

MBS PDFKit Plugin Documentation

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0.1 Introduction

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

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Chapter 4

PDFKit

4.1 class CustomPDFViewMBS

4.1.1 class CustomPDFViewMBS

Plugin Version: 10.3, Platform: macOS, Targets: Desktop only.

Function: The class for a custom PDFView.

Notes: Subclass of the PDFViewMBS class.

Blog Entries

- [MBS Xojo Plugins, version 17.5pr2](#)
- [MBS Xojo / Real Studio Plugins, version 17.0pr1](#)
- [MBS Real Studio Plugins, version 12.5pr5](#)
- [MBS Real Studio Plugins, version 12.0pr7](#)
- [Gestures on Mac OS X](#)
- [Have you checked out PDFViewMBS class?](#)
- [MBS Plugins 10.3 Release Notes](#)
- [MBS REALbasic Plugins, version 10.3pr4](#)

4.1.2 Methods

4.1.3 ClearOverlay(page as PDFPageMBS, post as boolean = true)

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Clear overlay item for this page.

Notes: Is post = false, than we clear the item for pre page drawing, else for post page drawing. The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.1.4 ClearOverlays

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Clear all overlays.

Notes: The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.1.5 Constructor

Plugin Version: 10.3, Platform: macOS, Targets: Desktop only.

Function: The constructor for a new custom PDFView object.

See also:

- 4.1.6 Constructor(Handle as Integer) 30
- 4.1.7 Constructor(left as Double, top as Double, width as Double, height as Double) 30

4.1.6 Constructor(Handle as Integer)

Plugin Version: 13.1, Platform: macOS, Targets: Desktop only.

Function: The constructor.

See also:

- 4.1.5 Constructor 30
- 4.1.7 Constructor(left as Double, top as Double, width as Double, height as Double) 30

4.1.7 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 10.3, Platform: macOS, Targets: Desktop only.

Function: The constructor for a new custom PDFView object.

See also:

- 4.1.5 Constructor 30
- 4.1.6 Constructor(Handle as Integer) 30

4.1.8 Destructor

Plugin Version: 12.5, Platform: macOS, Targets: Desktop only.

Function: The destructor.

4.1.9 Properties

4.1.10 Overlay(page as PDFPageMBS, post as boolean = true) as variant

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Get/Set overlay item.

Notes: MBS Plugin can draw a picture, NSImageMBS or PDFPageMBS below/over the PDF page. The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn. (Read and Write computed property)

4.1.11 Events

4.1.12 acceptsFirstMouse(e as NSEventMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.

Notes: The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

4.1.13 acceptsFirstResponder as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Whether to accept first responder.

Notes: Return true if your control can have the focus and false if not.

4.1.14 AfterDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The draw event called after a page was drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.15 AfterDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The draw event called after a page annotations were drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.16 AfterDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double)

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The draw event called after something was drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.17 becomeFirstResponder as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Called when the object gets focus.

Notes: Return true to accept.

4.1.18 BeforeDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The draw event called before a page was drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.19 BeforeDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The draw event called before a page annotations were drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.20 BeforeDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The draw event called before a something was drawn.

Notes: This event may not be called on OS X 10.11 or newer.

On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.1.21 beginGestureWithEvent(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Informs the receiver that the user has begun a touch gesture.

Notes: e: An event object representing the gesture beginning.

The event will be sent to the view under the touch in the key window.

Available in Mac OS X v10.6 and later.

Return true if you handled this event.

4.1.22 canBecomeKeyView as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: Returns whether the receiver can become key view.

Notes: Returns true if the receiver can become key view, false otherwise.

4.1.23 Close

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The event called when the custom `NSView` is destroyed.

4.1.24 `concludeDragOperation(sender as NSDraggingInfoMBS)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous `performDragOperation` must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object's `animatesToDestination` property was set to true in `prepareForDragOperation`, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.

4.1.25 `draggingEnded(sender as NSDraggingInfoMBS)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Implement this event to be notified when a drag operation ends in some other destination.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

4.1.26 `draggingEntered(sender as NSDraggingInfoMBS) as Integer`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in `NSDragOperation` in the `NSDraggingInfo` reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous `draggingEntered` message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination's bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the `draggingSourceOperationMask` method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return `NSDragOperationNone` (this is the default response if the method is not implemented by the destination). A destination will still receive `draggingUpdated` and `draggingExited` even if `NSDragOperationNone` is returned by this method.

4.1.27 `draggingExited(sender as NSDraggingInfoMBS)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the dragged image exits the destination's bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).

Notes: sender: The object sending the message; use it to get details about the dragging operation.

4.1.28 `draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the dragging session has completed.

Notes: session: The dragging session.

screenPoint: The point where the drag ended, in screen coordinates.

operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

4.1.29 `draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the drag moves on the screen.

Notes: session: The dragging session.

screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

4.1.30 `draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Declares the types of operations the source allows to be performed. (required)

Notes: session: The dragging session.

context: The dragging context. See `NSDraggingContext` constants for the supported values.

Return the appropriate dragging operation as defined in constants.

In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

4.1.31 `draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the drag will begin.

Notes: session: The dragging session.

screenPoint: The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

4.1.32 `draggingUpdated(sender as NSDraggingInfoMBS) as Integer`

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in `NSDragOperation` in the `NSDraggingInfo` reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous `draggingEntered` message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the `performDragOperation` method is invoked.

You typically examine the contents of the pasteboard in the `draggingEntered` method, where this examination is performed only once, rather than in the `draggingUpdated` method, which is invoked multiple times.

Only one destination at a time receives a sequence of `draggingUpdated` messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

4.1.33 `endGestureWithEvent(e as NSEventMBS)` as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Informs the receiver that the user has ended a touch gesture.

Notes: e: An event object representing the gesture end.

Available in Mac OS X v10.6 and later.

Return true if you handled this event.

4.1.34 `ignoreModifierKeysForDraggingSession(session as NSDraggingSessionMBS)` as boolean

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Returns whether the modifier keys will be ignored for this dragging session.

Notes: session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.

4.1.35 isOpaque as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Whether this view is opaque.

4.1.36 keyDown(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the key events.

Notes: Return true if you handled this event.

4.1.37 keyUp(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the key events.

Notes: Return true if you handled this event.

4.1.38 magnifyWithEvent(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Informs the receiver that the user has begun a pinch gesture.

Notes: e: An event object representing the magnify gesture.

The event will be sent to the view under the touch in the key window.

Available in Mac OS X v10.6 and later.

Return true if you handled this event.

4.1.39 menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

Plugin Version: 12.3, Platform: macOS, Targets: .

Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.

Notes: theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.

The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.

The default implementation returns the default menu.

4.1.40 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.41 mouseDownCanMoveWindow as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: This event is called so you can decide what happens with mouse down.

Notes: Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

4.1.42 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.43 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.44 `mouseExited(e as NSEventMBS, x as Double, y as Double)` as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.45 `mouseMoved(e as NSEventMBS, x as Double, y as Double)` as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.46 `mouseUp(e as NSEventMBS, x as Double, y as Double)` as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.47 `Open`

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: The event called when the custom `NSView` is created.

4.1.48 `otherMouseDown(e as NSEventMBS, x as Double, y as Double)` as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

Third mouse button.

4.1.49 otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

Third mouse button.

4.1.50 otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

Third mouse button.

4.1.51 performDragOperation(sender as NSDraggingInfoMBS) as boolean

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object's animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

4.1.52 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.

Notes: sender: The object sending the message; use it to get details about the dragging operation.

Returns true if the receiver agrees to perform the drag operation and false if not.

This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.

If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object's animatesToDestination property to true in your implementation of this method.

4.1.53 pressureChange(e as NSEventMBS) as boolean

Plugin Version: 15.1, Platform: macOS, Targets: .

Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.

Notes: This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.

Available in OS X v10.10.3 and later.

4.1.54 resignFirstResponder as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Focus is going away.

Notes: Return true to accept.

4.1.55 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.56 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.57 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: One of the mouse events.

Notes: Return true if you handled this event.

4.1.58 rotateWithEvent(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Informs the receiver that the user has begun a rotation gesture.

Notes: e: An event object representing the rotate gesture.

The event will be sent to the view under the touch in the key window.

Available in Mac OS X v10.6 and later.

Return true if you handled this event.

4.1.59 scrollWheel(e as NSEventMBS) as boolean

Plugin Version: 12.0, Platform: macOS, Targets: .

Function: Informs the subclass that the mouse's scroll wheel has moved.

Notes: e: An object encapsulating information about the wheel-scrolling event.

The default implementation simply passes this message to the next responder.

Return true to not pass the event.

4.1.60 swipeWithEvent(e as NSEventMBS) as boolean

Plugin Version: 10.3, Platform: macOS, Targets: .

Function: Informs the receiver that the user has begun a swipe gesture.

Notes: e: An event object representing the swipe gesture.

The event will be sent to the view under the touch in the key window.

Available in Mac OS X v10.6 and later.

Return true if you handled this event.

4.1.61 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Invoked when the dragging images should be changed.

Notes: sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

4.1.62 `viewDidMoveToWindow`

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: Informs the receiver that it has been added to a new view hierarchy.

Notes: The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.

`viewDidMoveToWindow` may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

4.1.63 `wantsPeriodicDraggingUpdates` as boolean

Plugin Version: 13.1, Platform: macOS, Targets: .

Function: Asks the destination object whether it wants to receive periodic `draggingUpdated` messages.

Notes: Return true if the destination wants to receive periodic `draggingUpdated` messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic `draggingUpdated` messages even if nothing changes.

4.2 control DesktopPDFThumbnailViewControlMBS

4.2.1 control DesktopPDFThumbnailViewControlMBS

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: The Xojo control for a PDFThumbnailView.

Notes: This control embeds a special PDFThumbnailView subclass.

Designed for Xojo 2021r3 and newer.

Please use view property to access the underlying object and set properties.

Does no longer work well with MacOS 10.12 or 10.13 as focus can't be set.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [News from the MBS Xojo Plugins in version 21.5](#)
- [New desktop controls](#)
- [MBS Xojo / Real Studio Plugins, version 13.4pr7](#)

4.2.2 Properties

4.2.3 View as PDFThumbnailViewMBS

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.

(Read only property)

4.2.4 Events

4.2.5 BoundsChanged

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The event called when the bounds, but not the frame, changed.

4.2.6 didCloseContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Did close contextual menu.

Notes: Allows you to restart any animation you may have stopped in the `willShowContextualMenu` event.

4.2.7 FocusLost

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The control lost focus.

In older Xojo versions, this event is named `LostFocus`.

Notes:

This only fires if the control itself lost focus and not a sub control.

4.2.8 FocusReceived

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The control itself got focus.

In older Xojo versions, this event is named `GotFocus`.

Notes:

This only fires if the control itself got focus and not a sub control.

4.2.9 FrameChanged

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The event called when the frame changed.

Notes: This event notifies you, that the control changed it's bounding frame, which is position and/or size.

4.2.10 MenuBarSelected

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The event where you can enable menu items.

In older Xojo versions, this event is named `EnableMenuItems`.

4.2.11MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control,Ãs region at the location passed in to x, y.

Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner of the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

4.2.12 MouseDrag(x as Integer, y as Integer)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes: Mouse location is local to the control passed in to x, y.

As this event is fired continuously (hundreds of times per second), it is your responsibility to determine if the mouse has really moved.

4.2.13 MouseUp(x as Integer, y as Integer)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

4.2.14 ScaleFactorChanged(NewFactor as Double)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.2.15 `willShowContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)`

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Will show contextual menu.

Notes: Your chance to modify the menu before it is shown, e.g. to add menu entries.

4.3 control DesktopPDFViewControlMBS

4.3.1 control DesktopPDFViewControlMBS

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: The Xojo control for a PDFView.

Notes: This control embeds a special PDFView subclass.

Designed for Xojo 2021r3 and newer.

Please use view property to access the underlying object and set properties.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [News from the MBS Xojo Plugins in version 21.5](#)
- [New desktop controls](#)
- [MBS Xojo Plugins, version 21.3pr1](#)
- [News from the MBS Xojo Plugins Version 21.1](#)
- [MBS Xojo Plugins, version 21.1pr3](#)
- [MBS Xojo Plugins, version 19.6pr1](#)
- [MBS Xojo Plugins, version 17.6pr5](#)
- [MBS Xojo Plugins, version 17.5pr2](#)
- [MBS Xojo / Real Studio Plugins, version 17.0pr1](#)

4.3.2 Methods

4.3.3 ClearOverlay(page as PDFPageMBS, post as boolean = true)

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: Clear overlay item for this page.

Notes: Is post = false, than we clear the item for pre page drawing, else for post page drawing.

The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.3.4 ClearOverlays

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: Clear all overlays.

Notes: The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.3.5 Properties

4.3.6 View as PDFViewMBS

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.
(Read only property)

4.3.7 Overlay(page as PDFPageMBS, post as boolean = true) as variant

Plugin Version: 21.5, Platform: macOS, Targets: Desktop only.

Function: Get/Set overlay item.

Notes: MBS Plugin can draw a picture, NSImageMBS or PDFPageMBS below/over the PDF page. The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.
(Read and Write computed property)

4.3.8 Events

4.3.9 AfterDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called after something was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.3.10 AfterDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called after a page annotations were drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.3.11 AfterDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called after a page was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.3.12 BeforeDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called before a page was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.3.13 BeforeDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called before a page annotations were drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.3.14 BeforeDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double) as boolean

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The draw event called before a something was drawn.

4.3.15 BoundsChanged

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The event called when the bounds, but not the frame, changed.

4.3.16 CocoaMouseDown(e as NSEventMBS)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control,Ãs region at the location passed in to x, y.

Notes: This is called before MouseDown, but provides the original Cocoa event, so you can query additional properties.

4.3.17 CocoaMouseDrag(e as NSEventMBS)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes: This is called before MouseDrag, but provides the original Cocoa event, so you can query additional properties.

4.3.18 CocoaMouseUp(e as NSEventMBS)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: This is called before MouseUp, but provides the original Cocoa event, so you can query additional properties.

4.3.19 didCloseContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Did close contextual menu.

Notes: Allows you to restart any animation you may have stopped in the willShowContextualMenu event.

4.3.20 FocusLost

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The control lost focus.

In older Xojo versions, this event is named LostFocus.

Notes:

This only fires if the control itself lost focus and not a sub control.

4.3.21 FocusReceived

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The control itself got focus.

In older Xojo versions, this event is named GotFocus.

Notes:

This only fires if the control itself got focus and not a sub control.

4.3.22 FrameChanged

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The event called when the frame changed.

Notes: This event notifies you, that the control changed it's bounding frame, which is position and/or size.

4.3.23 MenuBarSelected

Plugin Version: 21.5, Platform: macOS, Targets: .

Function:

The event where you can enable menu items.

In older Xojo versions, this event is named EnableMenuItems.

4.3.24MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control,Ãs region at the location passed in to x, y.

Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner of the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return `False`, the system handles the `MouseDown` so the above event handlers do not get called.

4.3.25 `MouseDown(x as Integer, y as Integer)`

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the `Control`.

Notes: Mouse location is local to the control passed in to `x`, `y`.

As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

4.3.26 `MouseUp(x as Integer, y as Integer)`

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: Use the `x` and `y` parameters to determine if the mouse button was released within the control's boundaries.

4.3.27 `OpenPDFforRemoteGoToAction(action as PDFActionRemoteGoToMBS)`

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Opens a specified page.

Notes: This event will be called to handle clicks on annotations containing a `PDFActionRemoteGoToMBS` action. The action contains a URL and a page index and point. You should open the PDF indicated by the URL and go to the page and point indicated. The easiest way to do the latter is to create a `PDFDestinationMBS` with the page index and point once a `PDFDocumentMBS` from the URL is created - then you can call: `goToDestination` method. The default implementation simply beeps.

4.3.28 `PerformFind`

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Performs a find operation.

Notes: Certain `PDFAction`'s may request that the PDF viewer application perform a `Find`. The event will be called when the user clicks on an annotation with such an action.

4.3.29 PerformGoToPage

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Performs a go-to operation.

Notes: Certain PDFAction's may request that the PDF viewer application bring up a panel allowing the user to enter a specific page number. The event will be called when the user clicks on an annotation with such an action.

4.3.30 PerformPrint

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Prints the current document.

Notes: Certain PDFAction's may request that the PDF viewer application Print the current document. This event will be called when the user clicks on an annotation with such an action.

4.3.31 PrintJobTitle as String

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Overrides the job title used when the PDFView is printed.

Notes: Allows to override the job title when PDFView is printed. The default implementation uses the string, if any, associated with the "Title" key from the view's PDFDocumentMBS attribute dictionary. Failing that, it uses the last path component if the PDFDocumentMBS is URL-based.

4.3.32 ScaleFactorChanged(NewFactor as Double)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.3.33 WillChangeScaleFactor(scale as Double) as Double

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Overrides changes to the scale factor.

Notes: Allows to override changes to the scale factor. The default implementation pins scaling between 0.1 and 10.0.

If you add this event, please return a value, e.g. the passed scale value.

4.3.34 WillClickOnLink(URL as String)

Plugin Version: 21.5, Platform: macOS, Targets: .

Function: Handle clicks on URL links in a view.

Notes: If implemented, this event will be called to handle clicks on URL links within the PDFView. The default implementation calls openURL on NSWorkspaceMBS class.

4.3.35 willShowContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Will show contextual menu.

Notes: Your chance to modify the menu before it is shown, e.g. to add menu entries.

4.4 class PDFActionGoToMBS

4.4.1 class PDFActionGoToMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFActionGoTo, a subclass of PDFAction, defines methods for getting and setting the destination of a go-to action.

Notes: A PDFActionGoTo object represents the action of going to a specific location within the PDF document.

Subclass of the PDFActionMBS class.

Blog Entries

- [MBS REALbasic Plugins Version 10.4 release notes](#)
- [MBS REALbasic Plugins, version 10.4pr4](#)

4.4.2 Methods

4.4.3 Constructor(destination as PDFDestinationMBS)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes the go-to action.

Notes: destination: The destination with which to initialize the go-to action. Available in Mac OS X v10.5 and later.

4.4.4 Properties

4.4.5 destination as PDFDestinationMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The destination associated with the action.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.5 class PDFActionMBS

4.5.1 class PDFActionMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFAction represents an action that is performed when, for example, a PDF annotation is activated or an outline item is clicked.

Notes: A PDFAction object represents an action associated with a PDF element, such as an annotation or a link, that the viewer application can perform. See the Adobe PDF Specification for more about actions and action types.

PDFAction is an abstract superclass of the following concrete classes:

- PDFActionGoToMBS
- PDFActionNamedMBS
- PDFActionRemoteGoToMBS
- PDFActionResetFormMBS
- PDFActionURLMBS

Blog Entries

- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)

4.5.2 Methods

4.5.3 Constructor

Plugin Version: 10.4, Platform: macOS, Targets: All.

Function: The private constructor.

Notes: This class is the base class for a number of annotations. So this constructor is private to make sure you don't create instances of PDFActionMBS. But you can still create instances of the subclasses.

This constructor is private to make sure you don't create an object from this class by error. Please use designated functions to create objects.

See also:

- 4.5.4 Constructor(Handle as Integer)

4.5.4 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFAction handle.

Notes: Please pass in a non zero handle which points to a PDFAction object.

For use with declares.

See also:

- 4.5.3 Constructor

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4.5.5 copy as PDFActionMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the action object.

4.5.6 Properties

4.5.7 Handle as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The internal reference to the PDF action object.

Notes: (Read and Write property)

4.5.8 type as string

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the type of the action.

Notes: The PDF action type returned by this method may not correspond precisely to the name of a PDFAction subclass. For example, a PDFActionURL object might return "URI" or "Launch," depending on the original action as defined by the Adobe PDF Specification. In the PDF Kit, these two actions are handled in the single PDFActionURL subclass, and the more familiar term "URL" is used instead.

Available in Mac OS X v10.5 and later.

(Read only property)

4.6 class PDFActionNamedMBS

4.6.1 class PDFActionNamedMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFActionNamed defines methods used to work with actions in PDF documents, some of which are named in the Adobe PDF Specification.

Notes: A PDFActionNamed object represents an action with a defined name, such as "Go back" or "Zoom in."

Subclass of the PDFActionMBS class.

4.6.2 Methods

4.6.3 Constructor(name as Integer)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes the PDFActionName object with the specified named action.

Notes: Available in Mac OS X v10.5 and later.

