

MBS Java 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 Java Plugin

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Chapter 3

Java

3.1 class `JavaArrayMBS`

3.1.1 class `JavaArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for a java array object.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Upgrading our Java Support for Xojo](#)
- [MBS Xojo Plugins, version 19.2pr5](#)

3.1.2 Methods

3.1.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.1.4 Properties

3.1.5 Length as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of items in the array.

Notes: Returns 0 on any error.

(Read only property)

3.2 class JavaBooleanArrayMBS

3.2.1 class JavaBooleanArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java boolean array object.

Notes: Subclass of the JavaArrayMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.2.2 Methods

3.2.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.2.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use `memoryblock.byte(index)` to access.

3.2.5 Values as Boolean()

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.2.6 Properties

3.2.7 Region(start as Integer, len as Integer) as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws `ArrayIndexOutOfBoundsException` if $(start + len - 1)$ does not specify a valid index in the array.

(Read and Write computed property)

3.2.8 Value(index as Integer) as Boolean

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.3 class `JavaByteArrayMBS`

3.3.1 class `JavaByteArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java byte array object.

Notes: Subclass of the `JavaArrayMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.3.2 Methods

3.3.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.3.4 Elements as `memoryblock`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one `memoryblock`.

Notes: Use `memoryblock.Byte(index)` to access.

3.3.5 Values as `Int8()`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.3.6 Properties

3.3.7 `Region(start as Integer, len as Integer)` as `memoryblock`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: `Start` is the starting index (0 based) and `len` the number of items to copy.

Throws `ArrayIndexOutOfBoundsException` if `(start + len - 1)` does not specify a valid index in the array.

(Read and Write computed property)

3.3.8 Value(index as Integer) as Int8

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.4 class JavaCharArrayMBS

3.4.1 class JavaCharArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java char array object.

Notes: Subclass of the JavaArrayMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.4.2 Methods

3.4.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.4.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use memoryblock.UShortMBS(index*2) to access.

3.4.5 Values as UInt16()

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.4.6 Properties

3.4.7 Region(start as Integer, len as Integer) as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.

(Read and Write computed property)

3.4.8 Value(index as Integer) as UInt16

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.5 class JavaClassMBS

3.5.1 class JavaClassMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for a Java class.

Notes: Subclass of the JavaObjectMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Trying Java 19 in Xojo](#)
- [MBS Xojo Plugins, version 19.4pr6](#)
- [Upgrading our Java Support for Xojo](#)
- [MBS Real Studio Plugins, version 12.5pr1](#)

3.5.2 Methods

3.5.3 AllocateObject as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Allocates a new Java object without invoking any of the constructors for the object. #

Notes: Returns a reference to the object or nil on any error.

Does not work for array classes.

Throws InstantiationException if the class is an interface or an abstract class.

3.5.4 CallStaticBooleanMethod(MethodID as JavaMethodMBS, args as memoryblock) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a boolean return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.5 CallStaticByteMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a byte return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.6 CallStaticCharMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a char return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.7 CallStaticDoubleMethod(MethodID as JavaMethodMBS, args as memoryblock) as Double

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a double return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.8 `CallStaticFloatMethod(MethodID as JavaMethodMBS, args as memoryblock) as single`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a float return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.9 `CallStaticIntMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with an integer return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on

platform)

3.5.10 CallStaticLongMethod(MethodID as JavaMethodMBS, args as memoryblock) as Int64

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a long return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.11 CallStaticMain(args() as string)

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static main method and passes the String array.

3.5.12 CallStaticMethod(MethodID as JavaMethodMBS, args() as Variant) as Variant

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method.

Example:

```
Dim vm As JavaVMMBS // your initialized VM

// 1. Find class
Dim jclass As JavaClassMBS =vm.FindClass("stringtest")

if jclass=nil then
msgbox "Can't find stringtest class"
Return
end if
```

```

// 2. lookup method
Dim jmethod3 As JavaMethodMBS = jclass.GetStaticMethod("setValue","(Ljava/lang/String;)V")
if jmethod3=nil then
MsgBox "Failed to find setValue method."
Return
end if

// 3. Call static method
Dim param3() As Variant
param3.append "Hello World"
Call jclass.CallStaticMethod(jmethod3,param3)

MsgBox "done"

```

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args variant array that immediately follows the methodID argument.

This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be `JavaObjectMBS` or subclasses including `JavaStringMBS` and the `JavaArrayMBS` subclasses. For your convenience you can pass in string and we convert to `JavaStringMBS` for you.

3.5.13 CallStaticObjectMethod(MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with an object return value.

Example:

```

dim e as JavaVMMBS // global

// Call "public static String getMessage()" and "public static void setMessage(String theMessage)" from
class "test".

dim jclass, sclass as JavaClassMBS
dim jmethod as JavaMethodMBS

```

```

dim jstring as JavaStringMBS
dim args as JavaObjectArrayMBS
dim m as MemoryBlock
dim s as String
dim jfield as JavaFieldMBS

jclass=e.FindClass("test")

if jclass=nil then
msgbox "Can't find test class"
else
jmethod = jclass.GetStaticMethod("setMessage", "(Ljava/lang/String;)V")

if jmethod=nil then
msgbox "Can't find HelloWorld.setMessage"
else
jstring = e.NewStringUTF8("Hello from Xojo!")
if jstring=nil then
msgbox "Out of memory"
else
m=NewMemoryBlock(8) // 8 bytes per parameter
m.Int64Value(0)=jstring.Handle

jclass.CallStaticVoidMethod(jmethod, m)

jmethod = jclass.GetStaticMethod("getMessage", "()Ljava/lang/String;")

if jmethod=nil then
msgbox "Can't find HelloWorld.getMessage"
else
m=NewMemoryBlock(8) // 8 bytes per parameter
m.Int64Value(0)=jstring.Handle

jstring=JavaStringMBS(jclass.CallStaticObjectMethod(jmethod,m))

MsgBox jstring.CopyStringUTF
end if
end if
end if
end if

```

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.14 CallStaticShortMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with a short return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.15 CallStaticVoidMethod(MethodID as JavaMethodMBS, args as memoryblock)

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a static method with no return value.

Notes: This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `JavaClassMBS.GetMethod()`.

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.5.16 Constructor

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.5.17 GetField(name as string, sig as string) as JavaFieldMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches for the Field with the given Name and Signature.

Notes: Nil on any error.

The signature is a string derived from the field's type or method's arguments and return type, as shown here:

Java Type	Signature
boolean	Z
byte	B
char	C
short	S
int	I
long	L
float	F
double	D
void	V
objects	Lfully-qualified-class-name;
arrays	[array-type
methods	(argument-types)return-type

3.5.18 GetMethod(name as string, sig as string) as JavaMethodMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches the method with the given name and signature.

Example:

```
dim jclass as JavaClassMBS
dim method as JavaMethodMBS
```

```
method=jclass.GetMethod("mymethod", "( [Ljava/lang/String;)V")
```

Notes: Returns the method ID for an instance (non-static) method of a class or interface. The method may be defined in one of the the class's super classes and inherited by the class. The method is determined by

its name and signature.

To obtain the method ID of a constructor, supply <init> as the method name and void (V) as the return type.

Nil on any error.

Throws NoSuchMethodError if the specified method cannot be found.

The signature is a string derived from the field's type or method's arguments and return type, as shown here:

Java Type	Signature
boolean	Z
byte	B
char	C
short	S
int	I
long	L
float	F
double	D
void	V
objects	Lfully-qualified-class-name;
arrays	[array-type
methods	(argument-types)return-type

3.5.19 GetStaticField(name as string, sig as string) as JavaFieldMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches the static field with the given name and signature.

Notes: Nil on any error.

3.5.20 GetStaticMethod(name as string, sig as string) as JavaMethodMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the method ID for a static method of a class. The method is specified by its name and signature.

Example:

```
dim jclass as JavaClassMBS
dim method as JavaMethodMBS
```

```
method=jclass.GetStaticMethod("main", "( [Ljava/lang/String;)V")
```

Notes: Nil on any error.

e.g. the signature of the default static main method is "([Ljava/lang/String;)V" which means return type void at the end and before an array of string.

3.5.21 NewObject(methodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constructs a new Java object.

Notes: The method ID indicates which constructor method to invoke. This ID must be obtained by calling GetMethod with <init> as the method name and void (V) as the return type.

Returns nil on any error.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

Throws Java InstantiationException if the class is an interface or an abstract class.

See also:

- 3.5.22 NewObject(MethodID as JavaMethodMBS, args() as Variant) as JavaObjectMBS 52

3.5.22 NewObject(MethodID as JavaMethodMBS, args() as Variant) as JavaObjectMBS

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constructs a new Java object.

Example:

```
dim vm as JavaVMMBS // your initialized VM

// 1. Find class
Dim jclass As JavaClassMBS=vm.FindClass("stringtest")
```

```

If jclass = Nil Then
MsgBox "Can't find stringtest class"
Return
End If

// 2. Call constructor
Dim jmethod As JavaMethodMBS = jclass.GetMethod("<init>", "(Ljava/lang/String;D)V")

If jmethod = Nil Then
MsgBox "Can't find constructor"
Return
End If

Dim param() As Variant
// 1. Parameter with Integer: I
param.Append 123
// 2. Parameter with string: Ljava/lang/String;
param.Append "Hello World"
// 3. Parameter with double: D
param.Append 3.14
Dim jobject As JavaObjectMBS = jclass.NewObject(jmethod, param)

If jobject = Nil Then
MsgBox "Constructor failed!?"
Else
MsgBox "OK: "+jobject.ClassName
End If

```

Notes: The method ID indicates which constructor method to invoke. This ID must be obtained by calling `GetMethod` with `<init>` as the method name and `void (V)` as the return type.

Returns nil on any error.

Programmers place all arguments to the method in an args variant array that immediately follows the `methodID` argument.

Throws `Java InstantiationException` if the class is an interface or an abstract class.

This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be `JavaObjectMBS` or subclasses including `JavaStringMBS` and the `JavaArrayMBS` subclasses. For your convenience you can pass in string and we convert to `JavaStringMBS` for you.

See also:

- 3.5.21 `NewObject(methodID as JavaMethodMBS, args as memoryblock)` as `JavaObjectMBS` 52

3.5.23 Superclass as `JavaClassMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Points to the superclass of this class.

Notes: Nil if no superclass exists.

3.5.24 Properties

3.5.25 `StaticBooleanField(TheField as JavaFieldMBS)` as `boolean`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static boolean field in this class.

Notes: (Read and Write computed property)

3.5.26 `StaticByteField(TheField as JavaFieldMBS)` as `Integer`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static byte field in this class.

Notes: (Read and Write computed property)

3.5.27 `StaticCharField(TheField as JavaFieldMBS)` as `Integer`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static char field in this class.

Notes: (Read and Write computed property)

3.5.28 `StaticDoubleField(TheField as JavaFieldMBS)` as `Double`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static double field in this class.

Notes: (Read and Write computed property)

3.5.29 StaticField(TheField as JavaFieldMBS) as Variant

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static field in this class.

Example:

```
Dim jclass As JavaClassMBS=vm.FindClass("stringtest")
```

```
If jclass = Nil Then
```

```
  MsgBox "Can't find stringtest class"
```

```
Return
```

```
End If
```

```
Dim field As JavaFieldMBS = jclass.GetField("Name", "Ljava/lang/String;")
```

```
Dim v As Variant = jclass.StaticField(field)
```

```
Dim js As JavaStringMBS = v
```

```
MsgBox js
```

Notes: This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be JavaObjectMBS or subclasses including JavaStringMBS and the JavaArrayMBS subclasses. For your convenience you can pass in string and we convert to JavaStringMBS for you.

Do not use for generic fields!

(Read and Write computed property)

3.5.30 StaticFloatField(TheField as JavaFieldMBS) as single

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static float field in this class.

Notes: (Read and Write computed property)

3.5.31 StaticIntegerField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static integer field in this class.

Example:

```
dim f as FolderItem
```

```
f=SpecialFolder.Desktop.Child("ojdbc14.jar")  
  
dim j as new JavaVMMBS(f)  
  
dim c as JavaClassMBS = j.FindClass("oracle/jdbc/driver/OracleTypes")  
  
dim field as JavaFieldMBS  
  
// this are all static integer fields in this class:  
  
field = c.GetStaticField("CURSOR","I")  
MsgBox str(c.StaticIntField(field))  
  
field = c.GetStaticField("BLOB","I")  
MsgBox str(c.StaticIntField(field))  
  
field = c.GetStaticField("DOUBLE","I")  
MsgBox str(c.StaticIntField(field))
```

Notes: (Read and Write computed property)

3.5.32 StaticLongField(TheField as JavaFieldMBS) as Int64

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static long field in this class.

Notes: (Read and Write computed property)

3.5.33 StaticObjectField(TheField as JavaFieldMBS) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static object field in this class.

Notes: (Read and Write computed property)

3.5.34 StaticShortField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a static short field in this class.

3.5. CLASS JAVACLASSMBS

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Notes: (Read and Write computed property)

3.6 class `JavaDoubleArrayMBS`

3.6.1 class `JavaDoubleArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java double array object.

Notes: Subclass of the `JavaArrayMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.6.2 Methods

3.6.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.6.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use `memoryblock.DoubleValue(index*4)` to access.

3.6.5 Values as `Double()`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.6.6 Properties

3.6.7 `Region(start as Integer, len as Integer)` as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws `ArrayIndexOutOfBoundsException` if $(start + len - 1)$ does not specify a valid index in the array.

(Read and Write computed property)

3.6.8 Value(index as Integer) as Double

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.7 class JavaFieldMBS

3.7.1 class JavaFieldMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java field ID.

Example:

```
dim f as FolderItem

f=SpecialFolder.Desktop.Child("ojdbc14.jar")

dim j as new JavaVMMBS(f)

dim c as JavaClassMBS = j.FindClass("oracle/jdbc/driver/OracleTypes")

dim field as JavaFieldMBS

// this are all static integer fields in this class:

field = c.GetStaticField("CURSOR","I")
MsgBox str(c.StaticIntField(field))

field = c.GetStaticField("BLOB","I")
MsgBox str(c.StaticIntField(field))

field = c.GetStaticField("DOUBLE","I")
MsgBox str(c.StaticIntField(field))
```

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Xojo Plugins, version 19.4pr6](#)
- [Upgrading our Java Support for Xojo](#)

3.7.2 Methods

3.7.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.7.4 Properties

3.7.5 Handle as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The fieldID of this field.

Notes: (Read only property)

3.7.6 Name as String

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The name of the field.

Notes: This is the name you passed in to GetField or GetStaticField functions.

(Read only property)

3.7.7 Signature as String

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The signature of the field.

Notes: This is the signature you passed in to GetField or GetStaticField functions.

(Read only property)

3.8 class `JavaFloatArrayMBS`

3.8.1 class `JavaFloatArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java float array object.

Notes: Subclass of the `JavaArrayMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.8.2 Methods

3.8.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.8.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use `memoryblock.SingleValue(index*4)` to access.

3.8.5 Values as `Single()`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.8.6 Properties

3.8.7 `Region(start as Integer, len as Integer)` as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws `ArrayIndexOutOfBoundsException` if $(start + len - 1)$ does not specify a valid index in the array.

(Read and Write computed property)

3.8.8 Value(index as Integer) as Single

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.9 class JavaHandleNilExceptionMBS

3.9.1 class JavaHandleNilExceptionMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The exception which is raised whenever a Java function is operations on an object and there is none.

