed by waiting for an initial Painted event.

(Read and Write property)

4.2.486 WrapStartIndent as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The size of indentation of sublines for wrapped lines.

Notes: WrapStartIndent sets the size of indentation of sublines for wrapped lines in terms of the average character width in `kStylesCommonDefault`. There are no limits on indent sizes, but values less than 0 or large values may have undesirable effects.

The indentation of sublines is independent of visual flags, but if `kWrapVisualFlagStart` is set an indent of at least 1 is used.

(Read and Write property)

4.2.487 WrapVisualFlags as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can enable the drawing of visual flags to indicate a line is wrapped.

Notes: Bits set in `wrapVisualFlags` determine which visual flags are drawn.

See `kWrapVisualFlag*` constants.

(Read and Write property)

4.2.488 WrapVisualFlagsLocation as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can set whether the visual flags to indicate a line is wrapped are drawn near the border or near the text.

Notes: Bits set in `wrapVisualFlagsLocation` set the location to near the text for the corresponding visual flag.

See `kWrapVisualLocation*` constants.

(Read and Write property)

4.2.489 XOffset as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The xOffset is the horizontal scroll position in pixels of the start of the text view.

Notes: A value of 0 is the normal position with the first text column visible at the left of the view.

See FirstVisibleLine property for vertical position.

(Read and Write property)

4.2.490 Zoom as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The zoom factor directly.

Notes: There is no limit set on the factors you can set, so limiting yourself to -10 to +20 to match the incremental zoom functions is a good idea.

Scintilla incorporates a "zoom factor" that lets you make all the text in the document larger or smaller in steps of one point. The displayed point size never goes below 2, whatever zoom factor you set. You can set zoom factors in the range -10 to +20 points.

(Read and Write property)

See also:

- 4.2.559 Zoom

333

4.2.491 AnnotationStyle(line as Integer) as ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styles for a line.

Notes: The whole of the text annotation on a line may be displayed in a particular style with AnnotationStyle or each character may be individually styled with AnnotationStyles which uses an array of bytes with each byte setting the style of the corresponding text byte similar to SetStylingEx. The text must be set first as it specifies how long the annotation is so how many bytes of styling to read. Setting an annotation will cause a ChangeAnnotation event to be sent.

Only some style attributes are active in annotations: font, size/sizeFractional, bold/weight, italics, fore, back, and characterSet.

(Read and Write computed property)

4.2.492 AnnotationStyles(line as Integer) as MemoryBlock

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets styles for a line.

Notes: The whole of the text annotation on a line may be displayed in a particular style with `AnnotationStyle` or each character may be individually styled with `AnnotationStyles` which uses an array of bytes with each byte setting the style of the corresponding text byte similar to `SetStylingEX`. The text must be set first as it specifies how long the annotation is so how many bytes of styling to read. Setting an annotation will cause a `ChangeAnnotation` event to be sent.

Only some style attributes are active in annotations: font, size/sizeFractional, bold/weight, italics, fore, back, and characterSet.
(Read and Write computed property)

4.2.493 `AnnotationText(line as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A different string may be set for each line with `AnnotationText`.

Notes: Set to empty string to clear it.

(Read and Write computed property)

4.2.494 `ElementColour(element as Integer) as Color`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This changes the colour of the indicated visual element overriding any current colour.

Notes: If the element supports translucency, then the alpha portion of the value is used. An opaque alpha value (&hff) should always be included when an opaque colour is desired as the value 0 is completely transparent and thus invisible.

(Read and Write computed property)

4.2.495 `EOLAnnotationStyle(line as Integer) as ScintillaStyleMBS`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Gets or sets the style to use for the EOL annotation.

Notes: (Read and Write computed property)

4.2.496 `EOLAnnotationText(line as Integer) as String`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A different string may be set for each line with `EOLAnnotationText`.

Notes: To clear end of line annotations assign `EOLAnnotationText` with a empty string. The whole of the

text EOLANNOTATION on a line may be displayed in a particular style with `EOLAnnotationStyle()`. Setting an end of line annotation will cause a `kModificationFlagsChangeEOLAnnotation` notification to be sent.

Only some style attributes are active in end of line annotations: `font`, `size/sizeFractional`, `bold/weight`, `italics`, `fore`, `back`, and `characterSet`.

End of Line Annotations are read-only lines of text at the end of each line of editable text. End of Line Annotations can be used to display an assembler version of code for debugging or to show diagnostic messages inline or to line up different versions of text in a merge tool.

(Read and Write computed property)

4.2.497 `FoldExpanded(line as Integer)` as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the expanded state of a single line.

Notes: The set message has no effect on the visible state of the line or any lines that depend on it. It does change the markers in the folding margin. If you ask for the expansion state of a line that is outside the document, the result is false (0).

If you just want to toggle the fold state of one line and handle all the lines that are dependent on it, it is much easier to use `ToggleFold`. You would use the `FolderExpanded()` method to process many folds without updating the display until you had finished. See `FoldAll()` and `Expand()` for examples of the use of these methods.

(Read and Write computed property)

4.2.498 `FoldLevel(line as Integer)` as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get a 32-bit value that contains the fold level of a line and some flags associated with folding.

Notes: The fold level is a number in the range 0 to `kFoldLevelNumberMask (&h0FFF)`. However, the initial fold level is set to `kFoldLevelBase (&h400)` to allow unsigned arithmetic on folding levels. There are two addition flag bits. `kFoldLevelWhiteFlag` indicates that the line is blank and allows it to be treated slightly different than its level may indicate. For example, blank lines should generally not be fold points and will be considered part of the preceding section even though they may have a lesser fold level. `kFoldLevelHeaderFlag` indicates that the line is a header (fold point). `kFoldLevelNone` is a default level that may occur before folding.

Use `FoldLevel(line) AND kFoldLevelNumberMask` to get the fold level of a line. Likewise, use `FoldLevel(line) AND kFoldLevelNumber*Flag` to get the state of the flags. To set the fold level you must or in the associated flags. For instance, to set the level to `thisLevel` and mark a line as being a fold point use: `FoldLevel(line) = thisLevel OR kFoldLevelHeaderFlag`.

This method causes the display to redraw.
(Read and Write computed property)

4.2.499 KeyWords(keyWordSet as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The keyword list.

Notes: You can set up to 9 lists of keywords for use by the current lexer. keyWordSet can be 0 to 8 (actually 0 to KEYWORDSET_MAX) and selects which keyword list to replace. keyWords is a list of keywords separated by spaces, tabs, "\n" or "\r" or any combination of these. It is expected that the keywords will be composed of standard ASCII printing characters, but there is nothing to stop you using any non-separator character codes from 1 to 255 (except common sense).

How these keywords are used is entirely up to the lexer. Some languages, such as HTML may contain embedded languages, VBScript and JavaScript are common for HTML. For HTML, key word set 0 is for HTML, 1 is for JavaScript and 2 is for VBScript, 3 is for Python, 4 is for PHP and 5 is for SGML and DTD keywords. Review the lexer code to see examples of keyword list. A fully conforming lexer sets the fourth argument of the LexerModule constructor to be a list of strings that describe the uses of the keyword lists. Alternatively, you might use set 0 for general keywords, set 1 for keywords that cause indentation and set 2 for keywords that cause unindentation. Yet again, you might have a simple lexer that colours keywords and you could change languages by changing the keywords in set 0. There is nothing to stop you building your own keyword lists into the lexer, but this means that the lexer must be rebuilt if more keywords are added.
(Read and Write computed property)

4.2.500 LineIndentation(line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The amount of indentation on a line.

Notes: The indentation is measured in character columns, which correspond to the width of space characters.

(Read and Write computed property)

4.2.501 LineState(Line as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The state for each line.

Notes: As well as the 8 bits of lexical state stored for each character there is also an integer stored for each line. This can be used for longer lived parse states such as what the current scripting language is in an ASP page. Assign to LineState to set the integer value and query LineState() to get the value. Changing the

value produces a `ChangeLineState` event.
(Read and Write computed property)

4.2.502 `MarginStyle(Line as Integer)` as `ScintillaStyleMBS`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tyle for the margin on this line.

Notes: The style to use for the margin.
(Read and Write computed property)

4.2.503 `MarginStyles(line as Integer)` as `MemoryBlock`

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The styles for the margin on this line.

Notes: The `MemoryBlock` contains an array of bytes with each byte setting the style of the corresponding text byte similar to style index.
(Read and Write computed property)

4.2.504 MarginText(line as Integer) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The text for the margin on this line.

Notes: Text margins are created with the type `kMarginTypeText` or `kMarginTypeRText`. A different string may be set for each line with `MarginText()`. The whole of the text margin on a line may be displayed in a particular style with `MarginStyle()` or each character may be individually styled with `MarginStyles()` which uses an array of bytes with each byte setting the style of the corresponding text byte similar to `style index`. Setting a text margin will cause a `kModificationFlagsChangeMargin` notification to be sent.

Only some style attributes are active in text margins: `font`, `size/sizeFractional`, `bold/weight`, `italics`, `fore`, `back`, and `characterSet`.

(Read and Write computed property)

4.2.505 PropertyValue(Key as String) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or get properties.

Notes: Lookup a keyword:value pair using the specified key; if found, copy the value to the user-supplied buffer and return the length (not including the terminating 0). If not found, copy an empty string to the buffer and return 0.

If the value argument is 0 then the length that should be allocated to store the value is returned; again, the terminating 0 is not included.

You can communicate settings to lexers with keyword:value string pairs. There is no limit to the number of keyword pairs you can set, other than available memory. `key` is a case sensitive keyword, `value` is a string that is associated with the keyword. If there is already a value string associated with the keyword, it is replaced. If you pass a zero length string, the method does nothing. Both key and value are used without modification; extra spaces at the beginning or end of key are significant.

The value string can no longer refer to other keywords as was possible in older releases of Scintilla.

Lexers may only store values for keywords they support.

Currently the "fold" property is defined for most of the lexers to set the fold structure if set to "1". `SCLEX_PYTHON` understands "tab.timmy.whinge.level" as a setting that determines how to indicate bad indentation. Most keywords have values that are interpreted as integers. Search the lexer sources for `GetPropertyInt` to see how properties are used.

There is a convention for naming properties used by lexers so that the set of properties can be found by scripts. Property names should start with "lexer.<lexer>." or "fold.<lexer>." when they apply to one lexer or start with "lexer." or "fold." if they apply to multiple lexers.

Applications may discover the set of properties used by searching the source code of lexers for lines that contain `GetProperty` or `DefineProperty` and a double quoted string and extract the value of the double

quoted string as the property name. The `lexilla/scripts/LexillaData.py` script does this and can be used as an example. Documentation for the property may be located above the call as a multi-line comment starting with `,Ä@// property <property-name>`
(Read and Write computed property)

4.2.506 Representation(encodedCharacter as String) as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Sets or gets a representation.

Notes: Some characters, such as control characters and invalid bytes, do not have a visual glyph or use a glyph that is hard to distinguish.

Control characters (characters with codes less than 32, or between 128 and 159 in some encodings) are displayed by Scintilla using their mnemonics inverted in a rounded rectangle. These mnemonics come from the early days of signalling, though some are still used (LF = Line Feed, BS = Back Space, CR = Carriage Return, for example).

For the low 'C0' values: "NUL", "SOH", "STX", "ETX", "EOT", "ENQ", "ACK", "BEL", "BS", "HT", "LF", "VT", "FF", "CR", "SO", "SI", "DLE", "DC1", "DC2", "DC3", "DC4", "NAK", "SYN", "ETB", "CAN", "EM", "SUB", "ESC", "FS", "GS", "RS", "US".

For the high 'C1' values: "PAD", "HOP", "BPH", "NBH", "IND", "NEL", "SSA", "ESA", "HTS", "HTJ", "VTS", "PLD", "PLU", "RI", "SS2", "SS3", "DCS", "PU1", "PU2", "STS", "CCH", "MW", "SPA", "EPA", "SOS", "SGCI", "SCI", "CSI", "ST", "OSC", "PM", "APC".

Invalid bytes are shown in a similar way with an 'x' followed by their value in hexadecimal, like "xFE".

Any character, including those normally displayed as mnemonics may be represented by a Unicode string inverted in a rounded rectangle.

For example, the Ohm sign ,Ñ¶ U+2126 looks very similar to the Greek Omega character €© U+03C9 so, for the UTF-8 encoding, to distinguish the Ohm sign as "U+2126 ,Ñ¶" this call could be made: `Representation(",Ñ¶", "U+2126 ,Ñ¶")`

The `encodedCharacter` parameter is a string of the bytes for one character in the current encoding. This can not be used to set a representation for multiple-character strings.

The `representation` parameter is an UTF-8 string with a maximum length of 200 bytes.

One exception to the single character restriction is that the two character sequence "CRLF" (Carriage Return + Line Feed) can have a representation that is visible in line end viewing (ViewEOL property) mode. If there is no representation for "CRLF" then the individual 'CR' and 'LF' representations will be seen.

The NULL (0) character is a special case and specified as an empty string.
(Read and Write computed property)

4.2.507 RepresentationAppearance(encodedCharacter as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The appearance may be changed using these flags.

Notes: If a colour is set and the appearance is set without RepresentationColour() then the representation will show in the colour of the underlying text.

(Read and Write computed property)

4.2.508 RepresentationColour(encodedCharacter as String) as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The colour and translucency of a representation may be set.

Notes: (Read and Write computed property)

4.2.509 SelectionNAnchor(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the anchor of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.2.510 SelectionNAnchorVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.2.511 SelectionNCaret(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.2.512 SelectionNCaretVirtualSpace(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the position and amount of virtual space for the caret of each already existing selection.

Notes: Selection parameter is zero based.

(Read and Write computed property)

4.2.513 SelectionNEnd(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: et or query the end position of each already existing selection.

Notes: Mostly of use to query each range for its text. The selection parameter is zero-based.

(Read and Write computed property)

4.2.514 SelectionNStart(selection as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set or query the start position of each already existing selection.

Notes: Mostly of use to query each range for its text. The selection parameter is zero-based.

(Read and Write computed property)

4.2.515 Events

4.2.516 AutoCompleteCancelled

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Auto complete was cancelled.

4.2.517 AutoCompleteCharacterDeleted

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user deleted a character while autocompletion list was active.

4.2.518 AutoCompleteCompleted(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated after an autocompletion has inserted its text.

Notes:

Parameter	Description
position	The start position of the word being completed.
text	The text of the selection.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred. See the table below.

Symbol	Value	Meaning
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.

4.2.519 AutoCompleteSelection(Position as Integer, Character as Integer, Text as String, listCompletionMethod as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user has selected an item in an autocompletion list.

Notes: The event is sent before the selection is inserted. Automatic insertion can be cancelled by calling AutoCCancel method before returning from the event.

Parameter	Description
position	The start position of the word being completed.
text	The text of the selection.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred. See the table below.

Symbol	Value	Meaning
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.

4.2.520 AutoCompleteSelectionChange(Position as Integer, Text as String, listType as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is sent when items are highlighted in an autocompletion or user list.

Notes:

Field	Usage
listType	This is set to the listType parameter from the SCI_USERLISTSHOW message or 0 for an autocompletion.
text	The text of the selection.
position	The position the list was displayed at.

4.2.521 CallTipClick(Position as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated when the user clicks on a calltip.

Notes: This event can be used to display the next function prototype when a function name is overloaded with different arguments. The position field is set to 1 if the click is in an up arrow, 2 if in a down arrow, and 0 if elsewhere.

4.2.522 CharacterAdded(Character as Integer, CharacterSource as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This is sent when the user types an ordinary text character (as opposed to a command character) that is entered into the text.

Notes: The container can use this to decide to display a call tip or an auto completion list.

For single byte character sets, this is the byte value of the character; for UTF-8, it is the Unicode code point; for DBCS, it is (first byte * 256 + second byte) for 2 byte characters and the byte value for 1 byte characters. This notification is sent before the character has been styled so processing that depends on styling should instead be performed in the UpdateUI event.

Symbol	Value	Meaning
kCharacterSourceDirectInput	0	Direct input characters, including characters generated by calling keyboard commands like NewLine method.
kCharacterSourceTentativeInput	1	Tentative input characters. They are used by IME (inline mode, see IMEInteraction) to composite final string, normally different from final composited string (which is the string that has been truly added into current document), and may be withdrawn when the user cancels typing (e.g. by pressing Esc key). Some system (at least Cocoa) also use tentative input for non-IME features like using dead key to composite diacritical marks (grave accent, etc.). These characters are not added to macro recording. Most applications can simply ignore the notification when this value is set.
kCharacterSourceImeResult	2	IME (either inline or windowed mode) full composited string. Modern IME is able to composite English word or sentence, when this value is set, current character may not a Chinese, Japanese or Korean character. Currently, this is only set on Windows.

4.2.523 Close

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control is about to close.

In Xojo version 2021r3 and newer this event is named Closing.

4.2.524 ConstructContextualMenu(base as MenuItem, x as Integer, y as Integer) as Boolean

Plugin Version: 22.1, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is called when it is appropriate to display a contextual menu for the control.

4.2.525 ContextualMenuAction(hitItem as MenuItem) as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Called when a menuitem is chosen.

Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

You can use UsePopUp(kPopUpNever) to disable the contextual menu from Scintilla and use Xojo menus.

4.2.526 DoubleClick(Position as Integer, line as integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The mouse button was double clicked in editor.

Notes: The position parameter is set to the text position of the double click, the line parameter is set to the line of the double click, and the modifiers parameter is set to the key modifiers held down in a similar manner to Key event.

4.2.527 DWellEnd(Position as Integer, X as Integer, Y as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: DWellEnd is generated after a DWellStart and the mouse is moved or other activity such as key press indicates the dwell is over.

4.2.528 DWellStart(Position as Integer, X as Integer, Y as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: DWellStart is generated when the user keeps the mouse in one position for the dwell period (see MouseDwellTime).

4.2.529 EnableMenuItems

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The event where you can enable menu items.

In Xojo version 2021r3 and newer this event is named MenuBarSelected.

4.2.530 FocusIn

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is raised when Scintilla receives focus.

Notes: While the control can have a focus from the Xojo point of view, this event informs you that the actual text control part got focus.

So the Xojo wrapper control can have a focus and within it the text control can then have a focus and there

are two different states.

4.2.531 FocusOut

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is raised when it loses focus.

4.2.532 FolderToggled(Line as Integer, Position as Integer, Margin as Scintilla-MarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: A folder was toggled due to a mouse click.

Notes: This is called when a folder is hit.

MarginClicked event will also be raised.

4.2.533 GotFocus

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control got focus.

In Xojo version 2021r3 and newer this event is named FocusReceived.

4.2.534 HotSpotClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user clicks on text that is in a style with the hotspot attribute set.

Notes: This event can be used to link to variable definitions or web pages. In the notification handler, you should avoid calling any function that modifies the current selection or caret position. The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key event. Only the state of the Ctrl key is reported for HotspotReleaseClick.

4.2.535 HotSpotDoubleClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user double clicks on text that is in a style with the hotspot attribute set.

Notes: This event can be used to link to variable definitions or web pages. In the notification handler, you should avoid calling any function that modifies the current selection or caret position. The position parameter is set the text position of the double click and the modifiers field set to the key modifiers held down in a similar manner to Key event. Only the state of the Ctrl key is reported for HotspotReleaseClick.

4.2.536 HotspotReleaseClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event are generated when the user clicks on text that is in a style with the hotspot attribute set.

4.2.537 IndicatorClick(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event is generated when the user clicks the mouse on text that has an indicator.

Notes: The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key.

4.2.538 IndicatorRelease(Position as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: These event is generated when the user releases the mouse on text that has an indicator.

Notes: The position parameter is set the text position of the click or double click and the modifiers field set to the key modifiers held down in a similar manner to Key.

4.2.539 Key(Character as Integer, modifiers as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Reports all keys pressed but not consumed by Scintilla.

Notes: Used on GTK because of some problems with keyboard focus and is not sent by the Windows version. Character holds the key code and modifiers holds the modifier flags. This notification is sent if the modifiers include kKeyModAlt or kKeyModCtrl and the key code is less than 256.

4.2.540 LostFocus

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control lost focus.

In Xojo version 2021r3 and newer this event is named FocusLost.

4.2.541 MacroRecord(Message as Integer, wParam as Integer, lParam as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event for a new macro step to record.

Notes: The StartRecord and StopRecord method enable and disable macro recording. When enabled, each time a recordable change occurs, the MacroRecord event is sent to the container. It is up to the container to record the action. To see the complete list of SCI_* messages that are recordable, search the Scintilla source Editor.cxx for Editor::NotifyMacroRecord.

Field	Usage
message	The SCI_* message that caused the notification.
wParam	The value of wParam in the SCI_* message.
lParam	The value of lParam in the SCI_* message.

4.2.542 MarginClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event tell the container that the mouse was left clicked inside a margin that was marked as sensitive.

Notes: This can be used to perform folding or to place breakpoints.

4.2.543 MarginRightClick(Position as Integer, modifiers as Integer, margin as ScintillaMarginMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event tell the container that the mouse was right clicked inside a margin that was marked as sensitive.

Field	Usage
modifiers	The appropriate combination of <code>kKeyModShift</code> , <code>kKeyModCtrl</code> and <code>kKeyModAlt</code> to indicate the keys that were held down at the time of the margin click.
position	The position of the start of the line in the document that corresponds to the margin click.
margin	The margin number that was clicked.

Notes: This can be used to perform folding or to place breakpoints.

Field	Usage
modifiers	The appropriate combination of <code>kKeyModShift</code> , <code>kKeyModCtrl</code> and <code>kKeyModAlt</code> to indicate the keys that were held down at the time of the margin click.
position	The position of the start of the line in the document that corresponds to the margin click.
margin	The margin number that was clicked.

4.2.544 Modified(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer, foldLevelNow as Integer, foldLevelPrev as Integer, token as Integer, annotationLinesAdded as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This notification is sent when the text or styling of the document changes or is about to change.

Notes: You can set a mask for the notifications that are sent to the container with `ModEventMask`. The parameters contains information about what changed, how the change occurred and whether this changed the number of lines in the document. No modifications may be performed while in a Modified event.

The `modificationType` field has bits set to tell you what has been done. The `kModificationFlags*` constants bits correspond to actions. They tell you if the action was done by the user, or the result of Undo or Redo of a previous action.

4.2.545 ModifyAttemptReadOnly

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Parameter	Usage
modificationType	A set of flags that identify the change(s) made. See the next table.
position	Start position of a text or styling change. Set to 0 if not used.
length	Length of the change in bytes when the text or styling changes. Set to 0 if not used.
linesAdded	Number of added lines. If negative, the number of deleted lines. Set to 0 if not used or no lines added or deleted.
text	Valid for text changes, not for style changes. If we are collecting undo information this holds a pointer to the text that is handed to the Undo system, otherwise it is zero. For user performed SC_MOD_BEFOREDELETE the text field is 0.
line	The line number at which a fold level or marker change occurred. This is 0 if unused and may be -1 if more than one line changed.
foldLevelNow	The new fold level applied to the line or 0 if this parameter is unused.
foldLevelPrev	The previous folding level of the line or 0 if this parameter is unused.