4.6.4 Properties

4.6.5 name as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The name of the named action.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.6.6 Constants

Constants

Constant	Value	Description
kPDFActionNamedFind	8	One of the name constants for the action. The Find action. Available in Mac OS X v10.5 and later.
kPDFActionNamedFirstPage	3	One of the name constants for the action. The First Page action. Available in Mac OS X v10.5 and later.
kPDFActionNamedGoBack	5	One of the name constants for the action. The Go Back action. Available in Mac OS X v10.5 and later.
kPDFActionNamedGoForward	6	One of the name constants for the action. The Go Forward action. Available in Mac OS X v10.5 and later.
kPDFActionNamedGoToPage	7	One of the name constants for the action. The Go to Page action. Available in Mac OS X v10.5 and later.
kPDFActionNamedLastPage	4	One of the name constants for the action. The Last Page action. Available in Mac OS X v10.5 and later.
kPDFActionNamedNextPage	1	One of the name constants for the action. The Next Page action. Available in Mac OS X v10.5 and later.
kPDFActionNamedNone	0	One of the name constants for the action. The action has no name. Available in Mac OS X v10.5 and later.
kPDFActionNamedPreviousPage	2	One of the name constants for the action. The Previous Page action. Available in Mac OS X v10.5 and later.
kPDFActionNamedPrint	9	One of the name constants for the action. The Print action. Available in Mac OS X v10.5 and later.
kPDFActionNamedZoomIn	10	One of the name constants for the action. The Zoom In action. Available in Mac OS X v10.5 and later.
kPDFActionNamedZoomOut	11	One of the name constants for the action. The Zoom Out action. Available in Mac OS X v10.5 and later.

4.7 class PDFActionRemoteGoToMBS

4.7.1 class PDFActionRemoteGoToMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFActionRemoteGoTo, a subclass of PDFAction, defines methods for getting and setting the destination of a go-to action that targets another document.

Notes: Available in Mac OS X v10.5 and later.

Subclass of the PDFActionMBS class.

4.7.2 Methods

4.7.3 Constructor(PageIndex as Integer, atPoint as NSPointMBS, file as folderitem)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes the remote go-to action with the specified page index, point, and document URL.

Notes: pageIndex: The page index of the remote document.

point: The point on the page in the remote document.

file: The file of the remote PDF document.

The PDFActionRemoteGoTo object uses a zero-based page index, not a PDFPage object. This simplifies the handling of remote destinations for documents that may not be instantiated yet.

Available in Mac OS X v10.5 and later.

See also:

- 4.7.4 Constructor(PageIndex as Integer, atPoint as NSPointMBS, url as string)

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4.7.4 Constructor(PageIndex as Integer, atPoint as NSPointMBS, url as string)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes the remote go-to action with the specified page index, point, and document URL.

Notes: pageIndex: The page index of the remote document.

point: The point on the page in the remote document.

url: The URL of the remote PDF document.

The PDFActionRemoteGoTo object uses a zero-based page index, not a PDFPage object. This simplifies the handling of remote destinations for documents that may not be instantiated yet.

4.7. CLASS PDFACTIONREMOTEGOTOMBS

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Available in Mac OS X v10.5 and later.

See also:

- 4.7.3 Constructor(PageIndex as Integer, atPoint as NSPointMBS, file as folderitem)

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4.7.5 Properties

4.7.6 pageIndex as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The zero-based page index referenced by the remote go-to action.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.7.7 point as NSPointMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The point, in page space, on the page referenced by the remote go-to action.

Notes: The point on the page of the remote document referenced by the action. If either the x value or the y value of the point is kPDFDestinationUnspecifiedValue, no position on the page is specified.

Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.7.8 URL as string

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The URL of the document referenced by the remote go-to action.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.8 class PDFActionResetFormMBS

4.8.1 class PDFActionResetFormMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFActionResetForm, a subclass of PDFAction, defines methods for getting and clearing fields in a PDF form.

Notes: A PDFActionResetForm object represents an action associated with a PDF form. Subclass of the PDFActionMBS class.

4.8.2 Methods

4.8.3 Constructor

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes a reset form action.

Notes: Initially, there are no fields and fieldsIncludedAreCleared returns true.

Available in Mac OS X v10.5 and later.

4.8.4 fields as string()

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns an array of fields associated with the reset action.

Notes: An array of strings that corresponds to the fieldNames property of widget annotations (such as PDFAnnotationButtonWidget) on the PDF page. This method can return an empty array.

Available in Mac OS X v10.5 and later.

4.8.5 setFields(fields() as string)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Sets the array of fields associated with the reset action.

Notes: Available in Mac OS X v10.5 and later.

4.8.6 Properties

4.8.7 fieldsIncludedAreCleared as boolean

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Whether the fields associated with the reset action are cleared when the action is performed.

Notes: If true, the reset action's fields are cleared when the action is performed. If false, the fields are excluded from the reset action; that is, they are not cleared, but all other fields in the document are cleared.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.9 class PDFActionURLMBS

4.9.1 class PDFActionURLMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: PDFActionURL, a subclass of PDFAction, defines methods for getting and setting the URL associated with a URL action.

Notes: Subclass of the PDFActionMBS class.

4.9.2 Methods

4.9.3 Constructor(url as string)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes a URL action with the specified URL.

Notes: Available in Mac OS X v10.5 and later.

4.9.4 Properties

4.9.5 URL as string

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The URL associated with the URL action.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.10 class PDFAnnotationButtonWidgetMBS

4.10.1 class PDFAnnotationButtonWidgetMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The class for an annotation button widget.

Notes: Subclass of the PDFAnnotationMBS class.

4.10.2 Methods

4.10.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor which creates a new annotation widget.

See also:

- 4.10.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 67

4.10.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor which creates a new annotation widget.

See also:

- 4.10.3 Constructor(left as Double, top as Double, width as Double, height as Double) 67

4.10.5 Properties

4.10.6 allowsToggleToOff as boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Returns a Boolean value indicating whether a radio button behaves in a toggling manner.

Notes: True if clicking a radio button control that is already in the on state toggles it to the off state; otherwise false.

Available in Mac OS X v10.5 and later.
(Read only property)

4.10.7 backgroundColor as NSColorMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The background color.
Notes: (Read and Write property)

4.10.8 caption as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The text of the label on a push button control.
Notes: This method applies only to the label drawn on a control of type `kPDFWidgetPushButtonControl`.
Available in Mac OS X v10.5 and later.
(Read and Write property)

4.10.9 controlType as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The control type of this widget.
Notes: Value is one of the following constants:

`kPDFWidgetUnknownControl`
`kPDFWidgetPushButtonControl`
`kPDFWidgetRadioButtonControl`
`kPDFWidgetCheckBoxControl`
(Read and Write property)

4.10.10 fieldName as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The internal name of a field (used for reset-form actions).
Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.10.11 font as NSFontMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font used in the control's label.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.10.12 fontColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font color used in the control's label.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.10.13 Highlighted as boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A Boolean value that indicates whether the control is highlighted when it is drawn.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.10.14 onStateValue as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The string associated with the on state of a radio button or checkbox control.

Notes: This is a required string for controls of types kPDFWidgetRadioButtonControl and kPDFWidgetCheckBoxControl. The off state is always labeled "Off".

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.10.15 state as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The state value.

Notes: (Read and Write property)

4.10.16 Events

4.10.17 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.10.18 Constants

Constants

Constant	Value	Description
kPDFWidgetCheckBoxControl	2	One of the control types for this widget.
kPDFWidgetPushButtonControl	0	One of the control types for this widget.
kPDFWidgetRadioButtonControl	1	One of the control types for this widget.
kPDFWidgetUnknownControl	-1	One of the control types for this widget.
NSOffState	0	One of the state constants. The corresponding feature is in effect nowhere.
NSOnState	1	One of the state constants. The corresponding feature is in effect everywhere.

States

Constant	Value	Description
kPDFWidgetMixedState	-1	The corresponding feature is in mixed state.
kPDFWidgetOffState	0	The corresponding feature is in effect nowhere.
kPDFWidgetOnState	1	The corresponding feature is in effect everywhere.

4.11 class PDFAnnotationChoiceWidgetMBS

4.11.1 class PDFAnnotationChoiceWidgetMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A PDFAnnotationChoiceWidget object provides user interactivity on a page of a PDF document, in the form of pop-up menus and lists.

Notes: PDFAnnotationChoiceWidget inherits general annotation behavior from the PDFAnnotation class. If you use a PDFAnnotationChoiceWidget object, your application must handle hit testing, unless you are simply using PDFView to display content. This is because PDFView automatically handles hit testing for you.

Subclass of the PDFAnnotationMBS class.

4.11.2 Methods

4.11.3 choices as string()

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Returns an array of strings that represent the items available in the list or pop-up menu of the choice widget annotation.

Notes: Available in Mac OS X v10.5 and later.

4.11.4 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Initializes a PDF annotation object.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. Available in Mac OS X v10.4 and later.

See also:

- 4.11.5 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 71

4.11.5 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Initializes a PDF annotation object.

See also:

- 4.11.4 Constructor(left as Double, top as Double, width as Double, height as Double) 71

4.11.6 setChoices(choices() as string)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Sets the items available in the list or pop-up menu of the choice widget annotation.

Notes: choices: Send an array of strings, each of which represents an item in the list or pop-up menu of the choice annotation widget.

Available in Mac OS X v10.5 and later.

4.11.7 Properties

4.11.8 backgroundColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The color of the widget annotation background.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.9 fieldName as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The internal field name associated with the widget annotation's value.

Notes: If the widget annotation is backed by PDF form data, it can associate an optional field name with a value or other data.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.10 font as NSFontMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font used to display the text in the widget annotation.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.11 `fontColor` as `NSColorMBS`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font color used to display the text in the widget annotation.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.12 `isListChoice` as `boolean`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Whether the widget annotation is a list.

Notes: A choice widget annotation can be either a list or a pop-up menu.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.13 `stringValue` as `string`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The selection in the widget annotation.

Notes: If the widget annotation object is backed by PDF form data, this method returns the value associated with the appropriate field in the form object, if possible.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.11.14 `Events`

4.11.15 `drawWithBox(box as Integer, g as NSGraphicsMBS)` as `boolean`

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.

4.12 class PDFAnnotationCircleMBS

4.12.1 class PDFAnnotationCircleMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for an annotation circle.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationCircleMBS(100,100,100,100)
```

```
a.border.style = PDFBorderMBS.kPDFBorderStyleBeveled
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: Subclass of the PDFAnnotationMBS class.

4.12.2 Methods

4.12.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation circle.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationCircleMBS(100,100,100,100)
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
```

o.Launch

See also:

- 4.12.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 76

4.12.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation circle.

See also:

- 4.12.3 Constructor(left as Double, top as Double, width as Double, height as Double) 75

4.12.5 Properties

4.12.6 interiorColor as NSColorMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Fill color used for drawing annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationCircleMBS(100,100,100,100)
a.interiorColor = NSColorMBS.magentaColor
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: (Read and Write property)

4.12.7 Events

4.12.8 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.13 class PDFAnnotationFreeTextMBS

4.13.1 class PDFAnnotationFreeTextMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The class for a free text annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationFreeTextMBS then
dim ft as PDFAnnotationFreeTextMBS = PDFAnnotationFreeTextMBS(a)
MsgBox ft.contents
end if
next
```

Notes: Subclass of the PDFAnnotationMBS class.

Blog Entries

- [MBS Xojo Plugins, version 22.1pr3](#)

4.13.2 Methods

4.13.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new free text annotation.

See also:

- 4.13.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 78

4.13.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new free text annotation.

See also:

- 4.13.3 Constructor(left as Double, top as Double, width as Double, height as Double)

4.13.5 NSCenterTextAlignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop only.

Function: The Cocoa text alignment constant for center.

4.13.6 NSRightTextAlignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop only.

Function: The Cocoa text alignment constant for right.

4.13.7 Properties

4.13.8 alignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Alignment of text within annotation bounds.

Example:

```
dim a as PDFAnnotationFreeTextMBS // an annotation

if a.alignment=a.NSLeftTextAlignment then
// left aligned
end if
```

Notes: Supported: NSLeftTextAlignment, NSRightTextAlignment and NSCenterTextAlignment.
(Read and Write property)

4.13.9 font as NSFontMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Font associated with the text field.

Notes: (Read and Write property)

4.13.10 fontColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font color used in the text field of the annotation.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.13.11 Events

4.13.12 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.13.13 Constants

Constants

Constant	Value	Description
NSJustifiedTextAlignment	3	The Cocoa text alignment constant for justified.
NSLeftTextAlignment	0	The Cocoa text alignment constant for left.
NSNaturalTextAlignment	4	The Cocoa text alignment constant for natural.

4.14 class PDFAnnotationInkMBS

4.14.1 class PDFAnnotationInkMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for an ink annotation.

Notes: Subclass of the PDFAnnotationMBS class.

Blog Entries

- [MBS Real Studio Plugins, version 12.5pr4](#)

4.14.2 Methods

4.14.3 addBezierPath(path as NSBezierPathMBS)

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: Adds a Bezier path to an annotation.

4.14.4 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new ink annotation.

See also:

- 4.14.5 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 81

4.14.5 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new ink annotation.

See also:

- 4.14.4 Constructor(left as Double, top as Double, width as Double, height as Double) 81

4.14.6 paths as NSBezierPathMBS()

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: Returns an array containing the Bezier paths that make up an annotation.

Example:

```
dim a as new PDFAnnotationInkMBS(0, 0, 100, 100)
```

```
dim b1 as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(NSMakeRectMBS(10, 10, 10, 10))
a.addBezierPath b1
```

```
dim b2 as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(NSMakeRectMBS(50, 50, 20, 30))
a.addBezierPath b2
```

```
dim paths() as NSBezierPathMBS = a.paths
break
```

4.14.7 removeBezierPath(path as NSBezierPathMBS)

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: Removes a Bezier path from an annotation.

4.14.8 Events

4.14.9 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.15 class PDFAnnotationLineMBS

4.15.1 class PDFAnnotationLineMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for a line annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show lines on first page
for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationLineMBS then
dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
MsgBox "Line from "+l.startPoint.String+" to "+l.endPoint.String
end if
next
```

Notes: Subclass of the PDFAnnotationMBS class.

4.15.2 Methods

4.15.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor for a new annotation line.

Example:

```
dim a as new PDFAnnotationLineMBS(100,100,100,100)
```

See also:

- 4.15.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 84

4.15.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor for a new annotation line.

See also:

- 4.15.3 Constructor(left as Double, top as Double, width as Double, height as Double)

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4.15.5 Properties

4.15.6 endLineStyle as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Style used for ornaments at the line end.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)
```

```
a.colorValue = NSColorMBS.redColor
a.endLineStyle = a.kPDFLineStyleOpenArrow
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
```

Notes: (Read and Write property)

4.15.7 endPoint as NSPointMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A point specifying the end point for line annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show lines on first page
for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationLineMBS then
dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
MsgBox "Line from "+l.startPoint.String+" to "+l.endPoint.String
end if
next

```

Notes: (Read and Write property)

4.15.8 interiorColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The color used to fill the ornament at the ends of the line.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.15.9 startLineStyle as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Style used for ornaments at the line start.

Example:

```

dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.startLineStyle = a.kPDFLineStyleSquare

```

Notes: (Read and Write property)

4.15.10 startPoint as NSPointMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A point specifying the start point for line annotation.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show lines on first page
for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationLineMBS then
dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
MsgBox "Line from "+l.startPoint.String+" to "+l.endPoint.String
end if
next

```

Notes: (Read and Write property)

4.15.11 Events

4.15.12 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.15.13 Constants

Line Styles

Constant	Value	Description
kPDFLineStyleCircle	2	
kPDFLineStyleClosedArrow	5	
kPDFLineStyleDiamond	3	
kPDFLineStyleNone	0	
kPDFLineStyleOpenArrow	4	
kPDFLineStyleSquare	1	

4.16 class PDFAnnotationLinkMBS

4.16.1 class PDFAnnotationLinkMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for a link annotation.

Example:

```
// load a PDF
dim sourceFile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(sourceFile)

// get 4th page
dim page as PDFPageMBS = p.pageAtIndex(3)
// create a destination
dim dest as new PDFDestinationMBS(page, NSMakePointMBS(0,0))

// create the link annotation
dim LinkAnnotation as new PDFAnnotationLinkMBS(100,100,100,100)
LinkAnnotation.destination = dest

// add a color rect so we see the link
dim SquareAnnotation as new PDFAnnotationSquareMBS(100,100,100,100)
SquareAnnotation.colorValue = NSColorMBS.redColor

// add to the first page
p.pageAtIndex(0).addAnnotation(SquareAnnotation)
p.pageAtIndex(0).addAnnotation(LinkAnnotation)

// and write new PDF.
dim destfile as FolderItem = SpecialFolder.Desktop.Child("output.pdf")
call p.write(destfile)
```

Notes: Subclass of the PDFAnnotationMBS class.

4.16.2 Methods

4.16.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor for a new annotation link.

See also:

- 4.16.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 88

4.16.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor for a new annotation link.

See also:

- 4.16.3 Constructor(left as Double, top as Double, width as Double, height as Double) 87

4.16.5 setHighlighted(value as boolean)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The highlight state dictates how the annotation is drawn.

Notes: If a user has clicked on a "Link" annotation, you should set highlighted to true and redraw it. When the user lets up, set highlighted to false and redraw again.

4.16.6 Properties

4.16.7 destination as PDFDestinationMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Destination for the link.

Notes: (Read and Write property)

4.16.8 URL as string

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: URL for the link.

Notes: (Read and Write property)

4.16.9 Events

4.16.10 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.17 class PDFAnnotationMarkupMBS

4.17.1 class PDFAnnotationMarkupMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The class for a markup annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: Subclass of the PDFAnnotationMBS class.

Blog Entries

- [MBS Xojo Plugins, version 17.3pr4](#)
- [MBS Real Studio Plugins, version 12.5pr5](#)

4.17.2 Methods

4.17.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new markup annotation.

Example:

```
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
```

See also:

- 4.17.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 91

4.17.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new markup annotation.

See also:

- 4.17.3 Constructor(left as Double, top as Double, width as Double, height as Double) 90

4.17.5 quadrilateralPoints as NSPointMBS()

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: Get the quadrilateral points.

Example:

```
dim m as new PDFAnnotationMarkupMBS(10, 20, 30, 40)
dim points() as NSPointMBS = m.quadrilateralPoints
break // see points in debugger
```

Notes: Array of (n * 4) NSPoints defining n quadrilaterals in page space where n is the number of quad points.

The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left point representing the start of the marked-up text, the next point will be the upper right, the third point will represent the lower left of the text and the last point the lower right. Points are specified relative to the annotation's bound's origin.

4.17.6 setQuadrilateralPoints(points() as NSPointMBS)

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: Set the quadrilateral points.

Notes: Array of (n * 4) NSPoints defining n quadrilaterals in page space where n is the number of quad points.

The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left point representing the start of the marked-up text, the next point will be the upper right, the third point will represent the lower left of the text and the last point the lower right. Points are specified relative to the annotation's bound's origin.

4.17.7 Properties

4.17.8 markupType as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Type of mark-up (highlight, strike-out or underline).

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
a.markupType = PDFAnnotationMarkupMBS.kPDFMarkupTypeUnderline
page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: Changing the markup type also changes the annotations type to one of: "Highlight", "Strikeout", or "Underline" (these are three separate annotation types treated here as three separate flavors of the one PDFAnnotationMarkup class).
(Read and Write property)

4.17.9 Events

4.17.10 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.17.11 Constants

Markup Types

4.17. CLASS PDFANNOTATIONMARKUPMBS

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Constant	Value	Description
kPDFMarkupTypeHighlight	0	Highlight
kPDFMarkupTypeRedact	3	Redact
kPDFMarkupTypeStrikeOut	1	StrikeOut
kPDFMarkupTypeUnderline	2	Underline

4.18 class PDFAnnotationMBS

4.18.1 class PDFAnnotationMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: This is the base class for all annotations.

Notes: A PDFAnnotation object by itself is not useful, only the subclasses (like PDFAnnotationCircle, PDFAnnotationText) are interesting. In parsing a PDF however, any unknown or unsupported annotations will be represented as this base class. Its drawRect method merely frames the bounds of the annotation and prints the annotation type (like "TrapNet") within the box.

Blog Entries

- [News from the MBS Xojo Plugins Version 21.1](#)
- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)
- [MBS Real Studio Plugins, version 12.5pr6](#)
- [MBS REALbasic Plugins Version 10.4 release notes](#)
- [MBS REALbasic Plugins, version 10.4pr4](#)

4.18.2 Methods

4.18.3 addBezierPath(path as NSBezierPathMBS)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Add paths from the annotation.

Notes: Path points are specified in annotation space.

Used by annotations type(s): /Ink.

4.18.4 choices as string()

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The choices are an array of strings indicating the options (items) in either a list or pop-up menu.

Notes: Used by annotations type(s): /Widget (field type(s): /Ch).