Notes: For example if you call a method on the JavaObjectMBS class which requires the handle value being not zero, the exception raises if the handle value is zero.

Subclass of the RuntimeException class.

3.10 class JavaIntArrayMBS

3.10.1 class JavaIntArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java int array object.

Notes: Subclass of the JavaArrayMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.10.2 Methods

3.10.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.10.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use memoryblock.Long(index*4) to access.

3.10.5 Values as Integer()

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.10.6 Properties

3.10.7 Region(start as Integer, len as Integer) as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.

(Read and Write computed property)

3.10.8 Value(index as Integer) as Int32

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.11 class JavaLongArrayMBS

3.11.1 class JavaLongArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java long array object.

Notes: Subclass of the JavaArrayMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.11.2 Methods

3.11.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.11.4 Elements as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one memoryblock.

Notes: Use memoryblock.Int64DoubleMBS(index*8) to access.

3.11.5 Values as Int64()

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.11.6 Properties

3.11.7 Region(start as Integer, len as Integer) as memoryblock

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.

(Read and Write computed property)

3.11.8 Value(index as Integer) as Int64

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.12 class JavaMethodMBS

3.12.1 class JavaMethodMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java method ID.

Notes: In terminal you can use "javap -s <classname>" to display the class with the method names and parameters.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Trying Java 19 in Xojo](#)
- [MBS Xojo Plugins, version 19.4pr6](#)
- [Upgrading our Java Support for Xojo](#)

3.12.2 Methods

3.12.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.12.4 Properties

3.12.5 Handle as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The methodID of this method.

Notes: (Read only property)

3.12.6 Name as String

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The name of the method.

Notes: This is the name you passed in to GetMethod or GetStaticMethod functions.
(Read only property)

3.12.7 Signature as String

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The signature of the method.

Notes: This is the signature you passed in to `GetMethod` or `GetStaticMethod` functions.
(Read only property)

3.13 class JavaNotInitializedExceptionMBS

3.13.1 class JavaNotInitializedExceptionMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The exception which is raised whenever a Java function is called which requires you to initialize the JVM before calling it.

Notes: Subclass of the RuntimeException class.

3.14 class `JavaObjectArrayMBS`

3.14.1 class `JavaObjectArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java object array object.

Notes: Subclass of the `JavaArrayMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.14.2 Methods

3.14.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.14.4 Values as `JavaObjectMBS()`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.14.5 Properties

3.14.6 `ArrayElement(index as Integer)` as `JavaObjectMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use `Value` instead. **Function:** The object at the given index in the array.

Notes: May return nil if the array is empty on the given index or if the index is out of bounds or any other error occurs.

Index is 0 based.

Throws

`ArrayIndexOutOfBoundsException`: if index does not specify a valid index in the array.

`ArrayStoreException`: if the class of value is not a subclass of the element class of the array.

(Read and Write computed property)

3.14.7 Value(index as Integer) as JavaObjectMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.15 class `JavaObjectMBS`

3.15.1 class `JavaObjectMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java object.

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Trying Java 19 in Xojo](#)
- [MBS Xojo Plugins, version 19.4pr6](#)
- [Upgrading our Java Support for Xojo](#)
- [MBS Xojo / Real Studio Plugins, version 16.5pr1](#)
- [MBS Real Studio Plugins, version 12.1pr1](#)

3.15.2 Methods

3.15.3 `CallBooleanMethod(MethodID as JavaMethodMBS, args as memoryblock) as boolean`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a boolean value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling `GetMethodID`.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.4 `CallByteMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a byte value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.5 CallCharMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a char value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.6 CallDoubleMethod(MethodID as JavaMethodMBS, args as memoryblock) as Double

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a double value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.7 CallFloatMethod(MethodID as JavaMethodMBS, args as memoryblock) as single

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a float value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.8 CallIntMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with an integer value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.9 CallLongMethod(MethodID as JavaMethodMBS, args as memoryblock) as Int64

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a long value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.10 CallMethod(MethodID as JavaMethodMBS, args() as Variant) as Variant

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method.

Example:

```
Dim vm As JavaVMMBS // your initialized VM

// 1. Find class
Dim jclass As JavaClassMBS =vm.FindClass("stringtest")

if jclass=nil then
msgbox "Can't find stringtest class"
Return
end if

// 2. Call constructor
dim jmethod1 as JavaMethodMBS = jclass.GetMethod("<init>", "()V")

if jmethod1=nil then
msgbox "Can't find constructor"
Return
end if

// 3. Create object
Dim param1() As Variant
```

```

dim jobject1 as JavaObjectMBS=jclass.NewObject(jmethod1, param1)

if jobject1=nil then
  MsgBox "Constructor failed!?"
  Return
end if

// 4. lookup method
Dim jmethod3 As JavaMethodMBS = jclass.GetMethod("setValue","(Ljava/lang/String;)V")
if jmethod3=nil then
  MsgBox "Failed to find setValue method."
  Return
end if

// 5. Call method
Dim param3() As Variant
param3.append "Hello World"
Call jobject1.CallMethod(jmethod3,param3)

MsgBox "done"

```

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args variant array that immediately follows the methodID argument.

This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be JavaObjectMBS or subclasses including JavaStringMBS and the JavaArrayMBS subclasses. For your convenience you can pass in string and we convert to JavaStringMBS for you.

3.15.11 CallNonvirtualBooleanMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a boolean value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.12 CallNonvirtualByteMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a byte value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.13 CallNonvirtualCharMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a char value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The `CallNonvirtualMethod` family of routines and the `CallMethod` family of routines are different. `CallMethod` routines invoke the method based on the class of the object, while `CallNonvirtualMethod` routines invoke the method based on the class, designated by the `TheClass` parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an `args` memoryblock that immediately follows the `methodID` argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.14 `CallNonvirtualDoubleMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Double`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a double value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The `methodID` argument must be obtained by calling `GetMethodID` on the class `TheClass`.

The `CallNonvirtualMethod` family of routines and the `CallMethod` family of routines are different. `CallMethod` routines invoke the method based on the class of the object, while `CallNonvirtualMethod` routines invoke the method based on the class, designated by the `TheClass` parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an `args` memoryblock that immediately follows the `methodID` argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.15 `CallNonvirtualFloatMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as single`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a float value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The `methodID` argument must be obtained by calling `GetMethodID` on the class `TheClass`.

The `CallNonvirtualMethod` family of routines and the `CallMethod` family of routines are different. `CallMethod` routines invoke the method based on the class of the object, while `CallNonvirtualMethod` routines invoke the method based on the class, designated by the `TheClass` parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.16 CallNonvirtualIntMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with an integer value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.17 CallNonvirtualLongMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Int64

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a long value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.18 CallNonvirtualMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args() as Variant) as Variant

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args variant array that immediately follows the methodID argument.

This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be JavaObjectMBS or subclasses including JavaStringMBS and the JavaArrayMBS subclasses. For your convenience you can pass in string and we convert to JavaStringMBS for you.

3.15.19 CallNonvirtualObjectMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with an object value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the

methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.20 CallNonvirtualShortMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with a short value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.21 CallNonvirtualVoidMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock)

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a non virtual method with no return value.

Notes: This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.22 CallObjectMethod(MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with an object value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.23 CallShortMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with a short value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.24 CallVoidMethod(MethodID as JavaMethodMBS, args as memoryblock)

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Calls a virtual method with no return value.

Notes: This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

3.15.25 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.15.26 GetDirectBufferAddress(directbuffer as JavaObjectMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the address of the memory from a directbuffer object.

Notes: Returns 0 on any error.

3.15.27 GetDirectBufferCapacity(directbuffer as JavaObjectMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the size of the memory from a directbuffer object.

Notes: Returns 0 on any error.

3.15.28 IsInstanceOf(TheClass as JavaClassMBS) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Tests whether an object is an instance of a class.

Notes: Returns true if obj can be cast to TheClass; otherwise, returns false. A nil object can be cast to any class.

3.15.29 IsSameObject(obj as JavaObjectMBS) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Tests whether two references refer to the same Java object.

Notes: Returns true if ref1 and ref2 refer to the same Java object, or are both nil; otherwise, returns false.

False on any error.

3.15.30 ObjectClass as JavaClassMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the class of an object.

Notes: Returns nil on any error.

3.15.31 Properties

3.15.32 ClassName as String

Plugin Version: 16.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Queries class name of object.

Notes: (Read only property)

3.15.33 Database as Variant

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The reference to the database object.

Notes: The variant is a JavaDatabaseMBS.

Do not assign new values, please.

This is set for all database classes, so the database isn't release from memory before you finished using this object.

(Read and Write property)

3.15.34 Handle as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The handle to the jobject.

Notes: (Read and Write property)

3.15.35 Lasterror as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error code reported.

Notes: (Read and Write property)

3.15.36 Tag as Variant

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: This is a property you can use for whatever you like.

Notes: The property value is stored as long as the RB object lives. The Java object may live longer.
(Read and Write property)

3.15.37 VM as JavaVMMBS

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The reference to the virtual machine.

Notes: Please do not assign new value unless you know what you do.
(Read and Write property)

3.15.38 BooleanField(TheField as JavaFieldMBS) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a boolean field in this class.

Notes: Do not use for static fields!
(Read and Write computed property)

3.15.39 ByteField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a byte field in this class.

Notes: Do not use for static fields!
(Read and Write computed property)

3.15.40 CharField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a char field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.41 DoubleField(TheField as JavaFieldMBS) as Double

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a double field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.42 Field(TheField as JavaFieldMBS) as Variant

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a field in this class.

Notes: This is generic version, where our plugin translates between native Xojo data types and Java data types. We support conversion of boolean, byte (integer), char (integer), short (integer), int (integer), long (int64), double, float (single) and Java objects. Objects can be JavaObjectMBS or subclasses including JavaStringMBS and the JavaArrayMBS subclasses. For your convenience you can pass in string and we convert to JavaStringMBS for you.

Do not use for static fields!

(Read and Write computed property)

3.15.43 FloatField(TheField as JavaFieldMBS) as single

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a single field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.44 IntField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for an integer field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.45 LongField(TheField as JavaFieldMBS) as Int64

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a long field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.46 ObjectField(TheField as JavaFieldMBS) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for an object field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.15.47 ShortField(TheField as JavaFieldMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value for a short field in this class.

Notes: Do not use for static fields!

(Read and Write computed property)

3.16 class `JavaShortArrayMBS`

3.16.1 class `JavaShortArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java short array object.

Notes: Subclass of the `JavaArrayMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.16.2 Methods

3.16.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.16.4 Elements as `memoryblock`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: All the elements in this array as one `memoryblock`.

Notes: Use `memoryblock.short(index*2)` to access.

3.16.5 Values as `Int16()`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns a Xojo array with values.

3.16.6 Properties

3.16.7 `Region(start as Integer, len as Integer)` as `memoryblock`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set a region of the array.

Notes: Start is the starting index (0 based) and len the number of items to copy.

Throws `ArrayIndexOutOfBoundsException` if $(start + len - 1)$ does not specify a valid index in the array.

(Read and Write computed property)

3.16.8 Value(index as Integer) as Int16

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get or set the value with given index.

Notes: May raise `OutOfBoundsException` if index is out of range.

(Read and Write computed property)

3.17 class `JavaStringMBS`

3.17.1 class `JavaStringMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java string class.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Trying Java 19 in Xojo](#)
- [MBS Xojo Plugins, version 19.4pr6](#)
- [MBS Xojo Plugins, version 19.2pr5](#)

3.17.2 Methods

3.17.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

3.17.4 `CopyString` as string

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use `StringValue` instead.

Function: Copies the content of the string into a Xojo string.

Notes: Returns "" on any error. The string returned is marked as being Unicode (16bit).

Deprecated in favor of `StringValue` property and auto conversion with `Operator_Convert`.

See also:

- 3.17.5 `CopyString(start as Integer, len as Integer) as string`

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3.17.5 `CopyString(start as Integer, len as Integer) as string`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Copies the content of the string into a Xojo string.

Example:

```
dim s as string
dim js as JavaStringMBS // your java string
```

```
s=js.CopyString(0,1) // copies first character
s=js.CopyString(3,6) // copies six characters from starting at the fourth
```

Notes: Returns "" on any error. The string returned is marked as being Unicode (16bit).
 For the first character to be the start use start=0.
 For the first character to be the end use len=1 and start=0.
 May crash on bad values for start and len.
 See also:

- 3.17.4 CopyString as string

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3.17.6 CopyStringUTF as string

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use StringValue instead.

Function: Copies the content of the string into a Xojo string.

Notes: Returns "" on any error. The string returned is marked as being UTF8.

Deprecated in favor of StringValue property and auto conversion with Operator_Convert.

See also:

- 3.17.7 CopyStringUTF(start as Integer, len as Integer) as string

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3.17.7 CopyStringUTF(start as Integer, len as Integer) as string

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Copies the content of the string into a Xojo string.

Notes: Returns "" on any error. The string returned is marked as being UTF8.

Start is 0 based.

May crash on bad values for start and len.

See also:

- 3.17.6 CopyStringUTF as string

93

3.17.8 Operator_Convert as string

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Converts to a string automatically.

Notes: Do not call it, just assign JavaStringMBS to a string an Xojo calls this internally.

3.17.9 UTFLength as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. You can use `StringValue` instead.

Function: The length of the string in bytes encoded as UTF8.

Notes: Returns 0 on any error.

3.17.10 Properties

3.17.11 Length as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The length of this string in unicode characters.

Notes: Returns 0 on any error.

(Read only property)

3.17.12 StringValue as String

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The string value as property.

Notes: Uses UTF-8 internally.

(Read only property)

3.18 class JavaThrowableMBS

3.18.1 class JavaThrowableMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The wrapper class for the java throwable object.

Notes: Subclass of the JavaObjectMBS class.

This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.

3.19 class JavaVMMBS

3.19.1 class JavaVMMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class for a java virtual machine.

Example:

```
dim vm as JavaVMMBS // global

const JNI_VERSION_1_1 = &h00010001
const JNI_VERSION_1_2 = &h00010002
const JNI_VERSION_1_4 = &h00010004

if TargetLinux then
// change path for your linux PC!
JavaVMMBS.SetLibraryPath("/home/cs/jre1.6.0_05/lib/i386/client/libjvm.so")
end if

dim options(-1) as string
dim f as FolderItem=GetFolderItem("test.jar")

vm=new JavaVMMBS(JNI_VERSION_1_4, options, f, false)

if vm.Handle = 0 then
MsgBox "Can't create Java VM"
else
MsgBox "Java Initialized."
end if
```

Notes: Add Linux support plugin version 8.7.

Releasing the java vm (by releasing all java objects), and reinitializing can fail.

Please make sure this Java VM object stays alive until you are done with all your java stuff. So all the java objects go away and this vm object is destroyed on the end. Because if some java code is still running like an background java thread, quitting the VM can lead into crashes.

While the plugin supports to have several instances, it seems like JNI does not support that.

On Windows, we look into Local Machine\SOFTWARE\JavaSoft\Java Runtime Environment in registry to find the newest entry and the path to the jvm.dll file. Please note that on Windows you can install 32-bit

and 64-bit version of Java and you need the matching bit number to FileMaker application.

If you get error 126 on Windows, maybe MSVCR100.DLL is missing. So install Visual Studio 2010 runtime libraries. You can download them from Microsoft website. Do not download them from other websites spreading malware!