Symbol	Value	Meaning	Parameter
MCModificationTypeNone	0	None done with an undo call. Will not cause text to scroll in text.	position, length, text, linesAdded
MCModificationTypeInsert	1	Text has been inserted into the document.	position, length, text, linesAdded
MCModificationTypeDelete	2	Text has been removed from the document.	position, length, text, linesAdded
MCModificationTypeChangeStyle	4	A style change has occurred.	line, length, position, foldLevelPrev
MCModificationTypeFold	8	A folding change has occurred.	line
MCModificationTypeNone	0x1000	Indicates the operation took place in the text.	None
MCModificationTypeText	0x2000	Indicates the text was the result of an Undo.	None
MCModificationTypeStyle	0x4000	Indicates the type the result of a Style.	None
MCModificationTypeUndo	0x8000	This is part of a multi-step Undo or Redo transaction.	None
MCModificationTypeBeforeDelete	0x10000	This is the first step in an Undo/Redo transaction.	None
MCModificationTypeAfterDelete	0x20000	One or more markers has changed in a line.	line
MCModificationTypeFoldLevel	0x40000	That a fold level has changed in the document.	position, if predefined by user then text in before, length in before
MCModificationTypeFoldLevelNow	0x80000	That a fold level has changed from the document.	position, length
MCModificationTypeFoldLevelPrev	0x100000	An indicator has been added or removed from a range of text.	position, length
MCModificationTypeChangeFoldLevel	0x200000	A line wrap has changed because lineWraps are on.	line
MCModificationTypeChangeFoldLevelNow	0x400000	The regular tab stops on a line have changed because ChangeTabs or AddTabStop was called.	position, length
MCModificationTypeChangeFoldLevelPrev	0x800000	A regular tab stop has changed from a range of text.	position, length
MCModificationTypeChangeFoldLevelNowPrev	0x1000000	An operation has changed.	line
MCModificationTypeChangeFoldLevelNowPrev	0x2000000	This is about to be inserted. The handler may change the text being inserted by calling SC_CHANGEINSERTION. No other modifications may be made in this handler.	position, length, text
MCModificationTypeChangeFoldLevelNowPrev	0x4000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0x8000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0x10000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0x20000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0x40000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0x80000000	This is part of an Undo or Redo with undo/redo changes.	None
MCModificationTypeChangeFoldLevelNowPrev	0xFFFFFFFF	This is a mask for all valid flags. This is the default mask state set by MacDraw/TextEdit.	None

Function: When in read-only mode, this notification is sent to the container if the user tries to change the text.

Notes: This can be used to check the document out of a version control system. You can set the read-only state of a document with ReadOnly property.

4.2.546 NeedsShown(Position as Integer, length as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Scintilla has determined that a range of lines that is currently invisible should be made visible.

Example:

```

sub NeedsShown(Position as Integer)
dim firstLine as Integer = LineFromPosition(me.position)
dim lastLine as Integer = LineFromPosition(me.position+me.length-1)
for line as integer = firstLine to lastLine
me.EnsureVisible(line)
next
end sub
    
```

Notes: An example of where this may be needed is if the end of line of a contracted fold point is deleted. This message is sent to the container in case it wants to make the line visible in some unusual way such as making the whole document visible. Most containers will just ensure each line in the range is visible by calling `EnsureVisible`. The position and length fields of `SCNotification` indicate the range of the document that should be made visible.

The container code will be similar to the following code skeleton in the example above. If the event is not implemented, we do similar automatically.

4.2.547 Open

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function:

The control is about to be created and you can initialize it. In Xojo version 2021r3 and newer this event is named `Opening`.

4.2.548 Painted

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Painting has just been done.

Notes: Useful when you want to update some other widgets based on a change in Scintilla, but want to have the paint occur first to appear more responsive.

4.2.549 Prepare

Plugin Version: 22.4, Platforms: macOS, Linux, Windows, Targets: .

Function: The prepare event.

Notes: Called before we create the control, so you can change properties like `HasBorder`.

4.2.550 SavePointLeft

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Sent to the container when the save point is entered or left, allowing the container to display a "document dirty" indicator and change its menus.

4.2.551 SavePointReached

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Sent to the container when the save point is entered or left, allowing the container to display a "document dirty" indicator and change its menus.

4.2.552 ScaleFactorChanged(NewFactor as double)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.2.553 SelectionChanged(updated as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Selection changed.

Notes: If content is changed or selection, this event is fired.

The UpdateUI event will also be called.

4.2.554 StyleNeeded(Position as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Queries you to provide style information.

Example:

```
// sample event to color digits
```

```
Sub StyleNeeded(Position as Integer) Handles StyleNeeded
```

```
#pragma BackgroundTasks false
```

```
Dim startPos As Integer = Me.EndStyled
```

```
Dim lineNumber As Integer = Me.LineFromPosition(startPos)
```

```
Dim LineStartPos As Integer = Me.PositionFromLine(lineNumber)
```

```
System.DebugLog "Style at "+Position.ToString+" from "+LineStartPos.ToString+" to "+position.ToString
```

```
Dim t As String = Me.Text
```

```
Dim pos As Integer = LineStartPos
```

```

While pos < position
Dim ch As Integer = t.Middle(pos, 1).Asc
If ch >= 48 And ch <= 57 Then
// digit
Me.SetStyling(pos, 1, Me.Style(2))
end if

pos = pos + 1
Wend
End Sub

```

Notes: If you used no explicit lexer to make the container act as the lexer, you will receive this notification when Scintilla is about to display or print text that requires styling.

You are required to style the text from the line that contains the position returned by `EndStyled` up to the position passed in `position`. Symbolically, you need code of the form:

```

startPos = me.EndStyled
lineNumber = LineFromPosition(startPos)
startPos = PositionFromLine(lineNumber)
ApplyStyles(startPos, position)

```

4.2.555 TextChanged(Position as Integer, modificationType as Integer, Text as String, length as Integer, linesAdded as Integer, line as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Text changed.

Notes: Our plugin calls this to inform you about a text change.

No modifications may be performed while in a Modified event.

Modified event will also be raised.

4.2.556 UpdateUI(updated as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Either the text or styling of the document has changed or the selection range or scroll position may have changed.

Notes: Now would be a good time to update any container UI elements that depend on document or view state. As it is sometimes difficult to determine whether a change has occurred, these events may also fire

when there has been no actual change. The updated field is set to the bit set of things changed since the previous notification.

See kUpdate* constants.

4.2.557 URIDropped(text as String)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Indicates that the user has dragged a URI such as a file name or Web address onto Scintilla.

Notes: The container could interpret this as a request to open the file.

4.2.558 UserListSelection(Position as Integer, Character as Integer, Text as String, listType as Integer, listCompletionMethod as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The user has selected an item in a user list.

Notes:

Field	Usage
listType	This is set to the listType parameter from the UserListShow message that initiated the list.
text	The text of the selection.
position	The position the list was displayed at.
Character	If a fillup character was the method of selection, the used character, otherwise 0.
listCompletionMethod	A value indicating the way in which the completion occurred.

4.2.559 Zoom

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: .

Function: This event is generated when the user zooms the display using the keyboard or the Zoom method is called.

Notes: This event can be used to recalculate positions, such as the width of the line number margin to maintain sizes in terms of characters rather than pixels.

See also:

- 4.2.490 Zoom as Integer

4.2.560 Constants

Constants

Constant	Value	Description
kAlphaOpaque	255	One of the alpha channel constants. Opaque color.
kAlphaTransparent	0	One of the alpha channel constants. Full transparency.
kInvalidPosition	-1	Invalid position constant.
kMaskFolders	&hFE000000	The mask for folder flags.
kTimeForever	10000000	The constant for MouseDwellTime to mean forever in duration.

Accessibility Status

Constant	Value	Description
kAccessibilityDisabled	0	Accessibility is disabled.
kAccessibilityEnabled	1	Accessibility is enabled.

Alpha

Constant	Value	Description
kAlphaNoAlpha	256	Special value to indicate no alpha.

Annotation Visibility

Constant	Value	Description
kAnnotationVisibleBoxed	2	Annotations are indented to match the text and are surrounded by a box.
kAnnotationVisibleHidden	0	Annotations are not displayed.
kAnnotationVisibleIndented	3	Annotations are indented to match the text.
kAnnotationVisibleStandard	1	Annotations are drawn left justified with no adornment.

Auto Completion Flags

Constant	Value	Description
kAutoCompleteOptionFixedSize	1	On Win32 only, use a fixed size list instead of one that can be resized by the user. This also avoids a header rectangle above the list.
kAutoCompleteOptionNormal	0	Display autocompletion using default settings.

Automatic Folding

Constant	Value	Description
kAutomaticFoldChange	&h0004	Show lines as needed when fold structure is changed. The Modified notification is still sent unless it is disabled by the container.
kAutomaticFoldClick	&h0002	Handle clicks in fold margin automatically. This avoids sending the MarginClick event for folding margins.
kAutomaticFoldNone	&h0000	Value with no automatic behaviour.
kAutomaticFoldShow	&h0001	Automatically show lines as needed. This avoids sending the NeedsShown notification.

Bidirectional Modes

Constant	Value	Description
kBidirectionalDisabled	0	Disabled
kBidirectionalL2R	1	Left to Right
kBidirectionalR2L	2	Right to Left

Caret Policy

Constant	Value	Description
kCaretPolicyEven	&h08	If not set, instead of having symmetrical UZs, the left and bottom UZs are extended up to right and top UZs respectively. This way, we favour the displaying of useful information: the beginning of lines, where most code reside, and the lines after the caret, for example, the body of a function.
kCaretPolicyJumps	&h10	If set, the display is moved more energetically so the caret can move in the same direction longer before the policy is applied again. '3UZ' notation is used to indicate three time the size of the UZ as a distance to the margin.
kCaretPolicySlop	&h01	If set, we can define a slop value: caretSlop. This value defines an unwanted zone (UZ) where the caret is... unwanted. This zone is defined as a number of pixels near the vertical margins, and as a number of lines near the horizontal margins. By keeping the caret away from the edges, it is seen within its context. This makes it likely that the identifier that the caret is on can be completely seen, and that the current line is seen with some of the lines following it, which are often dependent on that line.
kCaretPolicyStrict	&h04	If set, the policy set by kCaretPolicySlop is enforced... strictly. The caret is centred on the display if caretSlop is not set, and cannot go in the UZ if caretSlop is set.

Caret Sticky

Constant	Value	Description
kCaretStickyOff	0	When set to kCaretStickyOff (0), the sticky flag is off; all text changes (and all caret position changes) will remember the caret's new horizontal position when moving to different lines. This is the default.
kCaretStickyOn	1	When set to kCaretStickyOn (1), the sticky flag is on, and the only thing which will cause the editor to remember the horizontal caret position is moving the caret with mouse or keyboard (left/right arrow keys, home/end keys, etc).
kCaretStickyWhiteSpace	2	When set to kCaretStickyWhiteSpace (2), the caret acts like mode 0 (sticky off) except under one special case; when space or tab characters are inserted. (Including pasting only space/tabs – undo, redo, etc. do not exhibit this behaviour..).

Caret Styles

Constant	Value	Description
kCaretStyleBlock	2	Draws insertion carets as blocks.
kCaretStyleBlockAfter	&h100	When the caret end of a range is at the end and a block caret style is chosen, draws the block outside the selection instead of inside. This can be ored with kCaretStyleBlock or kCaretStyleBlockCurses.
kCaretStyleInsMask	&hF	The mask to only get the bits for insert mode.
kCaretStyleInvisible	0	Carets are not drawn at all.
kCaretStyleLine	1	Draws insertion carets as lines. This is the default.
kCaretStyleOverstrikeBar	0	Draws an overstrike caret as a bar. This is the default.
kCaretStyleOverstrikeBlock	&h10	Draws an overstrike caret as a block. This should be ored with one of the first three styles.

Case Insensitive Behavior Flags

Constant	Value	Description
kCaseInsensitiveBehaviourIgnoreCase	1	Ignore Case
kCaseInsensitiveBehaviourRespectCase	0	Respect Case

Character Sets

Constant	Value	Description
kCharacterSetAnsi	0	ANSI
kCharacterSetArabic	178	Arabic
kCharacterSetBaltic	186	Baltic
kCharacterSetChineseBig5	136	Chinese Big 5
kCharacterSetCyrillic	1251	Cyrillic
kCharacterSetDefault	1	Default one
kCharacterSetEastEurope	238	East Europe
kCharacterSetGB2312	134	GB 2312
kCharacterSetGreek	161	Greek
kCharacterSetHangul	129	Hangul
kCharacterSetHebrew	177	Hebrew
kCharacterSetIso8859_15	1000	ISO 8859-15
kCharacterSetJohab	130	Johab
kCharacterSetMac	77	Mac
kCharacterSetOem	255	OEM
kCharacterSetOem866	866	OEM 866
kCharacterSetRussian	204	Russian
kCharacterSetShiftJis	128	ShiftJis
kCharacterSetSymbol	2	Symbol
kCharacterSetThai	222	Thai
kCharacterSetTurkish	162	Turkish
kCharacterSetVietnamese	163	Vietnamese

Character Sources

Constant	Value	Description
kCharacterSourceDirectInput	0	Direct input characters, including characters generated by calling keyboard commands like NewLine method.
kCharacterSourceImeResult	2	IME (either inline or windowed mode) full composited string. Modern IME is able to composite English word or sentence, when this value is set, current character may not a Chinese, Japanese or Korean character. Currently, this is only set on Windows.
kCharacterSourceTentativeInput	1	Tentative input characters. They are used by IME (inline mode, see IMEInteraction) to composite final string, normally different from final composited string (which is the string that has been truly added into current document), and may be withdrawn when the user cancels typing (e.g. by pressing Esc key). Some system (at least Cocoa) also use tentative input for non-IME features like using dead key to composite diacritical marks (grave accent, etc.). These characters are not added to macro recording. Most applications can simply ignore the notification when this value is set.

Completion Methods

Constant	Value	Description
kCompletionMethodsCommand	5	The AutoCSelect method triggered the completion. Character is 0.
kCompletionMethodsDoubleClick	2	A double-click triggered the completion. Character is 0.
kCompletionMethodsFillUp	1	A fillup character triggered the completion. The character used is in Character
kCompletionMethodsNewline	4	A new line or Newline method triggered the completion. Character is 0.
kCompletionMethodsTab	3	The tab key or Tab method triggered the completion. Character is 0.

Cursor Shapes

Constant	Value	Description
kCursorShapeArrow	2	Normal arrow.
kCursorShapeNormal	-1	The normal cursor is displayed.
kCursorShapeReverseArrow	7	Reverse arrow.
kCursorShapeWait	4	The wait cursor is displayed when the mouse is over or owned by the Scintilla window.

Document Option

Constant	Value	Description
kDocumentOptionDefault	0	Standard options.
kDocumentOptionStylesNone	&h1	Stops allocation of memory to style characters which saves significant memory, often 40% with the whole document treated as being style 0.
kDocumentOptionTextLarge	&h100	Accommodates documents larger than 2 GigaBytes in 64-bit executables.

Long line display modes

Constant	Value	Description
kEdgeVisualStyleBackground	2	The background colour of characters after the column limit is changed to the colour set by EdgeColor property. This is recommended for proportional fonts.
kEdgeVisualStyleLine	1	A vertical line is drawn at the column number set by EdgeColumn(). This works well for monospaced fonts. The line is drawn at a position based on the width of a space character in kStylesCommonDefault, so it may not work very well if your styles use proportional fonts or if your style have varied font sizes or you use a mixture of bold, italic and normal text.
kEdgeVisualStyleMultiLine	3	This is similar to kEdgeVisualStyleLine but in contrary to showing only one single line a configurable set of vertical lines can be shown simultaneously. This edgeMode uses a completely independent dataset that can only be configured by using the MultiEdge* methods.
kEdgeVisualStyleNone	0	Long lines are not marked. This is the default state.

Elements

Constant	Value	Description
kElementCaret	40	Colour of caret for main selection
kElementCaretAdditional	41	Colour of caret for additional selections
kElementCaretLineBack	50	Colour of caret line background
kElementFoldLine	80	Colour of fold lines
kElementHiddenLine	81	Colour of line drawn to show there are lines hidden at that point
kElementHotSpotActive	70	Text colour of active hot spot
kElementHotSpotActiveBack	71	Background colour of active hot spot
kElementList	0	Text colour in autocompletion lists
kElementListBack	1	Background colour of autocompletion lists
kElementListSelected	2	Text colour of selected item in autocompletion lists
kElementListSelectedBack	3	Background colour of selected item in autocompletion lists
kElementSelectionAdditionalBack	13	Background colour of additional selections
kElementSelectionAdditionalText	12	Text colour of additional selections
kElementSelectionBack	11	Background colour of main selection
kElementSelectionInactiveBack	17	Background colour of selections when another window has focus
kElementSelectionInactiveText	16	Text colour of selections when another window has focus
kElementSelectionSecondaryBack	15	Background colour of selections when another window contains the primary selection
kElementSelectionSecondaryText	14	Text colour of selections when another window contains the primary selection
kElementSelectionText	10	Text colour of main selection
kElementWhiteSpace	60	Colour of visible white space
kElementWhiteSpaceBack	61	Colour of visible white space background

End Of Line

Constant	Value	Description
kEndOfLineCR	1	CR, the old Mac line ending.
kEndOfLineCRLF	0	CRLF, the Windows line ending.
kEndOfLineLF	2	LF, the unix line ending.

End of Line Annotation

Constant	Value	Description
kEOLAnnotationVisibleAngleCircle	&h102	Surround with a ,óÑshape,óó with angled left end and curved right end.
kEOLAnnotationVisibleAngleFlat	&h112	Surround with a ,óÑshape with angled left end and flat right end.
kEOLAnnotationVisibleAngles	&h122	Surround with a ,óÑshape,ñ with angles on each end.
kEOLAnnotationVisibleBoxed	&h2	End of Line Annotations are indented to match the text and are surrounded by a box.
kEOLAnnotationVisibleCircleAngle	&h120	Surround with a ,óñshape,ñ with curved left end and angled right end.
kEOLAnnotationVisibleCircleFlat	&h110	Surround with a ,óñshape with curved left end and flat right end.
kEOLAnnotationVisibleFlatAngle	&h121	Surround with a shape,ñ with flat left end and angled right end.
kEOLAnnotationVisibleFlatCircle	&h101	Surround with a shape,óó with flat left end and curved right end.
kEOLAnnotationVisibleFlats	&h111	Surround with a shape with flat ends.
kEOLAnnotationVisibleHidden	&h0	End of Line Annotations are not displayed.
kEOLAnnotationVisibleStadium	&h100	Surround with a ,óñstadium,óó - a rectangle with rounded ends.
kEOLAnnotationVisibleStandard	&h1	End of Line Annotations are drawn left justified with no adornment.

Search Flags

Constant	Value	Description
kFindOptionCxx11RegEx	&h00800000	This flag may be set to use C++11 <regex> instead of Scintilla's basic regular expressions. If the regular expression is invalid then -1 is returned and status is set to SC_STATUS_WARN_REGEX. The ECMAScript flag is set on the regex object and UTF-8 documents will exhibit Unicode-compliant behaviour. For MSVC, where wchar_t is 16-bits, the regular expression "." will match a single astral-plane character. There may be other differences between compilers. Must also have kFindOptionRegExP set.
kFindOptionMatchCase	&h4	A match only occurs with text that matches the case of the search string.
kFindOptionNone	&h0	Default setting is case-insensitive literal match.
kFindOptionPosix	&h00400000	Treat regular expression in a more POSIX compatible manner by interpreting bare (and) for tagged sections rather than \ (and \). Has no effect when kFindOptionCxx11RegEx is set.
kFindOptionRegExp	&h00200000	The search string should be interpreted as a regular expression. Uses Scintilla's base implementation unless combined with kFindOptionCxx11RegEx.
kFindOptionWholeWord	&h2	A match only occurs if the characters before and after are not word characters as defined by WordChars property.
kFindOptionWordStart	&h00100000	A match only occurs if the character before is not a word character as defined by WordChars.

Folder Actions

Constant	Value	Description
kFoldActionContract	0	Contract.
kFoldActionExpand	1	Expand.
kFoldActionToggle	2	Toggle between contracted and expanded.

Folder Display Text Style

Constant	Value	Description
kFoldDisplayTextStyleBoxed	2	Display the text tags with a box drawn around them.
kFoldDisplayTextStyleHidden	0	Do not display the text tags. This is the default.
kFoldDisplayTextStyleStandard	1	Display the text tags.

Folder Flags

Constant	Value	Description
kFoldFlagLevelNumbers	&h0040	Display hexadecimal fold levels in line margin to aid debugging of folding. The appearance of this feature may change in the future.
kFoldFlagLineAfterContracted	&h0010	Draw below if not expanded
kFoldFlagLineAfterExpanded	&h0008	Draw below if expanded
kFoldFlagLineBeforeContracted	&h0004	Draw above if not expanded
kFoldFlagLineBeforeExpanded	&h0002	Draw above if expanded
kFoldFlagLineStyle	&h0080	Display hexadecimal line state in line margin to aid debugging of lexing and folding. May not be used at the same time as kFoldFlagLevelNumbers.
kFoldFlagNone	&h0000	Default value.

Folder Levels

Constant	Value	Description
kFoldLevelBase	&h400	The initial fold level.
kFoldLevelHeaderFlag	&h2000	Indicates that the line is a header (fold point).
kFoldLevelNone	&h0	Default level that may occur before folding.
kFoldLevelNumberMask	&h0FFF	The mask for numbers.
kFoldLevelWhiteFlag	&h1000	Indicates that the line is blank and allows it to be treated slightly different then its level may indicate.

Font Quality with Antialiasing

Constant	Value	Description
kFontQualityQualityAntialiased	2	Antialiased
kFontQualityQualityDefault	0	Default.
kFontQualityQualityLcdOptimized	3	LCD Optimized
kFontQualityQualityMask	&hF	In case it is necessary to squeeze more options into this property, only a limited number of bits defined by kFontQualityQualityMask will be used for quality.
kFontQualityQualityNonAntialiased	1	Non Antialiased

Idle Styling

Constant	Value	Description
<code>kIdleStylingAfterVisible</code>	2	Text after the currently visible portion may be styled in the background.
<code>kIdleStylingAll</code>	3	Style both before and after the visible text.
<code>kIdleStylingNone</code>	0	Syntax styling is performed for all the currently visible text before displaying it.
<code>kIdleStylingToVisible</code>	1	A small amount of styling is performed before display and then further styling is performed incrementally in the background as an idle-time task.

IME Interaction Mode

Constant	Value	Description
<code>kIMEInteractionInline</code>	1	Show inline.
<code>kIMEInteractionWindowed</code>	0	Show on window.

Indentation Guides

Constant	Value	Description
<code>kIndentViewLookBoth</code>	3	Indentation guides are shown beyond the actual indentation up to the level of the next non-empty line or previous non-empty line whichever is the greater. This setting is good for most languages.
<code>kIndentViewLookForward</code>	2	Indentation guides are shown beyond the actual indentation up to the level of the next non-empty line. If the previous non-empty line was a fold header then indentation guides are shown for one more level of indent than that line. This setting is good for Python.
<code>kIndentViewNone</code>	0	No indentation guides are shown.
<code>kIndentViewReal</code>	1	Indentation guides are shown inside real indentation white space.

Modifier Keys

Constant	Value	Description
<code>kKeyModAlt</code>	4	Alt key. (named Option on MacOS usually)
<code>kKeyModCtrl</code>	2	Control key (the Command key on Mac, the Ctrl key on other platforms).
<code>kKeyModMeta</code>	16	Meta key (the Ctrl key on Mac, the Windows key on other platforms).
<code>kKeyModNorm</code>	0	No modifier key.
<code>kKeyModShift</code>	1	Shift Key
<code>kKeyModSuper</code>	8	This is the same as <code>kKeyModMeta</code> on all platforms.

Keys

Constant	Value	Description
kKeysAdd	310	
kKeysBack	8	
kKeysDelete	308	
kKeysDivide	312	
kKeysDown	300	
kKeysEnd	305	
kKeysEscape	7	
kKeysHome	304	
kKeysInsert	309	
kKeysLeft	302	
kKeysMenu	315	
kKeysNext	307	
kKeysPrior	306	
kKeysReturn	13	
kKeysRight	303	
kKeysRWin	314	
kKeysSubtract	311	
kKeysTab	9	
kKeysUp	301	
kKeysWin	313	

Layers

Constant	Value	Description
kLayerBase	0	Draw the selection background opaquely on the base layer
kLayerOverText	2	Draw the selection background translucently over the text.
kLayerUnderText	1	Draw the selection background translucently under the text. This will not work in single phase drawing mode as there is no under-text phase.