4.18.5 Constructor

Plugin Version: 10.4, Platform: macOS, Targets: All.

Function: The private constructor.

Notes: This class is the base class for a number of annotations. So this constructor is private to make sure you don't create instances of PDFAnnotationMBS. But you can still create instances of the subclasses.

This constructor is private to make sure you don't create an object from this class by error. Please use designated functions to create objects.

See also:

- 4.18.6 Constructor(Handle as Integer) 95
- 4.18.7 Constructor(left as Double, top as Double, width as Double, height as Double) 95
- 4.18.8 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 96

4.18.6 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFAnnotation handle.

Notes: Please pass in a non zero handle which points to a PDFAnnotation object.

For use with declares.

See also:

- 4.18.5 Constructor 94
- 4.18.7 Constructor(left as Double, top as Double, width as Double, height as Double) 95
- 4.18.8 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 96

4.18.7 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates a new annotation.

Notes: You need to set type once.

See also:

- 4.18.5 Constructor 94
- 4.18.6 Constructor(Handle as Integer) 95
- 4.18.8 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 96

4.18.8 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Creates a new annotation of given type.

See also:

- 4.18.5 Constructor 94
- 4.18.6 Constructor(Handle as Integer) 95
- 4.18.7 Constructor(left as Double, top as Double, width as Double, height as Double) 95

4.18.9 copy as PDFAnnotationMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the annotation object.

Notes: For Mac OS X 10.7 and newer this function uses the framework function.

For Mac OS X 10.6 and older this function uses our own copy function to duplicate the annotation.

4.18.10 Destructor

Plugin Version: 12.5, Platform: macOS, Targets: All.

Function: The destructor.

4.18.11 drawWithBox(box as Integer)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Draws the annotation on its associated page.

Notes: The annotation is drawn relative to the origin of box in page space.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

For additional information see the "Constants" section in the PDFPage class.

Available in Mac OS X v10.4 and later.

4.18.12 `lineStyleFromName(Name as String) as Integer`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Queries line style for given name.

Notes: Method to help with mapping PDFLineStyle to the associated name based on PDF specification
Used by annotations type(s): /Line.

4.18.13 `nameForLineStyle(LineStyle as Integer) as String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Queries name for line style.

Notes: Method to help with mapping PDFLineStyle to the associated name based on PDF specification
Used by annotations type(s): /Line.

4.18.14 `paths as NSBezierPathMBS()`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Array of NSBezierPathsMBS that comprise the annotation.

Notes: Paths are specified in annotation space.
Used by annotations type(s): /Ink.

4.18.15 `PDFAnnotationHighlightingModeInvert as String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the highlighting mode constants.

Notes: Invert

4.18.16 `PDFAnnotationHighlightingModeNone as String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the highlighting mode constants.

Notes: No

4.18.17 PDFAnnotationHighlightingModeOutline as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the highlighting mode constants.

Notes: Outline

4.18.18 PDFAnnotationHighlightingModePush as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the highlighting mode constants.

Notes: Push

4.18.19 PDFAnnotationKeyAction as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.20 PDFAnnotationKeyAdditionalActions as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.21 PDFAnnotationKeyAppearanceDictionary as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.22 PDFAnnotationKeyAppearanceState as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.23 PDFAnnotationKeyBorder as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.24 PDFAnnotationKeyBorderStyle as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.25 PDFAnnotationKeyColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.26 PDFAnnotationKeyContents as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.27 PDFAnnotationKeyDate as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.28 PDFAnnotationKeyDefaultAppearance as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.29 PDFAnnotationKeyDestination as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.30 PDFAnnotationKeyFlags as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.31 PDFAnnotationKeyHighlightingMode as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.32 PDFAnnotationKeyIconName as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.33 PDFAnnotationKeyInklist as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.34 PDFAnnotationKeyInteriorColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.35 PDFAnnotationKeyLineEndingStyles as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.36 PDFAnnotationKeyLinePoints as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.37 PDFAnnotationKeyName as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.38 PDFAnnotationKeyOpen as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.39 PDFAnnotationKeyPage as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.40 PDFAnnotationKeyParent as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.41 PDFAnnotationKeyPopup as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.42 PDFAnnotationKeyQuadding as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.43 PDFAnnotationKeyQuadPoints as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.44 PDFAnnotationKeyRect as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.45 PDFAnnotationKeySubtype as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.46 PDFAnnotationKeyTextLabel as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the annotation property keys.

4.18.47 PDFAnnotationKeyWidgetAppearanceDictionary as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.48 PDFAnnotationKeyWidgetBackgroundColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.49 PDFAnnotationKeyWidgetBorderColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.50 PDFAnnotationKeyWidgetCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.51 PDFAnnotationKeyWidgetDefaultValue as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.52 PDFAnnotationKeyWidgetDownCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.53 PDFAnnotationKeyWidgetFieldFlags as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.54 PDFAnnotationKeyWidgetFieldType as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.55 PDFAnnotationKeyWidgetMaxLen as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.56 PDFAnnotationKeyWidgetOptions as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.57 PDFAnnotationKeyWidgetRolloverCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.58 PDFAnnotationKeyWidgetRotation as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.59 PDFAnnotationKeyWidgetTextLabelUI as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.60 PDFAnnotationKeyWidgetValue as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the key widget property keys.

4.18.61 PDFAnnotationLineEndingStyleCircle as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: Circle

4.18.62 PDFAnnotationLineEndingStyleClosedArrow as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: Closed Arrow

4.18.63 PDFAnnotationLineEndingStyleDiamond as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: Diamond

4.18.64 PDFAnnotationLineEndingStyleNone as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: No

4.18.65 PDFAnnotationLineEndingStyleOpenArrow as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: Open Arrow

4.18.66 PDFAnnotationLineEndingStyleSquare as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the line ending style constants.

Notes: Square

4.18.67 PDFAnnotationSubtypeCircle as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Circle

4.18.68 PDFAnnotationSubtypeFreeText as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Freetext

4.18.69 PDFAnnotationSubtypeHighlight as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Highlight

4.18.70 PDFAnnotationSubtypeInk as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Ink

4.18.71 PDFAnnotationSubtypeLine as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Line

4.18.72 PDFAnnotationSubtypeLink as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Link

4.18.73 PDFAnnotationSubtypePopup as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Popup

4.18.74 PDFAnnotationSubtypeSquare as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Square

4.18.75 PDFAnnotationSubtypeStamp as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Stamp

4.18.76 PDFAnnotationSubtypeStrikeOut as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Strike out

4.18.77 PDFAnnotationSubtypeText as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Text

4.18.78 PDFAnnotationSubtypeUnderline as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Underline

4.18.79 PDFAnnotationSubtypeWidget as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the subtypes.

Notes: Widget

4.18.80 PDFAnnotationTextIconTypeComment as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Comment

4.18.81 PDFAnnotationTextIconTypeHelp as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Help

4.18.82 PDFAnnotationTextIconTypeInsert as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Insert

4.18.83 PDFAnnotationTextIconTypeKey as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Key

4.18.84 PDFAnnotationTextIconTypeNewParagraph as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: New Paragraph

4.18.85 PDFAnnotationTextIconTypeNote as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Note

4.18.86 PDFAnnotationTextIconTypeParagraph as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the icon type constants.

Notes: Paragraph

4.18.87 PDFAnnotationWidgetSubtypeButton as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget subtypes.

Notes: Button

4.18.88 PDFAnnotationWidgetSubtypeChoice as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget subtypes.

Notes: Choice

4.18.89 PDFAnnotationWidgetSubtypeSignature as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget subtypes.

Notes: Signature

4.18.90 PDFAnnotationWidgetSubtypeText as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget subtypes.

Notes: Text

4.18.91 quadrilateralPoints as NSPointMBS()

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Array of $n * 4$ points, packed as NSValue pointValue / CGPointValue, defining n quadrilaterals in page space where n is the number of quad points.

Notes: The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left point representing the start of the marked-up text, the next point will be the upper right, the third point will represent the lower left of the text and the last point the lower right.

Points are specified relative to the annotation's bound's origin.

4.18.92 removeAllAppearanceStreams

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: All appearance streams for the target annotation are removed.

Notes: Without an appearance stream, annotations are drawn strictly according to their parameters (color, border, font, etc.). When a PDF is saved, PDF Kit will always write out an appearance stream(s) for each annotation. If the PDF is reloaded, you will need to remove the appearance streams in order to continue to edit the annotations parameters.

Requires Mac OS X 10.5.

4.18.93 removeBezierPath(path as NSBezierPathMBS)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Remove paths from the annotation.

4.18.94 removeValueForAnnotationKey(Key as String)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Remove the key-value pair from the annotation dictionary. Returns true on successful removal.

4.18.95 setBooleanValue(Key as String, value as Boolean) as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Sets a boolean value.

Notes: See also setValue.

4.18.96 setChoices(choices() as string)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The choices are an array of strings indicating the options (items) in either a list or pop-up menu.

Notes: Used by annotations type(s): /Widget (field type(s): /Ch).

4.18.97 setQuadrilateralPoints(points() as NSPointMBS)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Array of $n * 4$ points, packed as NSValue pointValue / CGPointValue, defining n quadrilaterals in page space where n is the number of quad points.

Notes: The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left point representing the start of the marked-up text, the next point will be the upper right, the third point will represent the lower left of the text and the last point the lower right.

Points are specified relative to the annotation's bound's origin.

4.18.98 setRectValue(Key as String, value as NSRectMBS) as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Sets a rectangle value.

Notes: See also setValue.

4.18.99 setValue(Key as String, value as Variant) as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Allows you to set a key-value pair in this annotation's dictionary.

Notes: Returns true on successful assignment, false on error. Key must be valid for a PDF annotation's object type, and must have a value that is acceptable for the key type. These values can either be a string, number, array of strings or numbers, or an dictionary of the previously listed types. Some keys expect a complex type, for example the key `"/C"` expects a color in the format of an array of 0, 1, 3, or 4 elements, with each element being a floating-point number in the range of 0.0 - 1.0). As a convenience, these kind of keys will directly accept NSColorMBS values. Other convenience functions provide similar support can be found in PDFAnnotationUtilities header file. Note that you can set the environment variable `"PDFKIT_LOG_ANNOTATIONS"` to log any key-value assignment failures.

4.18.100 setValues(values() as string)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The choices are an array of strings indicating the option,Ãs export values in either a list or pop-up menu.

Notes: Used by annotations type(s): /Widget (field type(s): /Ch).

4.18.101 valueForAnnotationKey(Key as String) as Variant

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Retrieves a deep copy of the key-value pair based on the given key; key can either be from the keys PDFAnnotationKey, or an appropriate string from the PDF specification.

4.18.102 values as string()

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The choices are an array of strings indicating the option,Ãs export values in either a list or pop-up menu.

Notes: Used by annotations type(s): /Widget (field type(s): /Ch).

4.18.103 Properties

4.18.104 Action as PDFActionMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Optional action performed when a user clicks / taps an annotation.

Notes: PDF readers ignore actions except for those associated with Link or button Widget annotations.

Available in macOS 10.5 or newer
(Read and Write property)

4.18.105 alignment as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Alignment of text within annotation bounds. Supported: NSLeftTextAlignment, NSRightTextAlignment and NSCenterTextAlignment.

Notes: Used by annotations type(s): /FreeText, /Widget (field type(s): /Tx).
(Read and Write property)

4.18.106 allowsToggleToOff as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: For radio buttons, indicates whether clicking on widget whose state is already On toggles it Off.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn).
(Read and Write property)

4.18.107 annotationKeyValues as Dictionary

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: List all key-value pairs for this annotation; returns a deep copy of all pairs.

Notes: Note that this method will not include a copy of the value for /Parent. This is by design as to avoid introducing a memory cycle. If you would like to get the /Parent property, use valueForAnnotationKey with key PDFAnnotationKeyParent.
(Read only property)

4.18.108 backgroundColor as NSColorMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Background color characteristics.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).
(Read and Write property)

4.18.109 border as PDFBorderMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Optional border or border style that describes how to draw the annoation border (if any).

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)
```

```
a.interiorColor = NSColorMBS.greenColor
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: (Read and Write property)

4.18.110 bounds as NSRectMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The bounding box for the annotation in page space.

Notes: Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.4 and later.
(Read and Write property)

4.18.111 `buttonWidgetState` as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The current state of a button widget annotation.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn).
(Read and Write property)

4.18.112 `buttonWidgetStateString` as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The string that represents the ON state of a button widget annotation.

Notes: This should be set when trying to, for example, group together a set of radio buttons with the same field name.

When buttons share the same field name, their individual state strings set them apart from one another.

Used by annotations type(s): /Widget (field type(s): /Btn).
(Read and Write property)

4.18.113 `caption` as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Label for the button. Applies to `kPDFWidgetPushButtonControl` only.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn).
(Read and Write property)

4.18.114 `colorValue` as `NSColorMBS`

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: For many annotations ("Circle", "Square") the stroke color.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)
```

```
a.colorValue = NSColorMBS.redColor
a.endLineStyle = a.kPDFLineStyleOpenArrow
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
```

Notes: Used for other annotations as well.
(Read and Write property)

4.18.115 comb as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Used to configure combing for PDF text fields.

Notes: If set, the field is automatically divided into as many equally spaced positions, or combs, as the value of the maximum length of the field. To get the maximum length, use annotation key: PDFAnnotationKeyWidgetMaxLen.

Used by annotations type(s): /Widget (field type(s): /Tx).
(Read and Write property)

4.18.116 contents as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: A string of text associated with an annotation.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationTextMBS(100,100,100,100)
```

```
a.contents="Hello"
a.colorValue = NSColorMBS.redColor
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: Often to be displayed in a pop-up when the annotation is clicked on ("FreeText" and "Text" especially).

(Read and Write property)

4.18.117 destination as PDFDestinationMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Destination for the link. May be nil if no destination associated with link; in this case the URL may be valid.

Notes: The preferred way though is to use action property.

Used by annotations type(s): /Link.

(Read and Write property)

4.18.118 endLineStyle as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Style used for ornaments at the lines end (optional, PDF 1.4).

Notes: Used by annotations type(s): /Line.

(Read and Write property)

4.18.119 endPoint as NSPointMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Points specifying end points for line annotation (required).

Notes: Points are specified in annotation space.

Used by annotations type(s): /Line.

(Read and Write property)

4.18.120 fieldName as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Widget annotations backed by form data have (internal) field names with which to associate a value or data.

Notes: Can also be used for ResetForm actions.

Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).

(Read and Write property)

4.18.121 font as NSFontMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Font and font color associated with the text field.

Notes: Used by annotations type(s): /FreeText, /Popup, /Widget (field type(s): /Btn, /Ch, and /Tx).
(Read and Write property)

4.18.122 fontColor as NSColorMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Width of line used to stroke border.

Notes: Used by annotations type(s): /FreeText, /Widget (field type(s): /Btn, /Ch, and /Tx).
(Read and Write property)

4.18.123 Handle as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The handle used internally for the object reference.

Notes: (Read and Write property)

4.18.124 hasAppearanceStream as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns true if the annotation has an appearance stream.

Notes: Annotations with appearance streams are drawn using their stream. As a result, setting many parameters (like 'setColor' above), will have no visible effect.
(Read only property)

4.18.125 iconType as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The type of icon displayed in the PDF. Supported icons: "Comment", "Key", "Note", "Help", "NewParagraph", "Paragraph" and "Insert".

Notes: Used by annotations type(s): /Text.
(Read and Write property)

4.18.126 interiorColor as NSColorMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Interior color of the annotation.

Notes: Used by annotations type(s): /Circle, /Line, /Square.
(Read and Write property)

4.18.127 isHighlighted as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The highlight state dictates how the annotation is drawn.

Notes: For example, if a user has clicked on a "Link" annotation, you should set highlighted to YES and redraw it. When the user lets up, set highlighted to false and redraw again.

Available in macOS 10.13 or newer or iOS 11.0 or newer.

(Read and Write property)

4.18.128 isPasswordField as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Used to determine if a PDF text field is a password field.

Notes: Used by annotations type(s): /Widget (field type(s): /Tx).
(Read only property)

4.18.129 ListChoice as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: There are two flavors of Choice widget annotations, lists and pop-up menus. This method allow you to differentiate.

Notes: Used by annotations type(s): /Widget (field type(s): /Ch).
(Read and Write property)

4.18.130 markupType as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Type of mark-up (highlight, strike-out or underline). Changing the markup type also changes the annotations type.

Notes: Used by annotations type(s): /Highlight, /StrikeOut, /Underline.
(Read and Write property)

4.18.131 maximumLength as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Maximum characters allowed (optional, zero indicates no specified maximum).

Notes: Used by annotations type(s): /Widget (field type(s): /Tx).
(Read and Write property)

4.18.132 modificationDate as date

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The modification date of the annotation.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.18.133 modificationDateTime as DateTime

Plugin Version: 20.5, Platform: macOS, Targets: All.

Function: The modification date of the annotation.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.18.134 mouseUpAction as PDFActionMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The action performed when a user releases the mouse button within an annotation.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.18.135 multiline as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Used to configure multiline PDF text fields.

Notes: Used by annotations type(s): /Widget (field type(s): /Tx).
(Read and Write property)

4.18.136 Open as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Used to tell if an annotation is open or closed.

Notes: Used by annotations type(s): /Popup.
(Read and Write property)

4.18.137 page as PDFPageMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns the page the annotation is associated with.

Notes: (Read only property)

4.18.138 popup as Variant

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The pop-up annotation associated with an annotation.

Notes: The variant is a PDFAnnotationPopupMBS.

Pop-up annotations are not used with links or widgets. The bounds and open state of the pop-up annotation indicate the placement and open state of the pop-up window.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.18.139 radiosInUnison as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: For radio buttons, indicates whether a group of radio buttons will turn on and off in unison; that is if one is checked, they are all checked. If clear, the buttons are mutually exclusive.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn).
(Read and Write property)

4.18.140 ReadOnly as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Determines if a text field should be editable or not.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).
(Read and Write property)

4.18.141 shouldDisplay as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Specifies whether it should be drawn to the display or not.

Notes: (Read and Write property)

4.18.142 shouldPrint as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Specifies whether it should be printed or not.

Notes: (Read and Write property)

4.18.143 stampName as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Name of stamp annotation.

Notes: Standard stamps include names like, "Approved", "Draft", "TopSecret", etc.

The name must be representable as ASCII. Very little is rendered if the annotation has no appearance stream.

Used by annotations type(s): /Stamp
(Read and Write property)

4.18.144 startLineStyle as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Style used for ornaments at the lines start (optional, PDF 1.4).

Notes: Used by annotations type(s): /Line.
(Read and Write property)

4.18.145 startPoint as NSPointMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Points specifying start points for line annotation (required).

Notes: Points are specified in annotation space.
Used by annotations type(s): /Line.
(Read and Write property)

4.18.146 toolTip as string

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: String used for tooltips.

Notes: The base class returns contents, sub-classes may override as appropriate.
(Read only property)

4.18.147 type as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns the annotation type (called "Subtype" in the PDF specification since "Annot" is the type).

Example:

```
dim a as new PDFAnnotationTextMBS(100,100,100,100)
MsgBox a.type // Text
```

Notes: Examples include: "Text", "Link", "Line", etc.
(Read and Write property)

4.18.148 URL as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: URL for the link. May be nil if no URL action associated with link; in this case the destination may be valid.

Notes: The preferred way though is to via action property.

Used by annotations type(s): /Link.

(Read and Write property)

4.18.149 userName as string

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The name of the user who created the annotation.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.18.150 widgetControlType as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The type of button widget control type (radio button, push button, or checkbox).

Notes: Used by annotations type(s): /Widget (field type(s): /Btn).

(Read and Write property)

4.18.151 widgetDefaultStringValue as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The string value for a widget annotation.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).

(Read and Write property)

4.18.152 widgetFieldType as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The specific field type of a widget annotation (button, choice, or text).

Notes: Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).

(Read and Write property)

4.18.153 widgetStringValue as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The string value for a widget annotation.

Notes: Used by annotations type(s): /Widget (field type(s): /Btn, /Ch, /Tx).
(Read and Write property)

4.19 class PDFAnnotationPopupMBS

4.19.1 class PDFAnnotationPopupMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A PDFAnnotationPopup object provides user interactivity on a PDF page in the form of a pop-up menu.

Notes: Subclass of the PDFAnnotationMBS class.

4.19.2 Methods

4.19.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates a new annotation popup annotation with the given size.

See also:

- 4.19.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 127

4.19.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates a new annotation popup annotation with the given size.

See also:

- 4.19.3 Constructor(left as Double, top as Double, width as Double, height as Double) 127

4.19.5 Properties

4.19.6 isOpen as boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A Boolean value indicating whether the pop-up is open.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.19.7 Events

4.19.8 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.20 class PDFAnnotationSquareMBS

4.20.1 class PDFAnnotationSquareMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The class for a square annotation.

Example:

```
// load a PDF
dim sourceFile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(sourceFile)

// get 4th page
dim page as PDFPageMBS = p.pageAtIndex(3)
// create a destination
dim dest as new PDFDestinationMBS(page, NSMakePointMBS(0,0))

// create the link annotation
dim LinkAnnotation as new PDFAnnotationLinkMBS(100,100,100,100)
LinkAnnotation.destination = dest

// add a color rect so we see the link
dim SquareAnnotation as new PDFAnnotationSquareMBS(100,100,100,100)
SquareAnnotation.colorValue = NSColorMBS.redColor

// add to the first page
p.pageAtIndex(0).addAnnotation(SquareAnnotation)
p.pageAtIndex(0).addAnnotation(LinkAnnotation)

// and write new PDF.
dim destfile as FolderItem = SpecialFolder.Desktop.Child("output.pdf")
call p.write(destfile)
```

Notes: Subclass of the PDFAnnotationMBS class.

4.20.2 Methods

4.20.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a square annotation.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)

a.interiorColor = NSColorMBS.greenColor
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch

```

See also:

- 4.20.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 130

4.20.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a square annotation.