Blog Entries

- [MBS Xojo Plugins, version 23.2pr1](#)
- [Trying Java 19 in Xojo](#)
- [MBS Xojo Plugins, version 21.3pr7](#)
- [News from the MBS Xojo Plugins Version 20.3](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 20.3](#)
- [MBS Xojo Plugins, version 20.3pr1](#)
- [MBS Xojo Plugins, version 20.0pr8](#)
- [MBS Xojo Plugins, version 19.4pr2](#)
- [Java with MBS Plugin](#)
- [Encrypted Access database in Xojo](#)

3.19.2 Methods

3.19.3 Constructor(path as folderitem)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the Java virtual machine.

Notes: This is a convenience function which initializes the java with version=JNI_VERSION_1_4 and no options except the specified path.

The path can be a folderitem pointing to a jar file or a folder with class files.

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- [3.19.4 Constructor\(path as string\)](#) 98
- [3.19.5 Constructor\(version as Integer, options\(\) as string, ignoreUnrecognizedOptions as boolean\)](#) 98

- 3.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean) 100
- 3.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean) 101

3.19.4 Constructor(path as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the Java virtual machine.

Notes: This is a convenience function which initializes the java engine with version=JNI_VERSION_1_4 and no options except the specified path.

The path can be a path pointing to a jar file or a folder with class files. If you use more than one path, you need to separate them with ";". Seems like on Mac OS X and Linux the separator is ":".

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 3.19.3 Constructor(path as folderitem) 97
- 3.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean) 98
- 3.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean) 100
- 3.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean) 101

3.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the java virtual machine.

Notes: Only one VM can run at a time with this plugin.

You can specify whatever command line options you need in the options array.

Version must be one of the JNI_VERSION_1_x constants.

A note for Mac OS X and Java versions:

To specify the current preferred JDK in a family of JVM's, say the 1.5.x family, applications should set the environment variable `JAVA_JVM_VERSION` to 1.5, and then pass `JNI_VERSION_1_4` into `JNI_CreateJavaVM` as the `vm_args.version`. To get a specific Java 1.5 JVM, say Java 1.5.0, set the environment variable `JAVA_JVM_VERSION` to 1.5.0. For Java 1.6 it will be the same in that applications will need to set the environment variable `JAVA_JVM_VERSION` to 1.6 to specify the current preferred 1.6 Java VM, and to get a specific Java 1.6 JVM, say Java 1.6.1, set the environment variable `JAVA_JVM_VERSION` to 1.6.1.

To make this sample bring up the current preferred 1.5 JVM, set the environment variable `JAVA_JVM_VERSION` to 1.5 before calling `JNI_CreateJavaVM` as shown below. Applications must currently check for availability of JDK 1.5 before requesting it. If your application requires JDK 1.5 and it is not found, it is your responsibility to report an error to the user. To verify if a JVM is installed, check to see if the symlink, or directory exists for the JVM in `/System/Library/Frameworks/JavaVM.framework/Versions/` before setting the environment variable `JAVA_JVM_VERSION`.

If the environment variable `JAVA_JVM_VERSION` is not set, and `JNI_VERSION_1_4` is passed into `JNI_CreateJavaVM` as the `vm_args.version`, `JNI_CreateJavaVM` will return the current preferred JDK. Java 1.4.2 is the preferred JDK as of the release of this sample and the release of Mac OS X 10.4.

Useful option strings:

```
"-verbose:jni"  show debug output on the console
"-Xms256M"     initial memory
"-Xmx512M"     maximum memory
```

This method raises `UnsupportedOperationException` with error about missing `CreateJavaVM` function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. `Lasterror` will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

If you get error 126 on Windows, maybe `MSVCR100.DLL` is missing. So install Visual Studio 2010 runtime libraries. You can download them from Microsoft website. Do not download them from other websites spreading malware!

See also:

- 3.19.3 `Constructor(path as folderitem)` 97
- 3.19.4 `Constructor(path as string)` 98
- 3.19.6 `Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)` 100

- 3.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean) 101

3.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the Java virtual machine.

Example:

```
dim JarPath as folderitem = specialfolder.desktop.child("test.jar")
dim options() as string
```

```
options.append "-Xms256M"
options.append "-Xmx512M"
```

```
dim v as new JavaVMMBS( JavaVMMBS.JNI_VERSION_1_4, options, JarPath, false)
```

Notes: This is a convenience function which initializes the java engine with adding the given path to the options.

Only one VM can run at a time with this plugin.

You can specify whatever command line options you need in the options array.

Version must be one of the JNI_VERSION_1_x constants.

The path can be a folderitem pointing to a jar file or a folder with class files.

Useful option strings:

```
"-verbose:jni"  show debug output on the console
"-Xms256M"     initial memory
"-Xmx512M"     maximum memory
```

This method raises `UnsupportedOperationException` with error about missing `CreateJavaVM` function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. `Lasterror` will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 3.19.3 Constructor(path as folderitem)

3.19. CLASS JAVAVMMBS	101
• 3.19.4 Constructor(path as string)	98
• 3.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)	98
• 3.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)	101

3.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Initializes the java virtual machine.

Notes: This is a convenience function which initializes the java engine with adding the given path to the options.

Only one VM can run at a time with this plugin.

You can specify whatever command line options you need in the options array.

Version must be one of the JNI_VERSION_1_x constants.

The path can be a path pointing to a jar file or a folder with class files. If you use more than one path, you need to separate them with ";". Seems like on Mac OS X and Linux the separator is ":".

Useful option strings:

```
"-verbose:jni"  show debug output on the console
"-Xms256M"     initial memory
"-Xmx512M"     maximum memory
```

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

• 3.19.3 Constructor(path as folderitem)	97
• 3.19.4 Constructor(path as string)	98
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• 3.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)	100

3.19.8 DefineClass(name as string, Data as MemoryBlock) as JavaClassMBS

Plugin Version: 20.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads a class from a buffer of raw class data.

Notes: Returns nil in case of error or valid class object on success.

You may want to load a class file and pass it here as String or MemoryBlock.

To read jar file, you can use our archive classes to expand zip archives.

See also:

- 3.19.9 DefineClass(name as string, Data as String) as JavaClassMBS 102

3.19.9 DefineClass(name as string, Data as String) as JavaClassMBS

Plugin Version: 20.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Loads a class from a buffer of raw class data.

Notes: Returns nil in case of error or valid class object on success.

You may want to load a class file and pass it here as String or MemoryBlock.

To read jar file, you can use our archive classes to expand zip archives.

See also:

- 3.19.8 DefineClass(name as string, Data as MemoryBlock) as JavaClassMBS 102

3.19.10 FindClass(name as string) as JavaClassMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches a class based on the name.

Example:

```
dim e as JavaVMMBS // global
dim c as JavaClassMBS
c=e.FindClass("java/lang/String")
```

Notes: This function loads a locally defined class. It searches the directories and zip files specified by the CLASSPATH environment variable for the class with the specified name.

name: a fully qualified class name (that is, a package name, delimited by "/", followed by the class name). If the name begins with "[" (the array signature character), it returns an array class.

Returns nil on any error.

If your class is not found, it may be possible that it can't be loaded as the jar archive has dependencies to other jar archives.

3.19.11 FreeCurrentThread

Plugin Version: 8.4, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Releases the thread in Java.

Example:

```
dim w as JavaVMMBS // your vm object
w.FreeCurrentThread
```

Notes: The plugin is written to detect if you use it in a thread. But when the thread ends you need to deregister it with the Java runtime.

3.19.12 FromReflectedField(field as JavaObjectMBS) as JavaFieldMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches the field which matches the reflected field object.

3.19.13 FromReflectedMethod(method as JavaObjectMBS) as JavaMethodMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Searches the method which matches the reflected method object.

3.19.14 IsAssignableFrom(TheSubClass as JavaClassMBS, TheSuperClass as JavaClassMBS) as boolean

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: True if the class is assignable from the other class.

Notes: That means that the sub class is somewhere down the class tree from the super class.

3.19.15 MonitorEnter(obj as JavaObjectMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Enters the monitor associated with the underlying Java object referred to by obj.

Notes: Returns zero on success; otherwise, returns a negative value on failure.

Each Java objects has a monitor associated with it. If the current thread already owns the monitor associated with ref, it increments a counter in the monitor indicating the number of times this thread has entered the monitor. If the monitor associated with ref is not owned by any thread, the current thread becomes the owner of the monitor, setting the entry count of this monitor to 1. If another thread already owns the monitor associated with ref, the current thread waits until the monitor is released, then tries again to gain ownership.

3.19.16 MonitorExit(obj as JavaObjectMBS) as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Releases the monitor.

Notes: The current thread must be the owner of the monitor associated with the underlying Java object referred to by ref. The thread decrements the counter indicating the number of times it has entered this monitor. If as a result the value of the counter becomes zero, the current thread releases the montior.

Returns zero on success; otherwise, returns a negative value on failure.

3.19.17 NewBooleanArray(ref as JavaObjectMBS) as JavaBooleanArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.18 NewBooleanArray(size as Integer) as JavaBooleanArrayMBS 104
- 3.19.19 NewBooleanArray(values() as Boolean) as JavaBooleanArrayMBS 105

3.19.18 NewBooleanArray(size as Integer) as JavaBooleanArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

3.19. CLASS JAVAVMMBS 105

Function: Creates a new array for booleans with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.17 NewBooleanArray(ref as JavaObjectMBS) as JavaBooleanArrayMBS 104
- 3.19.19 NewBooleanArray(values() as Boolean) as JavaBooleanArrayMBS 105

3.19.19 NewBooleanArray(values() as Boolean) as JavaBooleanArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new boolean array with given values.

See also:

- 3.19.17 NewBooleanArray(ref as JavaObjectMBS) as JavaBooleanArrayMBS 104
- 3.19.18 NewBooleanArray(size as Integer) as JavaBooleanArrayMBS 104

3.19.20 NewByteArray(ref as JavaObjectMBS) as JavaByteArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.21 NewByteArray(size as Integer) as JavaByteArrayMBS 105
- 3.19.22 NewByteArray(values() as UInt8) as JavaBooleanArrayMBS 106

3.19.21 NewByteArray(size as Integer) as JavaByteArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for bytes with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.20 NewByteArray(ref as JavaObjectMBS) as JavaByteArrayMBS 105
- 3.19.22 NewByteArray(values() as UInt8) as JavaBooleanArrayMBS 106

3.19.22 `NewByteArray(values() as UInt8) as JavaBooleanArrayMBS`

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new byte array with given values.

See also:

- 3.19.20 `NewByteArray(ref as JavaObjectMBS) as JavaByteArrayMBS` 105
- 3.19.21 `NewByteArray(size as Integer) as JavaByteArrayMBS` 105

3.19.23 `NewCharArray(ref as JavaObjectMBS) as JavaCharArrayMBS`

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.24 `NewCharArray(size as Integer) as JavaCharArrayMBS` 106
- 3.19.25 `NewCharArray(values() as UInt16) as JavaCharArrayMBS` 106

3.19.24 `NewCharArray(size as Integer) as JavaCharArrayMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for chars (16bit) with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.23 `NewCharArray(ref as JavaObjectMBS) as JavaCharArrayMBS` 106
- 3.19.25 `NewCharArray(values() as UInt16) as JavaCharArrayMBS` 106

3.19.25 `NewCharArray(values() as UInt16) as JavaCharArrayMBS`

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new char array with given values.

See also:

- 3.19.23 `NewCharArray(ref as JavaObjectMBS) as JavaCharArrayMBS` 106
- 3.19.24 `NewCharArray(size as Integer) as JavaCharArrayMBS` 106

3.19.26 NewDirectByteBuffer(address as Integer, size as Integer) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new DirectBuffer object based on the values in address and size.

See also:

- 3.19.27 NewDirectByteBuffer(mem as memoryblock) as JavaObjectMBS 107

3.19.27 NewDirectByteBuffer(mem as memoryblock) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new DirectBuffer object based on a memoryblock.

Notes: Keep the memoryblock until this object is destroyed.

See also:

- 3.19.26 NewDirectByteBuffer(address as Integer, size as Integer) as JavaObjectMBS 107

3.19.28 NewDoubleArray(ref as JavaObjectMBS) as JavaDoubleArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.29 NewDoubleArray(size as Integer) as JavaDoubleArrayMBS 107
- 3.19.30 NewDoubleArray(values() as Double) as JavaDoubleArrayMBS 108

3.19.29 NewDoubleArray(size as Integer) as JavaDoubleArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for doubles with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.28 NewDoubleArray(ref as JavaObjectMBS) as JavaDoubleArrayMBS 107
- 3.19.30 NewDoubleArray(values() as Double) as JavaDoubleArrayMBS 108

3.19.30 NewDoubleArray(values() as Double) as JavaDoubleArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new double array with given values.

See also:

- 3.19.28 NewDoubleArray(ref as JavaObjectMBS) as JavaDoubleArrayMBS 107
- 3.19.29 NewDoubleArray(size as Integer) as JavaDoubleArrayMBS 107

3.19.31 NewFloatArray(ref as JavaObjectMBS) as JavaFloatArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.32 NewFloatArray(size as Integer) as JavaFloatArrayMBS 108
- 3.19.33 NewFloatArray(values() as Single) as JavaFloatArrayMBS 108

3.19.32 NewFloatArray(size as Integer) as JavaFloatArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for singles with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.31 NewFloatArray(ref as JavaObjectMBS) as JavaFloatArrayMBS 108
- 3.19.33 NewFloatArray(values() as Single) as JavaFloatArrayMBS 108

3.19.33 NewFloatArray(values() as Single) as JavaFloatArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new float array with given values.

See also:

- 3.19.31 NewFloatArray(ref as JavaObjectMBS) as JavaFloatArrayMBS 108
- 3.19.32 NewFloatArray(size as Integer) as JavaFloatArrayMBS 108

3.19.34 NewIntArray(ref as JavaObjectMBS) as JavaIntArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.35 NewIntArray(size as Integer) as JavaIntArrayMBS 109
- 3.19.36 NewIntArray(values() as Int32) as JavaIntArrayMBS 109

3.19.35 NewIntArray(size as Integer) as JavaIntArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for integers with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.34 NewIntArray(ref as JavaObjectMBS) as JavaIntArrayMBS 109
- 3.19.36 NewIntArray(values() as Int32) as JavaIntArrayMBS 109

3.19.36 NewIntArray(values() as Int32) as JavaIntArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new Int32 array with given values.

See also:

- 3.19.34 NewIntArray(ref as JavaObjectMBS) as JavaIntArrayMBS 109
- 3.19.35 NewIntArray(size as Integer) as JavaIntArrayMBS 109

3.19.37 NewLongArray(ref as JavaObjectMBS) as JavaLongArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.38 NewLongArray(size as Integer) as JavaLongArrayMBS 110
- 3.19.39 NewLongArray(values() as Int64) as JavaLongArrayMBS 110

3.19.38 NewLongArray(size as Integer) as JavaLongArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for 64 bit integers with the given size.

Notes: Returns nil on any error.

See also:

- 3.19.37 NewLongArray(ref as JavaObjectMBS) as JavaLongArrayMBS 109
- 3.19.39 NewLongArray(values() as Int64) as JavaLongArrayMBS 110

3.19.39 NewLongArray(values() as Int64) as JavaLongArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new Int64 array with given values.