Layout line cache modes

Constant	Value	Description
kLineCacheCaret	1	One line is cached. This is the default.
kLineCacheDocument	3	All lines in the document.
kLineCacheNone	0	No lines are cached.
kLineCachePage	2	Visible lines plus the line containing the caret.

Line Character Index Types

Constant	Value	Description
kLineCharacterIndexTypeNone	0	Bytewise.
kLineCharacterIndexTypeUtf16	2	UTF-16 code units are indexed.
kLineCharacterIndexTypeUtf32	1	Whole characters are indexed.

Line End Types

Constant	Value	Description
kLineEndTypeDefault	0	
kLineEndTypeUnicode	1	

Margin Options

Constant	Value	Description
kMarginOptionNone	0	Whole wrapped line is selected.
kMarginOptionSubLineSelect	1	Only sub line of wrapped line is selected.

Modification Flags

Constant	Value	Description
kModificationFlagsBeforeDelete	&h800	Text is about to be deleted from the document.
kModificationFlagsBeforeInsert	&h400	Text is about to be inserted into the document.
kModificationFlagsChangeAnnotation	&h20000	An annotation has changed.
kModificationFlagsChangeEOLAnnotation	&h400000	An annotation has changed.
kModificationFlagsChangeFold	&h8	A folding change has occurred.
kModificationFlagsChangeIndicator	&h4000	An indicator has been added or removed from a range of text.
kModificationFlagsChangeLineState	&h8000	A line state has changed because SCI_SETLINESTATE was called.
kModificationFlagsChangeMargin	&h10000	A text margin has changed.
kModificationFlagsChangeMarker	&h200	One or more markers has changed in a line.
kModificationFlagsChangeStyle	&h4	A style change has occurred.
kModificationFlagsChangeTabStops	&h200000	The explicit tab stops on a line have changed because ClearTabStops or SetTabStops was called.
kModificationFlagsContainer	&h40000	This is set on for actions that the container stored into the Undo/Redo stack. AddUndoAction was called.
kModificationFlagsDeleteText	&h2	Text has been removed from the document.
kModificationFlagsEventMaskAll	&h7FFFFFFF	This is a mask for all valid flags. This is the default mask stored in the eventMask.
kModificationFlagsInsertCheck	&h100000	Text is about to be inserted. The handler may change the text to be inserted by calling ChangeInsertion method. No other modifications will occur if this handler.
kModificationFlagsInsertText	&h1	Text has been inserted into the document.
kModificationFlagsLastStepInUndoRedo	&h100	This is the final step in an Undo or Redo transaction.
kModificationFlagsLexerState	&h80000	The internal state of a lexer has changed over a range.
kModificationFlagsMultilineUndoRedo	&h1000	This is part of an Undo or Redo with multi-line changes.
kModificationFlagsMultiStepUndoRedo	&h80	This is part of a multi-step Undo or Redo transaction.
kModificationFlagsNone	&h0	Base value with no fields valid. Will not occur but is useful in some cases.
kModificationFlagsRedo	&h40	Information: this was the result of a Redo.
kModificationFlagsStartAction	&h2000	This is set on a kModificationFlagsUser action when it is the first action in an undo transaction. This can be used to integrate the Scintilla with an undo stack in the container application by adding a ScintillaUndoAction to the container's stack for the currently opened container transaction. A new container transaction if there is no open container transaction.
kModificationFlagsUndo	&h20	Information: this was the result of an Undo.
kModificationFlagsUser	&h10	Information: the operation was done by the user.

Auto Completion for Multiple Selections

Constant	Value	Description
kMultiAutoCompleteEach	1	Each selection.
kMultiAutoCompleteOnce	0	Only first selection.

Multi Paste Options

Constant	Value	Description
kMultiPasteEach	1	The paste text can go into each selection.
kMultiPasteOnce	0	The pasted text can go into just the main selection.

Ordering Options

Constant	Value	Description
kOrderingCustom	2	Custom sorting.
kOrderingPerformSort	1	The control will sort for you.
kOrderingPreSorted	0	You pass list pre-sorted.

Popup Modi

Constant	Value	Description
kPopUpAll	1	Show default editing menu if clicking on scintilla.
kPopUpNever	0	Never show default editing menu.
kPopUpText	2	Show default editing menu only if clicking on text area.

Print Options

Constant	Value	Description
kPrintOptionBlackOnWhite	2	Print all text as black on a white background.
kPrintOptionColourOnWhite	3	Everything prints in its own colour on a white background.
kPrintOptionColourOnWhiteDefaultBG	4	Everything prints in its own foreground colour but all styles up to and including kStylesCommonLineNumber will print on a white background.
kPrintOptionInvertLight	1	If you use a dark screen background this saves ink by inverting the lightness of all colours and printing on a white background.
kPrintOptionNormal	0	Print using the current screen colours with the exception of line number margins which print on a white background. This is the default.
kPrintOptionScreenColours	5	Print using the current screen colours for both foreground and background. This is the only mode that does not set the background colour of the line number margin to white.

Representation Appearance

Constant	Value	Description
kRepresentationAppearanceBlob	1	Draw the representation text inverted in a rounded rectangle. This is the default appearance.
kRepresentationAppearanceColour		Draw the representation in the colour set with RepresentationColour() instead of in the colour of the style of the text being represented.
kRepresentationAppearancePlain	0	Draw the representation text with no decorations.

Selection Mode

Constant	Value	Description
kSelectionModeLines	2	Line selection.
kSelectionModeRectangle	1	Rectangular
kSelectionModeStream	0	Stream
kSelectionModeThin	3	Thin rectangular selection

Status Codes

Constant	Value	Description
kStatusBadAlloc	2	Memory is exhausted.
kStatusFailure	1	Generic failure.
kStatusOk	0	No failures.
kStatusRegEx	1001	Regular expression is invalid.
kStatusWarnStart	1000	Warnings start with this value.

Support

Constant	Value	Description
kSupportsFractionalStrokeWidth	2	Can lines be drawn with fractional widths like 1.5 or 0.5 pixels?
kSupportsLineDrawsFinal	0	Whether drawing a line draws its final position. Only false on Win32 GDI.
kSupportsPixelDivisions	1	Are logical pixels larger than physical pixels? Currently only true for macOS Cocoa with 'retina' displays. When true, creating pixmaps at twice the resolution can produce clearer output with less blur.
kSupportsPixelModification	4	Can individual pixels be modified? This is false for character cell platforms like curses.
kSupportsTranslucentStroke	3	Can translucent lines, polygons, ellipses, and text be drawn?

Tab Draw Modes

Constant	Value	Description
kTabDrawModeLongArrow	0	
kTabDrawModeStrikeOut	1	

Drawing Technology

Constant	Value	Description
kTechnologyDefault	0	Default
kTechnologyDirectWrite	1	Use DirectWrite API.
kTechnologyDirectWriteDC	3	DirectWrite to draw into a GDI DC.
kTechnologyDirectWriteRetain	2	Use DirectWrite API with retaining frame.

Property Types

Constant	Value	Description
kTypePropertyBoolean	0	Property is a boolean.
kTypePropertyInteger	1	Property is an integer.
kTypePropertyString	2	Property is a string.

Undo Flags

Constant	Value	Description
kUndoFlagsMayCoalesce	1	If the container action may be coalesced along with any insertion and deletion actions into a single compound action.
kUndoFlagsNone	0	Coalescing treats coalescible container actions as transparent so will still only group together insertions that look like typing or deletions that look like multiple uses of the Backspace or Delete keys.

Update Flags

Constant	Value	Description
kUpdateContent	&h1	Contents, styling or markers may have been changed.
kUpdateHScroll	&h8	May have scrolled horizontally.
kUpdateNone	&h0	Value without any changes.
kUpdateSelection	&h2	Selection may have been changed.
kUpdateVScroll	&h4	May have scrolled vertically.

Virtual Space Flags

Constant	Value	Description
kVirtualSpaceNone	0	Disables all use of virtual space.
kVirtualSpaceNoWrapLineStart	4	Prevents left arrow movement and selection from wrapping to the previous line. This is most commonly desired in conjunction with virtual space but is an independent setting so works without virtual space.
kVirtualSpaceRectangularSelection	1	Rectangular selection.
kVirtualSpaceUserAccessible	2	User accessible.

Visibility Policy

Constant	Value	Description
kVisiblePolicySlop	&h01	If set, we can define a slop value: caretSlop. This value defines an unwanted zone (UZ) where the caret is... unwanted. This zone is defined as a number of pixels near the vertical margins, and as a number of lines near the horizontal margins. By keeping the caret away from the edges, it is seen within its context. This makes it likely that the identifier that the caret is on can be completely seen, and that the current line is seen with some of the lines following it, which are often dependent on that line.
kVisiblePolicyStrict	&h04	If set, the policy set by slop is kVisiblePolicySlop... strictly. The caret is centred on the display if caretSlop is not set, and cannot go in the UZ if caretSlop is set.

White Space Visibility

Constant	Value	Description
kWhiteSpaceInvisible	0	The normal display mode with white space displayed as an empty background colour.
kWhiteSpaceVisibleAfterIndent	2	White space used for indentation is displayed normally but after the first visible character, it is shown as dots and arrows.
kWhiteSpaceVisibleAlways	1	White space characters are drawn as dots and arrows,
kWhiteSpaceVisibleOnlyInIndent	3	White space used for indentation is displayed as dots and arrows.

Wrap Modes

Constant	Value	Description
kWrapChar	2	Enable wrapping between any characters.
kWrapNone	0	Disable line wrapping.
kWrapWhiteSpace	3	Enable wrapping on whitespace.
kWrapWord	1	Enable wrapping on word or style boundaries.

Wrap Indent Mode

Constant	Value	Description
kWrapIndentModeDeepIndent	3	Wrapped sublines are aligned to first subline indent plus two more levels of indentation
kWrapIndentModeFixed	0	Wrapped sublines aligned to left of window plus amount set by WrapStartIndent.
kWrapIndentModeIndent	2	Wrapped sublines are aligned to first subline indent plus one more level of indentation
kWrapIndentModeSame	1	Wrapped sublines are aligned to first subline indent

Wrap Visual Flags

Constant	Value	Description
kWrapVisualFlagEnd	&h0001	Visual flag at end of subline of a wrapped line.
kWrapVisualFlagMargin	&h0004	Visual flag in line number margin.
kWrapVisualFlagNone	&h0000	No visual flags
kWrapVisualFlagStart	&h0002	Visual flag at begin of subline of a wrapped line. Subline is indented by at least 1 to make room for the flag.

Wrap Visual Location

Constant	Value	Description
kWrapVisualLocationDefault	&h0000	Visual flags drawn near border
kWrapVisualLocationEndByText	&h0001	Visual flag at end of subline drawn near text
kWrapVisualLocationStartByText	&h0002	Visual flag at beginning of subline drawn near text

4.3 class ScintillaFailureExceptionMBS

4.3.1 class ScintillaFailureExceptionMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for an exception in Scintilla.

Notes: Subclass of the RuntimeException class.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr2](#)

4.4 class ScintillaIndicatorMBS

4.4.1 class ScintillaIndicatorMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for an indicator.

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr2](#)

4.4.2 Methods

4.4.3 Constructor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The private constructor.

4.4.4 IndicatorEnd(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Find the end of a range with one value from a position within the range.

Notes: Can be used to iterate through the document to discover all the indicator positions.

4.4.5 IndicatorStart(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Find the start of a range with one value from a position within the range.

Notes: Can be used to iterate through the document to discover all the indicator positions.

4.4.6 IndicatorValueAt(pos as Integer) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the value of a particular indicator at a position.

4.4.7 Properties

4.4.8 Alpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The alpha for drawing indicator.

Notes: Set and get the alpha transparency used for drawing the fill colour of the `kIndicatorStyleRoundBox` and `kIndicatorStyleStraightBox` rectangle. The alpha value can range from 0 (completely transparent) to 255 (no transparency).

(Read and Write property)

4.4.9 Flags as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the flags associated with an indicator.

Notes: There is currently one flag defined, `kIndicFlagValueFore`: when this flag is set the colour used by the indicator is not from the indicator's fore setting but instead from the value of the indicator at that point in the file. `kIndicFlagNone` is the default. This allows many colours to be displayed for a single indicator. The value is an RGB integer colour that has been ored with `kIndicValueBit(&h1000000)` when setting Value. To find the colour from the value, and the value with `kIndicValueMask(&hFFFFFF)`.

(Read and Write property)

4.4.10 ForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the colour used to draw an indicator.

Example:

// The default indicator colours are equivalent to:

`Indicator(0).ForeColor = &c007f00 // (dark green)`

`Indicator(1).ForeColor = &cff0000 // (light blue)`

`Indicator(2).ForeColor = &c0000ff // (light red)`

Notes: (Read and Write property)

4.4.11 HoverForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the colour used to draw indicators when the mouse is over them or the caret moved into them.

Notes: The mouse cursor also changes when an indicator is drawn in hover style. The default is for the hover appearance to be the same as the normal appearance and calling ForeColor or Style properties will also reset the hover attribute.

(Read and Write property)

4.4.12 HoverStyle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the style used to draw indicators when the mouse is over them or the caret moved into them.

Notes: The mouse cursor also changes when an indicator is drawn in hover style. The default is for the hover appearance to be the same as the normal appearance and calling ForeColor or Style properties will also reset the hover attribute.

(Read and Write property)

4.4.13 Indicator as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The indicator index.

Notes: (Read only property)

4.4.14 OutlineAlpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The alpha for outline drawing.

Notes: Set and get the alpha transparency used for drawing the outline colour of the kIndicatorStyleRoundBox and kIndicatorStyleStraightBox rectangle. The alpha value can range from 0 (completely transparent) to 255 (no transparency).

(Read and Write property)

4.4.15 Parent as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The parent control.

Notes: (Read only property)

4.4.16 StrokeWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the stroke width used to draw an indicator in hundredths of a pixel.

Notes: The default value is 100 indicating a width of one pixel. Some indicator styles do not support setting stroke width, generally where it makes no sense (`kIndicatorStylePoint`) or wasn't simple (`kIndicatorStyleSquigglePixmap`). The indicators supporting stroke width are: `kIndicatorStyleFullBoxPlain`, `kIndicatorStyleSquiggle`, `kIndicatorStyleTT`, `INDIC_DIAGONAL`, `kIndicatorStyleFullBoxStrike`, `kIndicatorStyleFullBoxBox`, `kIndicatorStyleFullBoxRoundBox`, `kIndicatorStyleStraightBox`, `kIndicatorStyleFullBox`, `kIndicatorStyleFullBoxDash`, `kIndicatorStyleFullBoxDots`, `kIndicatorStyleSquiggleLow`.

Fractional pixel widths are possible such as 50 for half a pixel wide. On many systems a half pixel value will appear as a fainter line but it allows drawing very thin lines on systems with multiple physical pixels per logical pixel. Half (logical) pixel lines are available on macOS with 'retina' displays, see `kSupportsPixelDivisions`.

(Read and Write property)

4.4.17 Style as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The style for the indicator.

Example:

// The default indicator styles are equivalent to:

```
Indicator(0).style = kIndicatorStyleSquiggle
Indicator(1).style = kIndicatorStyleTT
Indicator(2).style = kIndicatorStylePlain
```

Notes: (Read and Write property)

4.4.18 Tag as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tag value.

Notes: A variable for you to put any reference information you like.
(Read only property)

4.4.19 Under as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get whether an indicator is drawn under text or over(default).

Notes: Drawing under text does not work with the deprecated single phase drawing mode.
(Read and Write property)

4.4.20 Constants

Constants

Constant	Value	Description
kIndicValueBit	&h1000000	The value bit set if this is a color value. use Bitwise AND and kIndicValueMask to get the color value.
kIndicValueMask	&hFFFFFF	The mask to get the color part of the value.

Indicator Numbers

Constant	Value	Description
kIndicatorNumbersContainer	8	
kIndicatorNumbersIme	32	
kIndicatorNumbersImeMax	35	
kIndicatorNumbersMax	35	

Indicator Styles

Constant	Value	Description
kIndicatorStyleBox	6	A rectangle around the text.
kIndicatorStyleCompositionThick	14	A 2-pixel thick underline located at the bottom of the line to try to avoid touching the character base. Each side is inset 1 pixel so that different indicators in this style covering a range appear isolated. This is similar to an appearance used for the target in Asian language input composition.
kIndicatorStyleCompositionThin	15	A 1-pixel thick underline located just before the bottom of the line. Each side is inset 1 pixel so that different indicators in this style covering a range appear isolated. This is similar to an appearance used for non-target ranges in Asian language input composition.
kIndicatorStyleDash	9	A dashed underline.
kIndicatorStyleDiagonal	3	Diagonal hatching.
kIndicatorStyleDotBox	12	A dotted rectangle around the text using translucent drawing. Translucency alternates between the alpha and outline alpha settings with the top-left pixel using the alpha setting. Alpha and OutlineAlpha control the alpha transparency values. The default values are 30 for alpha and 50 for outline alpha. To avoid excessive memory allocation the maximum width of a dotted box is 4000 pixels.
kIndicatorStyleDots	10	A dotted underline.
kIndicatorStyleFullBox	16	A rectangle around the text using translucent drawing similar to kIndicatorStyleStraightBox but covering the entire character area.
kIndicatorStyleGradient	20	A vertical gradient between a colour and alpha at top to fully transparent at bottom.
kIndicatorStyleGradientCentre	21	A vertical gradient with the specified colour and alpha in the middle fading to fully transparent at top and bottom.
kIndicatorStyleHidden	5	An indicator with no visual effect.
kIndicatorStylePlain	0	Underlined with a single, straight line.
kIndicatorStylePoint	18	Draw a triangle below the start of the indicator range.
kIndicatorStylePointCharacter	19	Draw a triangle below the centre of the first character of the indicator range.
kIndicatorStyleRoundBox	7	A rectangle with rounded corners around the text using translucent drawing, with the interior usually more transparent than the border. You can use Alpha and OutlineAlpha property to control the alpha transparency values. The default alpha values are 30 for fill colour and 50 for outline colour.
kIndicatorStyleSquiggle	1	A squiggly underline. Requires 3 pixels of descender space.
kIndicatorStyleSquiggleLow	11	Similar to kIndicatorStyleSquiggle but only using 2 vertical pixels so will fit under small fonts.
kIndicatorStyleSquigglePixmap	13	A version of kIndicatorStyleSquiggle that draws using a pixmap instead of a series of line segments for performance.
kIndicatorStyleStraightBox	8	A rectangle around the text using translucent drawing with the interior usually more transparent than the border. You can use Alpha and OutlineAlpha to control the alpha transparency values. The default alpha values are 30 for fill colour and 50 for outline colour. This indicator does not colour the top pixel of the line so that indicators on contiguous lines are visually distinct and disconnected.
kIndicatorStyleStrike	4	Strike out.
kIndicatorStyleTextFore	17	Change the colour of the text to the indicator's fore colour.
kIndicatorStyleTT	2	A line of small T shapes.

Flags

Constant	Value	Description
kIndicFlagNone	0	Default value for flags.
kIndicFlagValueFore	1	When this flag is set the colour used by the indicator is not from the indicator's fore setting but instead from the value of the indicator at that point in the file.

4.5 class ScintillaLoaderMBS

4.5.1 class ScintillaLoaderMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for loading data in chunks.

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr3](#)

4.5.2 Methods

4.5.3 AddData(data as MemoryBlock) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The application should call the AddData method with each block of data read from the file.

Notes: AddData will return kStatusOk unless a failure, such as memory exhaustion occurs. If a failure occurs in AddData or in a file reading call then loading can be abandoned and the loader released with the Release call. When the whole file has been read, Finished should be called to load the final document into the control.

There is no need to call Release after ConvertToDocument.

See also:

- 4.5.4 AddData(data as String) as Integer

358

4.5.4 AddData(data as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The application should call the AddData method with each block of data read from the file.

Notes: AddData will return kStatusOk unless a failure, such as memory exhaustion occurs. If a failure occurs in AddData or in a file reading call then loading can be abandoned and the loader released with the Release call. When the whole file has been read, Finished should be called to load the final document into the control.

There is no need to call Release after ConvertToDocument.

See also:

- 4.5.3 AddData(data as MemoryBlock) as Integer

358

4.5.5 Constructor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The private constructor.

4.5.6 Finished as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Finishes the document loading.

Notes: Returns true on success.

4.5.7 Properties

4.5.8 Handle as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The internal object reference.

Notes: (Read only property)

4.5.9 Parent as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The parent control.

Notes: (Read only property)

4.5.10 Tag as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tag value.

Notes: A variable for you to put any reference information you like.

(Read only property)

4.6 class ScintillaMarginMBS

4.6.1 class ScintillaMarginMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for a margin.

Notes: Margin areas are used for line numbers, breakpoints or folder.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr2](#)

4.6.2 Methods

4.6.3 Constructor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The private constructor.

4.6.4 Properties

4.6.5 BackColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A margin of type `kMarginTypeBack` may have its colour set with this property.

Notes: (Read and Write property)

4.6.6 Cursor as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: A reversed arrow cursor is normally shown over all margins.

Notes: This may be changed to a normal arrow with `Cursor = kCursorShapeArrow` or restored to a reversed arrow with `Cursor = kCursorShapeReverseArrow`.

(Read and Write property)

4.6.7 Layer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The layer number for this marker.

Notes: See `kLayerBase`, `kLayerOverText` and `kLayerUnderText` constants.
(Read and Write property)

4.6.8 Margin as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The margin number.

Notes: (Read only property)

4.6.9 Mask as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The mask is a 32-bit value.

Notes: Each bit corresponds to one of 32 logical symbols that can be displayed in a margin that is enabled for symbols. There is a useful constant, `kMaskFolders` (`&hFE000000` or `-33554432`), that is a mask for the 7 logical symbols used to denote folding. You can assign a wide range of symbols and colours to each of the 32 logical symbols, see `Markers` for more information. If $(\text{mask} \& \text{kMaskFolders}) = 0$, the margin background colour is controlled by style 33 (`kStylesCommonLineNumber`).

You add logical markers to a line with `SCI_MARKERADD`. If a line has an associated marker that does not appear in the mask of any margin with a non-zero width, the marker changes the background colour of the line. For example, suppose you decide to use logical marker 10 to mark lines with a syntax error and you want to show such lines by changing the background colour. The mask for this marker is 1 shifted left 10 times ($1 \ll 10$) which is `0x400`. If you make sure that no symbol margin includes `0x400` in its mask, any line with the marker gets the background colour changed.

To set a non-folding margin 1 use `Styles(1)`. `Mask = not kMaskFolders` which is the default set by Scintilla.

To set a folding margin 2 use `Styles(2)`. `Mask = kMaskFolders`

`textasciitilde kMaskFolders` is `&h1FFFFFFF` in hexadecimal or `33554431` decimal. Of course, you may need to display all 32 symbols in a margin, in which case use `Maks = -1`.

(Read and Write property)

4.6.10 Parent as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The parent control.

Notes: (Read only property)

4.6.11 Sensitive as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Each of the five margins can be set sensitive or insensitive to mouse clicks.

Notes: A click in a sensitive margin sends a MarginClick event to the container. Margins that are not sensitive act as selection margins which make it easy to select ranges of lines. By default, all margins are insensitive.

(Read and Write property)

4.6.12 Tag as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tag value.

Notes: A variable for you to put any reference information you like.

(Read only property)

4.6.13 Type as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Set and get the type of a margin.

Notes: The margin argument should be 0, 1, 2, 3 or 4.