See also:

- 4.20.3 Constructor(left as Double, top as Double, width as Double, height as Double) 129

4.20.5 Properties

4.20.6 interiorColor as NSColorMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Fill color used for drawing annotation.

Example:

```

dim a as new PDFAnnotationSquareMBS(100,100,100,100)
a.interiorColor = NSColorMBS.greenColor

```

Notes: (Read and Write property)

4.20.7 Events

4.20.8 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.21 class PDFAnnotationStampMBS

4.21.1 class PDFAnnotationStampMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A PDFAnnotationStamp object allows you to display a word or phrase, such as "Confidential," in a PDF page.

Example:

```
// create new document with blank page
dim doc as new PDFDocumentMBS
dim page as new PDFPageMBS
doc.appendPage page

// make new stamp annotation
dim stamp as new PDFAnnotationStampMBS(100, 100, 100, 100)

// Name of stamp annotation. Standard stamps include names like, "Approved", "Draft", "TopSecret",
etc.
// The name must be representable as ASCII.
// Very little is rendered if the annotation has no appearance stream.
stamp.name = "Approved"

page.addAnnotation stamp

// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

if doc.write(f) then
f.Launch
else
MsgBox "write failed"
end if
```

Notes: A PDFAnnotationStamp object should have an appearance stream associated with it; otherwise, nothing useful is rendered.

Subclass of the PDFAnnotationMBS class.

Blog Entries

- [MBS Real Studio Plugins, version 12.5pr5](#)

4.21.2 Methods

4.21.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates a new annotation stamp with the given size.

See also:

- 4.21.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 133

4.21.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates a new annotation stamp with the given size.

See also:

- 4.21.3 Constructor(left as Double, top as Double, width as Double, height as Double) 133

4.21.5 Properties

4.21.6 name as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The name associated with the stamp annotation.

Notes: The name must be representable in ASCII. You can set a stamp annotation's name to help you identify it, but that name is not displayed on the PDF page. You must provide the string you want displayed on the page, such as "Draft" or "Top Secret", in the appearance stream for the annotation.

Note that the name value of the stamp annotation is not necessarily identical to the user-visible appearance of the stamp annotation. For example, a stamp annotation that displays "Confidential" on a PDF page may not have a name value of "Confidential".

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.21.7 Events

4.21.8 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.22 class PDFAnnotationTextMBS

4.22.1 class PDFAnnotationTextMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for an annotation text.

Notes: Subclass of the PDFAnnotationMBS class.

4.22.2 Methods

4.22.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation text.

See also:

- 4.22.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil) 135

4.22.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation text.

See also:

- 4.22.3 Constructor(left as Double, top as Double, width as Double, height as Double) 135

4.22.5 Properties

4.22.6 iconType as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The type of icon displayed in the PDF.

Notes: Supported icons: "Comment", "Key", "Note", "Help", "NewParagraph", "Paragraph" and "Insert". (Read and Write property)

4.22.7 Events

4.22.8 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.22.9 Constants

Constants

Constant	Value	Description
kPDFTextAnnotationIconComment	0	One of the constants for use with the icontype property.
kPDFTextAnnotationIconHelp	3	One of the constants for use with the icontype property.
kPDFTextAnnotationIconInsert	6	One of the constants for use with the icontype property.
kPDFTextAnnotationIconKey	1	One of the constants for use with the icontype property.
kPDFTextAnnotationIconNewParagraph	4	One of the constants for use with the icontype property.
kPDFTextAnnotationIconNote	2	One of the constants for use with the icontype property.
kPDFTextAnnotationIconParagraph	5	One of the constants for use with the icontype property.

4.23 class PDFAnnotationTextWidgetMBS

4.23.1 class PDFAnnotationTextWidgetMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The PDFKit class for a text widget annotation.

Notes: Subclass of the PDFAnnotationMBS class.

Blog Entries

- [MBS Xojo Plugins, version 22.1pr3](#)

4.23.2 Methods

4.23.3 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation.

See also:

- [4.23.4 Constructor\(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil\)](#) 137

4.23.4 Constructor(left as Double, top as Double, width as Double, height as Double, annotationType as String, properties as Dictionary = nil)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a new annotation.

See also:

- [4.23.3 Constructor\(left as Double, top as Double, width as Double, height as Double\)](#) 137

4.23.5 NSCenterTextAlignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop only.

Function: The Cocoa text alignment constant for center.

4.23.6 NSRightTextAlignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop only.

Function: The Cocoa text alignment constant for right.

4.23.7 Properties

4.23.8 alignment as Integer

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Alignment of text.

Notes: Supported: NSLeftTextAlignment, NSRightTextAlignment and NSCenterTextAlignment.
(Read and Write property)

4.23.9 attributedStringValue as NSAttributedStringMBS

Plugin Version: 12.3, Platform: macOS, Targets: Desktop, Console & Web.

Function: Attributed string associated with text field (font / fontColor).

Notes: Available on Mac OS X 10.8 or newer.
(Read and Write property)

4.23.10 backgroundColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The background color of the annotation text field.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.23.11 fieldName as string

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The internal name for the annotation text field.

Notes: Field names are optional, internal names that identify text fields in a PDF form. You use field names with the PDFActionResetForm action.

Note that multiple PDFAnnotationTextWidget objects with the same field name always have the same text associated with that field name. When text is entered into one of the objects, the text associated with that

field name is changed in all objects. If you need to ensure unique text for a PDFAnnotationTextWidget object, you must give it a unique field name.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.23.12 font as NSFontMBS

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Font associated with the text field.

Notes: (Read and Write property)

4.23.13 fontColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The font color used for the annotation's text field.

Notes: Available in Mac OS X v10.5 and later.

(Read and Write property)

4.23.14 isMultiline as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Configuring multiline PDF text fields.

Notes: (Read and Write property)

4.23.15 maximumLength as Integer

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The maximum number of characters allowed in the annotations string.

Notes: A value of 0 means that there is no specified maximum.

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.23.16 rotation as Integer

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The rotation angle of the annotation text field in degrees.

Notes: The rotation angle to be applied to the annotation text field, in degrees. The rotation angle must be a positive or negative multiple of 90 (negative angles are converted to their positive equivalents; for example -90 is changed to 270).

Available in Mac OS X v10.5 and later.

(Read and Write property)

4.23.17 stringValue as string

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: String value associated with text field.

Notes: (Read and Write property)

4.23.18 Events

4.23.19 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Plugin Version: 12.5, Platform: macOS, Targets: .

Function: The event called for a custom drawing.

Notes: You can draw here what the annotation should show.

Return true to disable the default drawing from PDFKit.

4.23.20 Constants

Constants

Constant	Value	Description
NSJustifiedTextAlignment	3	The Cocoa text alignment constant for justified.
NSLeftTextAlignment	0	The Cocoa text alignment constant for left.
NSNaturalTextAlignment	4	The Cocoa text alignment constant for natural.

4.24 class PDFAppearanceCharacteristicsMBS

4.24.1 class PDFAppearanceCharacteristicsMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: PDFAppearanceCharacteristics represents a dictionary that is specific to widget annotation types, containing additional information for constructing the annotation's appearance.

Notes: It is designed to be a representation of the /MK appearance characteristics entry in the annotation dictionary. Because the /MK entry is optional, all properties of PDFAppearanceCharacteristics are optional as well.

Blog Entries

- [MonkeyBread Software Releases the MBS Xojo Plugins in version 21.1](#)
- [MBS Xojo Plugins, version 21.1pr2](#)

4.24.2 Methods

4.24.3 Constructor

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The constructor.

See also:

- [4.24.4 Constructor\(Handle as Integer\)](#) 141

4.24.4 Constructor(Handle as Integer)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The constructor.

Notes: Handle must point to an existing PDFAppearanceCharacteristics object.

See also:

- [4.24.3 Constructor](#) 141

4.24.5 copy as PDFAppearanceCharacteristicsMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Creates a copy of the object.

4.24.6 PDFAppearanceCharacteristicsKeyBackgroundColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.7 PDFAppearanceCharacteristicsKeyBorderColor as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.8 PDFAppearanceCharacteristicsKeyCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.9 PDFAppearanceCharacteristicsKeyDownCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.10 PDFAppearanceCharacteristicsKeyRolloverCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.11 PDFAppearanceCharacteristicsKeyRotation as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: One of the widget appearance characteristics keys.

4.24.12 Properties

4.24.13 appearanceCharacteristicsKeyValues as Dictionary

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: List all appearance characteristics properties as key-value pairs; returns a deep copy of all pairs.

Notes: Helpful for debugging.

(Read only property)

4.24.14 backgroundColor as NSColorMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The background color of the widget annotation.

Notes: (Read and Write property)

4.24.15 borderColor as NSColorMBS

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The border color of the widget annotation.

Notes: (Read and Write property)

4.24.16 caption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The widget annotation,Ãs normal caption, displayed when it is not interacting with the user.

Notes: (Read and Write property)

4.24.17 controlType as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: For button widget annotations, need to specify the control type for PDFAppearanceCharacteristicsMBS as certain attributes, i.e. captions, are only available for certain flavors.

Notes: Control type does not need to be set for text or choice widget annotations.

(Read and Write property)

4.24.18 downCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The widget's caption displayed when the user holds the mouse button while over the annotation.

Notes: Applies only to `kPDFWidgetPushButtonControl`.

(Read and Write property)

4.24.19 Handle as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The internal object reference.

Notes: (Read and Write property)

4.24.20 rolloverCaption as String

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The widget's caption displayed when the user moves the mouse over the annotation.

Notes: Applies only to `kPDFWidgetPushButtonControl`.

(Read and Write property)

4.24.21 rotation as Integer

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The number of *degrees* by which the widget annotation is rotated counterclockwise relative to the page.

Notes: The value must be a multiple of 90. Default value: 0.

(Read and Write property)

4.25 class PDFBorderMBS

4.25.1 class PDFBorderMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The class for PDFKit borders.

Blog Entries

- [MBS Xojo Plugins, version 21.1pr1](#)
- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)
- [MBS Real Studio Plugins, version 12.5pr5](#)

4.25.2 Methods

4.25.3 Constructor

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: The constructor.

Notes: Updated for version 21.1 to be public. Used to be private.

See also:

- [4.25.4 Constructor\(Handle as Integer\)](#)

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4.25.4 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFBorder handle.

Notes: Please pass in a non zero handle which points to a PDFBorder object.

For use with declares.

See also:

- [4.25.3 Constructor](#)

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4.25.5 copy as PDFBorderMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the border object.

Notes: Not available in Mac OS X 10.6.

4.25.6 `dashPattern` as `Double()`

Plugin Version: 12.5, Platform: macOS, Targets: All.

Function: Gets the dash pattern for the border.

Notes: Refer to the description for `NSBezierPath` for more information.

4.25.7 `PDFBorderKeyDashPattern` as `String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Key for the dash pattern property.

4.25.8 `PDFBorderKeyLineWidth` as `String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Key for the line width property.

4.25.9 `PDFBorderKeyStyle` as `String`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Key for the style property.

4.25.10 `setDashPattern(values())` as `Double`

Plugin Version: 12.5, Platform: macOS, Targets: All.

Function: Sets the dash pattern for the border.

Notes: Refer to the description for `NSBezierPath` for more information.

4.25.11 `Properties`

4.25.12 `borderKeyValues` as `Dictionary`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: List all border properties as key-value pairs; returns a deep copy of all pairs.

Notes: Helpful for debugging.

(Read only property)

4.25.13 horizontalCornerRadius as single

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: For rounded-rect borders, the corner radius.

Notes: Deprecated in Mac OS X 10.7.

(Read and Write property)

4.25.14 lineWidth as Double

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Width of line used to stroke border.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)
```

```
a.interiorColor = NSColorMBS.greenColor
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5
```

```
page.addAnnotation(a)
```

```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: (Read and Write property)

4.25.15 style as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Whether border is drawn solid, dashed etc.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)

a.border.style = PDFBorderMBS.kPDFBorderStyleDashed

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch

```

Notes: Use this constants:

kPDFBorderStyleSolid	= 0
kPDFBorderStyleDashed	= 1
kPDFBorderStyleBeveled	= 2
kPDFBorderStyleInset	= 3
kPDFBorderStyleUnderline	= 4

(Read and Write property)

4.25.16 verticalCornerRadius as single

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: For rounded-rect borders, the corner radius.

Notes: Deprecated in Mac OS X 10.7.

(Read and Write property)

4.25.17 Constants

Constants

Constant	Value	Description
kPDFBorderStyleBeveled	2	One of the constants for the border style.
kPDFBorderStyleDashed	1	One of the constants for the border style.
kPDFBorderStyleInset	3	One of the constants for the border style.
kPDFBorderStyleSolid	0	One of the constants for the border style.
kPDFBorderStyleUnderline	4	One of the constants for the border style.

4.26 class PDFDestinationMBS

4.26.1 class PDFDestinationMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The class for a pdf destination.

Blog Entries

- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)

4.26.2 Methods

4.26.3 compare(dest as PDFDestinationMBS) as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns a comparison result that indicates the location of the destination in the document, relative to the current position.

Notes: A comparison result, indicating the position of the passed-in destination relative to the current position.

If destination is between the receiver's position and the end of the document, compare returns NSOrderedAscending; if it is between the receiver's position and the beginning of the document, compare returns NSOrderedDescending. Otherwise, if destination matches the receiver's position, compare returns NSOrderedSame.

This method ignores the horizontal component of the destination point (the x value). If the destination's vertical component (or y value) is kPDFDestinationUnspecifiedValue, compare treats the destination as if its y value is the top point on the destination page.

An exception is raised if destination does not have a page associated with it or if its page is associated with a document other than the receiver's document.

Available in Mac OS X v10.5 and later.

4.26.4 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

4.26. CLASS PDFDESTINATIONMBS 151

Function: Creates a new object based on a given PDFDestination handle.

Notes: Please pass in a non zero handle which points to a PDFDestination object.

For use with declares.

See also:

- 4.26.5 Constructor(page as PDFPageMBS, point as NSPointMBS) 151

4.26.5 Constructor(page as PDFPageMBS, point as NSPointMBS)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes the destination.

Notes: page: The page of the destination.

point: The point of the destination, in page space.

Specify point in page space. Typically, there's no need to initialize destinations. Instead, you get them from PDFAnnotationLink, PDFOutline, or PDFView objects.

Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.4 and later.

See also:

- 4.26.4 Constructor(Handle as Integer) 150

4.26.6 copy as PDFDestinationMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the destination object.

4.26.7 kPDFDestinationUnspecifiedValue as Double

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Value used for unspecified destination.

Example:

```
MsgBox str(PDFDestinationMBS.kPDFDestinationUnspecifiedValue)
```

Notes: Unspecified value used when a destination's actual x or y value is unimportant.

Available in Mac OS X v10.5 and later.

4.26.8 point as NSPointMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the point, in page space, that the destination refers to.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.4 and later.

4.26.9 Properties

4.26.10 Handle as Integer

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: The internal object reference.

Notes: (Read and Write property)

4.26.11 page as PDFPageMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Page the destination refers to (destination page).

Notes: (Read only property)

4.26.12 Zoom as Double

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Specify the scale factor the PDF viewer should assume for this destination.

Notes: kPDFDestinationUnspecifiedValue indicates the scale factor is unaffected.

Available in Mac OS X 10.7 and later.

(Read and Write property)

4.27 class PDFDocumentDelegateMBS

4.27.1 class PDFDocumentDelegateMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: A class for a document delegate.

Notes: Subclass this class to handle document events.

4.27.2 Events

4.27.3 Close

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: Called when the delegate is destroyed.

4.27.4 didMatchString(selection as PDFSelectionMBS)

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The event for an item found.

Notes: If implemented by the delegate, called for every search instance found during a find. PDFDocument's implementation accumulates each PDFSelection in an array.

4.27.5 documentDidBeginDocumentFind

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The search started on the document.

4.27.6 documentDidBeginPageFind(PageIndex as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The page search started on this page.

Notes: PageIndex is zero based.

4.27.7 documentDidEndDocumentFind

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The search finished on this document.

4.27.8 documentDidEndPageFind(PageIndex as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The page search finished on this page.

Notes: PageIndex is zero based.

4.27.9 documentDidFindMatch(selection as PDFSelectionMBS)

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The search found an item.

4.27.10 documentDidUnlock

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The document has been unlocked.

4.27.11 Open

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: Called when the delegate is installed.

4.28 class PDFDocumentMBS

4.28.1 class PDFDocumentMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The PDFKit class for a PDF document.

Notes: Basically this is the code used by Preview.app by Apple.

Destructor is dispatched to main thread to avoid bugs in OS X 10.12.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [Several ways for picture to PDF in MBS Plugins](#)
- [News from the MBS Xojo Plugins Version 21.1](#)
- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 19.1](#)
- [MBS Xojo Plugins, version 19.1pr3](#)
- [PDF printing via PDFKit](#)
- [Have you checked out PDFViewMBS class?](#)
- [MBS REALbasic Plugins Version 10.4 release notes](#)

Xojo Developer Magazine

- [6.4, pages 33 to 34: Creating PDF Files, How to create PDFs using the MBS Plugins by Christian Schmitz](#)
- [20.3, page 80: Great Shots With Continuity Camera, Use your iOS device to take a picture for your Mac by Stefanie Juchmes](#)

4.28.2 Methods

4.28.3 appendPage(page as PDFPageMBS)

Plugin Version: 14.3, Platform: macOS, Targets: All.

Function: Appends a page to the document.

4.28.4 beginFindString(text as string, options as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Begins a find, searching the document for string.

Notes: Search results are handled via a DidFindMatch event in the delegate. Supported options are: NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch.

4.28.5 beginFindStrings(texts() as string, options as integer)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Like beginFindString but it accepts an array of strings to search for.

4.28.6 cancelFindString

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Method to cancel a search.

Notes: Can be called from a user method being serviced by a find notification.

4.28.7 Constructor

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The constructor to create a new pdf document in memory.

Example:

```
dim doc as new PDFDocumentMBS // new empty document
dim page as new PDFPageMBS // new empty page
```

```
doc.Creator="Xojo"
doc.Title="Test file"
```

```
doc.insertPage page,0
```

```
dim f as FolderItem=SpecialFolder.Desktop.Child("test.pdf")
```

```
if doc.write(f) then
f.launch
end if
```

4.28. CLASS PDFDOCUMENTMBS 157

See also:

- 4.28.8 Constructor(data as memoryblock) 157
- 4.28.9 Constructor(data as String) 157
- 4.28.10 Constructor(file as folderitem) 158
- 4.28.11 Constructor(Handle as Integer) 158

4.28.8 Constructor(data as memoryblock)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The constructor to create a new pdf document based on a string.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim b as BinaryStream = f.OpenAsBinaryFile(false)
dim s as string = b.Read(b.Length)
```

```
dim doc as new PDFDocumentMBS(s)
```

```
MsgBox doc.Title
```

See also:

- 4.28.7 Constructor 156
- 4.28.9 Constructor(data as String) 157
- 4.28.10 Constructor(file as folderitem) 158
- 4.28.11 Constructor(Handle as Integer) 158

4.28.9 Constructor(data as String)

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: The constructor to create a new pdf document based on a string.

See also:

- 4.28.7 Constructor 156
- 4.28.8 Constructor(data as memoryblock) 157
- 4.28.10 Constructor(file as folderitem) 158
- 4.28.11 Constructor(Handle as Integer) 158

4.28.10 Constructor(file as folderitem)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The constructor to create a new pdf document based on a file.