See also:

- 3.19.37 NewLongArray(ref as JavaObjectMBS) as JavaLongArrayMBS 109
- 3.19.38 NewLongArray(size as Integer) as JavaLongArrayMBS 110

3.19.40 NewObjectArray(ref as JavaObjectMBS) as JavaObjectArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

- 3.19.41 NewObjectArray(size as Integer, TheClass as JavaClassMBS, InitialValue as JavaObjectMBS = nil) as JavaObjectArrayMBS 110
- 3.19.42 NewObjectArray(values() as JavaObjectMBS) as JavaObjectArrayMBS 111

3.19.41 NewObjectArray(size as Integer, TheClass as JavaClassMBS, InitialValue as JavaObjectMBS = nil) as JavaObjectArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constructs a new array holding objects in class elementClass.

Notes: All elements are initially set to initialElement.

Returns nil on any error.

See also:

3.19. CLASS JAVAVMMBS	111
• 3.19.40 NewObjectArray(ref as JavaObjectMBS) as JavaObjectArrayMBS	110
• 3.19.42 NewObjectArray(values() as JavaObjectMBS) as JavaObjectArrayMBS	111

3.19.42 NewObjectArray(values() as JavaObjectMBS) as JavaObjectArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new Java object array with given size.

See also:

• 3.19.40 NewObjectArray(ref as JavaObjectMBS) as JavaObjectArrayMBS	110
• 3.19.41 NewObjectArray(size as Integer, TheClass as JavaClassMBS, InitialValue as JavaObjectMBS = nil) as JavaObjectArrayMBS	110

3.19.43 NewShortArray(ref as JavaObjectMBS) as JavaShortArrayMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array object based on the given java object.

Notes: This function is a convenience function to convert a java object array reference to a java array object in Xojo. It can crash if the java object used is not the array of the requested type.

See also:

• 3.19.44 NewShortArray(size as Integer) as JavaShortArrayMBS	111
• 3.19.45 NewShortArray(values() as Int16) as JavaShortArrayMBS	111

3.19.44 NewShortArray(size as Integer) as JavaShortArrayMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new array for shorts with the given size.

Notes: Returns nil on any error.

See also:

• 3.19.43 NewShortArray(ref as JavaObjectMBS) as JavaShortArrayMBS	111
• 3.19.45 NewShortArray(values() as Int16) as JavaShortArrayMBS	111

3.19.45 NewShortArray(values() as Int16) as JavaShortArrayMBS

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new short array with given values.

See also:

- 3.19.43 `NewShortArray(ref as JavaObjectMBS) as JavaShortArrayMBS` 111
- 3.19.44 `NewShortArray(size as Integer) as JavaShortArrayMBS` 111

3.19.46 `NewStringArray(size as integer, InitialValue as JavaStringMBS = nil) as JavaObjectArrayMBS`

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new Java string array with given size.

See also:

- 3.19.47 `NewStringArray(values() as String) as JavaObjectArrayMBS` 112

3.19.47 `NewStringArray(values() as String) as JavaObjectArrayMBS`

Plugin Version: 19.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates new string array with given values.

See also:

- 3.19.46 `NewStringArray(size as integer, InitialValue as JavaStringMBS = nil) as JavaObjectArrayMBS` 112

3.19.48 `NewStringUnicode(s as string) as JavaStringMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new string.

Notes: Preferres an Unicode encoded string.

3.19.49 `NewStringUTF8(s as string) as JavaStringMBS`

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new string.

Example:

```
// init Java
dim options() as string
dim javaVm as new JavaVMMBS(JavaVMMBS.JNI_VERSION_1_4, options, true)

// Get system class
Dim system As JavaClassMBS = javaVm.FindClass("java/lang/System")
```

```

If system <>Nil Then

// query method
dim transformerGetPropertyId as JavaMethodMBS = system.GetStaticMethod("getProperty", "(Ljava/lang/String;)Ljava/lang/String")
If transformerGetPropertyId <>Nil Then

// make parameters
Dim keyString As JavaStringMBS = javaVm.NewStringUTF8("os.version")
dim m as New MemoryBlock(8)
m.Int64Value(0)=keyString.Handle

// run it
dim r as JavaObjectMBS = system.CallStaticObjectMethod(transformerGetPropertyId, m)

if r<>Nil then
// show result
dim s as JavaStringMBS = JavaStringMBS(r)
MsgBox s.CopyStringUTF
end if

End If
End If

```

Notes: Prefers an UTF8 encoded string.

3.19.50 Runtime as JavaRuntimeMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the runtime object for the current VM so you can query the memory statistics.

3.19.51 SetLibraryPath(path as folderitem)

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Defines the path where to find the java library.

Notes: Must be called before you use the constructor.

If this is empty on Windows, we will look into registry.

If this is empty on MacOS, we ask the Java.framework for the functions.

See also:

- 3.19.52 SetLibraryPath(path as string)

3.19.52 SetLibraryPath(path as string)

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Defines the path where to find the java library.

Example:

```
if TargetLinux then
// change path for your linux PC!
JavaVMBS.SetLibraryPath("/home/cs/jre1.6.0_05/lib/i386/client/libjvm.so")
end if
```

Notes: Must be called before you use the constructor.

If this is empty on Windows, we will look into registry.

If this is empty on MacOS, we ask the Java.framework for the functions.

See also:

- 3.19.51 SetLibraryPath(path as folderitem)

113

3.19.53 ToReflectedField(TheClass as JavaClassMBS, fieldID as JavaFieldMBS, isStatic as boolean) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new reflected field object for the given field.

3.19.54 ToReflectedMethod(TheClass as JavaClassMBS, methodID as JavaMethodMBS, isStatic as boolean) as JavaObjectMBS

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new reflected method object for the given method.

3.19.55 Version as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the version of the java engine.

Notes: Currently the plugin always uses version 1.4.

Returns the major version number in the higher 16 bits and the minor version number in the lower 16 bits.

In JDK1.1, `GetVersion()` returns 0x00010001.

3.19.56 Properties

3.19.57 Handle as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The handle of the JavaVM.

Notes: (Read only property)

3.19.58 Lasterror as Integer

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last error code reported.

Notes: (Read and Write property)

3.19.59 Constants

Constants

Constant	Value	Description
JNI_VERSION_1_1	&h00010001	One of the constants to specify the JNI version in the constructor.
JNI_VERSION_1_2	&h00010002	One of the constants to specify the JNI version in the constructor.
JNI_VERSION_1_4	&h00010004	One of the constants to specify the JNI version in the constructor.
JNI_VERSION_1_6	&h00010006	One of the constants to specify the JNI version in the constructor.

Chapter 4

Java Database

4.1 class JavaBlobMBS

4.1.1 class JavaBlobMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The java class for a binary large object.

Notes: Subclass of the JavaObjectMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.1.2 Methods

4.1.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.1.4 `getBytes(Position as Int64, Length as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves all or part of the BLOB value that this Blob object represents, as an array of bytes.

Notes: This byte array contains up to length consecutive bytes starting at position pos.

pos: the ordinal position of the first byte in the BLOB value to be extracted; the first byte is at position 1

length: the number of consecutive bytes to be copied

Returns a byte array (as string) containing up to length consecutive bytes from the BLOB value designated by this Blob object, starting with the byte at position pos

4.1.5 length as int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the number of bytes in the BLOB value designated by this Blob object.

4.1.6 position(SearchString as JavaBlobMBS, Position as Int64) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the byte position in the BLOB value designated by this Blob object at which pattern begins. The search begins at position start.

Notes: pattern: the Blob object designating the BLOB value for which to search

start: the position in the BLOB value at which to begin searching; the first position is 1

Returns the position at which the pattern begins, else -1

See also:

- 4.1.7 position(SearchString as String, Position as Int64) as Int64 118

4.1.7 position(SearchString as String, Position as Int64) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the byte position at which the specified byte array pattern begins within the BLOB value that this Blob object represents.

Notes: The search for pattern begins at position start.

pattern: the byte array for which to search

start: the position at which to begin searching; the first position is 1

Returns the position at which the pattern appears, else -1

See also:

- 4.1.6 position(SearchString as JavaBlobMBS, Position as Int64) as Int64 118

4.1.8 setBytes(Position as Int64, Value as String) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes the given array of bytes to the BLOB value that this Blob object represents, starting at position pos, and returns the number of bytes written.

Notes: pos: the position in the BLOB object at which to start writing

bytes: the array of bytes to be written to the BLOB value that this Blob object represents

Returns the number of bytes written

See also:

- 4.1.9 setBytes(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer 119

4.1.9 setBytes(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes all or part of the given byte array to the BLOB value that this Blob object represents and returns the number of bytes written.

Notes: Writing starts at position pos in the BLOB value; len bytes from the given byte array are written.

pos: the position in the BLOB object at which to start writing

bytes: the array of bytes to be written to this BLOB object

offset: the offset into the array bytes at which to start reading the bytes to be set

len: the number of bytes to be written to the BLOB value from the array of bytes bytes

Returns the number of bytes written

See also:

- 4.1.8 setBytes(Position as Int64, Value as String) as Integer

119

4.1.10 truncate(len as int64)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Truncates the BLOB value that this Blob object represents to be len bytes in length.

Notes: len: the length, in bytes, to which the BLOB value that this Blob object represents should be truncated

4.2 class `JavaCallableStatementMBS`

4.2.1 class `JavaCallableStatementMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The Xojo class to handle a `CallableStatement` in Java.

Notes: The interface used to execute SQL stored procedures. The JDBC API provides a stored procedure SQL escape syntax that allows stored procedures to be called in a standard way for all RDBMSs. This escape syntax has one form that includes a result parameter and one that does not. If used, the result parameter must be registered as an OUT parameter. The other parameters can be used for input, output or both. Parameters are referred to sequentially, by number, with the first parameter being 1.

```
{ ?= call <procedure-name>[ <arg1>,<arg2>, ... ] }
{ call <procedure-name>[ <arg1>,<arg2>, ... ] }
```

IN parameter values are set using the set methods inherited from `PreparedStatement`. The type of all OUT parameters must be registered prior to executing the stored procedure; their values are retrieved after execution via the get methods provided here.

A `CallableStatement` can return one `ResultSet` object or multiple `ResultSet` objects. Multiple `ResultSet` objects are handled using operations inherited from `Statement`.

For maximum portability, a call's `ResultSet` objects and update counts should be processed prior to getting the values of output parameters.

Subclass of the `JavaStatementMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.2.2 Methods

4.2.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.2.4 `getBlob(parameterIndex as Integer)` as `JavaBlobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC BLOB parameter as a `Blob` object in the Java programming language.

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Notes: Parameters:

i - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value as a Blob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

- 4.2.5 getBlob(parameterName as string) as JavaBlobMBS 121

4.2.5 getBlob(parameterName as string) as JavaBlobMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC BLOB parameter as a Blob object in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value as a Blob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

- 4.2.4 getBlob(parameterIndex as Integer) as JavaBlobMBS 120

4.2.6 getBoolean(parameterIndex as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC BIT parameter as a boolean in the Java programming language.

Notes: Parameters:

parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is false.

See also:

- 4.2.7 getBoolean(parameterName as string) as boolean 121

4.2.7 getBoolean(parameterName as string) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC BIT parameter as a boolean in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is false.

See also:

- 4.2.6 `getBoolean(parameterIndex as Integer)` as `boolean` 121

4.2.8 `getBytes(parameterIndex as Integer)` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC TINYINT parameter as a byte in the Java programming language.

Notes: Parameters:

`parameterIndex` - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.9 `getBytes(parameterName as string)` as `Integer` 122

4.2.9 `getBytes(parameterName as string)` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC TINYINT parameter as a byte in the Java programming language.

Notes: Parameters:

`parameterName` - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.8 `getBytes(parameterIndex as Integer)` as `Integer` 122

4.2.10 `getClob(parameterIndex as Integer)` as `JavaClobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC CLOB parameter as a Clob object in the Java programming language.

Notes: Parameters:

`i` - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value as a Clob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

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• 4.2.11 getClob(parameterName as string) as JavaClobMBS	123

4.2.11 getClob(parameterName as string) as JavaClobMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC CLOB parameter as a Clob object in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value as a Clob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

- 4.2.10 getClob(parameterIndex as Integer) as JavaClobMBS 122

4.2.12 getDouble(parameterIndex as Integer) as Double

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC DOUBLE parameter as a double in the Java programming language.

Notes: Parameters:

parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.13 getDouble(parameterName as string) as Double 123

4.2.13 getDouble(parameterName as string) as Double

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC DOUBLE parameter as a double in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.12 getDouble(parameterIndex as Integer) as Double 123

4.2.14 `getFloat(parameterIndex as Integer) as single`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC FLOAT parameter as a float in the Java programming language.

Notes: Parameters:

`parameterIndex` - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.15 `getFloat(parameterName as string) as single` 124

4.2.15 `getFloat(parameterName as string) as single`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC FLOAT parameter as a float in the Java programming language.

Notes: Parameters:

`parameterName` - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.14 `getFloat(parameterIndex as Integer) as single` 124

4.2.16 `getInt(parameterIndex as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC INTEGER parameter as an int in the Java programming language.

Notes: Parameters:

`parameterIndex` - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.17 `getInt(parameterName as string) as Integer` 124

4.2.17 `getInt(parameterName as string) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC INTEGER parameter as an int in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.16 getInt(parameterIndex as Integer) as Integer 124

4.2.18 getLong(parameterIndex as Integer) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC BIGINT parameter as a long in the Java programming language.

Notes: Parameters:

parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.19 getLong(parameterName as string) as Int64 125

4.2.19 getLong(parameterName as string) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC BIGINT parameter as a long in the Java programming language.

Notes: Parameters:

parameterName - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.18 getLong(parameterIndex as Integer) as Int64 125

4.2.20 getShort(parameterIndex as Integer) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC SMALLINT parameter as a short in the Java programming language.

Notes: Parameters:

parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.21 `getShort(parameterName as string)` as Integer 126

4.2.21 `getShort(parameterName as string)` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC SMALLINT parameter as a short in the Java programming language.

Notes: Parameters:

`parameterName` - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 4.2.20 `getShort(parameterIndex as Integer)` as Integer 125

4.2.22 `getString(parameterIndex as Integer)` as String

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated JDBC CHAR, VARCHAR, or LONGVARCHAR parameter as a String in the Java programming language.

Notes: For the fixed-length type JDBC CHAR, the String object returned has exactly the same value the JDBC CHAR value had in the database, including any padding added by the database.

Parameters:

`parameterIndex` - the first parameter is 1, the second is 2, and so on

Returns:

the parameter value. If the value is SQL NULL, the result is null.

See also:

- 4.2.23 `getString(parameterName as string)` as String 126

4.2.23 `getString(parameterName as string)` as String

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of a JDBC CHAR, VARCHAR, or LONGVARCHAR parameter as a String in the Java programming language.

Notes: For the fixed-length type JDBC CHAR, the String object returned has exactly the same value the JDBC CHAR value had in the database, including any padding added by the database.

Parameters:

parameterName - the name of the parameter

Returns:

the parameter value. If the value is SQL NULL, the result is null.

See also:

- 4.2.22 getString(parameterIndex as Integer) as String 126

4.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the OUT parameter in ordinal position parameterIndex to the JDBC type sqlType.

Notes: All OUT parameters must be registered before a stored procedure is executed.

The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

If the JDBC type expected to be returned to this output parameter is specific to this particular database, sqlType should be java.sql.Types.OTHER. The method getObject(int) retrieves the value.

parameterIndex - the first parameter is 1, the second is 2, and so on

sqlType - the JDBC type code defined by java.sql.Types. If the parameter is of JDBC type NUMERIC or DECIMAL, the version of registerOutParameter that accepts a scale value should be used.