You can use the predefined constants kMarginTypeSymbol (0) and kMarginTypeNumber (1) to set a margin as either a line number or a symbol margin. A margin with application defined text may use kMarginTypeText (4) or kMarginTypeRText (5) to right justify the text. By convention, margin 0 is used for line numbers and the next two are used for symbols. You can also use the constants kMarginTypeBack (2), kMarginTypeFore (3), and kMarginTypeColour (6) for symbol margins that set their background colour to match the kCommonStylesDefault background and foreground colours or a specified colour.

(Read and Write property)

4.6.14 Width as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The width of a margin in pixels.

Notes: A margin with zero width is invisible. By default, Scintilla sets margin 1 for symbols with a width of 16 pixels, so this is a reasonable guess if you are not sure what would be appropriate. Line number margins widths should take into account the number of lines in the document and the line number style. You could

use something like `Styles(kStylesCommonLineNumber).TextWidth("_99999")` to get a suitable width.
(Read and Write property)

4.6.15 Constants

Margin Types

Constant	Value	Description
<code>kMarginTypeBack</code>	2	Background colour
<code>kMarginTypeColour</code>	6	Color
<code>kMarginTypeFore</code>	3	Foreground colour
<code>kMarginTypeNumber</code>	1	line number
<code>kMarginTypeRText</code>	5	Right text
<code>kMarginTypeSymbol</code>	0	symbol
<code>kMarginTypeText</code>	4	text

4.7 class ScintillaMarkerMBS

4.7.1 class ScintillaMarkerMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for a marker.

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr2](#)

4.7.2 Methods

4.7.3 Constructor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The private constructor.

4.7.4 Properties

4.7.5 Alpha as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The degree of translucency can be chosen by setting an alpha value.

Notes: This is only for the content area - in margins, translucency is achieved through the color with alpha. (Read and Write property)

4.7.6 BackColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The background color of the marker.

Notes: (Read and Write property)

4.7.7 BackColorSelected as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The highlight background color.

Notes: Sets the highlight background colour of a marker number when its folding block is selected. The default colour is &cFF0000.

(Read and Write property)

4.7.8 ForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The foreground color of the marker.

Notes: (Read and Write property)

4.7.9 Layer as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Defines the layer where marker is drawn.

Notes: When markers are drawn in the content area, either because there is no margin for them or they are of Background or Underline types, they may be drawn translucently over text or opaquely on the base layer. The layer to draw on is defined by this property.

See kLayer* constants.

(Read and Write property)

4.7.10 Marker as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The marker number.

Notes: (Read only property)

4.7.11 Parent as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The parent control.

Notes: (Read only property)

4.7.12 StrokeWidth as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The stroke width.

Notes: Sets the stroke width used to draw the marker in hundredths of a pixel. The default value is 100 indicating a single pixel wide line.

(Read and Write property)

4.7.13 Symbol as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The symbol used for this marker.

Notes: (Read and Write property)

4.7.14 Tag as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tag value.

Notes: A variable for you to put any reference information you like.

(Read only property)

4.7.15 Constants

Marker Outline

Constant	Value	Description
kMarkerOutlineFolder	30	Folder entry.
kMarkerOutlineFolderEnd	25	End of folder line.
kMarkerOutlineFolderMidTail	27	Middle part of tail.
kMarkerOutlineFolderOpen	31	Open folder.
kMarkerOutlineFolderOpenMid	26	Middle of an open folder.
kMarkerOutlineFolderSub	29	Sub folder.
kMarkerOutlineFolderTail	28	The tail line on a folder.

Marker Symbols

Constant	Value	Description
kMarkerSymbolArrow	2	An arrow to right.
kMarkerSymbolArrowDown	6	An arrow to down.
kMarkerSymbolArrows	24	Several arrows.
kMarkerSymbolAvailable	28	Available number.
kMarkerSymbolBackground	22	Background color filled.
kMarkerSymbolBookmark	31	Bookmark symbols left to right.
kMarkerSymbolBoxMinus	14	A circle with minus.
kMarkerSymbolBoxMinusConnected	15	Box with minus and connected with line.
kMarkerSymbolBoxPlus	12	A circle with plus.
kMarkerSymbolBoxPlusConnected	13	Box with plus and connected with lines.
kMarkerSymbolCharacter	10000	Character.
kMarkerSymbolCircle	0	A circle.
kMarkerSymbolCircleMinus	20	Circle with minus.
kMarkerSymbolCircleMinusConnected	21	Circle with minus and connected with lines.
kMarkerSymbolCirclePlus	18	Circle with plus.
kMarkerSymbolCirclePlusConnected	19	Circle with plus and connected with lines.
kMarkerSymbolDotDotDot	23	Three dots.
kMarkerSymbolEmpty	5	Empty marker.
kMarkerSymbolFullRect	26	Full rectangle.
kMarkerSymbolLCorner	10	Line from top to right.
kMarkerSymbolLCornerCurve	16	Line from top to right with curve.
kMarkerSymbolLeftRect	27	Rectangle on the left side.
kMarkerSymbolMinus	7	Symbol with minus.
kMarkerSymbolPixmap	25	A picture.
kMarkerSymbolPlus	8	Symbol with plus.
kMarkerSymbolRgbaImage	30	RGBA picture.
kMarkerSymbolRoundRect	1	Round rectangle.
kMarkerSymbolShortArrow	4	Short arrow.
kMarkerSymbolSmallRect	3	Small rectangle.
kMarkerSymbolTCorner	11	Line from top to bottom with line to right.
kMarkerSymbolTCornerCurve	17	Line from top to bottom with line to right with curves.
kMarkerSymbolUnderline	29	Underline
kMarkerSymbolVerticalBookmark	32	Bookmark symbols top to bottom.
kMarkerSymbolVLine	9	Vertical line.

4.8 class ScintillaRangeToFormatMBS

4.8.1 class ScintillaRangeToFormatMBS

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This class is used in printing and requires some of the graphics types from Platform
Blog Entries

- [News from the MBS Xojo Plugins Version 23.2](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 23.2](#)
- [MBS Xojo Plugins, version 23.2pr1](#)

4.8.2 Methods

4.8.3 Constructor

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The constructor.

See also:

- 4.8.4 Constructor(other as ScintillaRangeToFormatMBS) 368

4.8.4 Constructor(other as ScintillaRangeToFormatMBS)

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The copy constructor.

See also:

- 4.8.3 Constructor 368

4.8.5 Properties

4.8.6 AreaBottom as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Bottom of rectangle in which to print.

Notes: (Read and Write property)

4.8.7 AreaLeft as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Left of rectangle in which to print.

Notes: (Read and Write property)

4.8.8 AreaRight as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Right of rectangle in which to print.

Notes: (Read and Write property)

4.8.9 AreaTop as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Top of rectangle in which to print.

Notes: (Read and Write property)

4.8.10 CharacterRangeEnd as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The end of the range of characters to print.

Notes: $\text{CharacterRangeEnd} = \text{CharacterRangePosition} + \text{Length}$

You may put in 0 for CharacterRangePosition and ScintillaControl.Length for CharacterRangeEnd to print the whole document.

(Read and Write property)

4.8.11 CharacterRangePosition as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The position of the range of characters to print.

Notes: Position starts with zero.

(Read and Write property)

4.8.12 PageBottom as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Bottom of the physically printable page size

Notes: (Read and Write property)

4.8.13 PageHeight as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The page height.

Notes: Setting height will change bottom coordinate internally.

(Read and Write property)

4.8.14 PageLeft as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Left of the physically printable page size

Notes: (Read and Write property)

4.8.15 PageRight as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Right of the physically printable page size

Notes: (Read and Write property)

4.8.16 PageTop as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Top of the physically printable page size

Notes: (Read and Write property)

4.8.17 PageWidth as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The page width.

Notes: Setting width will change right coordinate internally.
(Read and Write property)

4.8.18 PrinterHandle as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Surface ID we print to.

Notes: For macOS use `Integer(g.Handle(Graphics.HandleTypes.CGContextRef))`, for windows use `Integer(g.Handle(Graphics.HandleTypes.HDC))`, for Linux use `Integer(g.Handle(Graphics.HandleTypes.CairoContext))` to get the handle.
(Read and Write property)

4.8.19 TargetHandle as Integer

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The Surface ID we use for measuring (may be same as hdc).

Notes: If zero, we use value from PrinterHandle.

For macOS use `Integer(g.Handle(Graphics.HandleTypes.CGContextRef))`, for windows use `Integer(g.Handle(Graphics.HandleTypes.HDC))`, for Linux use `Integer(g.Handle(Graphics.HandleTypes.CairoContext))` to get the handle.
(Read and Write property)

4.9 class ScintillaSpanMBS

4.9.1 class ScintillaSpanMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for a span.

Blog Entries

- [MBS Xojo Plugins, version 21.6pr2](#)

4.9.2 Methods

4.9.3 Constructor(Location as Integer, Length as Integer)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The constructor with values.

See also:

- 4.9.4 Constructor(other as ScintillaSpanMBS) 372

4.9.4 Constructor(other as ScintillaSpanMBS)

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The constructor.

See also:

- 4.9.3 Constructor(Location as Integer, Length as Integer) 372

4.9.5 Equal(other as ScintillaSpanMBS) as boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether two spans are equal.

4.9.6 Properties

4.9.7 EndPosition as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The end position.

Notes: This is equal to Length + StartPosition.
(Read and Write property)

4.9.8 Length as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The length of the span.

Notes: (Read only property)

4.9.9 StartPosition as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The start position in the text.

Notes: Zero based.

(Read and Write property)

4.10 class ScintillaStyleMBS

4.10.1 class ScintillaStyleMBS

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The class for style definitions.

Notes: Styles are used to style the various text parts found via the lexer.

The lexer classifies words and assigns them a style, so you can now define how to style the words, e.g. bold keywords.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Tips and tricks for Scintilla Control](#)
- [MBS Xojo Plugins, version 21.6pr2](#)

4.10.2 Methods

4.10.3 Constructor

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The private constructor.

4.10.4 TextWidth(style as Integer, text as String) as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Measures the text width for this style.

Notes: This returns the pixel width of a string drawn in the given style which can be used, for example, to decide how wide to make the line number margin in order to display a given number of numerals.

4.10.5 Properties

4.10.6 BackColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The text background color.

Notes: Text is drawn in the foreground colour. The space in each character cell that is not occupied by the character is drawn in the background colour.

(Read and Write property)

4.10.7 Bold as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether font is bold.

Notes: When you set this to true, the weight is set to `kFontWeightBold`, otherwise to `kFontWeightNormal`. (Read and Write property)

4.10.8 CaseVisible as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The value of `caseVisible` determines how text is displayed.

Notes: You can set upper case (`kCaseVisibleUpper`, 1) or lower case (`kCaseVisibleLower`, 2) or camel case (`kCaseVisibleCamel`, 3) or display normally (`kCaseVisibleMixed`, 0). This does not change the stored text, only how it is displayed.

(Read and Write property)

4.10.9 Changeable as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether this text is editable.

Notes: This is an experimental and incompletely implemented style attribute. The default setting is `changeable` set true but when set false it makes text read-only. The user can not move the caret within not-changeable text and not-changeable text may not be deleted by the user. The application may delete not-changeable text by calling `DeleteRange()`.

(Read and Write property)

4.10.10 CheckMonospaced as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether font is mono spaced.

Notes: This attribute indicates that the font may be monospaced over the ASCII graphics characters (`'', 'Ä¸', 'textasciitilde'`, including letters (`'a', 'Ä¸z', 'A', 'Ä¸Z'`) and numbers (`'0', 'Ä¸9'`)). This allows optimizing speed and memory use for some common scenarios where documents are mostly composed from ASCII characters. Fonts are rarely monospaced over all possible characters. Emoji `'üöÉ'`, Arabic characters `'ÿ¥'` and Chinese ideographs `'É°c'` are often different widths to Roman letters. Even when a font is designed as monospaced, not all characters may be present and platforms may substitute other fonts for any missing characters with the substitute characters taking more or less space. However, fonts are often reliably monospaced over ASCII text (disregarding control characters) and many documents contain mostly ASCII characters. This setting

allows simplified position calculations for text runs that are purely ASCII graphics characters. Before treating the font as monospaced, it is first checked over the ' ' ,Ä¶ ' textasciitilde ' range and for some known combinations of characters that may have different spacings because of kerning or ligatures. Applications may apply the 'check monospaced' attribute just to fonts known to be monospaced or on all fonts, leaving it to Scintilla to reject fonts that are proportional. (Read and Write property)

4.10.11 Description as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The style description.

Notes: Retrieve an English-language description of a style which may be suitable for display in a user interface. This looks like "Doc comment: block comments beginning with /** or /*!". (Read only property)

4.10.12 EOLFilled as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to fill till end of line.

Notes: If the last character in the line has a style with this attribute set, the remainder of the line up to the right edge of the window is filled with the background colour set for the last character. This is useful when a document contains embedded sections in another language such as HTML pages with embedded JavaScript. By setting eolFilled to true and a consistent background colour (different from the background colour set for the HTML styles) to all JavaScript styles then JavaScript sections will be easily distinguished from HTML. (Read and Write property)

4.10.13 Font as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The fontName is a string holding the name of a font.

Example:

```
dim c as ScintillaControlMBS // your control
Dim style As ScintillaStyleMBS = c.Style(ScintillaStyleMBS.kStylesCommonDefault)
// Set font to be system font
style.Font = SystemInformationMBS.SystemFont
```

Notes: Under Windows, only the first 32 characters of the name are used, the name is decoded as UTF-8, and the name is not case sensitive. For internal caching, Scintilla tracks fonts by name and does care about the casing of font names, so please be consistent. On GTK, Pango is used to display text and the name is

sent directly to Pango without transformation. On Qt, the name is decoded as UTF-8. On Cocoa, the name is decoded as MacRoman.
(Read and Write property)

4.10.14 ForeColor as Color

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The text foreground color.

Notes: Text is drawn in the foreground colour. The space in each character cell that is not occupied by the character is drawn in the background colour.

(Read and Write property)

4.10.15 HotSpot as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: This style is used to mark ranges of text that can detect mouse clicks.

Notes: The cursor changes to a hand over hotspots, and the foreground, and background colours may change and an underline appear to indicate that these areas are sensitive to clicking. This may be used to allow hyperlinks to other documents.

(Read and Write property)

4.10.16 Identifiers as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The identifiers associated to a sub style.

Notes: (Read and Write property)

4.10.17 Italic as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether this style uses an italic style.

Notes: (Read and Write property)

4.10.18 Name as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Retrieve the name of a style.

Notes: This is a C preprocessor symbol like "SCE_C_COMMENTDOC".
(Read only property)

4.10.19 Parent as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The parent control.

Notes: (Read only property)

4.10.20 Size as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The font size.

Notes: Sizes can be set to a whole number of points with Size property or to a fractional point size in hundredths of a point with SizeFractional property by multiplying the size by 100. For example, a text size of 9.4 points is set with SizeFractional = 940.

(Read and Write property)

4.10.21 SizeFractional as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The font size in 100th.

Notes: Sizes can be set to a whole number of points with Size property or to a fractional point size in hundredths of a point with SizeFractional property by multiplying the size by 100. For example, a text size of 9.4 points is set with SizeFractional = 940.

(Read and Write property)

4.10.22 Style as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The style number for this style.

Notes: (Read only property)

4.10.23 Tag as Variant

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tag value.

Notes: A variable for you to put any reference information you like.
(Read only property)

4.10.24 Tags as String

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The tags of a style.

Notes: This is a space-separated set of words like "comment documentation".
(Read only property)

4.10.25 Underline as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: You can set a style to be underlined.

Notes: The underline is drawn in the foreground colour. All characters with a style that includes the underline attribute are underlined, even if they are white space.
(Read and Write property)

4.10.26 Visible as Boolean

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether to show this text.

Notes: Text is normally visible. However, you can completely hide it by giving it a style with the visible set to 0. This could be used to hide embedded formatting instructions or hypertext keywords in HTML or XML. Invisible text may not be deleted by user actions but the application may delete invisible text by calling DeleteRange().
(Read and Write property)

4.10.27 Weight as Integer

Plugin Version: 22.0, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The weight of the font.

Notes: The weight or boldness of a font can be set with Bold or Weight properties. The weight is a number

between 1 and 999 with 1 being very light and 999 very heavy. While any value can be used, fonts often only support between 2 and 4 weights with three weights being common enough to have symbolic names: `kFontWeightNormal` (400), `kFontWeightSemiBold` (600), and `kFontWeightBold` (700).

(Read and Write property)

4.10.28 Constants

Case Visibility

Constant	Value	Description
<code>kCaseVisibleCamel</code>	3	Camel case.
<code>kCaseVisibleLower</code>	2	Uppercase letters.
<code>kCaseVisibleMixed</code>	0	Mixed case.
<code>kCaseVisibleUpper</code>	1	Uppercase letters.

Font Weights

Constant	Value	Description
<code>kFontWeightBold</code>	700	Bold font.
<code>kFontWeightNormal</code>	400	Normal font, not bold.
<code>kFontWeightSemiBold</code>	600	Semi bold.

Common Styles

Constant	Value	Description
kStylesCommonBraceBad	35	This style sets the display attributes used when marking an unmatched brace with the BraceBadLight method.
kStylesCommonBraceLight	34	This style sets the attributes used when highlighting braces with the BraceHighlight method and when highlighting the corresponding indentation with HighlightGuide.
kStylesCommonCallTip	38	Call tips normally use the font attributes defined by kStylesCommonDefault. Use of CallTipUseStyle causes call tips to use this style instead. Only the font face name, font size, foreground and background colours and character set attributes are used.
kStylesCommonControlChar	36	This style sets the font used when drawing control characters. Only the font, size, bold, italics, and character set attributes are used and not the colour attributes. See also: ControlCharSymbol method.
kStylesCommonDefault	32	This style defines the attributes that all styles receive when the StyleClearAll method is used.
kStylesCommonFoldDisplayText	39	This is the style used for drawing text tags attached to folded text.
kStylesCommonIndentGuide	37	This style sets the foreground and background colours used when drawing the indentation guides.
kStylesCommonLastPredefined	39	To make it easier for client code to discover the range of styles that are predefined, this is set to the style number of the last predefined style.
kStylesCommonLineNumber	33	This style sets the attributes of the text used to display line numbers in a line number margin. The background colour set for this style also sets the background colour for all margins that do not have any folding mask bits set. That is, any margin for which mask & kMaskFolders is 0. See Mask in ScintillaMarginMBS class for more about masks.
kStylesCommonMax	255	This is not a style but is the number of the maximum style that can be set. Styles between kStylesCommonLastPredefined and kStylesCommonMax may be used.

Chapter 5

List of Questions in the FAQ

- 6.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss? 393
- 6.0.2 Do you have plugins for Android? 394
- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400
- 6.0.10 Is there an example for vector graphics in Xojo? 401
- 6.0.11 Picture functions do not preserve resolution values? 402
- 6.0.12 A toolbox call needs a rect - how do I give it one? 402
- 6.0.13 API client not supported? 402
- 6.0.14 Can I access Access Database with Java classes? 403
- 6.0.15 Can I create PDF from Xojo Report using DynaPDF? 404
- 6.0.16 Can I use AppleScripts in a web application? 404
- 6.0.17 Can I use graphics class with DynaPDF? 404
- 6.0.18 Can I use sockets on a web application? 405
- 6.0.19 Can I use your ChartDirector plugin on a web application? 405

- 6.0.20 Can I use your DynaPDF plugin on a web application? 406
- 6.0.21 Can I use your plugin controls on a web application? 407
- 6.0.22 Can you get an unique machine ID? 407
- 6.0.23 ChartDirector: Alignment Specification 407
- 6.0.24 ChartDirector: Color Specification 408
- 6.0.25 ChartDirector: Font Specification 411
- 6.0.26 ChartDirector: Mark Up Language 415
- 6.0.27 ChartDirector: Parameter Substitution and Formatting 419
- 6.0.28 ChartDirector: Shape Specification 423
- 6.0.29 Copy styled text? 424
- 6.0.30 Do you have code to validate a credit card number? 425
- 6.0.31 Do you have plugins for X-Rite EyeOne, eXact or i1Pro? 426
- 6.0.32 Does SQL Plugin handle stored procedures with multiple result sets? 426
- 6.0.33 Does the plugin home home? 426
- 6.0.34 folderitem.absolutepath is limited to 255 chars. How can I get longer ones? 427
- 6.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window? 427
- 6.0.36 How about Plugin support for older OS X? 428
- 6.0.37 How can I detect whether an Intel CPU is a 64bit CPU? 429
- 6.0.38 How can I disable the close box of a window on Windows? 430
- 6.0.39 How can I get all the environment variables from Windows? 430
- 6.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application? 431
- 6.0.41 How can I get text from a PDF? 431
- 6.0.42 How can I get text from a Word Document? 431
- 6.0.43 How can I get the item string for a given file creator? 432
- 6.0.44 How can I launch an app using it's creator code? 433
- 6.0.45 How can I learn what shared libraries are required by a plugin on Linux? 433
- 6.0.46 How can I validate an email address? 435
- 6.0.47 How do I decode correctly an email subject? 435

	385
• 6.0.48 How do I enable/disable a single tab in a tabpanel?	436
• 6.0.49 How do I find the root volume for a file?	437
• 6.0.50 How do I get the current languages list?	437
• 6.0.51 How do I get the Mac OS Version?	438
• 6.0.52 How do I get the printer name?	439
• 6.0.53 How do I make a metal window if RB does not allow me this?	440
• 6.0.54 How do I make a smooth color transition?	440
• 6.0.55 How do I read the applications in the dock app?	441
• 6.0.56 How do I truncate a file?	442
• 6.0.57 How do update a Finder's windows after changing some files?	442
• 6.0.58 How to access a USB device directly?	443
• 6.0.59 How to add icon to file on Mac?	443
• 6.0.60 How to ask the Mac for the Name of the Machine?	443
• 6.0.61 How to automatically enable retina in my apps?	444
• 6.0.62 How to avoid leaks with Cocoa functions?	444
• 6.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?	445
• 6.0.64 How to avoid ___NSAutoreleaseNoPool console messages in threads?	445
• 6.0.65 How to bring app to front?	446
• 6.0.66 How to bring my application to front?	446
• 6.0.67 How to catch Control-C on Mac or Linux in a console app?	447
• 6.0.68 How to change name of application menu?	447
• 6.0.69 How to change the name in the menubar of my app on Mac OS X?	448
• 6.0.70 How to check if a folder/directory has subfolders?	448
• 6.0.71 How to check if Macbook runs on battery or AC power?	449
• 6.0.72 How to check if Microsoft Outlook is installed?	450
• 6.0.73 How to check on Mac OS which country or language is currently selected?	450
• 6.0.74 How to code sign my app with plugins?	451
• 6.0.75 How to collapse a window?	451
• 6.0.76 How to compare two pictures?	452

- 6.0.77 How to compile PHP library? 454
- 6.0.78 How to convert a `BrowserType` to a `String` with `WebSession.Browser`? 455
- 6.0.79 How to convert a `EngineType` to a `String` with `WebSession.Engine`? 456
- 6.0.80 How to convert a `PlatformType` to a `String` with `WebSession.Platform`? 456
- 6.0.81 How to convert a text to iso-8859-1 using the `TextEncoder`? 457
- 6.0.82 How to convert `ChartTime` back to Xojo date? 458
- 6.0.83 How to convert line endings in text files? 458
- 6.0.84 How to convert picture to string and back? 459
- 6.0.85 How to copy an array? 460
- 6.0.86 How to copy an dictionary? 460
- 6.0.87 How to copy parts of a movie to another one? 460
- 6.0.88 How to create a birthday like calendar event? 461
- 6.0.89 How to create a GUID? 462
- 6.0.90 How to create a Mac picture clip file? 462
- 6.0.91 How to create a PDF file in Xojo? 463
- 6.0.92 How to create `EmailAttachment` for PDF Data in memory? 463
- 6.0.93 How to create PDF for image files? 464
- 6.0.94 How to CURL Options translate to Plugin Calls? 465
- 6.0.95 How to delete file with ftp and curl plugin? 466
- 6.0.96 How to detect display resolution changed? 466
- 6.0.97 How to detect retina? 467
- 6.0.98 How to disable force quit? 467
- 6.0.99 How to disable the error dialogs from Internet Explorer on javascript errors? 467
- 6.0.100 How to display a PDF file in Xojo? 467
- 6.0.101 How to do a lottery in RB? 468
- 6.0.102 How to do an asycron DNS lookup? 469
- 6.0.103 How to draw a dashed pattern line? 469
- 6.0.104 How to draw a nice antialiased line? 470
- 6.0.105 How to dump java class interface? 471