Example:

```
dim p as PDFDocumentMBS
dim f as FolderItem
```

```
f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)
```

```
MsgBox "Text from first page:"+EndOfLine+EndOfLine+p.pageAtIndex(0).stringValue
```

See also:

- 4.28.7 Constructor 156
- 4.28.8 Constructor(data as memoryblock) 157
- 4.28.9 Constructor(data as String) 157
- 4.28.11 Constructor(Handle as Integer) 158

4.28.11 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFDocument handle.

Notes: Please pass in a non zero handle which points to a PDFDocument object.

For use with declares.

See also:

- 4.28.7 Constructor 156
- 4.28.8 Constructor(data as memoryblock) 157
- 4.28.9 Constructor(data as String) 157
- 4.28.10 Constructor(file as folderitem) 158

4.28.12 copy as PDFDocumentMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the document object.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(f)

// make a copy
dim c as PDFDocumentMBS = p.copy

// remove second page
c.removePageAtIndex 1

// c has one page less
MsgBox str(p.pageCount)+" " +str(c.pageCount)

```

Notes: For Mac OS X 10.7 and newer this function uses the framework function.
For Mac OS X 10.6 and older this function uses our own copy function to duplicate the document.

4.28.13 dataRepresentation(QuartzFilter as Variant = nil) as memoryblock

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Methods to record the current state of the PDFDocument as data string.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim o as FolderItem = SpecialFolder.Desktop.Child("out.pdf")
dim b as BinaryStream = o.CreateBinaryFile("")

b.Write doc.dataRepresentation

```

Notes: Optional for Mac OS X 10.6, you can pass a QuartzFilterMBS object to use that filter here.

Looks like newer macOS versions like 10.14 or later ignore the quartz filter.

4.28.14 exchangePageAtIndexWithPageAtIndex(indexA as Integer, indexB as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Exchanges the two pages with the given index.

Notes: Index is zero based.

4.28.15 findString(text as string, options as Integer) as PDFSelectionMBS()

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Searches entire document for string and returns an array of PDFSelections representing all instances found.

Example:

```

dim p as PDFDocumentMBS
dim f as FolderItem
dim sa() as PDFSelectionMBS
dim i,c as Integer
dim s as PDFSelectionMBS

const NSCaseInsensitiveSearch=1

f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)

if p.pageCount=0 then
  MsgBox "Failed to load the PDF."
  Return
end if

sa=p.findString("Plugin",NSCaseInsensitiveSearch)

if ubound(sa)<0 then
  MsgBox "no item found."
else
  MsgBox str(ubound(sa)+1)+" items found."
end if

s=sa(0)
s.extendSelectionAtEnd(50)
s.extendSelectionAtStart(50)

MsgBox s.stringValue // shows a bit more text before and after the location found

```

Notes: May return an empty array if nothing is found.
Returns nil on any error.

Supported options are:
NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch.

4.28.16 findStringFromSelection(text as string, selection as PDFSelectionMBS, options as Integer) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Searches for only the next instance of string beginning after the last character of selection with options (or preceding the first character of the selection if NSBackwardsSearch is specified as a search option).

Notes: Returns next instance as a PDFSelection or nil if the end of the document is reached. Supported options are: NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch. Passing in nil for selection will start the search from the beginning of the document (or end if NSBackwardsSearch is specified).

4.28.17 indexForPage(page as PDFPageMBS) as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a PDFPage, returns the pages index within the document.

Notes: Indices are zero-based.

4.28.18 insertPage(page as PDFPageMBS, index as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Inserts a page in the pdf on the given index.

Example:

```

dim file1,file2,file3,destfile as FolderItem
dim page1,page2,page3 as PDFPageMBS
dim doc1,doc2 as PDFDocumentMBS
dim img as NSImageMBS
dim doc as PDFDocumentMBS

file1=SpecialFolder.Desktop.Child("test1.pdf")
file2=SpecialFolder.Desktop.Child("test2.pdf")
file3=SpecialFolder.Desktop.Child("logo.jpg")

doc1=new PDFDocumentMBS(file1)
doc2=new PDFDocumentMBS(file2)

MsgBox str(doc1.pageCount)

img=new NSImageMBS(file3)

```

```

Backdrop=img.CopyPicture

page1=new PDFPageMBS(img)
page2=doc1.pageAtIndex(0)
page3=doc2.pageAtIndex(0)

doc=new PDFDocumentMBS
doc.insertPage page1,0
doc.insertPage page2,1
doc.insertPage page3,2

destfile=SpecialFolder.Desktop.Child("test.pdf")
call doc.write(destfile)

```

Notes: Index is zero based.

4.28.19 Keywords as string()

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Array of Strings containing document keywords.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox join(doc.Keywords)

```

4.28.20 outlineItemForSelection(selection as PDFSelectionMBS) as PDFOutlineMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a PDFSelection, this method returns the child outline item the selection most closely falls beneath.

Notes: Since a selection may span multiple outline items, only the point representing the first character of the PDFSelection is considered. Typically, outline's indicate things like chapters for the PDF. Therefore, this method would help you identify the chapter the selection falls within.

For some PDFs this method returns nil.

4.28.21 pageAtIndex(index as Integer) as PDFPageMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns a PDFPage object representing the page at index.

Example:

```
dim p as PDFDocumentMBS
dim f as FolderItem
```

```
f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)
```

```
MsgBox "Text from first page:"+EndOfLine+EndOfLine+p.pageAtIndex(0).stringValue
```

Notes: Will raise an exception if index is out of bounds. Indices are zero-based.

4.28.22 PDFDocumentAuthorAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the name of the author of the document.

4.28.23 PDFDocumentCreationDateAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the document's creation date.

4.28.24 PDFDocumentCreatorAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the name of the application that created the document content.

4.28.25 PDFDocumentDidBeginFindNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that the beginFindString or findString method begins finding.

Notes: The notification object is the PDFDocument object itself.

Use with NSNotificationObserverMBS class.

4.28.26 PDFDocumentDidBeginPageFindNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a find operation begins working on a new page of a document.

Notes: You can use this notification to update a progress bar.

The notification object is the PDFDocument object itself. To determine the page, use the PDFDocument-PageIndex key to obtain userinfo of type Number.

Use with NSNotificationObserverMBS class.

4.28.27 PDFDocumentDidBeginPageWriteNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a write operation begins working on a page in a document.

Notes: The notification object is the PDFDocumentMBS object itself. To determine the page, use the PDFDocumentPageIndex key to obtain userinfo of type Number.

Use with NSNotificationObserverMBS class.

4.28.28 PDFDocumentDidBeginWriteNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a write operation begins working on a document.

Notes: The notification object is the PDFDocumentMBS object itself.

Use with NSNotificationObserverMBS class.

4.28.29 PDFDocumentDidEndFindNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that the beginFindString or findString method returns.

Notes: The beginFindString method returns immediately, so this notification is posted when the „Áúfind,À” operation is finished.

You can use this notification to know when to close or hide a progress bar.

The notification object is the PDFDocument object itself.

Use with NSNotificationObserverMBS class.

4.28.30 PDFDocumentDidEndPageFindNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a find operation finishes working on a page in a document.

Notes: You can use this notification to update a progress bar.

The notification object is the PDFDocument object itself. To determine the page, use the PDFDocument-PageIndex key to obtain userinfo of type Number.

Use with NSNotificationObserverMBS class.

4.28.31 PDFDocumentDidEndPageWriteNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a write operation finishes working on a page in a document.

Notes: The notification object is the PDFDocumentMBS object itself. To determine the page, use the PDFDocumentPageIndex key to obtain userinfo of type Number.

Use with NSNotificationObserverMBS class.

4.28.32 PDFDocumentDidEndWriteNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a write operation finishes working on a document.

Notes: The notification object is the PDFDocumentMBS object itself.

Use with `NSNotificationObserverMBS` class.

4.28.33 `PDFDocumentDidFindMatchNotification` as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a string match is found in a document.

Notes: The notification object is the `PDFDocumentMBS` object itself. To determine the string selection found, use the `PDFDocumentFoundSelection` key to obtain `userinfo` of type `PDFSelectionMBS`.

Use with `NSNotificationObserverMBS` class.

4.28.34 `PDFDocumentDidUnlockNotification` as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: A notification that a document unlocks after a `unlockWithPassword` message.

Notes: Use with `NSNotificationObserverMBS` class.

The notification object is the `PDFDocument` object itself.

4.28.35 `PDFDocumentKeywordsAttribute` as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional array of text strings containing keywords for the document.

4.28.36 `PDFDocumentModificationDateAttribute` as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the document's last-modified date.

4.28.37 `PDFDocumentOwnerPasswordOption` as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the options for writing a PDF.

Notes: A string object for the owner's password which is required for encryption.

4.28.38 PDFDocumentProducerAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the name of the application that produced the PDF data for the document.

4.28.39 PDFDocumentSubjectAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing a description of the subject of the document.

4.28.40 PDFDocumentTitleAttribute as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the property keys.

Notes: An optional text string containing the title of the document.

4.28.41 PDFDocumentUserPasswordOption as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: One of the options for writing a PDF.

Notes: A string for the user's password which is optional for encryption.

4.28.42 PrintOperation(PrintInfo as Variant, AutoRotate as boolean = true, scalingMode as Integer = 0) as Variant

Plugin Version: 14.3, Platform: macOS, Targets: Desktop, Console & Web.

Function: Creates print operation for PDF document.

Example:

```
// select a PDF
dim f as FolderItem = GetOpenFolderItem("")
if f = nil then Return

// open PDF
dim doc as new PDFDocumentMBS(f)

// define some print setting via PrintInfo
dim PrintInfo as new NSPrintInfoMBS

// start print operation
dim printOperation as NSPrintOperationMBS = doc.PrintOperation(printinfo)

printOperation.showsPrintPanel = true
printOperation.showsProgressPanel = true

call printOperation.runOperation
```

Notes: Returns NSPrintOperationMBS object.

4.28.43 removePageAtIndex(index as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Removes a page in the pdf on the given index.

Notes: Index is zero based.

4.28.44 selectionForEntireDocument as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns a selection representing text for the entire document.

4.28.45 selectionFromPage(StartPage as PDFPageMBS, StartCharacterIndex as Integer, EndPage as PDFPageMBS, EndCharacterIndex as Integer) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns a selection representing text from page startPage and point StartCharacterIndex to page endPage and to point EndCharacterIndex on that page.

Notes: Start and end page can be the same.

See also:

- 4.28.46 selectionFromPage(StartPage as PDFPageMBS, StartPointX as single, StartPointY as single, EndPage as PDFPageMBS, EndPointX as single, EndPointY as single) as PDFSelectionMBS 169

4.28.46 selectionFromPage(StartPage as PDFPageMBS, StartPointX as single, StartPointY as single, EndPage as PDFPageMBS, EndPointX as single, EndPointY as single) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns a selection representing text from page startPage and point startPt to page endPage and to point endPt on that page.

Notes: Points are in page-space and relative to their respective pages. Start and end page can be the same (and are then equivalent to calling selectionFromPointToPoint).

See also:

- 4.28.45 selectionFromPage(StartPage as PDFPageMBS, StartCharacterIndex as Integer, EndPage as PDFPageMBS, EndCharacterIndex as Integer) as PDFSelectionMBS 168

4.28.47 SetDelegate(d as PDFDocumentDelegateMBS)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: If a PDFDocument has a delegate, delegate methods may be called for this document.

4.28.48 SetKeywords(keywords() as string)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Sets the array of strings containing document keywords.

4.28.49 unlockWithPassword(password as string) as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Unlocks an encrypted PDF with the given password.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```

if doc.unlockWithPassword("mypassword") then
  MsgBox "OK"
end if

```

Notes: Means of passing in a password to unlock encrypted PDF's. Calling `unlockWithPassword` will attempt to unlock the PDF. If successful, a `DidUnlockDocument` event is sent to the delegate. You cannot "re-lock" a PDF by passing in a bogus password. Returns true if the document is now unlocked, false otherwise (`isLocked = false`).

4.28.50 `write(file as folderitem, QuartzFilter as Variant = nil) as boolean`

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Methods to record the current state of the `PDFDocument` as a file.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

// modify here

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)

```

Notes: Returns true on success and false on failure.

There is a bug known in Mac OS X 10.4 that this function may return true even if the saving failed. So you may prefer to check the file whether it exists after write.

Optional for Mac OS X 10.6, you can pass a `QuartzFilterMBS` object to use that filter here.

Looks like newer macOS versions like 10.14 or later ignore the quartz filter.

4.28.51 `writeWithOptions(file as folderitem, options as dictionary) as boolean`

Plugin Version: 19.1, Platform: macOS, Targets: All.

Function: Writes PDF to file with options.

Notes: Returns true on success and false on failure.

Some keys to use include:

```
CGPDFContextMBS.kCGPDFContextUserPassword
CGPDFContextMBS.kCGPDFContextTitle
CGPDFContextMBS.kCGPDFContextSubject
CGPDFContextMBS.kCGPDFContextOwnerPassword
CGPDFContextMBS.kCGPDFContextOutputIntents
CGPDFContextMBS.kCGPDFContextOutputIntent
CGPDFContextMBS.kCGPDFContextKeywords
CGPDFContextMBS.kCGPDFContextEncryptionKeyLength
CGPDFContextMBS.kCGPDFContextCreator
CGPDFContextMBS.kCGPDFContextAuthor
CGPDFContextMBS.kCGPDFContextAllowsPrinting
CGPDFContextMBS.kCGPDFContextAllowsCopying
```

4.28.52 Properties

4.28.53 allowsCommenting as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: A Boolean value indicating whether you can create or modify document annotations, including form field entries.

Notes: Available in macOS 10.13 or newer.

(Read only property)

4.28.54 allowsContentAccessibility as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: A Boolean value indicating whether you can extract content from the document, but only for the purpose of accessibility.

Notes: Available in macOS 10.13 or newer.

(Read only property)

4.28.55 allowsCopying as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Whether copying is allowed.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

MsgBox str(doc.allowsCopying)

Notes: Even unlocked, encrypted PDF's may have certain restrictions regarding copying or printing placed upon them.

(Read only property)

4.28.56 allowsDocumentAssembly as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: A Boolean value indicating whether you can manage a document by inserting, deleting, and rotating pages.

Notes: Available in macOS 10.13 or newer.

(Read only property)

4.28.57 allowsDocumentChanges as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: A Boolean value indicating whether you can modify the document contents except for document attributes.

Notes: Available in macOS 10.13 or newer.

(Read only property)

4.28.58 allowsFormFieldEntry as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: A Boolean value indicating whether you can modify form field entries even if you can't edit document annotations.

Notes: Available in macOS 10.13 or newer.

(Read only property)

4.28.59 allowsPrinting as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Whether printing is allowed.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.allowsPrinting)
```

Notes: Even unlocked, encrypted PDF's may have certain restrictions regarding copying or printing placed upon them.
(Read only property)

4.28.60 Author as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String containing document author.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Author
```

Notes: (Read and Write property)

4.28.61 CreationDate as Date

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Date representing document creation date.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.CreationDate.LongDate
```

Notes: (Read and Write property)

4.28.62 CreationDateTime as DateTime

Plugin Version: 20.5, Platform: macOS, Targets: All.

Function: Date representing document creation date.

Notes: (Read and Write property)

4.28.63 Creator as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String containing name of app that created document content.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Creator
```

Notes: (Read and Write property)

4.28.64 documentRef as Integer

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Returns a CGPDFDocumentRef value for this document.

Notes: This is the CGPDFDocument associated with the PDFDocument object. With this object you can call many CoreGraphics API. May return 0 if the document was not created from an existing PDF file or data.

Use CGPDFDocumentMBS with Constructor taking a handle to call functions on this CGPDFDocument object.

(Read only property)

4.28.65 documentURL as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The document location.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.documentURL
```

Notes: May return nil if the document was created from data.
(Read only property)

4.28.66 Handle as Integer

Plugin Version: 10.4, Platform: macOS, Targets: All.

Function: The internal reference to the PDF Document.

Notes: (Read and Write property)

4.28.67 isEncrypted as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Whether the PDF is encrypted.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.isEncrypted)
```

Notes: With the right password, a PDF can be unlocked - nonetheless, the PDF still indicates that it is encrypted - just no longer locked. Some PDF's may be encrypted but can be unlocked with the empty string. These are unlocked automatically.

(Read only property)

4.28.68 isFinding as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns true if document is currently searching for a string.

Notes: (Read only property)

4.28.69 isLocked as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Whether the PDF is locked.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```
MsgBox str(doc.isLocked)
```

Notes: With the right password, a PDF can be unlocked - nonetheless, the PDF still indicates that it is encrypted - just no longer locked. Some PDF's may be encrypted but can be unlocked with the empty string. These are unlocked automatically.
(Read only property)

4.28.70 majorVersion as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: PDF version of the PDF file (example: major version = 1, minor = 4; PDF v1.4).

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.majorVersion)+" "+str(Doc.minorVersion)
```

Notes: (Read only property)

4.28.71 minorVersion as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: PDF version of the PDF file (example: major version = 1, minor = 4; PDF v1.4).

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.majorVersion)+" "+str(Doc.minorVersion)
```

Notes: (Read only property)

4.28.72 ModificationDate as Date

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Date representing last document modification date.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.ModificationDate.LongDate
```

Notes: (Read and Write property)

4.28.73 ModificationDateTime as DateTime

Plugin Version: 20.5, Platform: macOS, Targets: All.

Function: Date representing last document modification date.

Notes: (Read and Write property)

4.28.74 outlineRoot as PDFOutlineMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns the root outline object for the PDF (or nil if none).

Notes: (Read and Write property)

4.28.75 pageCount as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The number of pages in the document.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(Doc.pageCount)
```

Notes: (Read only property)

4.28.76 permissionsStatus as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the permissions status of the PDF document.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

Select case doc.permissionsStatus
case doc.kPDFDocumentPermissionsNone
MsgBox "None"
case doc.kPDFDocumentPermissionsOwner
MsgBox "Owner or no password"
case doc.kPDFDocumentPermissionsUser
MsgBox "User"
end Select

```

Notes: You have `kPDFDocumentPermissionsNone` status for an encrypted document that you have not supplied either a valid user or owner password. For a document with no encryption, you automatically have `kPDFDocumentPermissionsOwner` status.

Requires Mac OS X 10.6.
(Read only property)

4.28.77 Producer as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String containing name of app that produced PDF data.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Producer

```

Notes: (Read and Write property)

4.28.78 stringValue as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The text of the document.

Example:

```

dim p as PDFDocumentMBS
dim f as FolderItem

```

```
f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)
```

```
MsgBox "Text from PDF Document:"+EndOfLine+EndOfLine+p.stringValue
```

Notes: Convenience method. Returns a string representing the entire document (each page's string concatenated with line feeds between pages).

If you need to extract the text of a PDF document cross platform or with more options, you may want to look on the DynaPDF plugin.

It seems like this string value is not always available. It works for PDF Documents created from a disc file, but not for files our test app created on runtime in memory by using PDFDocument constructor and insertpage.

(Read only property)

4.28.79 Subject as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String containing document subject.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Subject
```

Notes: (Read and Write property)

4.28.80 Title as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String containing document title.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Title
```

Notes: (Read and Write property)

4.28.81 documentAttributes as Dictionary

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: The PDF meta data as a Xojo Dictionary object.

Notes: Returns a dictionary with PDF metadata. Metadata is optional for PDF's and so some of the keys may be missing or the entire dictionary may be empty.

(Read and Write computed property)

4.28.82 Constants

Document Permissions

Constant	Value	Description
kPDFDocumentPermissionsNone	0	Document permissions status. For encrypted PDF's, supplying the owner password will enable owner permission status.
kPDFDocumentPermissionsOwner	2	
kPDFDocumentPermissionsUser	1	

Page Scaling Modes

Constant	Value	Description
kPDFPrintPageScaleDownToFit	2	
kPDFPrintPageScaleNone	0	
kPDFPrintPageScaleToFit	1	

Search Flags

Constant	Value	Description
NSBackwardsSearch	4	Performs searching from the end of the range toward the beginning.
NSCaseInsensitiveSearch	1	Ignores case distinctions among characters.
NSLiteralSearch	2	Performs a byte-for-byte comparison. Differing literal sequences (such as composed character sequences) that would otherwise be considered equivalent are considered not to match. Using this option can speed some operations dramatically.

4.29 class PDFOutlineMBS

4.29.1 class PDFOutlineMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The class for a pdf outline object.

Blog Entries

- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)

4.29.2 Methods

4.29.3 childAtIndex(index as Integer) as PDFOutlineMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: PDFOutline child at index.

Notes: Will throw exception if index is out of range.

4.29.4 Constructor

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Initializes a PDFOutline object.