See also:

- 4.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 127
- 4.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 128
- 4.2.27 registerOutParameter(parameterName as string, sqlType as Integer) 129
- 4.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 129
- 4.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 130

4.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the parameter in ordinal position parameterIndex to be of JDBC type sqlType.

Notes: This method must be called before a stored procedure is executed.

The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

This version of `registerOutParameter` should be used when the parameter is of JDBC type `NUMERIC` or `DECIMAL`.

`parameterIndex` - the first parameter is 1, the second is 2, and so on

`sqlType` - the SQL type code defined by `java.sql.Types`.

`scale` - the desired number of digits to the right of the decimal point. It must be greater than or equal to zero.

See also:

- 4.2.24 `registerOutParameter(parameterIndex as Integer, sqlType as Integer)` 127
- 4.2.26 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string)` 128
- 4.2.27 `registerOutParameter(parameterName as string, sqlType as Integer)` 129
- 4.2.28 `registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer)` 129
- 4.2.29 `registerOutParameter(parameterName as string, sqlType as Integer, typeName as string)` 130

4.2.26 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the designated output parameter.

Notes: This version of the method `registerOutParameter` should be used for a user-defined or `REF` output parameter. Examples of user-defined types include: `STRUCT`, `DISTINCT`, `JAVA_OBJECT`, and named array types. Before executing a stored procedure call, you must explicitly call `registerOutParameter` to register the type from `java.sql.Types` for each `OUT` parameter. For a user-defined parameter, the fully-qualified SQL type name of the parameter should also be given, while a `REF` parameter requires that the fully-qualified type name of the referenced type be given. A JDBC driver that does not need the type code and type name information may ignore it. To be portable, however, applications should always provide these values for user-defined and `REF` parameters. Although it is intended for user-defined and `REF` parameters, this method may be used to register a parameter of any JDBC type. If the parameter does not have a user-defined or `REF` type, the `typeName` parameter is ignored.

Note: When reading the value of an out parameter, you must use the getter method whose Java type corresponds to the parameter's registered SQL type.

Parameters:

`paramIndex` - the first parameter is 1, the second is 2,...

`sqlType` - a value from `Types`

`typeName` - the fully-qualified name of an SQL structured type

See also:

- 4.2.24 `registerOutParameter(parameterIndex as Integer, sqlType as Integer)` 127
- 4.2.25 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)` 127

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4.2.27 registerOutParameter(parameterName as string, sqlType as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the OUT parameter named parameterName to the JDBC type sqlType.

Notes: Registers the OUT parameter named parameterName to the JDBC type sqlType. All OUT parameters must be registered before a stored procedure is executed.

The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

If the JDBC type expected to be returned to this output parameter is specific to this particular database, sqlType should be java.sql.Types.OTHER. The method getObject(int) retrieves the value.

Parameters:

parameterName - the name of the parameter

sqlType - the JDBC type code defined by java.sql.Types. If the parameter is of JDBC type NUMERIC or DECIMAL, the version of registerOutParameter that accepts a scale value should be used.

See also:

- 4.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 127
- 4.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 127
- 4.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 128
- 4.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 129
- 4.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 130

4.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the parameter named parameterName to be of JDBC type sqlType.

Notes: This method must be called before a stored procedure is executed.

The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

This version of `registerOutParameter` should be used when the parameter is of JDBC type `NUMERIC` or `DECIMAL`.

Parameters:

`parameterName` - the name of the parameter

`sqlType` - SQL type code defined by `java.sql.Types`.

`scale` - the desired number of digits to the right of the decimal point. It must be greater than or equal to zero.

See also:

- 4.2.24 `registerOutParameter(parameterIndex as Integer, sqlType as Integer)` 127
- 4.2.25 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)` 127
- 4.2.26 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string)` 128
- 4.2.27 `registerOutParameter(parameterName as string, sqlType as Integer)` 129
- 4.2.29 `registerOutParameter(parameterName as string, sqlType as Integer, typeName as string)` 130

4.2.29 `registerOutParameter(parameterName as string, sqlType as Integer, typeName as string)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Registers the designated output parameter.

Notes: This version of the method `registerOutParameter` should be used for a user-named or REF output parameter. Examples of user-named types include: `STRUCT`, `DISTINCT`, `JAVA_OBJECT`, and named array types. Before executing a stored procedure call, you must explicitly call `registerOutParameter` to register the type from `java.sql.Types` for each OUT parameter. For a user-named parameter the fully-qualified SQL type name of the parameter should also be given, while a REF parameter requires that the fully-qualified type name of the referenced type be given. A JDBC driver that does not need the type code and type name information may ignore it. To be portable, however, applications should always provide these values for user-named and REF parameters. Although it is intended for user-named and REF parameters, this method may be used to register a parameter of any JDBC type. If the parameter does not have a user-named or REF type, the `typeName` parameter is ignored.

Note: When reading the value of an out parameter, you must use the `getXXX` method whose Java type XXX corresponds to the parameter's registered SQL type.

Parameters:

`parameterName` - the name of the parameter

`sqlType` - a value from `Types`

`typeName` - the fully-qualified name of an SQL structured type

See also:

- 4.2.24 `registerOutParameter(parameterIndex as Integer, sqlType as Integer)` 127
- 4.2.25 `registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)` 127

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4.2.30 setBoolean(parameterName as string, x as boolean)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java boolean value.

Notes: The driver converts this to an SQL BIT value when it sends it to the database.

Parameters:

parameterName - the name of the parameter

x - the parameter value

4.2.31 setByte(parameterName as string, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java byte value.

Notes: The driver converts this to an SQL TINYINT value when it sends it to the database.

Parameters:

parameterName - the name of the parameter

x - the parameter value

4.2.32 setDouble(parameterName as string, x as Double)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java double value.

Notes: The driver converts this to an SQL DOUBLE value when it sends it to the database.

Parameters:

parameterName - the name of the parameter

x - the parameter value

4.2.33 setFloat(parameterName as string, x as single)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java float value.

Notes: The driver converts this to an SQL FLOAT value when it sends it to the database.

Parameters:

parameterName - the name of the parameter
x - the parameter value

4.2.34 setInt(parameterName as string, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java int value.

Notes: The driver converts this to an SQL INTEGER value when it sends it to the database.

Parameters:

parameterName - the name of the parameter
x - the parameter value

4.2.35 setLong(parameterName as string, x as int64)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java long value.

Notes: The driver converts this to an SQL BIGINT value when it sends it to the database.

Parameters:

parameterName - the name of the parameter
x - the parameter value

4.2.36 setNull(parameterName as string, sqlType as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to SQL NULL.

Notes: Note: You must specify the parameter's SQL type.

Parameters:

parameterName - the name of the parameter
sqlType - the SQL type code defined in java.sql.Types
See also:

- 4.2.37 setNull(parameterName as string, sqlType as Integer, typeName as string)

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4.2.37 setNull(parameterName as string, sqlType as Integer, typeName as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to SQL NULL.

Notes: This version of the method setNull should be used for user-defined types and REF type parameters. Examples of user-defined types include: STRUCT, DISTINCT, JAVA_OBJECT, and named array types.

Note: To be portable, applications must give the SQL type code and the fully-qualified SQL type name when specifying a NULL user-defined or REF parameter. In the case of a user-defined type the name is the type name of the parameter itself. For a REF parameter, the name is the type name of the referenced type. If a JDBC driver does not need the type code or type name information, it may ignore it. Although it is intended for user-defined and Ref parameters, this method may be used to set a null parameter of any JDBC type. If the parameter does not have a user-defined or REF type, the given typeName is ignored.

Parameters:

parameterName - the name of the parameter

sqlType - a value from java.sql.Types

typeName - the fully-qualified name of an SQL user-defined type; ignored if the parameter is not a user-defined type or SQL REF value

See also:

- 4.2.36 setNull(parameterName as string, sqlType as Integer)

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4.2.38 setShort(parameterName as string, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java short value.

Notes: The driver converts this to an SQL SMALLINT value when it sends it to the database.

Parameters:

parameterName - the name of the parameter

x - the parameter value

4.2.39 setString(parameterName as string, x as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java String value.

Notes: The driver converts this to an SQL VARCHAR or LONGVARCHAR value (depending on the argument's size relative to the driver's limits on VARCHAR values) when it sends it to the database.

Parameters:

parameterName - the name of the parameter

x - the parameter value

4.2.40 wasNull as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the last OUT parameter read had the value of SQL NULL.

Notes: Note that this method should be called only after calling a getter method; otherwise, there is no value to use in determining whether it is null or not.

Returns:

true if the last parameter read was SQL NULL; false otherwise

4.3 class JavaClobMBS

4.3.1 class JavaClobMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The java class for large character objects.

Notes: Subclass of the JavaObjectMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.3.2 Methods

4.3.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.3.4 getSubString(Position as int64, Length as Integer) as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a copy of the specified substring in the CLOB value designated by this Clob object.

Notes: The substring begins at position pos and has up to length consecutive characters.

Parameters:

pos: the first character of the substring to be extracted. The first character is at position 1.

length: the number of consecutive characters to be copied

Returns a String that is the specified substring in the CLOB value designated by this Clob object

4.3.5 length as int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the number of characters in the CLOB value designated by this Clob object.

Notes: Returns length of the CLOB in characters.

4.3.6 position(SearchString as JavaClobMBS, Start as Int64) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the character position at which the specified Clob object searchstr appears in this Clob object.

Notes: The search begins at position start.

SearchString: the Clob object for which to search

start: the position at which to begin searching; the first position is 1

Returns the position at which the Clob object appears or -1 if it is not present; the first position is 1

See also:

- 4.3.7 position(SearchString as String, Start as Int64) as Int64 136

4.3.7 position(SearchString as String, Start as Int64) as Int64

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the character position at which the specified substring searchstr appears in the SQL CLOB value represented by this Clob object.

Notes: The search begins at position start.

searchstr: the substring for which to search

start: the position at which to begin searching; the first position is 1

Returns the position at which the substring appears or -1 if it is not present; the first position is 1

See also:

- 4.3.6 position(SearchString as JavaClobMBS, Start as Int64) as Int64 136

4.3.8 setString(Position as Int64, Value as String) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes the given Java String to the CLOB value that this Clob object designates at the position pos.

Notes: Position: the position at which to start writing to the CLOB value that this Clob object represents

Value: the string to be written to the CLOB value that this Clob designates

Returns the number of characters written

See also:

- 4.3.9 `setString(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer` 137

4.3.9 `setString(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Writes Length characters of Value, starting at character offset, to the CLOB value that this Clob represents.

Notes: Position: the position at which to start writing to this CLOB object

Value: the string to be written to the CLOB value that this Clob object represents

Offset: the offset into str to start reading the characters to be written

Length: the number of characters to be written

Returns the number of characters written

See also:

- 4.3.8 `setString(Position as Int64, Value as String) as Integer` 136

4.3.10 `truncate(len as int64)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Truncates the CLOB value that this Clob designates to have a length of len characters.

Notes: len: the length, in bytes, to which the CLOB value should be truncated

4.4 class `JavaConnectionMBS`

4.4.1 class `JavaConnectionMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class for a java connection.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Encrypted Access database in Xojo](#)
- [MBS Real Studio Plugins, version 11.3pr11](#)

4.4.2 Methods

4.4.3 `clearWarnings`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears all warnings reported for this Connection object.

Notes: After a call to this method, the method `getWarnings` returns null until a new warning is reported for this Connection object.

4.4.4 `close`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Releases this Connection object's database and JDBC resources immediately instead of waiting for them to be automatically released.

4.4.5 `CLOSE_CURSORS_AT_COMMIT` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that `ResultSet` objects should be closed when the method `Connection.commit` is called.

4.4.6 `commit`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Makes all changes made since the previous commit/rollback permanent and releases any database locks currently held by the Connection.

Notes: See the java documentation for details on `java.sql.Connection.Commit`.

4.4.7 CONCUR_READ_ONLY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the concurrency mode for a `ResultSet` object that may NOT be updated.

4.4.8 CONCUR_UPDATABLE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the concurrency mode for a `ResultSet` object that may be updated.

4.4.9 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.4.10 createBlob as JavaBlobMBS

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constructs an object that implements the `Blob` interface.

Notes: The object returned initially contains no data. The `setBinaryStream` and `setBytes` methods of the `Blob` interface may be used to add data to the `Blob`.

4.4.11 createClob as JavaClobMBS

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Constructs an object that implements the `Clob` interface.

Notes: The object returned initially contains no data. The `setAsciiStream`, `setCharacterStream` and `setString` methods of the `Clob` interface may be used to add data to the `Clob`.

4.4.12 createStatement as JavaStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a Statement object for sending SQL statements to the database.

Notes: SQL statements without parameters are normally executed using Statement objects. If the same SQL statement is executed many times, it may be more efficient to use a PreparedStatement object.

Result sets created using the returned Statement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

Returns:

a new default Statement object

See also:

- 4.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS 140
- 4.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS 140

4.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a Statement object that will generate ResultSet objects with the given type and concurrency.

Notes: This method is the same as the createStatement method above, but it allows the default result set type and concurrency to be overridden.

Parameters:

resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

Returns:

a new Statement object that will generate ResultSet objects with the given type and concurrency

See also:

- 4.4.12 createStatement as JavaStatementMBS 140
- 4.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS 140

4.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a Statement object that will generate ResultSet objects with the given type, concurrency, and holdability.

Notes: This method is the same as the createStatement method above, but it allows the default result set type, concurrency, and holdability to be overridden.

Parameters:

resultSetType - one of the following ResultSet constants: ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

resultSetConcurrency - one of the following ResultSet constants: ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

resultSetHoldability - one of the following ResultSet constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

Returns:

a new Statement object that will generate ResultSet objects with the given type, concurrency, and holdability

See also:

- 4.4.12 createStatement as JavaStatementMBS 140
- 4.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS 140

4.4.15 FETCH_FORWARD as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the rows in a result set will be processed in a forward direction; first-to-last.

Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

4.4.16 FETCH_REVERSE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the rows in a result set will be processed in a reverse direction; last-to-first.

Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

4.4.17 FETCH_UNKNOWN as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the order in which rows in a result set will be processed is unknown.

Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may

ignore.

4.4.18 `getMetaData` as `JavaDatabaseMetaDataMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a `DatabaseMetaData` object that contains metadata about the database to which this `Connection` object represents a connection.

Notes: The metadata includes information about the database's tables, its supported SQL grammar, its stored procedures, the capabilities of this connection, and so on.

Returns:

a `DatabaseMetaData` object for this `Connection` object

4.4.19 `HOLD_CURSORS_OVER_COMMIT` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that `ResultSet` objects should not be closed when the method `Connection.commit` is called.

4.4.20 `isClosed` as `boolean`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this `Connection` object has been closed.

Notes: A connection is closed if the method `close` has been called on it or if certain fatal errors have occurred. This method is guaranteed to return `true` only when it is called after the method `Connection.close` has been called.

This method generally cannot be called to determine whether a connection to a database is valid or invalid. A typical client can determine that a connection is invalid by catching any exceptions that might be thrown when an operation is attempted.

Returns:

`true` if this `Connection` object is closed; `false` if it is still open

4.4.21 `nativeSQL(sql as string)` as `string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Converts the given SQL statement into the system's native SQL grammar.

Notes: A driver may convert the JDBC SQL grammar into its system's native SQL grammar prior to

sending it. This method returns the native form of the statement that the driver would have sent.