	387
• 6.0.106 How to duplicate a picture with mask or alpha channel?	472
• 6.0.107 How to enable assistive devices?	473
• 6.0.108 How to encrypt a file with Blowfish?	473
• 6.0.109 How to extract text from HTML?	474
• 6.0.110 How to find empty folders in a folder?	474
• 6.0.111 How to find iTunes on a Mac OS X machine fast?	474
• 6.0.112 How to find network interface for a socket by it's name?	475
• 6.0.113 How to find version of Microsoft Word?	476
• 6.0.114 How to fix CURL error 60/53 on connecting to server?	477
• 6.0.115 How to format double with n digits?	477
• 6.0.116 How to get a time converted to user time zone in a web app?	478
• 6.0.117 How to get an handle to the frontmost window on Windows?	478
• 6.0.118 How to get CFAbsoluteTime from date?	479
• 6.0.119 How to get client IP address on web app?	479
• 6.0.120 How to get fonts to load in charts on Linux?	479
• 6.0.121 How to get fonts to load in DynaPDF on Linux?	480
• 6.0.122 How to get GMT time and back?	481
• 6.0.123 How to get good crash reports?	481
• 6.0.124 How to get list of all threads?	482
• 6.0.125 How to get parameters from webpage URL in Xojo Web Edition?	482
• 6.0.126 How to get the color for disabled textcolor?	482
• 6.0.127 How to get the current free stack space?	483
• 6.0.128 How to get the current timezone?	484
• 6.0.129 How to get the current window title?	485
• 6.0.130 How to get the cursor blink interval time?	486
• 6.0.131 How to get the list of the current selected files in the Finder?	487
• 6.0.132 How to get the Mac OS system version?	488
• 6.0.133 How to get the Mac OS Version using System.Gestalt?	488
• 6.0.134 How to get the screensize excluding the task bar?	489

- 6.0.135 How to get the size of the frontmost window on Windows? 489
- 6.0.136 How to get the source code of a HTMLViewer? 490
- 6.0.137 How to get Xojo apps running Linux? 490
- 6.0.138 How to handle really huge images with GraphicsMagick or ImageMagick? 490
- 6.0.139 How to handle tab key for editable cells in listbox? 491
- 6.0.140 How to hard link MapKit framework? 492
- 6.0.141 How to have a PDF downloaded to the user in a web application? 493
- 6.0.142 How to hide all applications except mine? 493
- 6.0.143 How to hide script errors in HTMLViewer on Windows? 494
- 6.0.144 How to hide the grid/background/border in ChartDirector? 494
- 6.0.145 How to hide the mouse cursor on Mac? 494
- 6.0.146 How to insert image to NSTextView or TextArea? 494
- 6.0.147 How to jump to an anchor in a htmlviewer? 495
- 6.0.148 How to keep a movieplayer unclickable? 495
- 6.0.149 How to keep my web app from using 100% CPU time? 496
- 6.0.150 How to kill a process by name? 496
- 6.0.151 How to know how many CPUs are present? 497
- 6.0.152 How to know the calling function? 497
- 6.0.153 How to launch an app using it's creator code? 498
- 6.0.154 How to launch disc utility? 498
- 6.0.155 How to make a lot of changes to a REAL SQL Database faster? 499
- 6.0.156 How to make a NSImage object for my retina enabled app? 499
- 6.0.157 How to make a window borderless on Windows? 499
- 6.0.158 How to make an alias using AppleEvents? 500
- 6.0.159 How to make AppleScripts much faster? 501
- 6.0.160 How to make double clicks on a canvas? 501
- 6.0.161 How to make my Mac not sleeping? 503
- 6.0.162 How to make my own registration code scheme? 504
- 6.0.163 How to make small controls on Mac OS X? 504

	389
• 6.0.164 How to mark my Mac app as background only?	505
• 6.0.165 How to move a file or folder to trash?	505
• 6.0.166 How to move an application to the front using the creator code?	506
• 6.0.167 How to move file with ftp and curl plugin?	507
• 6.0.168 How to normalize string on Mac?	507
• 6.0.169 How to obscure the mouse cursor on Mac?	508
• 6.0.170 How to open icon file on Mac?	508
• 6.0.171 How to open PDF in acrobat reader?	508
• 6.0.172 How to open printer preferences on Mac?	509
• 6.0.173 How to open special characters panel on Mac?	510
• 6.0.174 How to optimize picture loading in Web Edition?	510
• 6.0.175 How to parse XML?	510
• 6.0.176 How to play audio in a web app?	511
• 6.0.177 How to pretty print xml?	512
• 6.0.178 How to print to PDF?	512
• 6.0.179 How to query Spotlight's Last Open Date for a file?	513
• 6.0.180 How to quit windows?	514
• 6.0.181 How to read a CSV file correctly?	514
• 6.0.182 How to read the command line on windows?	515
• 6.0.183 How to render PDF pages with PDF Kit?	515
• 6.0.184 How to restart a Mac?	516
• 6.0.185 How to resume ftp upload with curl plugin?	516
• 6.0.186 How to rotate a PDF page with CoreGraphics?	517
• 6.0.187 How to rotate image with CoreImage?	518
• 6.0.188 How to run a 32 bit application on a 64 bit Linux?	519
• 6.0.189 How to save HTMLViewer to PDF with landscape orientation?	519
• 6.0.190 How to save RTFD?	519
• 6.0.191 How to save RTFD?	520
• 6.0.192 How to scale a picture proportionally with mask?	520

- 6.0.193 How to scale a picture proportionally? 521
- 6.0.194 How to scale/resize a CImageMBS? 522
- 6.0.195 How to scale/resize a picture? 523
- 6.0.196 How to search with regex and use unicode codepoints? 523
- 6.0.197 How to see if a file is invisible for Mac OS X? 524
- 6.0.198 How to set cache size for SQLite or REALSQLDatabase? 525
- 6.0.199 How to set the modified dot in the window? 525
- 6.0.200 How to show a PDF file to the user in a Web Application? 525
- 6.0.201 How to show Keyboard Viewer programmatically? 526
- 6.0.202 How to show the mouse cursor on Mac? 527
- 6.0.203 How to shutdown a Mac? 527
- 6.0.204 How to sleep a Mac? 528
- 6.0.205 How to speed up rasterizer for displaying PDFs with DynaPDF? 528
- 6.0.206 How to use PDFLib in my RB application? 528
- 6.0.207 How to use quotes in a string? 529
- 6.0.208 How to use Sybase in Web App? 529
- 6.0.209 How to use the Application Support folder? 529
- 6.0.210 How to use the IOPMCopyScheduledPowerEvents function in Xojo? 530
- 6.0.211 How to validate a GUID? 533
- 6.0.212 How to walk a folder hierarchie non recursively? 533
- 6.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS 534
- 6.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown. 534
- 6.0.215 I want to accept Drag & Drop from iTunes 535
- 6.0.216 I'm drawing into a listbox but don't see something. 537
- 6.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen. 537
- 6.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software? 537
- 6.0.219 Is the fn key on a powerbook keyboard down? 538
- 6.0.220 Is there a case sensitive Dictionary? 538

- 6.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?
539
- 6.0.222 Is there an easy way I can launch the Displays preferences panel? 539
- 6.0.223 List of Windows Error codes? 540
- 6.0.224 Midi latency on Windows problem? 540
- 6.0.225 My Xojo Web App does not launch. Why? 540
- 6.0.226 SQLiteDatabase not initialized error? 541
- 6.0.227 Textconverter returns only the first x characters. Why? 541
- 6.0.228 The type translation between CoreFoundation/Foundation and Xojo data types. 542
- 6.0.229 Uploaded my web app with FTP, but it does not run on the server! 544
- 6.0.230 What classes to use for hotkeys? 544
- 6.0.231 What do I need for Linux to get picture functions working? 544
- 6.0.232 What does the NAN code mean? 545
- 6.0.233 What font is used as a 'small font' in typical Mac OS X apps? 545
- 6.0.234 What is last plugin version to run on Mac OS X 10.4? 546
- 6.0.235 What is last plugin version to run on PPC? 546
- 6.0.236 What is last version of the plugins for macOS 32-bit? 547
- 6.0.237 What is the difference between Timer and WebTimer? 547
- 6.0.238 What is the list of Excel functions? 547
- 6.0.239 What is the replacement for PluginMBS? 548
- 6.0.240 What to do on Xojo reporting a conflict? 548
- 6.0.241 What to do with a NSImageCacheException? 549
- 6.0.242 What to do with MySQL Error 2014? 549
- 6.0.243 What to do with SQL Plugin reporting Malformed string as error? 549
- 6.0.244 Where is CGGetActiveDisplayListMBS? 549
- 6.0.245 Where is CGGetDisplaysWithPointMBS? 550
- 6.0.246 Where is CGGetDisplaysWithRectMBS? 550
- 6.0.247 Where is CGGetOnlineDisplayListMBS? 550
- 6.0.248 Where is GetObjectClassNameMBS? 550
- 6.0.249 Where is NetworkAvailableMBS? 550

- 6.0.250 Where is StringHeight function in DynaPDF? 551
- 6.0.251 Where is XLSDocumentMBS class? 551
- 6.0.252 Where to get information about file formats? 551
- 6.0.253 Where to register creator code for my application? 552
- 6.0.254 Which Mac OS X frameworks are 64bit only? 552
- 6.0.255 Which plugins are 64bit only? 553
- 6.0.256 Why application doesn't launch because of a missing ddraw.dll!? 553
- 6.0.257 Why application doesn't launch because of a missing shlwapi.dll!? 553
- 6.0.258 Why do I hear a beep on keydown? 553
- 6.0.259 Why does folderitem.item return nil? 553
- 6.0.260 Why doesn't showurl work? 553
- 6.0.261 Why don't the picture functions not work on Linux? 554
- 6.0.262 Why have I no values in my chart? 554
- 6.0.263 Will application size increase with using plugins? 554
- 6.0.264 XLS: Custom format string guidelines 554
- 6.0.265 Xojo doesn't work with your plugins on Windows 98. 555
- 6.0.266 Xojo or my RB application itself crashes on launch on Mac OS Classic. Why? 556

Chapter 6

The FAQ

6.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):

Example:

```
Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.
```

```
// Examples:
// timeInSecs = 90, padHours = true; returns "00:01:30"
// timeInSecs = 1, padHours = false, padMinutes = true; returns "00:01"
// timeInSecs = 3601, padMinutes = false; returns "01:00:01"
```

```
dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string
```

```
hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60
```

```
if hours = 0 then
if padHours then
hoursString = "00:"
else
hoursString = ""
end if
```

```

else
hoursString = Format(hours, "##\:")
end if
if minutes = 0 then
if hours <>0 or padMinutes then
minutesString = "00:"
else
minutesString = ""
end if
else
minutesString = Format(minutes, "00\:")
end if

return hoursString + minutesString + Format(seconds, "00")
End Function

```

Notes: (from the rb mailinglist)

6.0.2 Do you have plugins for Android?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Since there is no plugin SDK for Android, we have no way to make a plugin for Android.

Notes: We support macOS, Windows, Linux and iOS.

6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use functions from NSColor to get proper highlight color in RGB:

Example:

```

Function ProperHighlightColor(active as Boolean) As Color
#if TargetCocoa
Dim theColor As NSColorMBS
If active Then
theColor = NSColorMBS.alternateSelectedControlColor
Else
theColor = NSColorMBS.secondarySelectedControlColor
End If

```

```

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibrate-

```

```

dRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
#else
return HighlightColor
#endif
End Function

```

Notes: As you see we convert color to Calibrated RGB for best results.
See also:

- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.4 How to catch delete key?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code in keydown event catches delete or backspace keys.

Example:

```

Function KeyDown(Key As String) As Boolean
if asc(key) = 8 or asc(key) = 127 then
MsgBox "Delete"
Return true
end if
End Function

```

See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394

- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.5 How to convert cmyk to rgb?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

The following is the code to convert cmyk values to an RGB color datatype.

It's just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :)

Example:

Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color

// converts c,m,y,k values (0-100) to color data type RGB

// place this in a method. Supply C,M,Y,K values-

// it returns color datatype

```
dim color_RGB as color
```

```
dim r, g, b as Integer
```

```
r=255-round(2.55*(c+k))
```

```
if r<0 then
```

```
r=0
```

```
end if
```

```
g=255-round(2.55*(m+k))
```

```
if g<0 then
```

```
g=0
```

```
end if
```

```
b=255-round(2.55*(y+k))
```

```
if b<0 then
```

```
b=0
```

```
end if
```

```
color_RGB=RGB(r,g,b)
```

```
return color_RGB
```

```
End Function
```

Notes:

(from the rb mailinglist)
See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.6 How to delete a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code that deletes a folder recursively.

Example:

```
Sub deletefolder(f as folderitem)
dim files(-1) as FolderItem

if f=nil then Return

// delete single file
if f.Directory=false then
f.Delete
Return
end if

// get a list of all items in that folder
dim i,c as Integer
c=F.Count
for i=1 to c
files.Append f.TrueItem(i)
next

// delete each item
for each fo as FolderItem in files
if fo=nil then
' ignore
elseif fo.Directory then
deletefolder fo
fo.delete
else ' file
```

```
fo.Delete
end if
next
```

```
f.Delete
End Sub
```

See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.7 How to detect if CPU if 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.7 How to detect if CPU if 64bit processor?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Via CPUID you can ask CPU:

Example:

```
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
MsgBox "64-bit CPU"
else
MsgBox "32-bit CPU"
end if
```

Notes: Should work on all intel compatible CPUs.

See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.6 How to delete a folder? 397
- 6.0.8 How to query variant type string for a variant? 399
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.8 How to query variant type string for a variant?

Plugin Version: 20.5, Platforms: macOS, Linux, Windows.

Answer: The following example function returns type string for variant.

Example:

```
Public Function VariantTypeString(v as Variant) as string
// Xojo's VarType doesn't know Unsigned integers
'Dim type As Integer = VarType(v)

// MBS VarType can detect unsigned integer
Dim type As Integer = GetVariantTypeMBS(v)

Dim IsArray As Boolean = BitwiseAnd(type, Variant.TypeArray) = Variant.TypeArray

// type without array
type = BitwiseAnd(type, Bitwise.OnesComplement(Variant.TypeArray))

// build a dictionary to map types on first call
Static TypeMap As Dictionary
If TypeMap = Nil Then
TypeMap = New Dictionary
TypeMap.Value(Variant.TypeBoolean) = "Boolean"
TypeMap.Value(Variant.TypeCFStringRef) = "CFStringRef"
TypeMap.Value(Variant.TypeColor) = "Color"
TypeMap.Value(Variant.TypeCString) = "CString"
TypeMap.Value(Variant.TypeCurrency) = "Currency"
TypeMap.Value(Variant.TypeDate) = "Date"
TypeMap.Value(Variant.TypeDateTime) = "DateTime"
TypeMap.Value(Variant.TypeDouble) = "Double"
TypeMap.Value(Variant.TypeInt32) = "Int32"
TypeMap.Value(Variant.TypeInt64) = "Int64"
TypeMap.Value(Variant.TypeInteger) = "Integer"
TypeMap.Value(Variant.TypeNil) = "Nil"
TypeMap.Value(Variant.TypeObject) = "Object"
TypeMap.Value(Variant.TypeOSType) = "OSType"
TypeMap.Value(Variant.TypePString) = "PString"
TypeMap.Value(Variant.TypePtr) = "Ptr"
TypeMap.Value(Variant.TypeSingle) = "Single"
TypeMap.Value(Variant.TypeString) = "String"
TypeMap.Value(Variant.TypeStructure) = "Structure"
TypeMap.Value(Variant.TypeText) = "Text"
TypeMap.Value(Variant.TypeWindowPtr) = "WindowPtr"
TypeMap.Value(Variant.TypeWString) = "WString"

// MBS extra types
TypeMap.Value(Variant.TypeInt32+100) = "UInt32"
TypeMap.Value(Variant.TypeInt64+100) = "UInt64"
```

End If

```
// lookup type

#if DebugBuild then
If Not TypeMap.HasKey(type) Then
Break // missing type
End If
#endif

If IsArray Then
Return "Array of " + TypeMap.Lookup(type,"?")
Else
Return TypeMap.Lookup(type,"?")
End If
End Function
```

See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396
- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.9 How to refresh a htmlviewer on Windows? 400

6.0.9 How to refresh a htmlviewer on Windows?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can ask the browser to reload the website with this code line:

Example:

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

- 6.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 394
- 6.0.4 How to catch delete key? 395
- 6.0.5 How to convert cmyk to rgb? 396

- 6.0.6 How to delete a folder? 397
- 6.0.7 How to detect if CPU is 64bit processor? 398
- 6.0.8 How to query variant type string for a variant? 399

6.0.10 Is there an example for vector graphics in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this example inside the paint event of a window:

Example:

```
dim v as Group2D
dim r as RectShape
dim s as StringShape
```

```
const pi=3.14
```

```
s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0
```

```
r=new RectShape
```

```
r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50
```

```
v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150
```

```
g.DrawObject v
```

6.0.11 Picture functions do not preserve resolution values?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the picture functions return pictures with no/default resolution values.

Example:

```
dim l as Picture = LogoMBS(500)
```

```
l.HorizontalResolution = 300
```

```
l.VerticalResolution = 300
```

```
dim r as Picture = l.Rotate90MBS
```

```
MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

```
r.HorizontalResolution = l.HorizontalResolution
```

```
r.VerticalResolution = l.VerticalResolution
```

```
MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

Notes: So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can't really set this easily from plugin code.

6.0.12 A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Fill a memoryblock like this:

Example:

```
Dim MB As Memoryblock
```

```
MB = NewMemoryBlock(8)
```

```
MB.Short(0) = window1.Top
```

```
MB.Short(2) = window1.Left
```

```
MB.Short(4) = window1.Height+window1.Top // bottom
```

```
MB.Short(6) = window1.Width+window1.Left // right
```

6.0.13 API client not supported?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you get this exception message on `SQLConnectionMBS.Connect`, we may have a problem.

Notes: First case is that the given thing is not supported (e.g. MS SQL directly on Mac).

Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

6.0.14 Can I access Access Database with Java classes?

Plugin Version: all, Platform: Windows.

Answer: You can use `ucanaccess` to access databases created with Microsoft

Example:

```

dim options(-1) as string

// load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count
dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <> Nil and f.Exists Then
libjs.append f.NativePath+";"
End If
Next

// now init virtual machine
dim library as string = Join(libjs, "")
dim vm as new JavaVMMBS(library)

if vm.Handle = 0 then
MsgBox "Failed to initialize virtual machine"
else
// now make a new database connection with ucanaccess
dim d as new JavaDatabaseMBS(vm,"net.ucanaccess.jdbc.UcanaccessDriver")
Dim DbFile as FolderItem = appFolder.Parent.Child("Database11.accdb")
dim j as JavaConnectionMBS = d.getConnection("jdbc:ucanaccess://" + DbFile.NativePath)

// select and show values
dim r as JavaResultSetMBS = j.MySelectSQL("Select * From test")
while r.NextRecord
MsgBox r.getString("FirstName") + " " + r.getString("LastName")
wend

end if

```

Exception `e` as `JavaExceptionMBS`
`MsgBox e.message+" errorcode: "+str(e.ErrorNumber)`

Notes: see website:
<http://ucanaccess.sourceforge.net/site.html>

6.0.15 Can I create PDF from Xojo Report using DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, we have a graphics class integration for DynaPDF.

Notes: Since MBS Plugin in version 19.2, we can integrate reports with Xojo.

6.0.16 Can I use AppleScripts in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.

Example:

```
dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

// shows something like "My Application.fcgi.debug"
```

Notes: This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.

6.0.17 Can I use graphics class with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sorry, no. We can't provide a graphics subclass from plugin.

Notes: This is a feature request to allow graphics subclasses:
Feedback case 11391: [feedback://showreport?report_id=11391](https://feedback.apple.com/feedback/showreport?report_id=11391)

6.0.18 Can I use sockets on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.

Notes: You can use `HTTPSocket`, `SMTPSocket`, `POP3Socket`, `SMTPSecureSocket`, `SecurePOP3Socket`, `EasyTCPSocket`, `EasyUDPSocket`, `AutoDiscovery`, our Bonjour classes or our `CURL*` classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using `SMTPSocket` may be a good idea for sending emails from the server like notifications.

6.0.19 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our ChartDirector plugin works just fine on the Xojo Web Edition.

Example:

```
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are chosen random to check font!
dim labels(-1) as string=array("Germany", "Italy", "France", "Spain", "UK", "Poland", "Russia")

// The colors to use for the sectors
dim colors(-1) as Integer

colors.Append &h66aaee
colors.Append &heebb22
colors.Append &hbbsbbb
colors.Append &h8844ff

if TargetLinux then
  CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype/msttcorefonts"
end if

// Create a PieChart object of size 360 x 300 pixels
dim c as new CDPieChartMBS(700, 600)
```

```

c.setBackground(c.linearGradientColor(0, 0, 0, c.getHeight(), &h0000cc, &h000044))
c.setRoundedFrame(&hffffff, 16)
dim tt as CDTextBoxMBS = c.addTitle("ChartDirector Demonstration", "timesbi.ttf", 18)
tt.setMargin(0, 0, 16, 0)
tt.setFontColor(&hFFFFFF)

// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)

// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)

dim t as CDTextBoxMBS = c.setLabelStyle("arialbd.ttf", 10, &h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.soft-
Lighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)

// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, &hbbffffff, 0)

// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle "arialbd.ttf",18

dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster

ImageView1.Picture=wp

```

Notes: Be aware that our plugin produces pictures for you, which you assign to ImageViews. Transferring those pictures takes time, so you can optimize that with using WebPicture class. There you can decide between different compressions to improve speed (use JPEG instead of PNG).

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with `"/usr/share/fonts/truetype/msttcorefonts"` as the path. No backslash on the end of a path, please.

6.0.20 Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our DynaPDF plugin works just fine on the Xojo Web Edition.

Notes: PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Xojo Web Edition.

6.0.21 Can I use your plugin controls on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: No.

6.0.22 Can you get an unique machine ID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There is nothing like an unique machine ID.

Notes: 1:

You can use the MAC IDs of the network interfaces.

This can be changed by the user with software tools.

And the list of network interfaces changes if user reorder the interfaces.

2:

You can use the system folder creation date/time.

This may stay equal after cloning machines or after migration to new PC.

3:

You can use the Mac Serialnumber.

Mac only and it can happen that a Mac does not have a serial number.

4:

You can use the x86 CPU ID.

This is x86 CPU only and does not avoid running on the same CPU in different PCs.

6.0.23 ChartDirector: Alignment Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Alignment Specification

Notes: In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using `TextBox.setAlignment`.

The ChartDirector API defines several constants for the alignment options.