Notes: If you want the PDFOutline object returned by this method to be the outline root, you must add additional PDFOutline objects to create the outline hierarchy you desire. Then, you must add the root outline object to your PDF document by assigning it to the PDFDocument OutlineRoot.

If you want the PDFOutline object returned by this method to be a child of an existing outline, you must use `setLabel:` to give it a label and give it either a destination or action using `setDestination:` or `setAction:`, respectively. In addition, you must add this outline object to the existing PDFOutline object as a new child, using `insertChild`.

Available in Mac OS X v10.4 and later.

See also:

- [4.29.5 Constructor\(Handle as Integer\)](#)

4.29.5 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFOutline handle.

Notes: Please pass in a non zero handle which points to a PDFOutline object.

For use with declares.

See also:

- 4.29.4 Constructor

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4.29.6 insertChild(child as PDFOutlineMBS, index as Integer)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Inserts the specified outline object at the specified index.

Notes: To build a PDF outline hierarchy, use this method to add child outline objects. Before you call this method on a PDFOutline object that already has a parent, you should retain the object and call removeFromParent on it first.

Available in Mac OS X v10.5 and later.

4.29.7 removeFromParent

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Removes the outline object from its parent (does nothing if outline object is the root outline object).

Notes: Available in Mac OS X v10.5 and later.

4.29.8 Properties

4.29.9 action as PDFActionMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The action performed when users click the outline.

Notes: The root outline serves only as a container for the outlines it owns; it does not have an action. Note that a PDFOutline object can have either an action or a destination, not both.

If the PDFOutline object has a destination, instead of an action, action returns a PDFActionGoTo object (this is equivalent to calling destination on the PDFOutline object). For other action types, action returns

the appropriate PDF Kit action type object, such as PDFActionURL.

Available in Mac OS X v10.5 and later.
(Read and Write property)

4.29.10 destination as PDFDestinationMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The destination associated with the outline item.

Notes: The root PDFOutline has no destination.
(Read and Write property)

4.29.11 document as PDFDocumentMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The PDFDocument the outline is associated with.

Notes: (Read only property)

4.29.12 index as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the index of the outline.

Notes: The index of the outline object is relative to its siblings and from the perspective of the parent of the outline object. The root outline object, and any outline object without a parent, has an index value of 0.

Available in Mac OS X v10.5 and later.
(Read only property)

4.29.13 isOpen as boolean

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Whether the outline object is initially disclosed.

Notes: Calling isOpen on an outline object that has no children always returns false. Calling isOpen on the root outline object always returns true.

Available in Mac OS X v10.5 and later.
(Read and Write property)

4.29.14 label as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The label for the outline.

Notes: The root PDFOutline has no label and is only a container for children PDFOutlines.
(Read and Write property)

4.29.15 numberOfChildren as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Number of PDFOutline children this PDFOutline has.

Notes: (Read only property)

4.29.16 parent as PDFOutlineMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The parent outline object of the outline.

Notes: Can be nil for the root object.

Available in Mac OS X v10.5 and later.

(Read only property)

4.30 class PDFPageMBS

4.30.1 class PDFPageMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The PDFKit class for a page in a pdf document.

Example:

```
dim file1,file2,file3,destfile as FolderItem
dim page1,page2,page3 as PDFPageMBS
dim doc1,doc2 as PDFDocumentMBS
dim img as NSImageMBS
dim doc as PDFDocumentMBS

file1=SpecialFolder.Desktop.Child("test1.pdf")
file2=SpecialFolder.Desktop.Child("test2.pdf")
file3=SpecialFolder.Desktop.Child("logo.jpg")

doc1=new PDFDocumentMBS(file1)
doc2=new PDFDocumentMBS(file2)

MsgBox str(doc1.pageCount)

img=new NSImageMBS(file3)

Backdrop=img.CopyPicture

page1=new PDFPageMBS(img)
page2=doc1.pageAtIndex(0)
page3=doc2.pageAtIndex(0)

doc=new PDFDocumentMBS
doc.insertPage page1,0
doc.insertPage page2,1
doc.insertPage page3,2

destfile=SpecialFolder.Desktop.Child("test.pdf")
call doc.write(destfile)
```

Blog Entries

- [MBS Xojo Plugins, version 22.5pr1](#)
- [Several ways for picture to PDF in MBS Plugins](#)

- [News from the MBS Xojo Plugins Version 21.1](#)
- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)
- [JPEG rendering in MacOS Mojave](#)
- [MBS Plugins 11.1 Release notes](#)
- [Have you checked out PDFViewMBS class?](#)
- [MBS REALbasic plug-ins version 10.3](#)
- [MBS Plugins 10.3 Release Notes](#)

Xojo Developer Magazine

- [6.4, page 34: Creating PDF Files, How to create PDFs using the MBS Plugins by Christian Schmitz](#)
- [20.3, page 80: Great Shots With Continuity Camera, Use your iOS device to take a picture for your Mac by Stefanie Juchmes](#)

4.30.2 Methods

4.30.3 addAnnotation(annotation as PDFAnnotationMBS)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Methods allowing annotations to be added.

4.30.4 annotationAtPoint(x as single, y as single) as PDFAnnotationMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Hit-testing method returns the annotation at point (or nil if none).

Notes: The point is in page-space.

4.30.5 annotations as PDFAnnotationMBS()

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns an array containing the page's annotations.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```

```

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show a msgbox with the types of all annotations
dim types(-1) as string

for each a as PDFAnnotationMBS in annotations
types.Append a.type
next

MsgBox Join(types)

```

Notes: The elements of the array will most likely be typed to subclasses of the PDFAnnotation class.

Available in Mac OS X v10.4 and later.

4.30.6 CalcTransformForBox(box as Integer) as Variant

Plugin Version: 12.5, Platform: macOS, Targets: Desktop, Console & Web.

Function: An utility function to calculate the transform needed to draw into a page.

Notes: Returns NSAffineTransformMBS object.

4.30.7 characterBoundsAtIndex(index as Integer) as NSRectMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns the bounds in page-space of the character at index.

Notes: In the unlikely event that more than one character are at the specified point, only the first character encountered is returned.

4.30.8 characterIndexAtPoint(x as single, y as single) as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns the index of the character at point (in page space).

Notes: Returns -1 if no character at point.

4.30.9 Constructor

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: The constructor to create a custom PDF page.

Example:

```
dim doc as new PDFDocumentMBS
dim page as PDFPageMBS
dim f as FolderItem

page=new MyPDFPageMBS

doc.Creator="Xojo"
doc.Title="Test file"

doc.insertPage page,0

f=SpecialFolder.Desktop.Child("test.pdf")

if doc.write(f) then
f.launch
end if
```

Notes: You draw the content using drawRect event.

See also:

- 4.30.10 Constructor(Handle as Integer) 188
- 4.30.11 Constructor(image as NSImageMBS) 189

4.30.10 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFPage handle.

Notes: Please pass in a non zero handle which points to a PDFPage object.

For use with declares.

See also:

- 4.30.9 Constructor 188
- 4.30.11 Constructor(image as NSImageMBS) 189

4.30.11 Constructor(image as NSImageMBS)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Creates a PDFPage for the NSImage passed in.

Notes: An easy way to create a PDFPage from an image to add to a PDFDocument.

Mac OS X 10.5 only.

See also:

- 4.30.9 Constructor 188
- 4.30.10 Constructor(Handle as Integer) 188

4.30.12 copy as PDFPageMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the page object.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
```

```
dim p as new PDFDocumentMBS(f)
```

```
// make a new PDF
```

```
dim c as new PDFDocumentMBS
```

```
// get first page
```

```
dim page as PDFPageMBS = p.pageAtIndex(0)
```

```
// add copy of page to new pdf
```

```
c.insertPage page.copy, 0
```

```
// c now has one page
```

```
MsgBox str(p.pageCount)+" " +str(c.pageCount)
```

4.30.13 Destructor

Plugin Version: 15.0, Platform: macOS, Targets: All.

Function: The destructor.

4.30.14 Draw(g as NSGraphicsMBS, box as Integer = 0)

Plugin Version: 12.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Draws PDF page into graphics environment.

Notes: Use kPDFDisplay*Box constants for box parameter.

4.30.15 drawWithBox(box as Integer)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Draws the page within the specified box.

Notes: This method takes into account the page rotation and draws clipped to the specified box. If the page is set to display annotations, this method also draws them. This method does not clear the background. To clear the background before drawing, use NSRectFill with NSColor set (typically) to white.

4.30.16 removeAnnotation(annotation as PDFAnnotationMBS)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Methods allowing annotations to be removed.

4.30.17 Render(dpi as Double = 72.0, box as Integer = 0, background as NSColorMBS = nil) as NSImageMBS

Plugin Version: 10.3, Platform: macOS, Targets: Desktop, Console & Web.

Function: Renders a PDF Page into an image.

Example:

```
dim f as FolderItem = GetFolderItem("Castles.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim image as NSImageMBS = page.Render
```

```
Backdrop = image.CopyPicture
```

Notes: dpi: The resolution you want to have on the image. Default 72.0. To get a scaled image with factor x, pass 72.0*x.

box: The display box. Use one of the kPDFDisplayBox* constants.

background: optional NSColorMBS object to fill the background before drawing the PDF. This will affect

only PDFs with transparent background.

Returns nil on any error.

Version 11.1pr8 adds code here to handle rotation better.

Due to bugs in Apple's PDFKit you may see memory leaks with JPEG data from PDF pages (seen in macOS 10.12).

4.30.18 selectionForLineAtPoint(left as single, top as single) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a point in page-space, returns a selection representing a whole line at that point.

Notes: May return nil if no character (and by extension no line) under point.

4.30.19 selectionForRange(position as Integer, length as Integer) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a range, returns a selection representing text within that range.

Example:

```
dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim sel as PDFSelectionMBS = page.selectionForRange(0,5)
MyPDFView.currentSelection = sel
```

Notes: Will raise an exception if the range length is zero or if the range is outside the range of the characters on the page.

4.30.20 selectionForRect(left as single, top as single, width as single, height as single) as PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a rect in page-space, returns a selection representing enclosed text on page.

4.30.21 `selectionForWordAtPoint(left as single, top as single)` as `PDFSelectionMBS`

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Given a point in page-space, returns a selection representing a whole word at that point.

Notes: May return nil if no character (and by extension no word) under point.

4.30.22 `selectionFromPointToPoint(startleft as single, starttop as single, endleft as single, endtop as single)` as `PDFSelectionMBS`

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns a selection representing text between startPt and endPt.

Notes: Point are sorted first top to bottom, left to right.

4.30.23 `thumbnailOfSize(size as NSSizeMBS, box as integer)` as `NSImageMBS`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Convenience function that returns an image of this page, with annotations, that fits the given size.

Notes: Note that the produced image is "size to fit": it retains the original page aspect-ratio. The size you give may not match the size of the returned image, but the returned image is guaranteed to be equal or less.

Available in macOS 10.13 or newer.

4.30.24 `transformContextForBox(box as Integer)`

Plugin Version: 8.0, Platform: macOS, Targets: Desktop, Console & Web.

Function: Given a display box, will transform the current context to take into account the rotation of the page as well as the origin of the box with respect to the page's base coordinates system.

Notes: This is a convenient method to call from within `drawPage` or from within the `draw` method of a `PDFAnnotation` subclass.

Mac OS X 10.5 only.

4.30.25 transformForBox(box as integer) as variant

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: This transform correctly rotates and offsets based on the given page's rotation property and the display box type.

Notes: Available in macOS 10.13 or newer.

4.30.26 Properties

4.30.27 attributedString as NSAttributedStringMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String (with linefeeds and in some cases spaces inserted) representing the text on the page.

Notes: (Read only property)

4.30.28 CGPDFPageHandle as Integer

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The CoreGraphics PDFPage handle.

Notes: (Read only property)

4.30.29 dataRepresentation as memoryblock

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Returns PDF data (a proper PDF document) consisting of a single page (this page).

Notes: Note, external page links are not preserved.
(Read only property)

4.30.30 displaysAnnotations as boolean

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Method to turn on or off the display of annotations when the page is drawn.

Notes: (Read and Write property)

4.30.31 document as PDFDocumentMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The PDFDocument the page is associated with.

Notes: (Read only property)

4.30.32 label as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The page label. Usually "1" for the first page, "2" for the second, etc.

Notes: (Read only property)

4.30.33 numberOfCharacters as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Number of characters on the page (including linefeeds and spaces inserted).

Notes: (Read only property)

4.30.34 rotation as Integer

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Rotation on a page.

Notes: Must be 0, 90, 180 or 270 (negative rotations will be "normalized" to one of 0, 90, 180 or 270). Some PDF's have an inherent rotation and so rotation may be non-zero when a PDF is first opened.

(Read and Write property)

4.30.35 stringValue as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String (with linefeeds and in some cases spaces inserted) representing the text on the page.

Example:

```
dim p as PDFDocumentMBS
dim f as FolderItem
```

```
f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)
```

```
MsgBox "Text from first page:"+EndOfLine+EndOfLine+p.pageAtIndex(0).stringValue
```

Notes: If you need to extract the text of a PDF document page cross platform or with more options, you may want to look on the DynaPDF plugin.

It seems like this string value is not always available. It works for PDF Documents created from a disc file, but not for files our test app created on runtime in memory by using PDFDocument constructor and insertpage.

(Read only property)

4.30.36 boundsForBox(box as Integer) as NSRectMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the bounds for the specified PDF display box.

Notes: The PDFDisplayBox enumeration defines the various box types.

Note that only the media box is required for a PDF. If you request the bounds for the crop box, but the PDF does not include a crop box, the bounds for the media box are returned instead. If you request the bounds for other box types, and the PDF does not includes these types, the bounds for the crop box are returned instead.

The coordinates for the box are in page space, so you might need to transform the points if the page has a rotation on it. Also, note that the bounds boundsForBox returns are intersected with the page's media box.

boundsForBox throws a range exception if box is not in range.

(Read and Write computed property)

4.30.37 Events

4.30.38 drawRect(box as Integer, g as NSGraphicsMBS)

Plugin Version: 8.0, Platform: macOS, Targets: .

Function: The event called when the PDFPage needs to be drawn.

Example:

```
Sub drawRect(box as Integer, g as NSGraphicsMBS)
```

```
if g.Valid then
```

```
System.DebugLog "is valid"
```

```

else
System.DebugLog "not valid"
end if

g.SetColorRGB 0,1,0

g.drawRect 200,200,200,200

g.SetColorRGB 1,0,0

g.fillRect 100,100,100,100
End Sub

```

Notes: Do not store the graphics reference as it is only valid in this event.
 Use the `kPDFDisplayBox*` constants for the box value.
 You can draw another PDF page here with Draw command.

To avoid drawRect causing StackOverflowException when showing in a control, please have PDF produced as file or MemoryBlock, then read it back to a new PDFDocumentMBS object and show that in a control.

4.30.39 Constants

Constants

Constant	Value	Description
<code>kPDFDisplayBoxArtBox</code>	4	One of the constants to use for page boxes.

Boxes

Constant	Value	Description
<code>kPDFDisplayBoxBleedBox</code>	2	
<code>kPDFDisplayBoxCropBox</code>	1	
<code>kPDFDisplayBoxMediaBox</code>	0	
<code>kPDFDisplayBoxTrimBox</code>	3	

4.31 class PDFSelectionMBS

4.31.1 class PDFSelectionMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: The PDFKit class for selections.

Example:

```
dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim sel as PDFSelectionMBS = page.selectionForRange(0,5)
MyPDFView.currentSelection = sel
```

Blog Entries

- [New in the MBS Xojo Plugins Version 20.2](#)
- [MBS Xojo Plugins, version 20.2pr3](#)

4.31.2 Methods

4.31.3 addSelection(selection as PDFSelectionMBS)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Add a selection to this selection.

Notes: Selections do not have to be contiguous. If the selection added overlaps with this selection, overlaps are removed.

4.31.4 addSelections(selection() as PDFSelectionMBS)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Adds the specified array of selections to the receiving selection.

Notes: This method provides better performance than multiple calls to addSelection if you need to add several selections to an existing selection. This is because the normalization of the selection (the removal of any overlaps between selections) occurs only once, after all selections have been added.

Available in Mac OS X v10.5 and later.

4.31.5 boundsForPage(page as PDFPageMBS) as NSRectMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns the bounds of the selection on the specified page.

Notes: The selection rectangle is given in page space.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

4.31.6 Constructor(doc as PDFDocumentMBS)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Creates an empty PDFSelection object.

Notes: Typically, you don't need to create a PDFSelection object, but you can use an empty PDFSelection object as a container into which you can place selections, using addSelection: and addSelections.

Available in Mac OS X v10.5 and later.

See also:

- 4.31.7 Constructor(Handle as Integer) 198

4.31.7 Constructor(Handle as Integer)

Plugin Version: 20.2, Platform: macOS, Targets: All.

Function: Creates a new object based on a given PDFSelection handle.

Notes: Please pass in a non zero handle which points to a PDFSelection object.

For use with declares.

See also:

- 4.31.6 Constructor(doc as PDFDocumentMBS) 198

4.31.8 copy as PDFSelectionMBS

Plugin Version: 13.1, Platform: macOS, Targets: All.

Function: Creates a copy of the selection object.

4.31.9 drawForPage(page as PDFPageMBS, active as boolean)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Calls drawForPage with a default value for box parameter.

Notes: The default value is kPDFDisplayBoxCropBox. If active is true, drawing uses selectedTextBack-

groundColor. If false, it uses secondarySelectedControlColor.

See also:

- 4.31.10 drawForPage(page as PDFPageMBS, box as Integer, active as boolean) 199

4.31.10 drawForPage(page as PDFPageMBS, box as Integer, active as boolean)

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Draws the selection relative to the origin of the specified box in page space.

Notes: The selection is drawn using the current highlight color. If active is true, drawing uses selected-TextBackgroundColor. If false, it uses secondarySelectedControlColor. Refer to the PDFPage class for the list of available box types.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

See also:

- 4.31.9 drawForPage(page as PDFPageMBS, active as boolean) 198

4.31.11 extendSelectionAtEnd(chars as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Extends the selection at either end.

Example:

```
dim s as PDFSelectionMBS // your selection
```

```
s.extendSelectionAtEnd(50)
```

Notes: Selections can be extended right off onto neighboring pages even to include the entire PDF document.

4.31.12 extendSelectionAtStart(chars as Integer)

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Extends the selection at either end.

Example:

```
dim s as PDFSelectionMBS // your selection
```

```
s.extendSelectionAtStart(50)
```

Notes: Selections can be extended right off onto neighboring pages even to include the entire PDF document.

4.31.13 `extendSelectionForLineBoundaries`

Plugin Version: 21.1, Platform: macOS, Targets: All.

Function: Extend to the selection to the beginning and end of the currently selected lines of text.

Notes: If the current selection is on a single line, then this will extend it to the entire line width. If the selection is across multiple lines, then the first and last lines are expected to wholly contain their respective rows of text.

Available in macOS 10.13 or newer or iOS 11.0 or newer.

4.31.14 `numberOfTextRangesOnPage(page as PDFPageMBS) as UInt32`

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Returns the number of contiguous ranges of text on the specified page.

Notes: Returns zero if page is not in selection.

A typical, simple selection will contain a single range of text.

Available in Mac OS X 10.7 and later.

4.31.15 `pages as PDFPageMBS()`

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: Array of pages covered by the selection.

Notes: These are sorted by page index.

Returns nil on any error.

4.31.16 `rangeAtIndex(page as PDFPageMBS, index as Integer) as NSRangeMBS`

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: Returns a range of contiguous text at index on the specified page.

Notes: A simple selection. A typical, simple selection will contain a single range of text.

Available in Mac OS X 10.7 and later.

4.31.17 selectionsByLine as PDFSelectionMBS()

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: Returns an array of selections, one for each line of text covered by the receiver.

Notes: If you call this method on a PDFSelection object that represents a paragraph, for example, selectionsByLine returns an array that contains one PDFSelection object for each line of text in the paragraph. Available in Mac OS X v10.5 and later.

4.31.18 Properties

4.31.19 attributedString as NSAttributedStringMBS

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String representing the text covered by the selection.

Notes: May contain line-feeds.

(Read only property)

4.31.20 colorValue as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: All.

Function: The color used to draw the selection.

Notes: Note that when no color has been specified for the PDFSelection objects in a document, the selections are drawn using NSColorMBS.selectedTextBackgroundColor for the active state and NSColorMBS.secondarySelectedControlColor for the inactive state.

(Read and Write property)

4.31.21 Handle as Integer

Plugin Version: 11.2, Platform: macOS, Targets: All.

Function: The handle used internally for the object reference.

Notes: (Read and Write property)

4.31.22 stringValue as string

Plugin Version: 8.0, Platform: macOS, Targets: All.

Function: String representing the text covered by the selection.

Notes: May contain line-feeds.
(Read only property)

4.32 control PDFThumbnailViewControlMBS

4.32.1 control PDFThumbnailViewControlMBS

Plugin Version: 13.4, Platform: macOS, Targets: Desktop only.

Function: The Xojo control for a PDFThumbnailView.

Notes: This control embeds a special PDFThumbnailView subclass.

Designed for Xojo 2013r1 and newer. May work on Xojo 2012, but not perfectly.

Please use view property to access the underlying object and set properties.

See PDFThumbnailViewIOSControlMBS for iOS projects.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [News from the MBS Xojo Plugins in version 21.5](#)
- [New desktop controls](#)
- [MBS Xojo / Real Studio Plugins, version 13.4pr7](#)

4.32.2 Properties

4.32.3 View as PDFThumbnailViewMBS

Plugin Version: 13.4, Platform: macOS, Targets: Desktop only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.

(Read only property)

4.32.4 Events

4.32.5 BoundsChanged

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The event called when the bounds, but not the frame, changed.

4.32.6 Close

Plugin Version: 13.4, Platform: macOS, Targets: .

Function:

The control is about to close.
In Xojo version 2021r3 and newer this event is named Closing.

4.32.7 ConstructContextMenu(base as MenuItem, x as Integer, y as Integer) as Boolean

Plugin Version: 22.1, Platform: macOS, Targets: .

Function: This event is called when it is appropriate to display a contextual menu for the control.

4.32.8 ContextualMenuItemAction(hitItem as MenuItem) as Boolean

Plugin Version: 17.1, Platform: macOS, 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.

4.32.9 didCloseContextMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Did close contextual menu.

Notes: Allows you to restart any animation you may have stopped in the willShowContextMenu event.

4.32.10 EnableMenuItems

Plugin Version: 17.1, Platform: macOS, Targets: .

Function:

The event where you can enable menu items.
In Xojo version 2021r3 and newer this event is named MenuBarSelected.

4.32.11 FrameChanged

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The event called when the frame changed.

Notes: This event notifies you, that the control changed it's bounding frame, which is position and/or size.

4.32.12 GotFocus

Plugin Version: 16.5, Platform: macOS, Targets: .

Function:

The control itself got focus.

In Xojo version 2021r3 and newer this event is named FocusReceived.

Notes:

This only fires if the control itself got focus and not a sub control.

4.32.13 LostFocus

Plugin Version: 16.5, Platform: macOS, Targets: .

Function:

The control lost focus.

In Xojo version 2021r3 and newer this event is named FocusLost.

Notes:

This only fires if the control itself lost focus and not a sub control.

4.32.14MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control,Ãs region at the location passed in to x, y.

Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner of the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

4.32.15 MouseDrag(x as Integer, y as Integer)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes: Mouse location is local to the control passed in to x, y.

As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

4.32.16 MouseUp(x as Integer, y as Integer)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

4.32.17 Open

Plugin Version: 13.4, Platform: macOS, 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.

4.32.18 ScaleFactorChanged(NewFactor as Double)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.32.19 willShowContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Will show contextual menu.

Notes: Your chance to modify the menu before it is shown, e.g. to add menu entries.

4.33 control PDFThumbnailViewIOSControlMBS

4.33.1 control PDFThumbnailViewIOSControlMBS

Plugin Version: 23.3, Platform: iOS, Targets: iOS only.

Function: The Xojo control for a PDFThumbnailView.

Notes: This control embeds a special PDFThumbnailView subclass.

Please use view property to access the underlying object and set properties.

See PDFThumbnailViewControlMBS for desktop projects.

Blog Entries

- [MonkeyBread Software Releases the MBS Xojo Plugins in version 23.3](#)
- [PDF Viewer controls for iOS](#)
- [MBS Xojo Plugins, version 23.3pr4](#)

Xojo Developer Magazine

- [21.5, page 10: News](#)

4.33.2 Properties

4.33.3 View as PDFThumbnailViewMBS

Plugin Version: 23.3, Platform: iOS, Targets: iOS only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.
(Read only property)

4.33.4 Events

4.33.5 Close

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control is about to close.

4.33.6 GotFocus

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control itself got focus.

Notes: This only fires if the control itself got focus and not a sub control.

4.33.7 LostFocus

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control lost focus.

Notes: This only fires if the control itself lost focus and not a sub control.

4.33.8 Open

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control is about to was created and you can initialize it.

4.34 class PDFThumbnailViewMBS

4.34.1 class PDFThumbnailViewMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: A PDFThumbnailView object contains a set of thumbnails, each of which represents a page in a PDF document.

Notes: You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [MBS Xojo Plugins, version 21.1pr1](#)

4.34.2 Methods

4.34.3 Constructor

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Creates a new PDF thumbnail view with size 100/100 and position 0/0

Example:

```
dim t as new PDFThumbnailViewMBS
```

Notes: On success the handle property is not zero.

See also:

- [4.34.4 Constructor\(Handle as Integer\)](#) 209
- [4.34.5 Constructor\(left as Double, top as Double, width as Double, height as Double\)](#) 210

4.34.4 Constructor(Handle as Integer)

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Creates an object based on the given PDFThumbnailView handle.

Example:

```
dim t as new PDFThumbnailViewMBS(0, 0, 100, 100)
dim v as new PDFThumbnailViewMBS(t.handle)
```

```
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a PDFThumbnailView and the plugin retains this handle.

See also:

- 4.34.3 Constructor 209
- 4.34.5 Constructor(left as Double, top as Double, width as Double, height as Double) 210

4.34.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Creates a new PDF thumbnail view with the given size and position.

Example:

```
dim x as new PDFThumbnailViewMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.

See also:

- 4.34.3 Constructor 209
- 4.34.4 Constructor(Handle as Integer) 209

4.34.6 PDFThumbnailViewDocumentEditedNotification as String

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: The Notification when PDFDocument is modified.

Notes: Use NSNotificationObserverMBS class to listen for this one.

4.34.7 selectedPages as PDFPageMBS()

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns an array of PDF pages that correspond to the selected thumbnails in the thumbnail view.

Notes: If the thumbnail view allows multiple selections (if allowsMultipleSelection returns true), you can use this method to get the PDF pages that correspond to the selected thumbnails.

Available in Mac OS X v10.5 and later.

4.34.8 Properties

4.34.9 allowsDragging as boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Whether users can drag thumbnails within the thumbnail view; that is, re-order pages in the document.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.10 allowsMultipleSelection as boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Whether the thumbnail view allows users to select more than one thumbnail at a time.

Notes: By default, PDFThumbnailView allows only a single thumbnail to be selected at one time. When this is the case, you can get the PDF page that corresponds to the selected thumbnail using the PDFView method `currentPage`.

If you use `setAllowsMultipleSelection` to enable multiple selections, however, you must use `selectedPages` to get the pages that correspond to the set of selected thumbnails.

Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.11 backgroundColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The color used in the background of the thumbnail view.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.12 Bezeled as Boolean

Plugin Version: 18.1, Platform: macOS, Targets: Desktop only.

Function: Whether to use bezel for control.

Notes: (Read and Write property)

4.34.13 labelFont as NSFontMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: The font used to label the thumbnails.

Notes: Typically, the label of a thumbnail is the page number of the page it represents.
Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.14 maximumNumberOfColumns as Integer

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Returns the maximum number of columns of thumbnails the thumbnail view can display.

Notes: The thumbnail displays as many columns of thumbnails as fit in its size.
Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.15 PDFView as PDFViewMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The PDFView object associated with the thumbnail view.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.34.16 thumbnailSize as NSSizeMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The maximum width and height of the thumbnails in the thumbnail view.

Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

4.35 control PDFViewControlMBS

4.35.1 control PDFViewControlMBS

Plugin Version: 13.4, Platform: macOS, Targets: Desktop only.

Function: The Xojo control for a PDFView.

Notes: This control embeds a special PDFView subclass.

Designed for Xojo 2013r1 and newer. May work on Xojo 2012, but not perfectly.

Please use view property to access the underlying object and set properties.

Can be linked to a PDFThumbnailViewControlMBS control to show the thumbnails for the pages.

See PDFViewIOSControlMBS control for iOS projects.

See WinPreviewControlMBS control for Windows targets.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [News from the MBS Xojo Plugins in version 21.5](#)
- [New desktop controls](#)
- [MBS Xojo Plugins, version 21.3pr1](#)
- [News from the MBS Xojo Plugins Version 21.1](#)
- [MBS Xojo Plugins, version 21.1pr3](#)
- [MBS Xojo Plugins, version 19.6pr1](#)
- [MBS Xojo Plugins, version 17.6pr5](#)
- [MBS Xojo Plugins, version 17.5pr2](#)
- [MBS Xojo / Real Studio Plugins, version 17.0pr1](#)

4.35.2 Methods

4.35.3 ClearOverlay(page as PDFPageMBS, post as boolean = true)

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Clear overlay item for this page.

Notes: Is post = false, than we clear the item for pre page drawing, else for post page drawing.

The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.35.4 ClearOverlays

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Clear all overlays.

Notes: The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

4.35.5 Properties

4.35.6 View as PDFViewMBS

Plugin Version: 13.4, Platform: macOS, Targets: Desktop only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.

(Read only property)

4.35.7 Overlay(page as PDFPageMBS, post as boolean = true) as variant

Plugin Version: 17.5, Platform: macOS, Targets: Desktop only.

Function: Get/Set overlay item.

Notes: MBS Plugin can draw a picture, NSImageMBS or PDFPageMBS below/over the PDF page.

The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

(Read and Write computed property)

4.35.8 Events

4.35.9 AfterDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called after something was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.35.10 AfterDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS)

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called after a page annotations were drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.35.11 AfterDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double)

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called after a page was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.35.12 BeforeDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called before a page was drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.35.13 BeforeDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called before a page annotations were drawn.

Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

4.35.14 BeforeDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double) as boolean

Plugin Version: 13.4, Platform: macOS, Targets: .

Function: The draw event called before a something was drawn.

4.35.15 BoundsChanged

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The event called when the bounds, but not the frame, changed.

4.35.16 Close

Plugin Version: 13.4, Platform: macOS, Targets: .

Function:

The control is about to close.

In Xojo version 2021r3 and newer this event is named Closing.

4.35.17 CocoaMouseDown(e as NSEventMBS)

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control,Ãs region at the location passed in to x, y.

Notes: This is called before MouseDown, but provides the original Cocoa event, so you can query additional properties.

4.35.18 CocoaMouseDrag(e as NSEventMBS)

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes: This is called before MouseDrag, but provides the original Cocoa event, so you can query additional properties.

4.35.19 CocoaMouseUp(e as NSEventMBS)

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: This is called before MouseUp, but provides the original Cocoa event, so you can query additional properties.

4.35.20 ConstructContextualMenu(base as MenuItem, x as Integer, y as Integer) as Boolean

Plugin Version: 22.1, Platform: macOS, Targets: .

Function: This event is called when it is appropriate to display a contextual menu for the control.

4.35.21 ContextualMenuAction(hitItem as MenuItem) as Boolean

Plugin Version: 17.1, Platform: macOS, 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.

4.35.22 didCloseContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Did close contextual menu.

Notes: Allows you to restart any animation you may have stopped in the willShowContextualMenu event.

4.35.23 EnableMenuItems

Plugin Version: 17.1, Platform: macOS, Targets: .

Function:

The event where you can enable menu items.

In Xojo version 2021r3 and newer this event is named MenuBarSelected.

4.35.24 FrameChanged

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The event called when the frame changed.

Notes: This event notifies you, that the control changed it's bounding frame, which is position and/or size.

4.35.25 GotFocus

Plugin Version: 16.5, Platform: macOS, Targets: .

Function:

The control itself got focus.

In Xojo version 2021r3 and newer this event is named FocusReceived.

Notes:

This only fires if the control itself got focus and not a sub control.

4.35.26 LostFocus

Plugin Version: 16.5, Platform: macOS, Targets: .

Function:

The control lost focus.

In Xojo version 2021r3 and newer this event is named FocusLost.

Notes:

This only fires if the control itself lost focus and not a sub control.

4.35.27MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The mouse button was pressed inside the control's region at the location passed in to x, y.

Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner of the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

4.35.28 MouseDrag(x as Integer, y as Integer)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes: Mouse location is local to the control passed in to x, y.

As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

4.35.29 MouseUp(x as Integer, y as Integer)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The mouse button was released.

Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

4.35.30 Open

Plugin Version: 13.4, Platform: macOS, Targets: .

Function:

The control is about to was created and you can initialize it.
In Xojo version 2021r3 and newer this event is named Opening.

4.35.31 OpenPDFforRemoteGoToAction(action as PDFActionRemoteGoToMBS)

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Opens a specified page.

Notes: This event will be called to handle clicks on annotations containing a PDFActionRemoteGoToMBS action. The action contains a URL and a page index and point. You should open the PDF indicated by the URL and go to the page and point indicated. The easiest way to do the latter is to create a PDFDestinationMBS with the page index and point once a PDFDocumentMBS from the URL is created - then you can call: goToDestination method. The default implementation simply beeps.

4.35.32 PerformFind

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Performs a find operation.

Notes: Certain PDFAction's may request that the PDF viewer application perform a Find.
The event will be called when the user clicks on an annotation with such an action.

4.35.33 PerformGoToPage

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Performs a go-to operation.

Notes: Certain PDFAction's may request that the PDF viewer application bring up a panel allowing the user to enter a specific page number. The event will be called when the user clicks on an annotation with such an action.

4.35.34 PerformPrint

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Prints the current document.

Notes: Certain PDFAction's may request that the PDF viewer application Print the current document. This event will be called when the user clicks on an annotation with such an action.

4.35.35 PrintJobTitle as String

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Overrides the job title used when the PDFView is printed.

Notes: Allows to override the job title when PDFView is printed. The default implementation uses the string, if any, associated with the "Title" key from the view's PDFDocumentMBS attribute dictionary. Failing that, it uses the last path component if the PDFDocumentMBS is URL-based.

4.35.36 ScaleFactorChanged(NewFactor as Double)

Plugin Version: 17.1, Platform: macOS, Targets: .

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

4.35.37 WillChangeScaleFactor(scale as Double) as Double

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Overrides changes to the scale factor.

Notes: Allows to override changes to the scale factor. The default implementation pins scaling between 0.1 and 10.0.

If you add this event, please return a value, e.g. the passed scale value.

4.35.38 WillClickOnLink(URL as String)

Plugin Version: 21.1, Platform: macOS, Targets: .

Function: Handle clicks on URL links in a view.

Notes: If implemented, this event will be called to handle clicks on URL links within the PDFView. The default implementation calls openURL on NSWorkspaceMBS class.

4.35.39 willShowContextualMenu(menu as NSMenuMBS, NSEvent as NSEventMBS)

Plugin Version: 24.1, Platform: macOS, Targets: .

Function: Will show contextual menu.

Notes: Your chance to modify the menu before it is shown, e.g. to add menu entries.

4.36 control PDFViewIOSControlMBS

4.36.1 control PDFViewIOSControlMBS

Plugin Version: 23.3, Platform: iOS, Targets: iOS only.

Function: The Xojo control for a PDFView.

Notes: This control embeds a special PDFView subclass.

Please use view property to access the underlying object and set properties.

Can be linked to a PDFThumbnailViewIOSControlMBS control to show the thumbnails for the pages.

See PDFViewControlMBS control for desktop projects.

See WinPreviewControlMBS control for Windows targets.

Blog Entries

- [MonkeyBread Software Releases the MBS Xojo Plugins in version 23.3](#)
- [PDF Viewer controls for iOS](#)
- [MBS Xojo Plugins, version 23.3pr4](#)

Xojo Developer Magazine

- [21.5, page 10: News](#)

4.36.2 Properties

4.36.3 View as PDFViewMBS

Plugin Version: 23.3, Platform: iOS, Targets: iOS only.

Function: The view used in the control.

Notes: Use this object to set more options on the control.

(Read only property)

4.36.4 Events

4.36.5 Close

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control is about to close.

4.36.6 GotFocus

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control itself got focus.

Notes: This only fires if the control itself got focus and not a sub control.

4.36.7 LostFocus

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control lost focus.

Notes: This only fires if the control itself lost focus and not a sub control.

4.36.8 Open

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: The control is about to was created and you can initialize it.

4.36.9 OpenPDFforRemoteGoToAction(action as PDFActionRemoteGoToMBS)

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: Opens a specified page.

Notes: This event will be called to handle clicks on annotations containing a PDFActionRemoteGoToMBS action. The action contains a URL and a page index and point. You should open the PDF indicated by the URL and go to the page and point indicated. The easiest way to do the latter is to create a PDFDestinationMBS with the page index and point once a PDFDocumentMBS from the URL is created - then you can call: goToDestination method. The default implementation simply beeps.

4.36.10 PerformFind

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: Performs a find operation.

Notes: Certain PDFAction's may request that the PDF viewer application perform a Find. The event will be called when the user clicks on an annotation with such an action.

4.36.11 PerformGoToPage

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: Performs a go-to operation.

Notes: Certain PDFAction's may request that the PDF viewer application bring up a panel allowing the user to enter a specific page number. The event will be called when the user clicks on an annotation with such an action.

4.36.12 WillClickOnLink(URL as String)

Plugin Version: 23.3, Platform: iOS, Targets: .

Function: Handle clicks on URL links in a view.

Notes: If implemented, this event will be called to handle clicks on URL links within the PDFView. The default implementation calls openURL on NSWorkspaceMBS class.

4.37 class PDFViewMBS

4.37.1 class PDFViewMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: A PDFView object encapsulates the functionality of PDF Kit into a single widget that you can add to your application.

Notes: PDFView may be the only class you need to deal with for adding PDF functionality to your application. It lets you display PDF data and allows users to select content, navigate through a document, set zoom level, and copy textual content to the Pasteboard. PDFView also keeps track of page history.

You can subclass PDFView to create a custom PDF viewer or better use our CustomPDFViewMBS class.

You can also create a custom PDF viewer by using the PDF Kit utility classes directly and not using PDFView at all.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard.

Subclass of the NSViewMBS class.

Blog Entries

- [PDF Viewer controls for iOS](#)
- [News from the MBS Xojo Plugins Version 21.1](#)
- [Have you checked out PDFViewMBS class?](#)
- [MBS REALbasic Plugins, version 10.6pr2](#)
- [MBS Plugins 10.3 Release Notes](#)
- [MBS REALbasic Plugins, version 10.3pr8](#)
- [MBS REALbasic Plugins, version 10.3pr4](#)

4.37.2 Methods

4.37.3 annotationsChangedOnPage(page as PDFPageMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Tells the PDF view that an annotation on the specified page has changed.

Notes: When the PDFView object receives this message, it rescans for tool tips and pop-ups and informs the PDFThumbnailView objects so the thumbnail images can be redrawn.

Available in Mac OS X v10.5 and later.

4.37.4 `areaOfInterestForMouse(e as NSEventMBS) as Integer`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Returns the type of area the mouse cursor is over.

Notes: The `PDFAreaOfInterest` enumeration defines the various area types. This method is for custom subclasses of the `PDFView` class. Use it if you override the `NSResponder` class's `mouseMoved:` method or related methods.

4.37.5 `areaOfInterestForPoint(p as NSPointMBS) as integer`

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: Returns type of area (see defines above) mouse is over.

4.37.6 `clearSelection`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Clears the selection.

Notes: The view redraws as necessary but does not scroll. This call is equivalent to setting `CurrentSelection=nil`.

4.37.7 `Constructor`

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Creates a new PDF view with size 100/100 and position 0/0

Example:

```
dim t as new PDFViewMBS
```

Notes: On success the handle property is not zero.

See also:

- 4.37.8 `Constructor(Handle as Integer)` 226
- 4.37.9 `Constructor(left as Double, top as Double, width as Double, height as Double)` 227

4.37.8 `Constructor(Handle as Integer)`

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Creates an object based on the given PDFView handle.

Example:

```
dim t as new PDFViewMBS(0, 0, 100, 100)
dim v as new PDFViewMBS(t.handle)
```

```
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a NSButton and the plugin retains this handle.

See also:

- 4.37.7 Constructor 226
- 4.37.9 Constructor(left as Double, top as Double, width as Double, height as Double) 227

4.37.9 Constructor(left as Double, top as Double, width as Double, height as Double)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Creates a new PDF view with the given size and position.