Parameters:

sql - an SQL statement that may contain one or more '?' parameter placeholders

Returns:

the native form of this statement

4.4.22 prepareCall(sql as string) as CallableStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a CallableStatement object for calling database stored procedures.

Notes: The CallableStatement object provides methods for setting up its IN and OUT parameters, and methods for executing the call to a stored procedure.

Note: This method is optimized for handling stored procedure call statements. Some drivers may send the call statement to the database when the method prepareCall is done; others may wait until the CallableStatement object is executed. This has no direct effect on users; however, it does affect which method throws certain SQLExceptions.

Result sets created using the returned CallableStatement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

Parameters:

sql - an SQL statement that may contain one or more '?' parameter placeholders. Typically this statement is a JDBC function call escape string.

Returns:

a new default CallableStatement object containing the pre-compiled SQL statement

See also:

- 4.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as CallableStatementMBS 143
- 4.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as CallableStatementMBS 144

4.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as CallableStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a CallableStatement object that will generate ResultSet objects with the given type and concurrency.

Notes: This method is the same as the prepareCall method above, but it allows the default result set type and concurrency to be overridden.

Parameters:

sql - a String object that is the SQL statement to be sent to the database; may contain on or more ? parameters

resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

Returns:

a new CallableStatement object containing the pre-compiled SQL statement that will produce ResultSet objects with the given type and concurrency

See also:

- 4.4.22 prepareCall(sql as string) as CallableStatementMBS 143
- 4.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as CallableStatementMBS 144

4.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as CallableStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a CallableStatement object that will generate ResultSet objects with the given type and concurrency.

Notes: This method is the same as the prepareCall method above, but it allows the default result set type, result set concurrency type and holdability to be overridden.

Parameters:

sql - a String object that is the SQL statement to be sent to the database; may contain on or more ? parameters

resultSetType - one of the following ResultSet constants: ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

resultSetConcurrency - one of the following ResultSet constants: ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

resultSetHoldability - one of the following ResultSet constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

Returns:

a new CallableStatement object, containing the pre-compiled SQL statement, that will generate ResultSet objects with the given type, concurrency, and holdability

See also:

- 4.4.22 prepareCall(sql as string) as CallableStatementMBS 143
- 4.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as CallableStatementMBS 143

4.4.25 `prepareStatement(sql as string)` as `JavaPreparedStatementMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a `PreparedStatement` object for sending parameterized SQL statements to the database.

Notes: A SQL statement with or without IN parameters can be pre-compiled and stored in a `PreparedStatement` object. This object can then be used to efficiently execute this statement multiple times.

Note: This method is optimized for handling parametric SQL statements that benefit from precompilation. If the driver supports precompilation, the method `prepareStatement` will send the statement to the database for precompilation. Some drivers may not support precompilation. In this case, the statement may not be sent to the database until the `PreparedStatement` object is executed. This has no direct effect on users; however, it does affect which methods throw certain `SQLException` objects.

Result sets created using the returned `PreparedStatement` object will by default be type `TYPE_FORWARD_ONLY` and have a concurrency level of `CONCUR_READ_ONLY`.

Parameters:

`sql` - an SQL statement that may contain one or more '?' IN parameter placeholders

See also:

- 4.4.26 `prepareStatement(sql as string, autoGeneratedKeys as Integer)` as `JavaPreparedStatementMBS` 145
- 4.4.27 `prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer)` as `JavaPreparedStatementMBS` 146
- 4.4.28 `prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer)` as `JavaPreparedStatementMBS` 147

4.4.26 `prepareStatement(sql as string, autoGeneratedKeys as Integer)` as `JavaPreparedStatementMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a default `PreparedStatement` object that has the capability to retrieve auto-generated keys.

Notes: The given constant tells the driver whether it should make auto-generated keys available for retrieval. This parameter is ignored if the SQL statement is not an INSERT statement.

Note: This method is optimized for handling parametric SQL statements that benefit from precompilation. If the driver supports precompilation, the method `prepareStatement` will send the statement to the database for precompilation. Some drivers may not support precompilation. In this case, the statement may not be sent to the database until the `PreparedStatement` object is executed. This has no direct effect on users; however, it does affect which methods throw certain `SQLExceptions`.

Result sets created using the returned PreparedStatement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

Parameters:

sql - an SQL statement that may contain one or more '?' IN parameter placeholders

autoGeneratedKeys - a flag indicating whether auto-generated keys should be returned; one of Statement.RETURN_GENERATED_KEYS or Statement.NO_GENERATED_KEYS

Returns:

a new PreparedStatement object, containing the pre-compiled SQL statement, that will have the capability of returning auto-generated keys

See also:

- 4.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS 145
- 4.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS 146
- 4.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS 147

4.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a PreparedStatement object that will generate ResultSet objects with the given type and concurrency.

Notes: This method is the same as the prepareStatement method above, but it allows the default result set type and concurrency to be overridden.

Parameters:

sql - a String object that is the SQL statement to be sent to the database; may contain one or more ? IN parameters

resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

Returns:

a new PreparedStatement object containing the pre-compiled SQL statement that will produce ResultSet objects with the given type and concurrency

See also:

- 4.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS 145
- 4.4.26 prepareStatement(sql as string, autoGeneratedKeys as Integer) as JavaPreparedStatementMBS 145
- 4.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS 147

4.4.28 `prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer)` as `JavaPreparedStatementMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a `PreparedStatement` object that will generate `ResultSet` objects with the given type, concurrency, and holdability.

Notes: This method is the same as the `prepareStatement` method above, but it allows the default result set type, concurrency, and holdability to be overridden.

Parameters:

`sql` - a `String` object that is the SQL statement to be sent to the database; may contain one or more ? IN parameters

`resultSetType` - one of the following `ResultSet` constants: `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

`resultSetConcurrency` - one of the following `ResultSet` constants: `ResultSet.CONCUR_READ_ONLY` or `ResultSet.CONCUR_UPDATABLE`

`resultSetHoldability` - one of the following `ResultSet` constants: `ResultSet.HOLD_CURSORS_OVER_COMMIT` or `ResultSet.CLOSE_CURSORS_AT_COMMIT`

Returns:

a new `PreparedStatement` object, containing the pre-compiled SQL statement, that will generate `ResultSet` objects with the given type, concurrency, and holdability

See also:

- 4.4.25 `prepareStatement(sql as string)` as `JavaPreparedStatementMBS` 145
- 4.4.26 `prepareStatement(sql as string, autoGeneratedKeys as Integer)` as `JavaPreparedStatementMBS` 145
- 4.4.27 `prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer)` as `JavaPreparedStatementMBS` 146

4.4.29 `releaseSavepoint(savepoint as JavaSavepointMBS)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Removes the given `Savepoint` object from the current transaction.

Notes: Any reference to the savepoint after it have been removed will cause an `SQLException` to be thrown.

`savepoint`: the `Savepoint` object to be removed

4.4.30 `rollback`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Drops all changes made since the previous commit/rollback and releases any database locks currently held by this Connection.

Notes: This method should be used only when auto- commit has been disabled.

See the java documentation for details on `java.sql.Connection.Rollback`.

See also:

- 4.4.31 `rollback(safepoint as JavaSavepointMBS)` 148

4.4.31 `rollback(safepoint as JavaSavepointMBS)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Undoes all changes made after the given Savepoint object was set.

Notes: This method should be used only when auto-commit has been disabled.

savepoint: the Savepoint object to roll back to

See also:

- 4.4.30 `rollback` 147

4.4.32 `setSavepoint as JavaSavepointMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates an unnamed savepoint in the current transaction and returns the new Savepoint object that represents it.

See also:

- 4.4.33 `setSavepoint(name as string) as JavaSavepointMBS` 148

4.4.33 `setSavepoint(name as string) as JavaSavepointMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a savepoint with the given name in the current transaction and returns the new Savepoint object that represents it.

Notes: name: a String containing the name of the savepoint
returns the new Savepoint object

See also:

- 4.4.32 `setSavepoint as JavaSavepointMBS` 148

4.4.34 TRANSACTION_NONE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A constant indicating that transactions are not supported.

4.4.35 TRANSACTION_READ_COMMITTED as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A constant indicating that dirty reads are prevented; non-repeatable reads and phantom reads can occur.

Notes: This level only prohibits a transaction from reading a row with uncommitted changes in it.

4.4.36 TRANSACTION_READ_UNCOMMITTED as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A constant indicating that dirty reads, non-repeatable reads and phantom reads can occur.

Notes: This level allows a row changed by one transaction to be read by another transaction before any changes in that row have been committed (a "dirty read"). If any of the changes are rolled back, the second transaction will have retrieved an invalid row.

4.4.37 TRANSACTION_REPEATABLE_READ as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A constant indicating that dirty reads and non-repeatable reads are prevented; phantom reads can occur.

Notes: This level prohibits a transaction from reading a row with uncommitted changes in it, and it also prohibits the situation where one transaction reads a row, a second transaction alters the row, and the first transaction rereads the row, getting different values the second time (a "non-repeatable read").

4.4.38 TRANSACTION_SERIALIZABLE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A constant indicating that dirty reads, non-repeatable reads and phantom reads are prevented.

Notes: This level includes the prohibitions in TRANSACTION_REPEATABLE_READ and further prohibits the situation where one transaction reads all rows that satisfy a WHERE condition, a second transaction inserts a row that satisfies that WHERE condition, and the first transaction rereads for the same

condition, retrieving the additional "phantom" row in the second read.

4.4.39 typeARRAY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type ARRAY.

4.4.40 typeBIGINT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BIGINT.

Example:

```
dim d as JavaConnectionMBS
MsgBox str(d.typeBIGINT)
```

4.4.41 typeBINARY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BINARY.

4.4.42 typeBIT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BIT.

4.4.43 typeBLOB as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BLOB.

4.4.44 typeCHAR as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type CHAR.

4.4.45 typeCLOB as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type CLOB.

4.4.46 typeDATE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DATE.

4.4.47 typeDECIMAL as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DECIMAL.

4.4.48 typeDISTINCT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DISTINCT.

4.4.49 typeDOUBLE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DOUBLE.

4.4.50 typeFLOAT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type FLOAT.

4.4.51 typeINTEGER as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type INTEGER.

4.4.52 typeJAVA_OBJECT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type JAVA_OBJECT.

4.4.53 typeLONGVARBINARY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type LONGVARBINARY.

4.4.54 typeLONGVARCHAR as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type LONGVARCHAR.

4.4.55 typeNULL as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type NULL.

4.4.56 typeNUMERIC as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type NUMERIC.

4.4.57 typeOTHER as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language that indicates that the SQL type is database-specific and gets mapped to a Java object that can be accessed via the methods getObject and setObject.

4.4.58 typeREAL as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type REAL.

4.4.59 typeREF as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type REF.

4.4.60 typeSMALLINT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type SMALLINT.

4.4.61 typeSTRUCT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type STRUCT.

4.4.62 typeTIME as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TIME.

4.4.63 typeTIMESTAMP as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TIMESTAMP.

4.4.64 typeTINYINT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TINYINT.

4.4.65 typeVARBINARY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type VARBINARY.

4.4.66 typeVARCHAR as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type VARCHAR.

4.4.67 TYPE_FORWARD_ONLY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object whose cursor may move only forward.

4.4.68 TYPE_SCROLL_INSENSITIVE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object that is scrollable but generally not sensitive to changes made by others.

4.4.69 TYPE_SCROLL_SENSITIVE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object that is scrollable and generally sensitive to changes made by others.

4.4.70 Properties

4.4.71 AutoCommit as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The current auto-commit state.

Notes: See the java documentation for details on `java.sql.Connection.SetAutoCommit`.
(Read and Write computed property)

4.4.72 Catalog as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets or gets the given catalog name in order to select a subspace of this Connection object's database in which to work.

Notes: If the driver does not support catalogs, it will silently ignore this request.
(Read and Write computed property)

4.4.73 Holdability as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Changes or retrieves the holdability of ResultSet objects created using this Connection object to the given holdability.

Notes: Parameters:

holdability - a ResultSet holdability constant; one of ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

(Read and Write computed property)

4.4.74 ReadOnly as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether this connection in read-only mode as a hint to enable database optimizations.

Notes: See the java documentation for details on java.sql.Connection.SetReadOnly.
(Read and Write computed property)

4.4.75 TransactionIsolation as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Attempts to change the transaction isolation level for this Connection object to the one given.

Notes: The constants defined in the interface Connection are the possible transaction isolation levels.

Note: If this method is called during a transaction, the result is implementation-defined.

Parameters:

level - one of the following Connection constants: Connection.TRANSACTION_READ_UNCOMMITTED, Connection.TRANSACTION_READ_COMMITTED, Connection.TRANSACTION_REPEATABLE_READ, or Connection.TRANSACTION_SERIALIZABLE. (Note that Connection.TRANSACTION_NONE cannot be used because it specifies that transactions are not supported.)

(Read and Write computed property)

4.5 class JavaDatabaseMBS

4.5.1 class JavaDatabaseMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class to handle database access using JDBC drivers.

Notes: This class is not a subclass of RB's database class, so you can use it with Xojo Standard Edition.

Nearly all methods on this class can raise java exceptions which you can get using the error property. (and errorstring and errorcode)

Add Linux support plugin version 8.7.

Please make sure this Java VM object stays alive until you are done with all your java stuff. So all the java objects go away and this vm object is destroyed on the end. Because if some java code is still running like an background java thread, quitting the VM can lead into crashes.

Subclass of the JavaObjectMBS class.

Blog Entries

- [Prefetching records from databases](#)
- [Encrypted Access database in Xojo](#)
- [MBS Real Studio Plugins, version 12.1pr6](#)
- [MonkeyBread Software Releases the MBS Plugins 8.3](#)

4.5.2 Methods

4.5.3 connect(url as string) as JavaConnectionMBS

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Connects directly to the database calling the Drivers's connect method.

Notes: While getConnection calls DriverManager, this calls directly the driver.

Attempts to make a database connection to the given URL. The driver should return "null" if it realizes it is the wrong kind of driver to connect to the given URL. This will be common, as when the JDBC driver manager is asked to connect to a given URL it passes the URL to each loaded driver in turn.

The driver should throw an SQLException if it is the right driver to connect to the given URL but has trouble connecting to the database.

The java.util.Properties argument can be used to pass arbitrary string tag/value pairs as connection arguments. Normally at least "user" and "password" properties should be included in the Properties object. (the

plugin passes empty Properties object)

url - the URL of the database to which to connect

Returns a Connection object that represents a connection to the URL
Throws SQLException - if a database access error occurs

4.5.4 Constructor(vm as JavaVMMBS, driverclass as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Creates a new java database object.

Example:

```
dim vm as JavaVMMBS // your VM
dim db as JavaDatabaseMBS
```

```
db=new JavaDatabaseMBS(vm,"com.mysql.jdbc.Driver")
```

Notes: The driverclass is the name of the main class of the jdbc driver.

4.5.5 getConnection(url as string) as JavaConnectionMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Attempts to establish a connection to the given database URL.

Example:

```
dim d as JavaDatabaseMBS
dim c as JavaConnectionMBS
```

```
// get database
```

```
// connect to Oracle database using service name:
```

```
c=d.getConnection("jdbc:oracle:thin:@//192.168.10.20:1521/adbprod","user","pw")
```

```
// connect with SID:
```

```
c=d.getConnection("jdbc:oracle:thin:@192.168.10.20:1521:adbprod","user","pw")
```

Notes: The DriverManager attempts to select an appropriate driver from the set of registered JDBC drivers.