ConstantValueDescription

BottomLeft	1	The leftmost point on the bottom line.
BottomCenter	2	The center point on the bottom line.
BottomRight	3	The rightmost point on the bottom line.
Left	4	The leftmost point on the middle horizontal line.
Center	5	The center point on the middle horizontal line.
Right	6	The rightmost point on the middle horizontal line.
TopLeft	7	The leftmost point on the top line.
TopCenter	8	The center point on the top line.
TopRight	9	The rightmost point on the top line.
Bottom	2	The center point on the bottom line. Same as BottomCenter.
Top	8	The center point on the top line. Same as TopCenter.
TopLeft2	10	An alternative top-left position used in <code>Axis.setTitlePos</code> for axis title positioning only. For a vertical axis, TopLeft2 refers to refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2	11	An alternative top-right position used in <code>Axis.setTitlePos</code> for axis title positioning only. For a vertical axis, TopRight2 refers to refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2	12	An alternative bottom-left position used in <code>Axis.setTitlePos</code> for axis title positioning only. For a vertical axis, BottomLeft2 refers to refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2	13	An alternative bottom-right position used in <code>Axis.setTitlePos</code> for axis title positioning only. For a vertical axis, BottomRight2 refers to refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

6.0.24 ChartDirector: Color Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Color Specification

Notes: Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports col-

ors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports "dynamic" colors. A dynamic color is a color that changes depending on the position of the pixels. The "dynamic" colors that ChartDirector supports include "pattern colors", "metal colors", "gradient colors", "zone colors" and "dash line colors".

ChartDirector supports specifying colors indirectly using "palette colors". When a "palette color" is used, the color is specified as an index to a palette. The actual color is looked up from the palette. ARGB Color ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AAR-RGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is "0x". For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.

For the alpha transparency component, a zero value means the color is not transparent at all. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.

Note that ChartDirector's ARGB color is web and HTML compatible. For example, red is FF0000, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in ChartDirector.

If alpha transparency is FF (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in ChartDirector, only one totally transparent color is used - FF000000. All other colors of the form FFnnnnnn are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color FF000000 is often used in ChartDirector to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, ChartDirector defines a constant called Transparent, which is equivalent to FF000000. Pattern Color

A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using `BaseChart.patternColor`, `BaseChart.patternColor2`, `DrawArea.patternColor` and `DrawArea.patternColor2`. The `patternColor` method creates pattern colors using an array of colors as a bitmap. The `patternColor2` method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any `ChartDirector` API that expects a color as its input.

A metal color is a color of which the brightness varies smoothly across the chart surface as to make the surface look shiny and metallic. `ChartDirector` supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using `CDBaseChartMBS.metalColor`, `CDBaseChartMBS.goldColor` and `CDBaseChartMBS.silverColor`. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any `ChartDirector` API that expects a color as its input.

A gradient color is a color that changes progressively across a direction.

Gradient colors are created using `BaseChart.gradientColor`, `BaseChart.gradientColor2`, `DrawArea.gradientColor` and `DrawArea.gradientColor2`. The `gradientColor` method creates a 2-point gradient color that changes from color A to color B. The `gradientColor2` method creates a multi-point gradient colors that changes from color A to B to C

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any `ChartDirector` API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to `DrawArea.gradientColor2` for details.

A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using `BaseChart.dashLineColor` and `DrawArea.dashLineColor`. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any `ChartDirector` API that expects a color as its input.

Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using `Layer.xZoneColor`, `Layer.yZoneColor`, `XYChart.xZoneColor` or `XYChart.yZoneColor`.

Palette Colors
Palette colors are colors of the format `FFFFnnnn`, where the least significant 16 bits (`nnnn`) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by

looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

ConstantValueDescription

Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.

ConstantDescription

6.0.25 ChartDirector: Font Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

Answer: ChartDirector: Font Specification

Notes: Font Name

In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information

In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location

ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the " [windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the " [windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at

http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355

is highly recommended. Please refer to

<http://www.microsoft.com/typography/faq/faq8.htm>

on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTSPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories.

Artificial Boldening and Italicizing
Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".

Font List
Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.

ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

KeywordsDescription

"normal"	This default normal font, which is the first font in the font table. This is initially mapped to "arial.ttf" (Arial).
"bold"	The default bold font, which is the second font in the font table. This is initially mapped to "arialbd.ttf" (Arial Bold).
"italic"	The default italic font, which is the third font in the font table. This is initially mapped to "ariali.ttf" (Arial Italic).
"boldItalic"	The default bold-italic font, which is the fourth font in the font table. This is initially mapped to "arialbi.ttf" (Arial Bold Italic).
"fontN"	The (N + 1)th font in the font table (the first font is "font0").

The font table can be modified using `BaseChart.setFontTable` or `DrawArea.setFontTable`.

The advantage of using indirect font names is that you can change the fonts in your charts in one place.

Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.

The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. `TextBox.setFontSize`) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.

This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)

This is the angle in degrees by which the font should be rotated anti-clockwise.

By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use `BaseChart.addText` to add text that are laid out vertically. Vertical layout is common for

oriental languages such as Chinese, Japanese and Korean.

6.0.26 ChartDirector: Mark Up Language

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Mark Up Language

Notes: ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text. **Font Styles**

You can change the style of the text by using CDML tags. For example, the line:

```
<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
```

will result in the following text rendered:

In general, all tags in CDML are enclosed by <*> and *>. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include <*> in text without being interpreted as CDML tags, use «* as the escape sequence.

The following table describes the supported font style attributes in CDML. See [Font Specification](#) for details on various font attributes.

Attribute	Description
super	Set the following text to be in superscript style. This attribute does not need to have a value. (You may use "super" as the attribute instead of "super=1".)

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.
xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

section. You may use `<*/font*>` to terminate a style section, which will restore the font styles to the state before the style section.

Blocks and Lines

In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("`\n`") or with `<*br*>`. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

```
<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO
```

will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using `<*block*>` as the start tag and

<*/*>as the end tag.

When a block ends, font styles will be restored to the state before entering the block. Embedding Images
CDML supports embedding images in text using the following syntax:

```
<*img=my_image_file.png*>
where my_image_file.png is the path name of the image file.
```

For example, the line:

```
<*size=20*>A <*img=sun.png*>day
will result in the following text rendered:
```

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath or DrawArea.setSearchPath on the directory that ChartDirector will search for the file.

The <*img*>tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and height. Blocks Attributes

CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the <*block*>tag to control the alignment and orientation of the sub-blocks. The <*img=my_image_file.png*>is treated as a block for layout purposes.

For example, the line:

```
<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
will result in the following text rendered:
```

The the above starts <*block,valign=absmiddle*>which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside <*block*>tag:

AttributeDescription

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

6.0.27 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Parameter Substitution and Formatting

Notes: ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.

Format Strings

In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

```
" { label } ( { percent } %)"
```

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

```
" { label } : US$ { value | 2 } K ( { percent } %)"
```

The sector label will then become something like "ABC: US\$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

```
"USD { value } (Euro { = { value } *0.9 } )"
```

In the above, "{ value }" will be substituted with the actual value of the sector. The expression "{ = { value } *0.9 }" will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "%" (modulo) and "^" (exponentiation). Operators "*", "/", "%", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers

The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers

The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis

The following table describes the parameters available for pie charts.

Number Formatting

For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2, . } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

```
{ [ param ] | [ a ] [ b ] [ c ] [ d ] }
```

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting

For parameters that are dates/times, the formatting options can be specified using the following syntax:

```
{ [ param ] | [ datetime_format_string ] }
```

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' ' . (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format `{ value | mmm '<*color=dd0000*>'yyyy }` will display a date as something like `Jan <*color=dd0000*>2005` (the `<*color=dd0000*>` is a CDML tag to specify red text color). Note that the `<*color=dd0000*>` tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.

Escaping URL/HTML/CDML characters

Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the `'>'` is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as `'?'`, `'&'` and `'+'` also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format `"%XX"` (eg. `"?"` will become `"%3F"`). After that, it will modify HTML special characters to the HTML escape format `"&#nn;"` (eg. `">"` will become `">"`). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - `" { escape_url } "`, `" { noescape_url } "`, `" { escape_html } "`, `" { noescape_html } "`, `" { escape_cdml } "` and `{ noescape_cdml }`. These fields enable/disable the escape methods used in the template fields that follow them.

6.0.28 ChartDirector: Shape Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Shape Specification

Notes: Several ChartDirector API accept shape specification as arguments. For example, `BarLayer.setBarShape` and `BarLayer.setBarShape2` can be used to specify shapes of bars in bar charts, while `DataSet.setDataSymbol`, `DataSet.setDataSymbol4`, `PolarLayer.setDataSymbol` and `PolarLayer.setDataSymbol4` can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see `DataSet.setDataSymbol2`, `DataSet.setDataSymbol3`, `PolarLayer.setDataSymbol2` and `PolarLayer.setDataSymbol3`.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a `ChartDirector` method for parameterized shapes. For example, a circle is represented by an explicit constant `CircleShape (=7)`. On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the `PolygonShape` method, passing in the number of sides as argument.

The following table illustrates the various `ChartDirector` shapes:

Custom Shapes

In `ChartDirector`, custom shapes are specified as an array of integers `x0, y0, x1, y1, x2, y2 ...` representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

`ChartDirector` will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various `ChartDirector` API.

As an example, the shape of the standard diamond shape in `ChartDirector` is represented as an array with 8 numbers:

```
0, 0, 500, 500, 0, 1000, -500, 500
```

6.0.29 Copy styled text?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to quickly copy styled text from one textarea to another?

Example:

```
#if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
#elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
#else
TextArea1.StyledText = TextArea2.StyledText
#endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

6.0.30 Do you have code to validate a credit card number?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can check the checksum to tell if a credit card number is not valid.

Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue <10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End IF
```

Notes: Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

6.0.31 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all.

Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.

Notes: Please first go to X-Rite and get a SDK license.

Then we can talk about the plugin.

6.0.32 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the plugin can work with multiple recordsets.

Notes: You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all records in the first result set. Then you simply start again with FetchNext to get the second record set.

Even the RecordSet functions should work, just use them twice to get all records from both record sets.

6.0.33 Does the plugin home home?

Plugin Version: all, Platform: macOS.

Answer: Yes, we like to know who is using the plugin, so the plugin may contact our server.

Example:

none.

Notes: Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall.

Blocking the transfer will not disable the plugin or change the features.

Or contact us for a plugin version which explicitly does not contain this feature.

6.0.34 folderitem.absolutePath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Paths on a Mac are not unique, so use them only to display them to the user.

Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + "." + s
nf = nf.parent
wend
Return s
End Function
```

6.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Platform: macOS.

Answer: This code implements animations for a tabpanel change:

Example:

// in a tabpanel.change event:

```
dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
```

```

// watch the value of the clicked tab versus the last tab
if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value

```

Notes: See CGS* classes for more details.

6.0.36 How about Plugin support for older OS X?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We support in general Mac OS X 10.5 and newer.

Notes: All the 64-bit plugins on Mac require OS X 10.7.

Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6. Also for SQL Plugin the built in SQLite library requires 10.6.

6.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all.

Answer: Look on the CPU family returned by sysctl:

Example:

Function is64bit() As Boolean

```
#if TargetLittleEndian
```

```
dim m as MemoryBlock = NewMemoryBlock(8)
```

```
dim family as Integer
```

```
dim s as string
```

```
m=SystemControlNameToMIBMBS("hw.cpufamily")
```

```
m=SystemControlMBS(m)
```

```
if m<>nil then
```

```
m.LittleEndian=True
```

```
family=m.Long(0)
```

```
const CPUFAMILY_INTEL_6_14 = &h73d67300 /* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
```

```
const CPUFAMILY_INTEL_6_15 = &h426f69ef /* "Intel Core 2 Duo" */
```

```
const CPUFAMILY_INTEL_6_23 = &h78ea4fbc /* Penryn */
```

```
const CPUFAMILY_INTEL_6_26 = &h6b5a4cd2 /* Nehalem */
```

```
Select case family
```

```
case CPUFAMILY_INTEL_6_14
```

```
Return false
```

```
case CPUFAMILY_INTEL_6_15
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_23
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_26
```

```
Return true
```

```
// newer CPUs may be missing here
```

```
end Select
```

```
end if
```

```
#endif
```

```
Return false
```

```
Exception
```

```
Return false
```

```
End Function
```

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

6.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Platform: Windows.

Answer: The following code will remove the close item from the system menu of the window.

Example:

```
#if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, &HF060, &H0
#endif
```

Notes: The window may not be updated directly.

6.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
```

```
loop until m.byte(n)=0
#endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

6.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Platform: macOS.

Answer: You need to get a media reservation.

Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation.

See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

6.0.41 How can I get text from a PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Crossplatform you can use DynaPDF Pro.

Notes: On Mac OS X you can also use PDFKit for the same job.

While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

6.0.42 How can I get text from a Word Document?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: to get the text string from a doc file, use the NSAttributedStringMBS class.

Notes: The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the `NSAttributedStringMBS.initWithDocFormat(data as string)` as boolean method.

6.0.43 How can I get the item string for a given file creator?

Plugin Version: all.

Answer: Try this function:

Example:

```
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer
```

```
Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")
```

```
listBox1.deleteAllRows
```

```
m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <> 0 then
listBox1.addRow "<Not found.>"
return
end if
```

```
do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if
end if
```

loop

End Sub

Notes: Change "Translation" to "CarbonLib" for Mac OS X.

6.0.44 How can I launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "odoc" with the creator code to the Finder ("MACS"):

Example:

```
Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent("aevt","odoc","MACS")
A.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf",nil,C)
return A.Send
End Function
```

6.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please use the ldd command in the terminal.

Notes: You build an app on any platform, but for Linux.

For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
```

```

/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$

```

As you see all library have been found and their load address is printed behind the name. If a library is missing, you usually see the address missing there or being zero.


```

while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result

```

Notes: May not look nice depending on the controls used.
This is no longer needed when using MimeEmailMBS class which decodes for you.

6.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.

Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.

For Cocoa, please use enabled property of NSTabViewItemMBS class.

6.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:

Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <> nil then
root = f // f might be the volume
do
dum = root.parent
if dum <> nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

6.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFOBJECTMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages", ".GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

6.0.51 How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if

```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

6.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.

Example:

```

dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>" " then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if

```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn't provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource #-8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

6.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.

Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)
```

```
ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

6.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have 255 different colors. If the bars are longer than 255 pixels, would this look nice?

Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

```

c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub

```

Notes:

Try the code above in a window paint event handler.

6.0.55 How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPREFERENCESMBS class like in this example:

Example:

```

// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPREFERENCESMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser,
pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

```

```

// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if

```

Notes: You can use the `CFPreferencesMBS.SetValue` to change a value and `CFPreferencesMBS.Synchronize` to write the values to disc. You may need to restart the `Dock.app` if you modified things.

6.0.56 How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a `binarystream` you can set the `length` property to truncate.

6.0.57 How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—")=f
if not ae.send then
//something went wrong

```

end if

Notes: The `folderitem.finderupdate` from the MBS Plugin does something like this.

6.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.

Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the `QTGrabberClassMBS`
- Mass storage devices using the `folderitem` class.
- Serial devices using the `System.SerialPort` function.
- HID USB devices can be used with `MacHIDMBS`, `WinHIDMBS` or `LinuxHIDInterface` class.
- Any USB device may be used with `MacUSBMBS` or `WinUSBMBS` classes.

In general it is always the best to take the most high level access to have others do the work for the details.

6.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use `FolderItem.AddCustomIcon` or `NSWorkspaceMBS.setIcon` functions.

Notes: Please close any open stream for the file you want to add an icon.

6.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:

Example:

Function `Computername()` *As string*

```

dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function

```

Notes: Code above is for Mac OS 9!

Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

6.0.61 How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable""
YES")

```

Notes: This will set the NSHighResolutionCapable flag to YES.

6.0.62 How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:

Example:

```

// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

```

```

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS

```

End Sub

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the `NSAutoreleasePools` for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a `objc_msgSend` call.

6.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.

Notes: In environment variables, the paths like `ORACLE_HOME` must be defined.

On Mac OS X you also need to define `DYLD_LIBRARY_PATH` to point to the dylib files from oracle.

For that you need to modify `/etc/launchd.conf` for Mac OS X 10.8 and newer.

In older versions those variables in `.MacOSX/environment.plist` file in user's home.

Another way for the case you bundle things inside your app is to use the `LSEnvironment` key in `info.plist`. In `info.plist` it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

6.0.64 How to avoid `___NSAutoreleaseNoPool` console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own `NSAutoreleasePool` on a thread like this:

Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

end sub

Notes: For more details read here:

http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

6.0.65 How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:

Example:

```
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

6.0.66 How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code txt) to the frontmost application:

Example:

```
Dim A As AppleEvent
A = NewAppleEvent("misc", "actv", "")
If Not A.Send then
Beep
end if
```

Notes: (Code is Mac only)

6.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.

Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is caught, a flag is set and you can ask later in your normal application flow for the result.

6.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:

Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

6.0.69 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

```
<key>CFBundleExecutable</key>
<string>Executable file name here</string>
```

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

```
<key>CFBundleName</key>
<string>Name for menu here</string>
```

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at <http://www.bitjuggler.com/products/appbundler/>.

6.0.70 How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:

Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count
```

```
for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)
```

```
if item<>Nil and item.Directory then
Return true
end if
```

next

End Function

Notes: We use trueitem() here to avoid resolving alias/link files. Also we check for nil as we may not have permission to see all items. And if one is a directory, we return without checking the rest.

6.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:

Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

6.0.72 How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:

Example:

```
Function OutlookInstalled() As Boolean
    #if TargetWin32 then

    try
    dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

    Return true

    catch r as RegistryAccessErrorException
    // not installed
    Return false

    end try

    #else

    // Windows only, so false on other platforms
    Return false

    #endif

End Function
```

6.0.73 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.

Example:

```
dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
```

```

CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

```

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

6.0.74 How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.

Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature. We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of app>
```

```

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

```

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder. If you have helper apps you need to sign them first.

You can use a build step to automatically sign your app on build.

6.0.75 How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):

Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock
```

```
Declare Function CollapseWindow Lib "Carbon" (window as Integer, collapse as Integer) as Integer
```

```
IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF
```

```
err = CollapseWindow(w.MacWindowPtr, state)
```

```
End Sub
```

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set. For Windows the MBS Plugin has a window.isiconicmbs property.

6.0.76 How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:

Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color
```

```
h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth
```

```
if d1<>d2 then
Return 1
elseif w1<>w2 then
```

```

return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function

```

Notes: Remember that this only works on bitmap pictures, so the `picture.BitmapMBS` function may be useful.

6.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.
- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure --enable-embed --with-curl --enable-ftp --enable-zip --enable-sockets --enable-static --enable-soap --with-zlib --with-bz2 --enable-exif --enable-bcmath --enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole __yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;"
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.

6.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return "Andriod"
case WebSession.BrowserType.Blackberry
Return "Blackberry"
case WebSession.BrowserType.Chrome
Return "Chrome"
case WebSession.BrowserType.ChromeOS
Return "ChromeOS"
case WebSession.BrowserType.Firefox
Return "Firefox"
case WebSession.BrowserType.InternetExplorer
Return "InternetExplorer"
case WebSession.BrowserType.Opera
Return "Opera"
case WebSession.BrowserType.Safari
Return "Safari"
case WebSession.BrowserType.SafariMobile
Return "SafariMobile"
case WebSession.BrowserType.Unknown
Return "Unknown"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.79 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.80 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```

case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

```

End Function

6.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you although it's not perfect.
You need to set lc to the current color you use.

Example:

```

dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear

```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

6.0.82 How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:

Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0
```

```
if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds
```

```
diff = ts - d2
end if
```

```
dim d as new date
d.TotalSeconds = diff + ChartTime
```

```
Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

6.0.83 How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.

Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)
```

```
ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: `TextInputStream` will read any input line endings and with `delimiter` property in `TextOutputStream` you can easily define your new delimiter.

6.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:

Notes: JPEG:

`JPEGStringToPictureMBS(buf as string)` as picture
`JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean)` as picture
`PictureToJPEGStringMBS(pic as picture,quality as Integer)` as string

PNG:

`PictureToPNGStringMBS(pic as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PNGStringToPictureMBS(data as string, gamma as single)` as picture
`PNGStringToPNGPictureMBS(data as string, gamma as single)` as PNGpictureMBS

Tiff:

`TIFFStringToPictureMBS(data as string)` as picture
`TIFFStringToTiffPictureMBS(data as string)` as TiffPictureMBS

BMP:

`BMPStringtoPictureMBS(data as string)` as picture
`Picture.BMPDataMBS(ResolutionValueDPI as Integer=72)` as string

GIF:

`GifStringToGifMBS(data as string)` as GIFMBS
`GifStringToPictureMBS(data as string)` as Picture

6.0.85 How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:

Example:

```
Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double. For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

6.0.86 How to copy a dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:

Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double. For a deep copy of a dictionary of objects, you need to change code to also make a copy of those objects.

6.0.87 How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```

dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))

```

Notes: If result is not 0, the method fails.

6.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every
year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars

```

```

// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if

```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

6.0.89 How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

6.0.90 How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.

Example:

```

dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99

```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99
```

```
dim r As ResourceFork 'ResourceFork is needed for a clip file
```

```
// Please define a file type Any
r=f.CreateResourceFork("Any")
```

```
// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")
```

```
dim m as new MemoryBlock(8)
```

```
m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height
```

```
r.AddResource(m,"RECT",256,"")
```

```
'Values taken from a sample file and irrelevant to the problem
```

```
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAABAAAAAAAAAAAAAAAAABUQ0IQAAAAA")
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

6.0.91 How to create a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check our DynaPDF plugin and the examples.

Notes: An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X. For Windows, we can only suggest our DynaPDF plugin.

6.0.92 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Platform: macOS.

Answer: You can use code like the one below:

Example:

Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
 dim a as new EmailAttachment

```
a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMETYPE = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename
```

Return a

End Function

Notes: Compared to sample code from Xojo documentation, we set the mime type correct for PDF. The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients. "prvw" is the creator code for Apple's preview app.

6.0.93 How to create PDF for image files?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use DynaPDF like this:

Example:

```
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight as Integer) As Boolean
  // have files?
  If pdfFile = Nil Then Return False
  If jpgFiles = Nil Then Return False

  If jpgFiles.Ubound < 0 Then Return False

  // new DynaPDF
  Dim pdf As New MyDynapdfMBS

  // page width/height in MilliMeter
  Dim pdfWidth as Integer = PageWidth * 72 / 25.4
  Dim pdfHeight as Integer = PageHeight * 72 / 25.4

  // put your license here
  Call pdf.SetLicenseKey "Starter"

  // create pdf
  Call pdf.CreateNewPDF pdfFile
```

```

// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
Next

// close
Call pdf.CloseFile

Return True
End Function

```

Notes: This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

6.0.94 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a few tips on how to translate command line CURL calls to plugin calls.

Notes: `curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456 -data-binary @DocumentRegister.docx -H "Content-Type: application/msword"`

- The option `-v` means verbose. You can use `OptionVerbose` and listen for messages in the `DebugMessage` event.
- The option `-X PUT` means we want to do a HTTP PUT Request. So set `OptionPut` to true. Also you will want to set `OptionUpload` to true as you upload data.
- We have the URL which you put into `OptionURL` property.