Example:

```
dim x as new PDFViewMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.

See also:

- 4.37.7 Constructor 226
- 4.37.8 Constructor(Handle as Integer) 226

4.37.10 convertPointFromPage(point as NSPointMBS, page as PDFPageMBS) as NSPointMBS

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Converts a point from page space to view space.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

4.37.11 `convertPointToPage(point as NSPointMBS, page as PDFPageMBS) as NSPointMBS`

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Converts a point from view space to page space.

Example:

```
// convert point from mouse event to page coordinates
Function MouseDown(x as Integer, y as Integer, Modifiers as Integer) Handles MouseDown as Boolean
Dim a As NSApplicationMBS = NSApplicationMBS.sharedApplication
Dim n As NSEventMBS = a.currentEvent
Dim v As PDFViewMBS = Me.View
Dim w As NSWindowMBS = Self.NSWindowMBS
Dim p As NSPointMBS = n.locationInWindow

System.DebugLog "p: " + str(p.x) + "/" + str(p.y)

Dim doc As PDFDocumentMBS = v.document
Dim page As PDFPageMBS = doc.pageAtIndex(0)
Dim r As NSPointMBS = v.convertPointFromView(p, Nil)

System.DebugLog "r: " + Str(r.x) + "/" + Str(r.y)

Dim d As NSPointMBS = v.convertPointToPage(r, page)

System.DebugLog "d: " + Str(d.x) + "/" + Str(d.y)
End Function
```

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

4.37.12 `convertRectFromPage(rect as NSRectMBS, page as PDFPageMBS) as NSRectMBS`

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Converts a rectangle from page space to view space.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

4.37.13 `convertRectToPage(rect as NSRectMBS, page as PDFPageMBS) as NSRectMBS`

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Converts a rectangle from view space to page space.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

4.37.14 `copy`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Copies the text in the selection, if any, to the Pasteboard.

4.37.15 `drawPage(page as PDFPageMBS)`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: For use by subclasses of PDFView for custom rendering of pages.

Notes: Do not invoke this method, except by invoking it on super from a subclass.

The PDFView class calls `drawPage:` as necessary for each visible page that requires rendering. In the PDFView class, this method erases page to white, calls `page.drawInRect(pageRect,self.displayBox)`, and then draws the selection, if any.

You can override this method to draw on top of a PDF page or to control how pages are drawn. In these cases, invoke this method on super and then perform custom drawing on top of the PDF page.

Changed in v22.5 to work on macOS Ventura.

But if the `drawPage` is called by macOS on the wrong thread, we ignore that to prevent `StackOverflowException` from Xojo runtime.

4.37.16 `drawPagePost(page as PDFPageMBS)`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: For use by subclasses of PDFView for post-page rendering.

Notes: The default implementation of this method draws the text highlighting (if any) for the page. This method does not apply scaling or rotating to the current context to map to page space; instead, the context is in view-space coordinates (in which the origin is at the lower-left corner of the current PDF view).

Available in Mac OS X v10.5 and later.

4.37.17 goBack

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates back one step in the page history.

Notes: The page history gets built as your application calls navigation methods such as `goToDestination` and `goToLastPage`.

4.37.18 goForward

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates forward one step in the page history.

Notes: The page history gets built as your application calls navigation methods such as `goToDestination` and `goToLastPage`.

4.37.19 goToDestination(page as PDFDestinationMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the specified destination.

Notes: Destinations include a page and a point on the page specified in page space.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

4.37.20 goToFirstPage

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the first page of the document.

Notes: PDF Kit records the move in its page history.

4.37.21 goToLastPage

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the last page of the document.

Notes: PDF Kit records the move in its page history.

4.37.22 goToNextPage

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the next page of the document.

Notes: PDF Kit records the move in its page history.

4.37.23 goToPage(page as PDFPageMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Scrolls to the specified page.

Notes: PDF Kit records the move in its page history.

4.37.24 goToPreviousPage

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the previous page of the document.

Notes: PDF Kit records the move in its page history.

4.37.25 goToRect(rect as NSRectMBS, page as PDFPageMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Navigates to the specified rectangle on the specified page.

Notes: If the specified rectangle is already visible, this method does nothing. This allows you to scroll the PDFView object to a specific PDFAnnotation or PDFSelection object, because both of these objects have bounds methods that return an annotation or selection position in page space.

Note that rect is specified in page-space coordinates. Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.5 and later.

4.37.26 goToSelection(page as PDFSelectionMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Scrolls to the first character of the specified selection.

Notes: PDF Kit records the move in its page history.

4.37.27 highlightedSelections as PDFSelectionMBS()

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Queries highlighted selections.

Notes: Unlike the user selection (above), these selections do not go away when the user clicks in the PDFView, etc. You must explicitly remove them by passing nil to setHighlightedSelections. These methods allow you to highlight text perhaps to indicate matches from a text search. To avoid confusion you should probably make sure the PDFSelectionMBS passed in are a different color from the user's default text selection color. Commonly used for highlighting search results.

4.37.28 layoutDocumentView

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Performs layout of the inner views.

Notes: The PDFView actually contains several subviews, such as the document view (where the PDF is actually drawn) and a "matte view" (which may appear as a gray area around the PDF content, depending on the scaling). Changes to the PDF content may require changes to these inner views, so you must call this method explicitly if you use PDF Kit utility classes to add or remove a page, rotate a page, or perform other operations affecting visible layout.

This method is called automatically from PDFView methods that affect the visible layout (such as setDocument, setDisplayBox or zoomIn).

4.37.29 pageForPoint(point as NSPointMBS, nearest as boolean) as PDFPageMBS

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the page containing a point specified in view coordinates.

Notes: Returns nil if there's no page at the specified point and nearest is set to false.

4.37.30 PDFViewAnnotationHitNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the user clicks on an annotation.

Use the "PDFAnnotationHit" key to obtain userinfo of type PDFAnnotation.

4.37.31 PDFViewAnnotationWillHitNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted before the user clicks an annotation.

Available in Mac OS X v10.5 and later.

4.37.32 PDFViewChangedHistoryNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the page history changes.

4.37.33 PDFViewCopyPermissionNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the user attempts to copy to the pasteboard without the appropriate permissions.

4.37.34 PDFViewDisplayBoxChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the display box has changed.

Available in Mac OS X v10.5 and later.

4.37.35 PDFViewDisplayModeChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the display mode has changed.

Available in Mac OS X v10.5 and later.

4.37.36 PDFViewDocumentChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when a new document is associated with the view.

4.37.37 PDFViewPageChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when a new page becomes the current page.

4.37.38 PDFViewPrintPermissionNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the user attempts to print without the appropriate permissions.

4.37.39 PDFViewScaleChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the scale factor changes.

4.37.40 PDFViewSelectionChangedNotification as string

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: One of the notification names used with the PDF view.

Notes: Posted when the current selection has changed.

Available in Mac OS X v10.5 and later.

4.37.41 PDFViewVisiblePagesChangedNotification as string

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Notification when the scroll view has scrolled into the bounds of a new page.

4.37.42 performAction(action as PDFActionMBS)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Performs the specified action.

Notes: Available in Mac OS X v10.5 and later.

4.37.43 printWithInfo(printInfo as NSRectMBS, autoRotate as Boolean)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: Print the PDF document.

Notes: If autoRotate is true, will ignore the orientation attribute in printInfo and rather choose the orientation on a page by page basis that best fits the page to the paper size.

See also:

- 4.37.44 printWithInfo(printInfo as NSRectMBS, autoRotate as Boolean, pageScaling as Integer) 235

4.37.44 printWithInfo(printInfo as NSRectMBS, autoRotate as Boolean, pageScaling as Integer)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: Like the above method but allows an additional parameter to describe page scaling (see PDF-Document.h for types).

Notes: If pageScaling is equal to kPDFPrintPageScaleToFit each page is scaled up or down in order to best fit the paper size. Specifying kPDFPrintPageScaleDownToFit for pageScaling will only scale large pages down to fit the paper, smaller pages will not be scaled up. Passing pageScaling equal to kPDFPrintPageScaleNone is the equivalent of calling printWithInfo above.

See also:

- 4.37.43 printWithInfo(printInfo as NSRectMBS, autoRotate as Boolean) 235

4.37.45 rowSizeForPage(page as PDFPageMBS) as NSSizeMBS

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the size needed to display a row of the current document page.

Notes: The size is dependent on the current scale factor and display attributes.

4.37.46 scrollSelectionToVisible

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Scrolls the view until the selection is visible.

4.37.47 selectAll

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Selects all text in the document.

4.37.48 setCurrentSelection(selection as PDFSelectionMBS, animate as boolean)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Sets the selection, in an animated way, if desired.

Notes: This method behaves as `setCurrentSelection`, but with the addition of animation, if `animate` is true. The animation serves to draw the user's attention to the new selection, which can be useful when implementing search.

Available in Mac OS X v10.5 and later.

4.37.49 setCursorForAreaOfInterest(area as Integer)

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Sets the type of mouse cursor according to the type of area the mouse cursor is over.

Notes: This method is especially useful for custom subclasses of the `PDFView` class.

4.37.50 setHighlightedSelections(selections() as PDFSelectionMBS)

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Sets highlighted selections.

Notes: Unlike the user selection (above), these selections do not go away when the user clicks in the `PDFView`, etc. You must explicitly remove them by passing `nil` to `setHighlightedSelections`. These methods allow you to highlight text perhaps to indicate matches from a text search. To avoid confusion you should probably make sure the `PDFSelectionMBS` passed in are a different color from the user's default text selection color. Commonly used for highlighting search results.

4.37.51 visiblePages as PDFPageMBS()

Plugin Version: 10.3, Platform: macOS, Targets: Desktop & iOS.

Function: Returns an array of PDFPageMBS objects that represent the currently visible pages.

Notes: Available in Mac OS X v10.5 and later.

4.37.52 zoomIn

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Zooms in by increasing the scaling factor.

Notes: Each invocation of zoomIn multiplies the scaling factor by the square root of 2.
Available in Mac OS X v10.4 and later.

4.37.53 zoomOut

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Zooms out by decreasing the scaling factor.

Notes: Each invocation of zoomOut divides the scaling factor by the square root of 2.
Available in Mac OS X v10.4 and later.

4.37.54 Properties

4.37.55 acceptsDraggedFiles as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: Desktop only.

Function: Indicate whether dragging a file into PDFView is allowed.

Notes: If false (default), dragging events are not supported.

If true, a user can drag and drop a PDF file into the view and have it loaded & set as the visible document (the old document is released).

Available in macOS 10.13 or newer.
(Read and Write property)

4.37.56 allowsDragging as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Determines whether the view can accept new PDF documents dragged into it by the user.

Notes: (Read and Write property)

4.37.57 autoScales as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: A Boolean value indicating whether autoscaling is set.

Notes: (Read and Write property)

4.37.58 backgroundColor as NSColorMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the view's background color.

Notes: A view's background is the area displayed to either side of a PDF document's pages. The background also appears between pages when page breaks are enabled. The default color is a 50% gray.

(Read and Write property)

4.37.59 canGoBack as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the previous page in the page history.

Notes: The page history gets built as your application calls navigation methods such as `goToDestination` and `goToLastPage`.

(Read only property)

4.37.60 canGoForward as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the next page in the page history.

Notes: The page history gets built as your application calls navigation methods such as `goToDestination` and `goToLastPage`.

(Read only property)

4.37.61 canGoToFirstPage as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the first page of the document.

Notes: The return value will be true unless the view is already displaying the first page.
(Read only property)

4.37.62 canGoToLastPage as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the last page of the document.

Notes: The return value will be true unless the view is already displaying the last page.
(Read only property)

4.37.63 canGoToNextPage as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the next page of the document.

Notes: The return value will be true unless the view is displaying the last page.
(Read only property)

4.37.64 canGoToPreviousPage as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can navigate to the previous page of the document.

Notes: The return value will be true unless the view is displaying the first page.
(Read only property)

4.37.65 canZoomIn as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can magnify the view—that is, zoom in.

Notes: (Read only property)

4.37.66 canZoomOut as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a Boolean value indicating whether the user can view an expanded area—that is, zoom out.

Notes: (Read only property)

4.37.67 currentDestination as PDFDestinationMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns a PDFDestination object representing the current page and the current point in the view specified in page space.

Notes: Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. (Read only property)

4.37.68 currentPage as PDFPageMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the current page.

Notes: When there are two pages in the view in a two-up mode, "current page" is the left page. For continuous modes, returns the page crossing a horizontal line halfway between the view's top and bottom bounds.

(Read only property)

4.37.69 currentSelection as PDFSelectionMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the current selection.

Example:

```
dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim sel as PDFSelectionMBS = page.selectionForRange(0,5)
MyPDFView.currentSelection = sel
```

Notes: Returns NULL if no selection exists.

Note that this method returns the actual instance of the current PDFSelectionMBS object. Therefore, if you want to modify it, you should make a copy of the returned selection and modify that, instead.
(Read and Write property)

4.37.70 displayBox as Integer

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The current style of display box.

Notes: The available values for display boxes are defined in the Constants section in the PDFPageMBS class.

(Read and Write property)

4.37.71 displayDirection as Integer

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Set the layout direction, either vertical or horizontal, for the given display mode.

Notes: Defaults to vertical layout (kPDFDisplayDirectionVertical).

Available in macOS 10.13 or newer.

(Read and Write property)

4.37.72 displayMode as Integer

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The current display mode.

Notes: Value can be kPDFDisplaySinglePage, kPDFDisplaySinglePageContinuous, kPDFDisplayTwoUp and kPDFDisplayTwoUpContinuous.

(Read and Write property)

4.37.73 displaysAsBook as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: A Boolean value indicating whether the view will display the first page as a book cover (meaningful only when the document is in two-up or two-up continuous display mode).

Notes: (Read and Write property)

4.37.74 displaysPageBreaks as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: A Boolean value indicating whether the view is displaying page breaks.

Notes: (Read and Write property)

4.37.75 displaysRTL as Boolean

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Specifies presentation of pages from right-to-left.

Notes: Defaults to false.

(Read and Write property)

4.37.76 document as PDFDocumentMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the document associated with a PDFView object.

Notes: (Read and Write property)

4.37.77 documentView as NSViewMBS

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Returns the innermost view used by PDFView or by your PDFView subclass.

Notes: The innermost view is the one displaying the visible document pages. This method is useful when converting coordinates from one view to another.

(Read only property)

4.37.78 enableDataDetectors as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: Whether data detection is enabled.

Notes: If enabled, page text will be scanned for URL's as the page becomes visible. Where // URL's are found, Link annotations are created in place. These are temporary annotations and are not saved.

Requires Mac OS X 10.6.
(Read and Write property)

4.37.79 greekingThreshold as Double

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: The greeking threshold to use for displaying text.

Notes: The default threshold is 3.0.

(Read and Write property)

4.37.80 interpolationQuality as Integer

Plugin Version: 11.2, Platform: macOS, Targets: Desktop & iOS.

Function: The interpolation quality for images drawn into the PDFView context.

Notes: Available in Mac OS X 10.7 or later.

(Read and Write property)

4.37.81 maxScaleFactor as Double

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Set the maximum scaling factor for the PDF document.

Notes: Assigning this value will implicitly turn off autoScales, and allows scaleFactor to vary between these min / max scale factors

Available in macOS 10.13 or newer.

(Read and Write property)

4.37.82 minScaleFactor as Double

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Set the minimum scaling factor for the PDF document.

Notes: Assigning this value will implicitly turn off autoScales, and allows scaleFactor to vary between these min / max scale factors

Available in macOS 10.13 or newer.
(Read and Write property)

4.37.83 `pageBreakMargins` as `NSEdgeInsetsMBS`

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: The page break margins.

Notes: If `displaysPageBreaks` is enabled, you may customize the spacing between pages by defining margins for the top, bottom, left, and right of each page. Note that `pageBreakMargins` only allows positive values and will clamp any negative value to 0.0. By default, if `displaysPageBreaks` is enabled, `pageBreakMargins` is { 4.75, 4.0, 4.75, 4.0 } (with respect to top, left, bottom, right), otherwise it is { 0.0, 0.0, 0.0, 0.0 }
(Read and Write property)

4.37.84 `pageShadowsEnabled` as `Boolean`

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Specifies if shadows should be drawn around page borders in a `PDFView`.

Notes: Defaults to true.

Available in macOS 10.14 or newer.
(Read and Write property)

4.37.85 `scaleFactor` as `Double`

Plugin Version: 9.6, Platform: macOS, Targets: Desktop & iOS.

Function: The scale factor for the view.

Notes: The default value is 1.0, corresponding to actual size.
(Read and Write property)

4.37.86 `scaleFactorForSizeToFit` as `Double`

Plugin Version: 21.1, Platform: macOS, Targets: Desktop & iOS.

Function: Regardless of current `autoScales` mode, this returns the "size to fit" scale factor that `autoScales` would use for scaling the current document and layout.

Notes: For continuous modes this is a "fit width" scale, for non-continuous modes it is a "best fit" scale.
Available in macOS 10.13 or newer.
(Read only property)

4.37.87 shouldAntiAlias as Boolean

Plugin Version: 9.6, Platform: macOS, Targets: Desktop only.

Function: Whether to use anti-aliasing in the view.

Notes: (Read and Write property)

4.37.88 Constants

PDF Area Of Interest

Constant	Value	Description
kPDFAnnotationArea	4	The mouse is over an annotation.
kPDFControlArea	16	The mouse is over a control.
kPDFIconArea	64	The mouse is over an icon. Available in Mac OS X v10.5 and later.
kPDFImageArea	256	Over an image.
kPDFLinkArea	8	The mouse is over a link.
kPDFNoArea	0	The mouse is over an undefined area.
kPDFPageArea	1	The mouse is over a page.
kPDFPopupArea	128	The mouse is over a popup menu.
kPDFTextArea	2	The mouse is over text.
kPDFTextFieldArea	32	The mouse is over a text field.

Display Directions

Constant	Value	Description
kPDFDisplayDirectionHorizontal	1	Horizontal
kPDFDisplayDirectionVertical	0	Vertical

Display Mode

Constant	Value	Description
kPDFDisplaySinglePage	0	The document displays one page at a time horizontally and vertically. Vertical and horizontal scrolling apply only to the current page.
kPDFDisplaySinglePageContinuous	1	The document displays in continuous mode vertically, with single-page width horizontally. Vertical scrolling applies to the entire document.
kPDFDisplayTwoUp	2	The document displays two pages side-by-side. Vertical and horizontal scrolling apply only to the pair of displayed pages.
kPDFDisplayTwoUpContinuous	3	The document displays in continuous mode vertically and displays two pages side-by-side horizontally. Vertical scrolling applies to the entire document.

Interpolation Quality Constants

Constant	Value	Description
kPDFInterpolationQualityHigh	2	high
kPDFInterpolationQualityLow	1	low
kPDFInterpolationQualityNone	0	

Chapter 5

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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? 259
- 6.0.5 How to convert cmyk to rgb? 260
- 6.0.6 How to delete a folder? 261
- 6.0.7 How to detect if CPU is 64bit processor? 262
- 6.0.8 How to query variant type string for a variant? 263
- 6.0.9 How to refresh a htmlviewer on Windows? 264

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? 258

- 6.0.5 How to convert cmyk to rgb? 260
- 6.0.6 How to delete a folder? 261
- 6.0.7 How to detect if CPU is 64bit processor? 262
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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? 258
- 6.0.4 How to catch delete key? 259
- 6.0.6 How to delete a folder? 261
- 6.0.7 How to detect if CPU is 64bit processor? 262
- 6.0.8 How to query variant type string for a variant? 263
- 6.0.9 How to refresh a htmlviewer on Windows? 264

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? 258
- 6.0.4 How to catch delete key? 259
- 6.0.5 How to convert cmyk to rgb? 260
- 6.0.7 How to detect if CPU is 64bit processor? 262
- 6.0.8 How to query variant type string for a variant? 263
- 6.0.9 How to refresh a htmlviewer on Windows? 264

6.0.7 How to detect if CPU is 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? 258
- 6.0.4 How to catch delete key? 259
- 6.0.5 How to convert cmyk to rgb? 260
- 6.0.6 How to delete a folder? 261
- 6.0.8 How to query variant type string for a variant? 263
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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? 258
- 6.0.4 How to catch delete key? 259
- 6.0.5 How to convert cmyk to rgb? 260
- 6.0.6 How to delete a folder? 261
- 6.0.7 How to detect if CPU is 64bit processor? 262
- 6.0.9 How to refresh a htmlviewer on Windows? 264

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? 258
- 6.0.4 How to catch delete key? 259
- 6.0.5 How to convert cmyk to rgb? 260

- 6.0.6 How to delete a folder? 261
- 6.0.7 How to detect if CPU is 64bit processor? 262
- 6.0.8 How to query variant type string for a variant? 263

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.

Metal Color
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.

Gradient Color
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.

Dash Line Colors
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:

Attribute	Description
-----------	-------------

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 na,e. 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 txtxt) 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 occured"
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 url0 as string = app.audioFileOGG.URL
dim urlm as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+url0+""" 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 NSFileWrapperMBS = 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(NewCFBinaryDataMBS(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. pdfiib 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 client 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.macsw.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: This classes have been removed XLSCellMBS, 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,,