Parameters:

url - a database url of the form jdbc:subprotocol:subname

Returns:

a connection to the URL

See also:

- 4.5.6 getConnection(url as string, username as string, password as string) as JavaConnectionMBS 159

4.5.6 getConnection(url as string, username as string, password as string) as JavaConnectionMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Attempts to establish a connection to the given database URL.

Example:

```
dim d as JavaDatabaseMBS
dim c as JavaConnectionMBS
```

```
// get database
```

```
// connect to Oracle database using service name:
```

```
c=d.getConnection("jdbc:oracle:thin:@//192.168.10.20:1521/adbprod","user","pw")
```

```
// connect with SID:
```

```
c=d.getConnection("jdbc:oracle:thin:@192.168.10.20:1521:adbprod","user","pw")
```

Notes: The DriverManager attempts to select an appropriate driver from the set of registered JDBC drivers.

Parameters:

url - a database url of the form jdbc:subprotocol:subname

user - the database user on whose behalf the connection is being made

password - the user's password

Returns:

a connection to the URL

See also:

- 4.5.5 getConnection(url as string) as JavaConnectionMBS

4.5.7 IsDriverLoaded as Boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether a driver has been loaded.

4.5.8 `println(message as string)`

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Prints a message to the current JDBC log stream.

4.5.9 Properties

4.5.10 `LoginTimeout` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum time in seconds that a driver will wait while attempting to connect to a database.

Notes: The login time limit in seconds.

(Read and Write computed property)

4.6 class `JavaDatabaseMetaDataMBS`

4.6.1 class `JavaDatabaseMetaDataMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Comprehensive information about the database as a whole.

Notes: This interface is implemented by driver vendors to let users know the capabilities of a Database Management System (DBMS) in combination with the driver based on JDBC™ technology ("JDBC driver") that is used with it. Different relational DBMSs often support different features, implement features in different ways, and use different data types. In addition, a driver may implement a feature on top of what the DBMS offers. Information returned by methods in this interface applies to the capabilities of a particular driver and a particular DBMS working together. Note that as used in this documentation, the term "database" is used generically to refer to both the driver and DBMS.

A user for this interface is commonly a tool that needs to discover how to deal with the underlying DBMS. This is especially true for applications that are intended to be used with more than one DBMS. For example, a tool might use the method `getTypeInfo` to find out what data types can be used in a `CREATE TABLE` statement. Or a user might call the method `supportsCorrelatedSubqueries` to see if it is possible to use a correlated subquery or `supportsBatchUpdates` to see if it is possible to use batch updates.

Some `DatabaseMetaData` methods return lists of information in the form of `ResultSet` objects. Regular `ResultSet` methods, such as `getString` and `getInt`, can be used to retrieve the data from these `ResultSet` objects. If a given form of metadata is not available, the `ResultSet` getter methods throw an `SQLException`.

Some `DatabaseMetaData` methods take arguments that are String patterns. These arguments all have names such as `fooPattern`. Within a pattern String, "%" means match any substring of 0 or more characters, and "_" means match any one character. Only metadata entries matching the search pattern are returned. If a search pattern argument is set to null, that argument's criterion will be dropped from the search.

A method that gets information about a feature that the driver does not support will throw an `SQLException`. In the case of methods that return a `ResultSet` object, either a `ResultSet` object (which may be empty) is returned or an `SQLException` is thrown.

Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.6.2 Methods

4.6.3 `allProceduresAreCallable` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the current user can call all the procedures returned by the method `getPro-`

cedures.

Notes: Returns true if so; false otherwise

4.6.4 allTablesAreSelectable as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the current user can use all the tables returned by the method `getTables` in a `SELECT` statement.

Notes: Returns true if so; false otherwise

4.6.5 attributeNoNulls as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that `NULL` values might not be allowed.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` object returned by the method `getAttributes`.

4.6.6 attributeNullable as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that `NULL` values are definitely allowed.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` object returned by the method `getAttributes`.

4.6.7 attributeNullableUnknown as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that whether `NULL` values are allowed is not known.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` object returned by the method `getAttributes`.

4.6.8 bestRowNotPseudo as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the best row identifier is NOT a pseudo column.

Notes: A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getBestRowIdentifier.

4.6.9 bestRowPseudo as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the best row identifier is a pseudo column.

Notes: A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getBestRowIdentifier.

4.6.10 bestRowSession as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the scope of the best row identifier is the remainder of the current session.

Notes: A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

4.6.11 bestRowTemporary as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the scope of the best row identifier is very temporary, lasting only while the row is being used.

Notes: A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

4.6.12 bestRowTransaction as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the scope of the best row identifier is the remainder of the current transaction.

Notes: A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

4.6.13 `bestRowUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the best row identifier may or may not be a pseudo column.

Notes: A possible value for the column `PSEUDO_COLUMN` in the `ResultSet` object returned by the method `getBestRowIdentifier`.

4.6.14 `columnNoNulls` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column might not allow NULL values.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` returned by the method `getColumns`.

4.6.15 `columnNullable` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column definitely allows NULL values.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` returned by the method `getColumns`.

4.6.16 `columnNullableUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the nullability of columns is unknown.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` returned by the method `getColumns`.

4.6.17 `Constructor`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.6.18 `dataDefinitionCausesTransactionCommit` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a data definition statement within a transaction forces the transaction to commit.

4.6.19 dataDefinitionIgnoredInTransactions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database ignores a data definition statement within a transaction.

4.6.20 deletesAreDetected(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether or not a visible row delete can be detected by calling the method `ResultSet.rowDeleted`.

Notes: If the method `deletesAreDetected` returns false, it means that deleted rows are removed from the result set.

Parameters:

type - the `ResultSet` type; one of `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

Returns:

true if deletes are detected by the given result set type; false otherwise

4.6.21 doesMaxRowSizeIncludeBlobs as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the return value for the method `getMaxRowSize` includes the SQL data types `LONGVARCHAR` and `LONGVARBINARY`.

Notes: Returns true if so; false otherwise.

4.6.22 getAttributes(catalog as string, schemaPattern as string, typeNamePattern as string, attributeNamePattern as string) as JavaResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the given attribute of the given type for a user-defined type (UDT) that is available in the given schema and catalog.

Notes: Descriptions are returned only for attributes of UDTs matching the catalog, schema, type, and attribute name criteria. They are ordered by TYPE_SCHEM, TYPE_NAME and ORDINAL_POSITION. This description does not contain inherited attributes.

The ResultSet object that is returned has the following columns:

TYPE_CAT String =>type catalog (may be null)
 TYPE_SCHEM String =>type schema (may be null)
 TYPE_NAME String =>type name
 ATTR_NAME String =>attribute name
 DATA_TYPE int =>attribute type SQL type from java.sql.Types
 ATTR_TYPE_NAME String =>Data source dependent type name. For a UDT, the type name is fully qualified. For a REF, the type name is fully qualified and represents the target type of the reference type.
 ATTR_SIZE int =>column size. For char or date types this is the maximum number of characters; for numeric or decimal types this is precision.
 DECIMAL_DIGITS int =>the number of fractional digits
 NUM_PREC_RADIX int =>Radix (typically either 10 or 2)
 NULLABLE int =>whether NULL is allowed
 attributeNoNulls - might not allow NULL values
 attributeNullable - definitely allows NULL values
 attributeNullableUnknown - nullability unknown
 REMARKS String =>comment describing column (may be null)
 ATTR_DEF String =>default value (may be null)
 SQL_DATA_TYPE int =>unused
 SQL_DATETIME_SUB int =>unused
 CHAR_OCTET_LENGTH int =>for char types the maximum number of bytes in the column

ORDINAL_POSITION int =>index of column in table (starting at 1)

IS_NULLABLE String =>"false" means column definitely does not allow NULL values; "true" means the column might allow NULL values. An empty string means unknown.

SCOPE_CATALOG String =>catalog of table that is the scope of a reference attribute (null if DATA_TYPE isn't REF)

SCOPE_SCHEMA String =>schema of table that is the scope of a reference attribute (null if DATA_TYPE isn't REF)

SCOPE_TABLE String =>table name that is the scope of a reference attribute (null if the DATA_TYPE isn't REF)

SOURCE_DATA_TYPE short =>source type of a distinct type or user-generated Ref type,SQL type from java.sql.Types (null if DATA_TYPE isn't DISTINCT or user-generated REF)

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

typeNamePattern - a type name pattern; must match the type name as it is stored in the database

attributeNamePattern - an attribute name pattern; must match the attribute name as it is declared in the database

Returns:

a ResultSet object in which each row is an attribute description

Throws:

SQLException - if a database access error occurs

4.6.23 getCatalogs as JavaResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the catalog names available in this database. The results are ordered by catalog name.

Notes: The catalog column is:

TABLE_CAT String =>catalog name

Returns:

a ResultSet object in which each row has a single String column that is a catalog name

Throws:

SQLException - if a database access error occurs

4.6.24 getCatalogSeparator as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the String that this database uses as the separator between a catalog and table name.

4.6.25 getCatalogTerm as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the database vendor's preferred term for "catalog".

4.6.26 `getColumnPrivileges(catalog as string, schema as string, table as string, columnNamePattern as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the access rights for a table's columns.

Notes: Only privileges matching the column name criteria are returned. They are ordered by `COLUMN_NAME` and `PRIVILEGE`.

Each privilege description has the following columns:

`TABLE_CAT` String =>table catalog (may be null)

`TABLE_SCHEM` String =>table schema (may be null)

`TABLE_NAME` String =>table name

`COLUMN_NAME` String =>column name

`GRANTOR` =>grantor of access (may be null)

`GRANTEE` String =>grantee of access

`PRIVILEGE` String =>name of access (SELECT, INSERT, UPDATE, REFERENCES, ...)

`IS_GRANTABLE` String =>"true" if grantee is permitted to grant to others; "false" if not; null if unknown

Parameters:

`catalog` - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

`schema` - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

`table` - a table name; must match the table name as it is stored in the database

`columnNamePattern` - a column name pattern; must match the column name as it is stored in the database

`columnNamePattern` - a column name pattern; must match the column name as it is stored in the database

Returns:

`ResultSet` - each row is a column privilege description

Throws:

`SQLException` - if a database access error occurs

4.6.27 `getColumns(catalog as string, schemaPattern as string, tableNamePattern as string, columnNamePattern as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of table columns available in the specified catalog.

Notes: Only column descriptions matching the catalog, schema, table and column name criteria are returned. They are ordered by `TABLE_SCHEM`, `TABLE_NAME`, and `ORDINAL_POSITION`.

Each column description has the following columns:

TABLE_CAT String =>table catalog (may be null)
 TABLE_SCHEM String =>table schema (may be null)
 TABLE_NAME String =>table name
 COLUMN_NAME String =>column name
 DATA_TYPE int =>SQL type from java.sql.Types
 TYPE_NAME String =>Data source dependent type name, for a UDT the type name is fully qualified
 COLUMN_SIZE int =>column size. For char or date types this is the maximum number of characters, for numeric or decimal types this is precision.
 BUFFER_LENGTH is not used.
 DECIMAL_DIGITS int =>the number of fractional digits
 NUM_PREC_RADIX int =>Radix (typically either 10 or 2)
 NULLABLE int =>is NULL allowed.
 columnNoNulls - might not allow NULL values
 columnNullable - definitely allows NULL values
 columnNullableUnknown - nullability unknown
 REMARKS String =>comment describing column (may be null)
 COLUMN_DEF String =>default value (may be null)
 SQL_DATA_TYPE int =>unused
 SQL_DATETIME_SUB int =>unused
 CHAR_OCTET_LENGTH int =>for char types the maximum number of bytes in the column

ORDINAL_POSITION int =>index of column in table (starting at 1)

IS_NULLABLE String =>"false" means column definitely does not allow NULL values; "true" means the column might allow NULL values. An empty string means nobody knows.
 SCOPE_CATALOG String =>catalog of table that is the scope of a reference attribute (null if DATA_TYPE isn't REF)
 SCOPE_SCHEMA String =>schema of table that is the scope of a reference attribute (null if the DATA_TYPE isn't REF)
 SCOPE_TABLE String =>table name that this the scope of a reference attribute (null if the DATA_TYPE isn't REF)
 SOURCE_DATA_TYPE short =>source type of a distinct type or user-generated Ref type, SQL type from java.sql.Types (null if DATA_TYPE isn't DISTINCT or user-generated REF)

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
 schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
 tableNamePattern - a table name pattern; must match the table name as it is stored in the database
 columnNamePattern - a column name pattern; must match the column name as it is stored in the database

Returns:

ResultSet - each row is a column description

Throws:

SQLException - if a database access error occurs

4.6.28 getConnection as JavaConnectionMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the connection that produced this metadata object.

4.6.29 getCrossReference(primaryCatalog as string, primarySchema as string, primaryTable as string, foreignCatalog as string, foreignSchema as string, foreignTable as string) as ResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the foreign key columns in the given foreign key table that reference the primary key columns of the given primary key table (describe how one table imports another's key).

Notes: This should normally return a single foreign key/primary key pair because most tables import a foreign key from a table only once. They are ordered by FKTABLE_CAT, FKTABLE_SCHEM, FKTABLE_NAME, and KEY_SEQ.

Each foreign key column description has the following columns:

PKTABLE_CAT String =>primary key table catalog (may be null)

PKTABLE_SCHEM String =>primary key table schema (may be null)

PKTABLE_NAME String =>primary key table name

PKCOLUMN_NAME String =>primary key column name

FKTABLE_CAT String =>foreign key table catalog (may be null) being exported (may be null)

FKTABLE_SCHEM String =>foreign key table schema (may be null) being exported (may be null)

FKTABLE_NAME String =>foreign key table name being exported

FKCOLUMN_NAME String =>foreign key column name being exported

KEY_SEQ short =>sequence number within foreign key

UPDATE_RULE short =>What happens to foreign key when primary is updated:

importedNoAction - do not allow update of primary key if it has been imported

importedKeyCascade - change imported key to agree with primary key update

importedKeySetNull - change imported key to NULL if its primary key has been updated

importedKeySetDefault - change imported key to default values if its primary key has been updated

importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)

DELETE_RULE short =>What happens to the foreign key when primary is deleted.

importedKeyNoAction - do not allow delete of primary key if it has been imported

importedKeyCascade - delete rows that import a deleted key

importedKeySetNull - change imported key to NULL if its primary key has been deleted

importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)

importedKeySetDefault - change imported key to default if its primary key has been deleted

FK_NAME String =>foreign key name (may be null)

PK_NAME String =>primary key name (may be null)

DEFERRABILITY short =>can the evaluation of foreign key constraints be deferred until commit

importedKeyInitiallyDeferred - see SQL92 for definition

importedKeyInitiallyImmediate - see SQL92 for definition

importedKeyNotDeferrable - see SQL92 for definition

Parameters:

primaryCatalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means drop catalog name from the selection criteria

primarySchema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means drop schema name from the selection criteria

primaryTable - the name of the table that exports the key; must match the table name as it is stored in the database

foreignCatalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means drop catalog name from the selection criteria

foreignSchema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means drop schema name from the selection criteria

foreignTable - the name of the table that imports the key; must match the table name as it is stored in the database

Returns:

ResultSet - each row is a foreign key column description

Throws:

SQLException - if a database access error occurs

4.6.30 getDatabaseMajorVersion as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the major version number of the underlying database.

4.6.31 getDatabaseMinorVersion as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the minor version number of the underlying database.

4.6.32 getDatabaseProductName as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the name of this database product.