- The `-data-binary` option tells CURL to pass the given data. With the `@` before the data, it is interpreted as a file name, so the data is read from the given file. You'll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)
- The last option `-H` specifies an additional header for the upload. Pass this additional header with the `SetOptionHTTPHeader` method.

```
curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfc4328001c59 -d '{ "type": "Product", "description": "Application Serial", "acronym": "AppSerial", "dateAdded": "2011-03-21 14:57:36" } '
```

- Option `-X PUT` like above.
- Pass the URL again in `OptionURL`
- This time data is passed in command line for CURL. You'd put this data in the quotes into a string and make it available in the Read event. (See CURLS ftp upload example project)

6.0.95 How to delete file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object
```

```
// delete file
```

```
dim ws() As String
```

```
ws.Append "DELE Temp.txt"
```

```
d.SetOptionPostQuote(ws)
```

Notes: Use `SetOptionPostQuote`, `SetOptionPreQuote` or `SetOptionQuote`.

The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use `DELE` and the file path.

6.0.96 How to detect display resolution changed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X simply listen for display changed notifications.

Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

6.0.97 How to detect retina?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use `Window.BackingScaleFactorMBS` to query the factor.

Example:

```
msgbox str(window1.BackingScaleFactorMBS)
```

6.0.98 How to disable force quit?

Plugin Version: all, Platform: macOS.

Answer:

Please visit this website and get the control panel for Mac OS 9 there:

<http://www3.sk.sympatico.ca/tinyjohn/DFQ.html>

For Mac OS X use the MBS Plugin with the `SetSystemUIModeMBS` method.

Notes:

Please use `presentationOptions` in `NSApplicationMBS` for Cocoa applications.

6.0.99 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Platform: Windows.

Answer: You can use this code in the `htmlviewer` open event:

Example:

```
if targetwin32 then
htmlviewer1._ole.Content.value("Silent") = True
end if
```

Notes: This disables the error dialogs from Internet Explorer.

6.0.100 How to display a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.

Notes: An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it. On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

6.0.101 How to do a lottery in RB?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:

Example:

```
Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)

for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max

d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub
```

```

Sub Open()
// Test it

dim za(0) as Integer ' the array of the numbers

lotto 49,6,za ' 6 of 49 in Germany

' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za(5))+chr(13)+str(za(6))+chr(13)+str(za(7))+chr(13)+str(za(8))+chr(13)+str(za(9))+chr(13)+str(za(10))+chr(13)+str(za(11))+chr(13)+str(za(12))+chr(13)+str(za(13))+chr(13)+str(za(14))+chr(13)+str(za(15))+chr(13)+str(za(16))+chr(13)+str(za(17))+chr(13)+str(za(18))+chr(13)+str(za(19))+chr(13)+str(za(20))+chr(13)+str(za(21))+chr(13)+str(za(22))+chr(13)+str(za(23))+chr(13)+str(za(24))+chr(13)+str(za(25))+chr(13)+str(za(26))+chr(13)+str(za(27))+chr(13)+str(za(28))+chr(13)+str(za(29))+chr(13)+str(za(30))+chr(13)+str(za(31))+chr(13)+str(za(32))+chr(13)+str(za(33))+chr(13)+str(za(34))+chr(13)+str(za(35))+chr(13)+str(za(36))+chr(13)+str(za(37))+chr(13)+str(za(38))+chr(13)+str(za(39))+chr(13)+str(za(40))+chr(13)+str(za(41))+chr(13)+str(za(42))+chr(13)+str(za(43))+chr(13)+str(za(44))+chr(13)+str(za(45))+chr(13)+str(za(46))+chr(13)+str(za(47))+chr(13)+str(za(48))+chr(13)+str(za(49))+chr(13)+str(za(50))+chr(13)+str(za(51))+chr(13)+str(za(52))+chr(13)+str(za(53))+chr(13)+str(za(54))+chr(13)+str(za(55))+chr(13)+str(za(56))+chr(13)+str(za(57))+chr(13)+str(za(58))+chr(13)+str(za(59))+chr(13)+str(za(60))+chr(13)+str(za(61))+chr(13)+str(za(62))+chr(13)+str(za(63))+chr(13)+str(za(64))+chr(13)+str(za(65))+chr(13)+str(za(66))+chr(13)+str(za(67))+chr(13)+str(za(68))+chr(13)+str(za(69))+chr(13)+str(za(70))+chr(13)+str(za(71))+chr(13)+str(za(72))+chr(13)+str(za(73))+chr(13)+str(za(74))+chr(13)+str(za(75))+chr(13)+str(za(76))+chr(13)+str(za(77))+chr(13)+str(za(78))+chr(13)+str(za(79))+chr(13)+str(za(80))+chr(13)+str(za(81))+chr(13)+str(za(82))+chr(13)+str(za(83))+chr(13)+str(za(84))+chr(13)+str(za(85))+chr(13)+str(za(86))+chr(13)+str(za(87))+chr(13)+str(za(88))+chr(13)+str(za(89))+chr(13)+str(za(90))+chr(13)+str(za(91))+chr(13)+str(za(92))+chr(13)+str(za(93))+chr(13)+str(za(94))+chr(13)+str(za(95))+chr(13)+str(za(96))+chr(13)+str(za(97))+chr(13)+str(za(98))+chr(13)+str(za(99))
End Sub

```

6.0.102 How to do an asycron DNS lookup?

Plugin Version: all, Platform: Windows.

Answer: use CFHostMBS class (Mac OS X only).

Notes: Xojo internal functions and plugin DNS functions are sycronized.

You can use DNSLookupThreadMBS class for doing them asycron.

6.0.103 How to draw a dushed pattern line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:

Example:

```
// call like this: DrawDushedPatternLine g,0,0,width,height,10
```

```

Sub DrawDushedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen

```

```

b=true
x=x1
while (x<x2) and (y<y2)
  ox=x
  oy=y

  x=x+dx
  y=y+dy

  if b then
    g.DrawLine ox,oy,x,y
  end if

  b=not b
wend

```

End Sub

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Xojo code, so it even works on Windows.

6.0.104 How to draw a nice antialiased line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you although it's not perfect.
You need to set lc to the current color you use.

Example:

```

Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as
color)
  dim intX, intY, count, n, xDiff, yDiff as Integer
  dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
  dim c as color

  const st=1.0

  xDiff=xe-xs
  yDiff=ye-ys
  count=max(abs(xDiff), abs(yDiff))
  xStep=xDiff/count
  yStep=yDiff/count

```

```

xx=xs
yy=ys
for n=1 to count
intX=xx
intY=yy
floatX=xx-intX
floatY=yy-intY

v=(1-floatX)*(1-floatY)*st
v1=1-v
c=face.pixel(intX, intY)
face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*(1-floatY)*st
v1=1-v
c=face.pixel(intX+1, intY)
face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=(1-floatX)*floatY*st
v1=1-v
c=face.pixel(intX, intY+1)
face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*floatY*st
v1=1-v
c=face.pixel(intX+1, intY+1)
face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)

xx=xx+xStep
yy=yy+yStep
next
End Sub

```

Notes:

PS: st should be 1 and face should be a RGBSurface or a Graphics object.

6.0.105 How to dump java class interface?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In terminal you can use "javap -s <classname>" to display the class with the method names and parameters.

Notes: For example show ResultSet class: javap -s java.sql.ResultSet

6.0.106 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this function:

Example:

```
Function Duplicate(extends p as Picture) As Picture
#If RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
#endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes: Simply copy it to a module and call it like this: `q = p.duplicate`.

The code above works with old Xojo versions because of the `#if` even if your RS version does not support alpha channel pictures. This way it's future proof.

6.0.107 How to enable assistive devices?

Plugin Version: all, Platform: macOS.

Answer: You can use AppleScript code like below:

Notes: tell application "System Events"
activate

```
set UI elements enabled to true
```

```
return UI elements enabled
end tell
```

You can run this with AppleScriptMBS class.

6.0.108 How to encrypt a file with Blowfish?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")
```

```
// read input
```

```
dim bi as BinaryStream = BinaryStream.Open(fi)
```

```
dim si as string = bi.Read(bi.Length)
```

```
bi.Close
```

```
// encrypt
```

```
dim so as string = BlowfishMBS.Encrypt("MyKey",si)
```

```
// write output
```

```
dim bo as BinaryStream = BinaryStream.Create(fo)
```

```
bo.Write so
```

```
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

6.0.109 How to extract text from HTML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:

Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)
```

MsgBox text // shows: Gr√üë

Notes: You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.

DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like ä to √§.

6.0.110 How to find empty folders in a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this code:

Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

6.0.111 How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Platform: macOS.

Answer: You can try Launch Services.

Example:

```
dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.NativePath
```

6.0.112 How to find network interface for a socket by it's name?

Plugin Version: all, Platform: macOS.

Answer: You can use our plugin to build a lookup table.

Example:

```
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
dim IPv4s() as string = n.IPv4s
dim IPv6s() as string = n.IPv6s

for each IPv4 as string in IPv4s
map.Value(IPv4) = n.Name
next
for each IPv6 as string in IPv6s
map.Value(IPv6) = n.Name
next
if n.MAC<>>" then
map.Value(n.MAC) = n.Name
```

```

end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function

```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

6.0.113 How to find version of Microsoft Word?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```

// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.microsoft.Word", "")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion", "")

```

Notes: Older versions of Word can be found with creator code "MSWD".

6.0.114 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Platform: macOS.

Answer: You probably connect with SSL and you have no valid certificate.

Example:

```
dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.NativePath
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
```

Notes: You can either use the code above to disable the SSL verification and have no security. Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:

<http://curl.haxx.se/ca/>

6.0.115 How to format double with n digits?

Plugin Version: all, Platform: macOS.

Answer: You can use the FormatMBS function for this.

Example:

```
dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
```

```
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)
```

Notes: see FormatMBS for details.

In general %f is normal style, %e is scientific and %g is whichever gives best result for given space.

6.0.116 How to get a time converted to user time zone in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.GMTOffset property.

Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

6.0.117 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: This function returns a handle for the frontmost window:

Example:

```
Function GetForegroundWindowHandle() as Integer
#if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
#endif
End Function
```

6.0.118 How to get CFAbsoluteTime from date?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use code like this:

Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianCalendarMBS
g.Day = d.Day
g.Month = d.Month
g.Year = d.Year
g.Minute = d.Minute
g.Hour = d.Hour
g.Second = d.Second

dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value
```

```
MsgBox str(x)
```

Notes: As you see we need a timezone and put the date values in a gregorian date record. Now we can query absolute time for the given timezone.

6.0.119 How to get client IP address on web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.RemoteAddress property.

Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

6.0.120 How to get fonts to load in charts on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the `SetFontSearchPath` method in the `CDBaseChartMBS` class to specify where your fonts are.

Example:

```

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype;/usr/share/fonts/truetype/msttcorefonts"
else
// on Mac and Windows we use system fonts.
end if

// also you can later switch default fonts:

dim Chart as CDBaseChartMBS // your chart

#If TargetARM And TargetLinux Then
// use specific fonts on Linux on Raspberry Pi
Call Chart.setDefaultFonts("/usr/share/fonts/truetype/piboto/PibotoLt-Regular.ttf", "/usr/share/fonts/truetype/piboto/Pi
#EndIf

```

Notes: On macOS, iOS and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the `ttf-mscorefonts-installer` package and call this method with `"/usr/share/fonts/truetype/msttcorefonts"` as the path. No backslash on the end of a path, please.

6.0.121 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the `AddFontSearchPath` method in the `DynaPDFMBS` class to specify where your fonts are.

Example:

```

dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
// on Mac and Windows we use system fonts.
end if

```

Notes: On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the `ttf-mscorefonts-installer` package and call this method with `"/usr/share/fonts/truetype/msttcorefonts"` as the path. No backslash on the end of a path, please.

6.0.122 How to get GMT time and back?

Plugin Version: all, Platform: macOS.

Answer: You can use the date class and the GMTOffset property.

Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+ " " +str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+" (" +str(d.GMTOffset)+") " +str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+" (" +str(e.GMTOffset)+") " +str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+" (" +str(f.GMTOffset)+") " +str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

6.0.123 How to get good crash reports?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check this website from the webkit website:

Notes: <http://webkit.org/quality/crashlogs.html>

6.0.124 How to get list of all threads?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the runtime module like in this function:

Example:

```
Function Threads() As Thread()
#pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function
```

Notes: This returns an array of all thread objects currently in memory.

The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

6.0.125 How to get parameters from webpage URL in Xojo Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the Webpage.ParametersReceived event.

Example:

```
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->" +Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Xojo 2010r5. Please use DefineEncoding.

6.0.126 How to get the color for disabled textcolor?

Plugin Version: all, Platform: macOS.

Answer: Ask the appearance manager:

Example:

```
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as
Boolean, outColor as Ptr) as Integer
```

```
dim i as Integer
```

```
dim col as MemoryBlock
```

```
col = newMemoryBlock(6)
```

```
i = GetThemeTextColor(inColor, inDepth, inColorDev, col)
```

```
return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
```

```
End Function
```

Notes: The color for this is:

```
const kThemeTextColorDialogInactive = 2.
```

```
c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

6.0.127 How to get the current free stack space?

Plugin Version: all, Platform: macOS.

Answer: You can something like the code below:

Example:

```
Sub ShowStackSize()
```

```
dim threadid as Integer
```

```
dim size as Integer
```

```
declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
```

```
declare function ThreadCurrentStackSize lib "Carbon" (threadid as Integer, byref size as Integer) as short
```

```
if GetCurrentThread(threadid)=0 then
```

```
if 0=ThreadCurrentStackSize(threadid,size) then
```

```
MsgBox str(size)
```

```
end if
```

```
end if
```

End Sub

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use #if if you like for that.

6.0.128 How to get the current timezone?

Plugin Version: all, Platforms: macOS, Windows.

Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:

Example:

```
Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

#if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info
if false then
// bad, because it does not work on Intel Macs:
'offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), &hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
```

```

offset = offset \60
return offset

#endif

#if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// - Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

#endif

End Function

```

6.0.129 How to get the current window title?

Plugin Version: all, Platform: macOS.

Answer: The code below returns the current window title for the frontmost window on Mac OS X if Accessibility services are

Example:

```

Function CurrentWindowTitle() As string
// your application needs permissions for accessibility to make this work!

dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS

```

```

SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function

```

6.0.130 How to get the cursor blink interval time?

Plugin Version: all, Platform: macOS.

Answer: On Mac OS you can use GetCaretTime from the toolbox.

Example:

```
declare function GetCaretTime lib "Carbon" () as Integer
```

```
MsgBox str(GetCaretTime()+ " ticks")
```

Notes: 60 ticks make one second.

6.0.131 How to get the list of the current selected files in the Finder?

Plugin Version: all, Platform: macOS.

Answer:

Use the AppleScript like this one:

```
tell application "finder"
return selection
end tell
```

Which translates into this AppleEvent:

```
Process("Finder").SendAE "core,getd,'—':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"
```

and as Xojo code it looks like this:

Example:

```
dim ae as appleEvent
dim o1 as appleEventObjectSpecifier
dim f as folderItem
dim alist as appleEventDescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItem(i)

dateiname=f.name
// editfield1 with property "multiline=true"!
editfield1.text=editfield1.text + dateiname + chr(13)
next
```

end if

6.0.132 How to get the Mac OS system version?

Plugin Version: all, Platform: macOS.

Answer: The following code queries the value and displays the version number:

Example:

```

dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+" "+str(Second)+" "+str(third)
else
msgbox "Mac OS "+str(First)+" "+str(Second)+" "+str(third)
end if

```

6.0.133 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)

```

```

For i =Len(s)-1 DownTo 1
s=Left(s,i)+””+Mid(s,i+1)
Next
MsgBox ”Systemversion: Mac OS ” + s
end if

```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

6.0.134 How to get the screensize excluding the task bar?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Notes: Use the Screen class with the available* properties.

6.0.135 How to get the size of the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Notes: Make yourself a class for the WindowRect with four properties:

```

Bottom as Integer
Left as Integer
Right as Integer
Top as Integer

```

Add the following method to your class:

```

Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
#if targetwin32 then
Declare Function GetWindowRect Lib ”user32.dll” (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)

```

```
#endif  
End Sub
```

Good to use for the MDI Master Window!

6.0.136 How to get the source code of a HTMLViewer?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
// for Windows:
```

```
msgbox HTMLViewer1.IEHTMLTextMBS
```

```
// for MacOS with WebKit 2.x:
```

```
msgbox HTMLViewer1.WKWebViewMBS.HTMLText
```

6.0.137 How to get Xojo apps running Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You need to install some require packages.

Notes: You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

6.0.138 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sometimes it may be better to use an extra application to process images.

Notes: A typical 32 bit app made with Xojo can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

6.0.139 How to handle tab key for editable cells in listbox?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this function:

Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event
```

```
Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
```

```

// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function

```

Notes: You call it from CellKeyDown event like this:

```

EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler

```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

6.0.140 How to hard link MapKit framework?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:

Example:

```

Sub ReferenceMapKit()
// just put this in window or app class

#if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
#endif

End Sub

```

Notes: No need to call the method.

Just having it in a window or app, will cause the compiler to hard link the framework.

6.0.141 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.

Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Xojo Web Edition.

6.0.142 How to hide all applications except mine?

Platform: macOS.

Answer: The code below will on Mac OS hide all applications except your one:

Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

6.0.143 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Platform: Windows.

Answer: Set Internet Explorer to silent mode with code like this:

Example:

```
htmlviewer1._ole.Content.value("Silent") = True
```

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

6.0.144 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you want to hide something in a chart, simply assign the kTransparent constant as color.

6.0.145 How to hide the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")
```

```
HideCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

6.0.146 How to insert image to NSTextView or TextArea?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to insert file:

Example:

```
// insert a file to textview
```

```
Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
```

```
// read to file
```

```

dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// build wrapper
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
fileWrapper.preferredFilename = f.name

// make attachment
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(fileAttachment)

// add to a NSTextViewMBS
textview.insertText attributedString

End Sub

```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

6.0.147 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You can use javascript to change the current window's location.

Example:

```

// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""#16""
end if

```

6.0.148 How to keep a movieplayer unclickable?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.

Example:

```
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function
```

6.0.149 How to keep my web app from using 100% CPU time?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Linux and MacOS you can use renice command in the terminal. On Windows use the task manager to reduce priority.

Notes: If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

```
nohup /webapps/MyApp/MyApp &
```

you can simply have a second line saying this:

```
renice 20 $ !
```

which tells the system to lower priority to lowest value for the latest background process.

6.0.150 How to kill a process by name?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can kill a process (or application) by name if you loop over all the processes and kill the one you need.

Example:

```
dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess
```

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

6.0.151 How to know how many CPUs are present?

Plugin Version: all, Platform: macOS.

Answer: Try this function:

Example:

```
Function GetCPUCount() as Integer
Declare Function MPPProcessors Lib "Carbon" () as Integer
```

```
Return MPPProcessors()
End Function
```

Notes: Your app will than need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

6.0.152 How to know the calling function?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use a helper function like this this code:

Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function
```

```
#Pragma BreakOnExceptions false
```

```
try
```

```
// raise a dummy exception
dim r as new NilObjectException
raise r
```

```
catch x as NilObjectException
```

```
// get stack
dim stack() as string = x.Stack
```

```
// pick function name and return
dim name as string = stack(2)
Return name
```

```
end try
End Function
```

Notes: You need to include function names in your application.

6.0.153 How to launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):

Example:

```
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occurred"
else

end if
```

6.0.154 How to launch disc utility?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this code:

Example:

```
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.apple.DiskUtility", "")

if f<>Nil then
f.Launch
end if
```

Notes: This works even if people renamed the disc utility or moved it to another folder.

6.0.155 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You may try to embed your changes to the database between two transaction calls.

Example:

```
dim db as Database // some database

db.SQLiteExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLiteExecute "END TRANSACTION"
```

Notes: This can increase speed by some factors.

6.0.156 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Platform: macOS.

Answer: You can use code like this:

Example:

```
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function
```

Notes: The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points.

You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

6.0.157 How to make a window borderless on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this declares:

Example:

```
// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).
```

```
Const SWP_NOMOVE = &H2
Const SWP_FRAMECHANGED = &H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = &H80880000
```

```
Dim styleFlags as Integer
```

```
#If TargetWin32 Then
```

```
Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
```

```
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer
```

```
styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )
```

```
#EndIf
```

6.0.158 How to make an alias using AppleEvents?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
```

```
dim ev as AppleEvent
```

```
dim myResult as boolean
```

```
dim properties as AppleEventRecord
```

```
ev = NewAppleEvent("core", "crel", "MACS")
```

```
ev.MacTypeParam("kocl") = "alis"
```

```
ev.FolderItemParam("to ") = target
```

```
ev.FolderItemParam("insh") = folder
```

```
properties=new AppleEventRecord
```

```

properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

myResult = ev.send
// true on success, false on error
End Sub

```

Notes: Call it like this:

```
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"
```

Seems to not work on Mac OS X 10.6

6.0.159 How to make AppleScripts much faster?

Plugin Version: all, Platform: macOS.

Answer: use "ignoring application responses" like in this example:

```

Notes: on run { fn,fpx,fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx,fpy
end ignoring
end run

```

6.0.160 How to make double clicks on a canvas?

Plugin Version: all, Platform: macOS.

Answer:

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

```
dim doubleClickTime, currentClickTicks as Integer

#if targetMacOS then
Declare Function GetDbtTime Lib "Carbon" () as Integer
doubleClickTime = GetDbtTime()
#endif

#if targetWin32 then
Declare Function GetDoubleClickTime Lib "User32.DLL" () as Integer
```

```

doubleClickTime = GetDoubleClickTime()/60 // convert to ticks from milliseconds
#endif

currentClickTicks = ticks
//if the two clicks happened close enough together in time
if (currentClickTicks - lastClickTicks) <= doubleClickTime then
//if the two clicks occurred close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
DoubleClick //a double click has occurred so call the event
end if
end if
lastClickTicks = currentClickTicks
lastClickX = X
lastClickY = Y

```

10. Now to test out your new DoubleClickCanvas, drag the class from the Project window to a window in your project to create an instance of it.

11. Double-click on the canvas you just added to your window to open the Code Editor. Notice that the canvas has a DoubleClick event handler. In this event handler, add the following code:
BEEP

6.0.161 How to make my Mac not sleeping?

Plugin Version: all, Platform: macOS.

Answer: Just inform the Mac OS about some system activity with code like this:

Example:

```

Sub UpdateSystemActivity()

#if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDAActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)

```

```
// you may react on an error if e is not 0 after the call.
```

```
#endif
End Sub
```

Notes: You may use another constant if you prefer some different behavior. Call it maybe every second.

6.0.162 How to make my own registration code scheme?

Plugin Version: all, Platform: Windows.

Answer: There are excellent articles about how to make a registration code scheme, but you can also simply use our RegistrationEngineMBS class.

Notes: If you need a license text, why not use the one from Xojo as a starting point?

6.0.163 How to make small controls on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:

Example:

```

'/*
** Use the control's default drawing variant. This does not apply to
** Scroll Bars, for which Normal is Large.
**/
const kControlSizeNormal = 0

'/*
** Use the control's small drawing variant. Currently supported by
** the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
** controls.
**/
const kControlSizeSmall = 1

'/*
** Use the control's small drawing variant. Currently supported by
** the Indeterminate Progress Bar, Progress Bar and Round Button
** controls.
**/
const kControlSizeLarge = 2

```

```

'/*
' * Control drawing variant determined by the control's bounds. This
' * ControlSize is only available with Scroll Bars to support their
' * legacy behavior of drawing differently within different bounds.
' */
const kControlSizeAuto = &hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OS-
Type, size as Integer, data as ptr) as short

dim m as MemoryBlock

m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall

Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))

```

6.0.164 How to mark my Mac app as background only?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")

```

Notes: This will set the NSUIElement flag to YES.

6.0.165 How to move a file or folder to trash?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:

Example:

```

Function MoveToTrash(f as FolderItem) As Boolean
#if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFile-
OperationDefaultOptions)

```

```

if e = 0 then
Return true // Ok
end if

#elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent
+ w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
#else
// Target not supported
break
Return false
#endif
End Function

```

Notes: If you want to move a file to trash, you could use `f.movefileto f.trashfolder`, but that will overwrite existing files in the trash. You can use our `MacFileOperationMBS` class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use `WindowsFileCopyMBS` class.
Requires Mac OS X 10.5.

6.0.166 How to move an application to the front using the creator code?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:

Example:

```

dim a as appleevent

a=newappleEvent("misc","actv","ttxt")

```

```
if a.send then
end if
```

Notes: (Code is Mac only)

6.0.167 How to move file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.

The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTD with the new file name. To delete use DELE and the file path.

6.0.168 How to normalize string on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:

Example:

```
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)
```

[Return m.str](#)
[End Function](#)

Notes: This uses Apple's CFString functions to normalize unicode variants.

6.0.169 How to obscure the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub ObscureCursor Lib "Carbon" ()
```

```
ObscureCursor
```

Notes: The MBS Plugin has this function, but it's not supported for Windows.

6.0.170 How to open icon file on Mac?

Plugin Version: all, Platform: macOS.

Answer: Use the NSImageMBS class like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")  
dim n as new NSImageMBS(f)
```

```
window1.Backdrop = n.CopyPictureWithMask
```

6.0.171 How to open PDF in acrobat reader?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
```

```

// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if

```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

6.0.172 How to open printer preferences on Mac?

Plugin Version: all, Platform: macOS.

Answer: You can use our OpenMacOSXPreferencesPaneMBS function like this:

Example:

```

dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
MsgBox "OK"
elseif e = -43 then
MsgBox "File not found."
else
MsgBox "Error: "+str(e)
end if

```

6.0.173 How to open special characters panel on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have functions for that in Cocoa and Carbon.

Example:

```
dim a as new NSApplicationMBS
a.orderFrontCharacterPalette
```

Notes: For Cocoa, you can use `orderFrontCharacterPalette` method in `NSApplicationMBS` class.

Or simply for Carbon and Cocoa the `ShowCharacterPaletteMBS` method.

6.0.174 How to optimize picture loading in Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the `WebPicture` class.

Notes: Take your picture and create a `WebPicture` object. Store this `WebPicture` in a property of the `WebPage`, `Session` or `app` (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.

Having pictures in `App` or some module reuses the same picture for all sessions which reduces memory footprint.

This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our `Map` example.

6.0.175 How to parse XML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```
dim s as string = "<test><test /></test>"
```

```
try
```

```

dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try

```

Notes: If you got an exception, you have a parse error.

6.0.176 How to play audio in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the HTML5 audio tag and control it with javascript.

Notes: This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Xojo 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```

audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"

```

```

audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"

```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Than we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

```
dim urlO as string = app.audioFileOGG.URL
dim urlM as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+urlO+""" type=""audio/ogg""
/><source src="""+urlM+""" type=""audio/mpeg"" />Your browser does not support the audio ele-
ment.</audio>"
```

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once we got the object, we call it's play method to start playback.

```
me.ExecuteJavaScript("document.getElementById('mymusic').play();")
```

same for pause:

```
me.ExecuteJavaScript("document.getElementById('mymusic').pause();")
```

and finally for changing volume:

```
me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+"");")
```

6.0.177 How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.

Notes: Learn more here:

<http://docs.xojo.com/index.php/XMLDocument.Transform>

6.0.178 How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.

Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20

```

Notes: And you can use normal graphics class for that.

6.0.179 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS object to query this value:

Example:

```

Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function

```

Notes: Thanks for Josh Hoggan for this example code.

6.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

6.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow """
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

6.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

6.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```

if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if

```

Notes: PDFKit works only on Mac OS X.

6.0.184 How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```

dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if

```

6.0.185 How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value. Don't forget to implement the read event and return data there as requested.

6.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90° rotation.

Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90°
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

```
c = nil

// show in PDF viewer
destfile.Launch
```

Notes: This code is Mac only as it needs CoreGraphics.

6.0.187 How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:

Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

6.0.188 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.

Notes: The package is called ia32-libs for ubuntu (and others).

Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

6.0.189 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.

Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

6.0.190 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:

Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtf")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
```

```

else
MsgBox e.LocalizedDescription
end if

```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

6.0.191 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?

Example:

```

Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub

```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

6.0.192 How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if

// return result
Return NewPic
End Function

```

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

6.0.193 How to scale a picture proportionally?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

```

```

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function

```

Notes: This does not handle mask, but you can scale the mask the same way and assign it to the new picture.
(see other FAQ entry with mask)

6.0.194 How to scale/resize a CIIImageMBS?

Plugin Version: all, Platform: Windows.

Answer: Use the CIFilterLanczosScaleTransform filter to scale down a picture to a specific size.

Example:

```

Dim pic As Picture = LogoMBS(500)
Dim image As CIIImageMBS = CIIImageMBS.imageWithPicture(pic)

Dim filter As New CIFilterLanczosScaleTransformMBS

Const targetWidth = 600.0
Const targetHeight = 400.0

Dim scale As Double = targetHeight / image.Extent.Height
Dim aspect As Double = targetWidth / (image.Extent.Width * scale)

filter.inputImage = image
filter.inputScale = scale
filter.inputAspectRatio = aspect

Dim result As Picture = filter.outputImage.RenderPicture

Backdrop = result

```

Notes: This is same code as our scaleTo convenience method.

6.0.195 How to scale/resize a picture?

Plugin Version: all, Platform: Windows.

Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.

Example:

```
dim Original,Scaled as Picture
```

```
Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)
```

Notes: The plugin ways:

- GraphicsMagick can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure Xojo:

- make a new picture and draw the old one with new size inside.

6.0.196 How to search with regex and use unicode codepoints?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can specify unicode characters in search string with backslash x and digits.

Example:

```
dim r as RegExMbs
dim s as string
dim c as Integer
```

```

s="123 √$√√° ABC 456"

r=new RegExMBS
if r.Compile("√.") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile("\xF6.") then // finds √ using Unicode codepoint
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

```

6.0.197 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: Try this function:

Example:

```

Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)

```

```

If S=F.name Then
Return True
End If
Next
end if
End if
End Function

```

6.0.198 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You use the pragma cache_size command on the database.

Example:

```

// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"

```

Notes: Default cache size is 2000 pages which is not much.

You get best performance if whole database fits in memory.

At least you should try to have a cache big enough so you can do queries in memory.

You only need to call this pragma command once after you opened the database.

6.0.199 How to set the modified dot in the window?

Plugin Version: all, Platform: macOS.

Answer: Try this declares:

Example:

```

window1.ModifiedMBS=true

```

6.0.200 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the

Example:

```

dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL

```

Notes: See our Create PDF example for the Xojo Web Edition.

6.0.201 How to show Keyboard Viewer programmatically?

Platform: macOS.

Answer: Use Xojo or AppleScript to launch the KeyboardViewerServer.app.

Example:

```

dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-
Support/KeyboardViewerServer.app""
lines.append ""
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose
name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)

a.Compile text
a.Execute

```

Notes: AppleScript code:

```
set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/KeyboardViewerServer.app"
```

```
set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theApplication))
if isRunning then tell application POSIXPath to quit
delay 0.15
```

```
ignoring application responses
tell application POSIXPath to run
end ignoring
```

6.0.202 How to show the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub ShowCursor Lib "Carbon" ()
```

```
ShowCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

6.0.203 How to shutdown a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","shut","MACS")
if not ae.send then
msgBox "The computer couldn't be shutdown."
end if
```

Notes: Or toolbox call (Attention: This method will stop the computer immediatly: No document asked to be saved, all applications quitting without knowing).

```
Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower
```

6.0.204 How to sleep a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

6.0.205 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Here a few speed tips:

Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

6.0.206 How to use PDFLib in my RB application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The PDFlib plugin was discontinued in favor of our DynaPDF plugin.

Notes: If you need help to move, please contact us.

6.0.207 How to use quotes in a string?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Just double them.

Example:

```
msgbox "This String contains ""quotes"""
```

6.0.208 How to use Sybase in Web App?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use our MBS Xojo SQL Plugin to connect to a Sybase Database in your web application.

Notes: If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.

The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
SetEnv SYBASE /opt/sybase
```

6.0.209 How to use the Application Support folder?

Plugin Version: all, Platform: macOS.

Answer:

I was saving a registration code for an app to the Preference folder. People on the list have suggested that it would be better in the ApplicationSupportFolder. How do I save the file called CWWPrefs into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

```
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

Example:

```

dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.NativePath

```

Notes:

You may not be able to write there with a normal user account!

6.0.210 How to use the IOPMCopyScheduledPowerEvents function in Xojo?

Plugin Version: all, Platform: macOS.

Answer: You can use the following code which does this using the SoftDeclareMBS class.

Example:

```

Sub Open()
dim c as CFDateMBS
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights

```

```

Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As carrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS
dim m as MemoryBlock

'/*
'* Types of power event
'* These are potential arguments to IOPMSchedulePowerEvent().
'* These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionaryes
'* returned by IOPMCopyScheduledPowerEvents().
'*/
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
'*/
'#define kIOPMAutoWake "wake"
,
'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.

```

```

*/
'#define kIOPMAutoPowerOn "poweron"
,
/*!
'@define kIOPMAutoWakeOrPowerOn
'@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
'power on, whichever is necessary.
*/
,
'#define kIOPMAutoWakeOrPowerOn "wakepoweron"
/*!
'@define kIOPMAutoSleep
'@abstract Value for scheduled sleep.
*/
,
'#define kIOPMAutoSleep "sleep"
/*!
'@define kIOPMAutoShutdown
'@abstract Value for scheduled shutdown.
*/
,
'#define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil
m.Long(8)=type.Handle

if s.CallFunction(3,m) then
Return s.Result
end if
end if
end if

End Function

```

Notes: Requires Mac OS X and to execute root rights.

6.0.211 How to validate a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:

Example:

Function IsGUID(guid as string) As Boolean

dim r as new RegEx

```
r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$ "
```

Return r.Search(guid)<>nil

End Function

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

6.0.212 How to walk a folder hierarchie non recursively?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this one:

Example:

Sub Walk(folder as FolderItem)

dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count

for i as Integer = 1 to c

dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then

// no permission

elseif item.Visible then // only visible

if item.Directory then

folders.Append item

```
else
// work with file here
end if

end if

next

wend
End Sub
```

Notes: As you see we go with a long loop which runs until we don't have more folders to process. We ignore items we can't access due to permission limits. And we only work visible items. If you like, check `folderitem.isBundleMBS` on item to handle packages and applications better on Mac OS X.

6.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Platform: macOS.

Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.

Notes: We splitted the plugin because the Xojo IDE on Windows crashed on compilation.

6.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There are two main reasons.

Notes: 1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.

On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.

In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the temporary files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Next check if you can clear the Xojo caches and that helps. This includes the Xojo Scratch folder and the Plugins & Project caches. Simply locate those folders and delete them. For Windows look in hidden AppData folder in your user folder. For Mac, please check textasciitilde /Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

6.0.215 I want to accept Drag & Drop from iTunes

Plugin Version: all, Platform: macOS.

Answer: You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.

Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub
```

```
Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem
```

```
if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")
```

```
// Parse XML
o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBS CFStringMBS(o),nil

file=u.file
if file<>nil then
MsgBox file.NativePath
end if
end if
end if
next
end if
end if
end if
End Sub
```

Notes: The code above inside a window on Xojo 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

6.0.216 I'm drawing into a listbox but don't see something.

Plugin Version: all.

Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position

Example:

```
Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function
```

Notes: Try this in a listbox. The Graphics object there has a clipping and an offset which the plugin doesn't know about.

6.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Platform: macOS.

Answer:

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.

Notes:

See Window.Transition functions.

6.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Platforms: macOS, Linux, Windows.

Answer: Stand alone.

Notes: Xojo compiles all used plugins into the application binary.

Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdfib for some classes)

6.0.219 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?

Example:

' Window.Open Event of a blank project:

```
dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

6.0.220 Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.

Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.

If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

```
IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class
```

6.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:

Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

6.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:

Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

6.0.223 List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.

Notes: <http://www.monkeybreadsoftware.de/xojo/winerror.shtml>

6.0.224 Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.

Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

6.0.225 My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:

Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error "Premature end of script headers" in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don't have code in app.open, session.open and other events which crashes app right at launch?
- You don't have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

6.0.226 SQLiteDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLiteDatabaseMBS, it must be initialized.

Example:

```
dim d as new SQLiteDatabaseMBS
```

Notes: This happens normally when you use "new SQLiteDatabaseMBS".

But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happened, yet.

So please simply add a line "dim d as new SQLiteDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

6.0.227 Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

Notes:

Xojo seems not to support Textconverters at all on Windows.

6.0.228 The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:

Notes: Cocoa NSObject to Variant:

```

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

```

- ->*MBS

Variant to Cocoa NSObject:

```

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

```

NSPointMBS ->NSValue with NSPoint
 NSRangeMBS ->NSValue with NSRange
 NSBurnMBS ->NSBurn
 NSViewMBS ->NSView
 NSFontMBS ->NSFont
 NSParagraphStyleMBS ->NSParagraphStyle
 NSAttributedStringMBS ->NSAttributedString
 WebPolicyDelegateMBS ->WebPolicyDelegate
 WebUIDelegateMBS ->WebUIDelegate
 WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
 WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
 NSIndexSetMBS ->NSIndexSet
 QTTimeMBS ->QTTime
 QTTimeRangeMBS ->QTTimeRange
 Array of Variant ->NSArray
 Array of String ->NSArray
 CFStringMBS ->NSString
 CFNumberMBS ->NSNumber
 CFDataMBS ->NSData
 CFURLMBS ->NSURL
 CFArrayMBS ->NSArray
 CFDictionaryMBS ->NSDictionary
 CFBinaryDataMBS ->NSData

Carbon CTypeRef to Variant:

CFDictionaryRef ->Dictionary
 CFStringRef ->String
 CFDataRef ->String
 CFURL ->String
 CFNumber ->Integer/Double/Int64
 CFArray ->Array
 CFDate ->date
 nil ->nil
 CGColorSpace ->CGColorSpaceMBS
 CGColor ->CGColorMBS
 CGImage ->CGImageMBS
 CF* ->CF*MBS

Variant to Carbon CTypeRef:

Dictionary ->CFDictionaryRef
 Boolean ->CFBooleanRef
 Color ->CFNumberRef
 Integer ->CFNumberRef

Int64 ->CFNumberRef
 Single ->CFNumberRef
 Double ->CFNumberRef
 String ->CFStringRef
 Color ->CGColorRef
 Date ->CFDateRef
 nil ->nil
 Memoryblock ->CFDataRef
 FolderItem ->CFURLRef
 Dictionary ->CFDictionaryRef
 Array of Variant/String/Date/Double/Single/Int64/Integer ->CFArray
 CGRectMBS ->CGRect as CFDataRef
 CGSizeMBS ->CGSize as CFDataRef
 CGPointMBS ->CGPoint as CFDataRef
 CGColorMBS ->CGColor
 CGColorSpaceMBS ->CGColorSpace
 CGImageMBS ->CGImage
 CGDataConsumerMBS ->CGDataConsumer
 CGDataProviderMBS ->CGDataProvider
 CF*MBS ->CF*

Strings without encodings should be put into dictionaries as memoryblocks.

6.0.229 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

6.0.230 What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

6.0.231 What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.

Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so”
- libgtk-x11-2.0.so.0”
- /usr/lib/libgtk-x11-2.0.so”
- /usr/lib32/libgtk-x11-2.0.so”
- /usr/lib/libgtk-x11-2.0.so.0”
- /usr/lib32/libgtk-x11-2.0.so.0”

gdk is loaded with this paths:

- libgdk-x11-2.0.so”
- libgdk-x11-2.0.so.0”
- /usr/lib/libgdk-x11-2.0.so”
- /usr/lib32/libgdk-x11-2.0.so”
- /usr/lib/libgdk-x11-2.0.so.0”
- /usr/lib32/libgdk-x11-2.0.so.0”

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

6.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

6.0.233 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant "SmallSystem" to use for a font name.

For older versions try this code:

Example:

```

Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontName as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock

const smSystemScript = -1

Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style

err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub

```

6.0.234 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.

Notes: With version 15.4 you can build applications for OS X 10.4 and newer.

For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

6.0.235 What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.

Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.

For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

6.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.

Notes: We stopped including 32-bit code for macOS in version 23.1. Please use older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

6.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Timer is server side and WebTimer client side.

Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

6.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.

Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, DEREf, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUNDBAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARDIZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TERMINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREGISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

6.0.239 What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

6.0.240 What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.

Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

6.0.241 What to do with a `NSImageCacheException`?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for `NSExcptionMBS` in order to catch this exception.

Notes: You may also add code to write the stack of the exception into a log file for later locating the error source.

A `NSImage` has several image representations in memory. So basically you pass in the base image and for whatever size an image is needed, the `NSImage` class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

6.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

6.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.

Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.

e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.

If encoding is set to none, it may get confused for non-ascii text.

6.0.244 Where is `CGGetActiveDisplayListMBS`?

Plugin Version: all, Platform: Windows.

Answer: This is now `CGDisplayMBS.GetActiveDisplayList`.

6.0.245 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

6.0.246 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

6.0.247 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

6.0.248 Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:

Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

6.0.249 Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basically it's not useful. If you want to check whether you have a network, than do a DNS resolve:

Example:

```

// two independent domain names
const domain1 = "www.google.com"
const domain2 = "www.macs.w.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if

```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

6.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.

Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

6.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.

Notes: These classes have been removed: XLCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

6.0.252 Where to get information about file formats?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Please visit this web page:

<http://www.wotsit.org>

6.0.253 Where to register creator code for my application?

Plugin Version: all, Platform: macOS.

Answer:

Register at Apple:

<http://developer.apple.com/dev/cftype/information.html>

6.0.254 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins for Xojo until 64bit target is available.

Notes: For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit
- MediaLibrary
- Social
- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

6.0.255 Which plugins are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.

Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

6.0.256 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install DirectX from Microsoft on your Windows.

6.0.257 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.

Notes: This bug is for several older Windows 95 editions.

6.0.258 Why do I hear a beep on keydown?

Plugin Version: all, Platform: Windows.

Answer: When the user presses a key, RB goes through all keydown event handlers till on returns true.

Notes: If no keydown event handler returns true for the key, a beep is performed.

6.0.259 Why does folderitem.item return nil?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Because Xojo fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.

Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

6.0.260 Why doesn't showurl work?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

There are three main reasons:

1. showurl is not supported by Xojo in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

6.0.261 Why don't the picture functions not work on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please make sure libcairo is installed.

Notes: For accessing pictures on Linux, the MBS Plugin relays on the cairo library.

Please install the package if you don't have it already.

Our plugin looks for library called libcairo.so or libcairo.so.2.

6.0.262 Why have I no values in my chart?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You have no data points visible, there may be several reasons:

Notes: For example one of the data values may be infinite or invalid.

Or the scaling may be out of range, so you simply see nothing.

6.0.263 Will application size increase with using plugins?

Plugin Version: all, Platform: Windows.

Answer: All plugins used by your application will be included in the application.

Notes: If you use no plugins, your application will not change size.

And if you use one class from the plugins, your application size will increase by a few kilobytes.

The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

6.0.264 XLS: Custom format string guidelines

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

```
#,###.00_); [ Red ] (#,###.00);0.00;"sales "@
```

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.

Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.

```
[ Red ] [ <=100 ] ; [ Blue ] [ >100 ]
```

If the cell value does not meet any of the criteria, then pound signs ("##") are displayed across the width of the cell.

Dates and times

Examples

6.0.265 Xojo doesn't work with your plugins on Windows 98.

Plugin Version: all, Platform: Windows.

Answer: Please upgrade your Windows version.

6.0.266 Xojo or my RB application itself crashes on launch on Mac OS Classic.
Why?

Plugin Version: all.

Answer:

You may check if the application has enough memory to be loaded.

RB should have on Mac OS Classic more than 20 MB of RAM.

I preferred to use 50 MB and for an application a 10 MB partition is a good way to start.

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see <code>Axis.setLabels</code> on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).
xLabel	The bottom x-axis label of the data point.
x2Label	The top x-axis label of the data point.
value	The value of the data point.
accValue	The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
totalValue	The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
percent	The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
accPercent	The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
gpercent	The percentage of the data point based on the total value of all data points in a layer.
dataSet	The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).
dataSetName	The name of the data set to which the data point belongs.
dataItem	The data point number within the data set. The first data point is 0. The nth data point is (n-1).
dataGroup	The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).
dataGroupName	The name of the data group to which the data point belongs.
layerId	The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using <code>Layer.addExtraField</code> , <code>Layer.addExtraField2</code> , <code>BaseChart.addExtraField</code> or <code>BaseChart.addExtraField2</code> .

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
zx	The symbol scale in the x dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .

Parameter	Description
slope	The slope of the trend line.
intercept	The y-intercept of the trend line.
corr	The correlation coefficient in linear regression analysis.
stderr	The standard error in linear regression analysis.

Parameter	Description
top	The value of the top edge of the box-whisker symbol.
bottom	The value of the bottom edge of the box-whisker symbol.
max	The value of the maximum mark of the box-whisker symbol.
min	The value of the minimum mark of the box-whisker symbol.
med	The value of the median mark of the box-whisker symbol.

Parameter	Description
high	The high value.
low	The low value.
open	The open value.
close	The close value.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
radius	The radial value of the data point.
value	Same as { radius } . See above.
angle	The angular value of the data point.
x	Same as { angle } . See above.
label	The angular label of the data point.
xLabel	Same as { label } . See above.
name	The name of the layer to which the data point belongs.
dataSetName	Same as { name } . See above.
i	The data point number. The first data point is 0. The nth data point is (n-1).
dataItem	Same as { i } . See above.
z	The symbol scale. Applicable for layers with symbol scales set by Polar-Layer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.
diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.
Parameter	Description
dir	The direction of the vector.
len	The length of the vector.
Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.
Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b]	The thousand separator. Should be a non-alphanumeric character (not 0-9, A-Z, a-z). Use '.
textasciitilde ' for no thousand separator. The default is 'textasciitilde ', which can be modified using BaseChart.setNumberFormat.	
[c]	The decimal point character. The default is '.', which can be modified using BaseChart.setNumberFormat.
[d]	The negative sign character. Use '-'
textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.	

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6, 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val("x7")
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format #.00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is #.##, and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and add the percentage symbol in the cell.
, (comma)	Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (#) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is #.0,, and the cell value is 12,200,000 then the number 12.2 is displayed.
E- E+ e- e+	Scientific format. The application shall display a number to the right of the "E" symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is #0.0E+0, then the number 12.2E+6 is displayed.
\$ -+/():space	Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (\). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.
\	Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0\!, and the value 3 is in the cell, the value 3! is displayed.
*	Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.
_ (underline)	Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format _(0.0_);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.
"text"	Display whatever text is inside the quotation marks. For example, the format 0.00 "dollars" displays 1.23 dollars when the value 1.23 is in the cell.
@	Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is "Bob "@ Smith" (including quotation marks), and the value "John" is in the cell, the value Bob John Smith is displayed.

[Black] [Green] [White] [Blue] [Magenta] [Yellow] [Cyan] [Red]

To display	As	Use this code
Months	1-12	m
Months	01-12	mm
Months	Jan-Dec	mmm
Months	January-December	mmmm
Months	J-D	mmmmm
Days	1-31	d
Days	01-31	dd
Days	Sun-Sat	ddd
Days	Sunday-Saturday	dddd
Years	00-99	yy
Years	1900-9999	yyyy
Hours	0-23	h
Hours	00-23	hh
Minutes	0-59	m
Minutes	00-59	mm
Seconds	0-59	s
Seconds	00-59	ss
Time	4 AM	h AM/PM
Time	4:36 PM	h:mm AM/PM
Time	4:36:03 P	h:mm:ss A/P
Time	4:36:03.75	h:mm:ss.00
Elapsed time	1:02	[h] :mm
Elapsed time	62:16	[mm] :ss
Elapsed time	3735.80	[ss] .00

To display	As	Use this code
1234.59	1234.6	#####.#
8.9	8.900	#.000
.631	0.6	0.#
12	12.0	#.0#
1234.568	1234.57	#.0#
44.398	44.398	???.???
102.65	102.65	???.???
2.8	2.8	???.???
5.25	5 1/4	# ??/??
5.3	5 3/10	# ??/??
12000	12,000	#,####
12000	12	#,
12400000	12.4	0.0,,