4.6.33 `getDatabaseProductVersion` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the version number of this database product.

4.6.34 `getDefaultTransactionIsolation` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves this database's default transaction isolation level.

Notes: The possible values are defined in `java.sql.Connection`.

4.6.35 `getDriverMajorVersion` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves this JDBC driver's major version number.

4.6.36 `getDriverMinorVersion` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves this JDBC driver's minor version number.

4.6.37 `getDriverName` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the name of this JDBC driver.

4.6.38 `getDriverVersion` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the version number of this JDBC driver as a String.

4.6.39 `getExportedKeys(catalog as string, schema as string, table as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the foreign key columns that reference the given table's primary key columns (the foreign keys exported by a table).

Notes: They are ordered by `FKTABLE_CAT`, `FKTABLE_SCHEM`, `FKTABLE_NAME`, and `KEY_SEQ`. Each foreign key column description has the following columns:

`PKTABLE_CAT` String =>primary key table catalog (may be null)
`PKTABLE_SCHEM` String =>primary key table schema (may be null)
`PKTABLE_NAME` String =>primary key table name
`PKCOLUMN_NAME` String =>primary key column name
`FKTABLE_CAT` String =>foreign key table catalog (may be null) being exported (may be null)
`FKTABLE_SCHEM` String =>foreign key table schema (may be null) being exported (may be null)
`FKTABLE_NAME` String =>foreign key table name being exported
`FKCOLUMN_NAME` String =>foreign key column name being exported
`KEY_SEQ` short =>sequence number within foreign key
`UPDATE_RULE` short =>What happens to foreign key when primary is updated:
`importedNoAction` - do not allow update of primary key if it has been imported
`importedKeyCascade` - change imported key to agree with primary key update
`importedKeySetNull` - change imported key to NULL if its primary key has been updated
`importedKeySetDefault` - change imported key to default values if its primary key has been updated
`importedKeyRestrict` - same as `importedKeyNoAction` (for ODBC 2.x compatibility)
`DELETE_RULE` short =>What happens to the foreign key when primary is deleted.
`importedKeyNoAction` - do not allow delete of primary key if it has been imported
`importedKeyCascade` - delete rows that import a deleted key
`importedKeySetNull` - change imported key to NULL if its primary key has been deleted
`importedKeyRestrict` - same as `importedKeyNoAction` (for ODBC 2.x compatibility)
`importedKeySetDefault` - change imported key to default if its primary key has been deleted
`FK_NAME` String =>foreign key name (may be null)
`PK_NAME` String =>primary key name (may be null)
`DEFERRABILITY` short =>can the evaluation of foreign key constraints be deferred until commit
`importedKeyInitiallyDeferred` - see SQL92 for definition
`importedKeyInitiallyImmediate` - see SQL92 for definition
`importedKeyNotDeferrable` - see SQL92 for definition

Parameters:

`catalog` - a catalog name; must match the catalog name as it is stored in this database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
`schema` - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
`table` - a table name; must match the table name as it is stored in this database

Returns:

a ResultSet object in which each row is a foreign key column description

Throws:

SQLException - if a database access error occurs

4.6.40 getExtraNameCharacters as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves all the "extra" characters that can be used in unquoted identifier names (those beyond a-z, A-Z, 0-9 and _).

4.6.41 getIdentiferQuoteString as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the string used to quote SQL identifiers. This method returns a space " " if identifier quoting is not supported.

4.6.42 getImportedKeys(catalog as string, schema as string, table as string) as JavaResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the primary key columns that are referenced by a table's foreign key columns (the primary keys imported by a table).

Notes: They are ordered by PKTABLE_CAT, PKTABLE_SCHEM, PKTABLE_NAME, and KEY_SEQ. Each primary key column description has the following columns:

PKTABLE_CAT String =>primary key table catalog being imported (may be null)

PKTABLE_SCHEM String =>primary key table schema being imported (may be null)

PKTABLE_NAME String =>primary key table name being imported

PKCOLUMN_NAME String =>primary key column name being imported

FKTABLE_CAT String =>foreign key table catalog (may be null)

FKTABLE_SCHEM String =>foreign key table schema (may be null)

FKTABLE_NAME String =>foreign key table name

FKCOLUMN_NAME String =>foreign key column name

KEY_SEQ short =>sequence number within a foreign key

UPDATE_RULE short =>What happens to a foreign key when the primary key is updated:

importedNoAction - do not allow update of primary key if it has been imported

importedKeyCascade - change imported key to agree with primary key update

importedKeySetNull - change imported key to NULL if its primary key has been updated

importedKeySetDefault - change imported key to default values if its primary key has been updated

importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)

DELETE_RULE short =>What happens to the foreign key when primary is deleted.

importedKeyNoAction - do not allow delete of primary key if it has been imported

importedKeyCascade - delete rows that import a deleted key

importedKeySetNull - change imported key to NULL if its primary key has been deleted

importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)

importedKeySetDefault - change imported key to default if its primary key has been deleted

FK_NAME String =>foreign key name (may be null)

PK_NAME String =>primary key name (may be null)

DEFERRABILITY short =>can the evaluation of foreign key constraints be deferred until commit

importedKeyInitiallyDeferred - see SQL92 for definition

importedKeyInitiallyImmediate - see SQL92 for definition

importedKeyNotDeferrable - see SQL92 for definition

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

table - a table name; must match the table name as it is stored in the database

Returns:

ResultSet - each row is a primary key column description

Throws:

SQLException - if a database access error occurs

4.6.43 getJDBCMajorVersion as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the major JDBC version number for this driver.

4.6.44 getJDBCMinorVersion as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the minor JDBC version number for this driver.

4.6.45 getMaxBinaryLiteralLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of hex characters this database allows in an inline binary literal.

Notes: Returns the maximum length (in hex characters) for a binary literal; a result of zero means that there is no limit or the limit is not known

4.6.46 getMaxCatalogNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters that this database allows in a catalog name.

Notes: Returns the maximum number of characters allowed in a catalog name; a result of zero means that there is no limit or the limit is not known

4.6.47 getMaxCharLiteralLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters this database allows for a character literal.

Notes: Returns the maximum number of characters allowed for a character literal; a result of zero means that there is no limit or the limit is not known

4.6.48 getMaxColumnNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters this database allows for a column name.

Notes: Returns the maximum number of characters allowed for a column name; a result of zero means that there is no limit or the limit is not known

4.6.49 getMaxColumnsInGroupBy as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of columns this database allows in a GROUP BY clause.

Notes: Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

4.6.50 getMaxColumnsInIndex as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of columns this database allows in an index.

Notes: Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

4.6.51 getMaxColumnsInOrderBy as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of columns this database allows in an ORDER BY clause.

Notes: Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

4.6.52 getMaxColumnsInSelect as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of columns this database allows in a SELECT list.

Notes: Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

4.6.53 getMaxColumnsInTable as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of columns this database allows in a table.

Notes: Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

4.6.54 getMaxConnections as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of concurrent connections to this database that are possible.

Notes: Returns the maximum number of active connections possible at one time; a result of zero means that there is no limit or the limit is not known

4.6.55 getMaxCursorNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters that this database allows in a cursor name.

Notes: Returns the maximum number of characters allowed in a cursor name; a result of zero means that there is no limit or the limit is not known

4.6.56 getMaxIndexLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of bytes this database allows for an index, including all of the parts of the index.

Notes: Returns the maximum number of bytes allowed; this limit includes the composite of all the constituent parts of the index; a result of zero means that there is no limit or the limit is not known

4.6.57 getMaxProcedureNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters that this database allows in a procedure name.

Notes: Returns the maximum number of characters allowed in a procedure name; a result of zero means that there is no limit or the limit is not known

4.6.58 getMaxRowSize as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of bytes this database allows in a single row.

Notes: Returns the maximum number of bytes allowed for a row; a result of zero means that there is no limit or the limit is not known

4.6.59 getMaxSchemaNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters that this database allows in a schema name.

Notes: Returns the maximum number of characters allowed in a schema name; a result of zero means that there is no limit or the limit is not known

4.6.60 getMaxStatementLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters this database allows in an SQL statement.

Notes: Returns the maximum number of characters allowed for an SQL statement; a result of zero means that there is no limit or the limit is not known

4.6.61 getMaxStatements as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of active statements to this database that can be open at the same time.

Notes: Returns the maximum number of statements that can be open at one time; a result of zero means that there is no limit or the limit is not known

4.6.62 getMaxTableNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters this database allows in a table name.

Notes: Returns the maximum number of characters allowed for a table name; a result of zero means that there is no limit or the limit is not known

4.6.63 getMaxTablesInSelect as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of tables this database allows in a SELECT statement.

Notes: Returns the maximum number of tables allowed in a SELECT statement; a result of zero means that there is no limit or the limit is not known

4.6.64 getMaxUserNameLength as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the maximum number of characters this database allows in a user name.

Notes: Returns the maximum number of characters allowed for a user name; a result of zero means that there is no limit or the limit is not known

4.6.65 `getNumericFunctions` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a comma-separated list of math functions available with this database.

Notes: These are the Open /Open CLI math function names used in the JDBC function escape clause.

4.6.66 `getPrimaryKeys(catalog as string, schema as string, table as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the given table's primary key columns. They are ordered by `COLUMN_NAME`.

Notes: Each primary key column description has the following columns:

`TABLE_CAT` String =>table catalog (may be null)
`TABLE_SCHEM` String =>table schema (may be null)
`TABLE_NAME` String =>table name
`COLUMN_NAME` String =>column name
`KEY_SEQ` short =>sequence number within primary key
`PK_NAME` String =>primary key name (may be null)

Parameters:

`catalog` - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

`schema` - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

`table` - a table name; must match the table name as it is stored in the database

Returns:

`ResultSet` - each row is a primary key column description

4.6.67 `getProcedureColumns(catalog as string, schemaPattern as string, procedureNamePattern as string, columnNamePattern as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the given catalog's stored procedure parameter and result columns.

Notes: Only descriptions matching the schema, procedure and parameter name criteria are returned. They are ordered by `PROCEDURE_SCHEM` and `PROCEDURE_NAME`. Within this, the return value, if any, is first. Next are the parameter descriptions in call order. The column descriptions follow in column number order.

Each row in the ResultSet is a parameter description or column description with the following fields:

PROCEDURE_CAT String =>procedure catalog (may be null)
 PROCEDURE_SCHEM String =>procedure schema (may be null)
 PROCEDURE_NAME String =>procedure name
 COLUMN_NAME String =>column/parameter name
 COLUMN_TYPE Short =>kind of column/parameter:
 procedureColumnUnknown - nobody knows
 procedureColumnIn - IN parameter
 procedureColumnInOut - INOUT parameter
 procedureColumnOut - OUT parameter
 procedureColumnReturn - procedure return value
 procedureColumnResult - result column in ResultSet
 DATA_TYPE int =>SQL type from java.sql.Types
 TYPE_NAME String =>SQL type name, for a UDT type the type name is fully qualified
 PRECISION int =>precision
 LENGTH int =>length in bytes of data
 SCALE short =>scale
 RADIX short =>radix
 NULLABLE short =>can it contain NULL.
 procedureNoNulls - does not allow NULL values
 procedureNullable - allows NULL values
 procedureNullableUnknown - nullability unknown
 REMARKS String =>comment describing parameter/column
 Note: Some databases may not return the column descriptions for a procedure. Additional columns beyond REMARKS can be defined by the database.

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
 schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
 procedureNamePattern - a procedure name pattern; must match the procedure name as it is stored in the database
 columnNamePattern - a column name pattern; must match the column name as it is stored in the database

Returns:

ResultSet - each row describes a stored procedure parameter or column

Throws:

SQLException - if a database access error occurs

4.6.68 `getProcedures(catalog as string, schemaPattern as string, procedureNamePattern as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the stored procedures available in the given catalog.

Notes: Only procedure descriptions matching the schema and procedure name criteria are returned. They are ordered by `PROCEDURE_SCHEM` and `PROCEDURE_NAME`.

Each procedure description has the the following columns:

`PROCEDURE_CAT` String =>procedure catalog (may be null)

`PROCEDURE_SCHEM` String =>procedure schema (may be null)

`PROCEDURE_NAME` String =>procedure name

reserved for future use

reserved for future use

reserved for future use

`REMARKS` String =>explanatory comment on the procedure

`PROCEDURE_TYPE` short =>kind of procedure:

`procedureResultUnknown` - May return a result

`procedureNoResult` - Does not return a result

`procedureReturnsResult` - Returns a result

Parameters:

`catalog` - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

`schemaPattern` - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

`procedureNamePattern` - a procedure name pattern; must match the procedure name as it is stored in the database

Returns:

`ResultSet` - each row is a procedure description

Throws:

`SQLException` - if a database access error occurs

4.6.69 `getProcedureTerm` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the database vendor's preferred term for "procedure".

4.6.70 `getResultSetHoldability` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the default holdability of this `ResultSet` object.

Notes: Returns:

the default holdability; either `ResultSet.HOLD_CURSORS_OVER_COMMIT` or `ResultSet.CLOSE_CURSORS_AT_COMMIT`

4.6.71 `getSchemas` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the schema names available in this database.

Notes: The results are ordered by schema name.

The schema column is:

TABLE_SCHEM String =>schema name

TABLE_CATALOG String =>catalog name (may be null)

Returns:

a `ResultSet` object in which each row is a schema decription

Throws:

`SQLException` - if a database access error occurs

4.6.72 `getSchemaTerm` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the database vendor's preferred term for "schema".

4.6.73 `getSearchStringEscape` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the string that can be used to escape wildcard characters.

Notes: This is the string that can be used to escape `'_'` or `'%'` in the catalog search parameters that are a pattern (and therefore use one of the wildcard characters).

The `'_'` character represents any single character; the `'%'` character represents any sequence of zero or more characters.

4.6.74 getSQLKeywords as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a comma-separated list of all of this database's SQL keywords that are NOT also SQL92 keywords.

4.6.75 getSQLStateType as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the SQLSTATE returned by `SQLException.getSQLState` is X/Open (now known as Open Group) SQL CLI or SQL99.

Notes: Returns:

the type of SQLSTATE; one of: `sqlStateXOpen` or `sqlStateSQL99`

4.6.76 getStringFunctions as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a comma-separated list of string functions available with this database.

Notes: These are the Open Group CLI string function names used in the JDBC function escape clause.

4.6.77 getSuperTables(catalog as string, schemaPattern as string, tableNamePattern as string) as ResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the table hierarchies defined in a particular schema in this database.

Notes: Only supertable information for tables matching the catalog, schema and table name are returned. The table name parameter may be a fully-qualified name, in which case, the catalog and schemaPattern parameters are ignored. If a table does not have a super table, it is not listed here. Supertables have to be defined in the same catalog and schema as the sub tables. Therefore, the type description does not need to include this information for the supertable.

Each type description has the following columns:

TABLE_CAT String =>the type's catalog (may be null)

TABLE_SCHEM String =>type's schema (may be null)

TABLE_NAME String =>type name

SUPERTABLE_NAME String =>the direct super type's name

Note: If the driver does not support type hierarchies, an empty result set is returned.

Parameters:

catalog - a catalog name; "" retrieves those without a catalog; null means drop catalog name from the selection criteria

schemaPattern - a schema name pattern; "" retrieves those without a schema

tableNamePattern - a table name pattern; may be a fully-qualified name

Returns:

a ResultSet object in which each row is a type description

Throws:

SQLException - if a database access error occurs

4.6.78 getSuperTypes(catalog as string, schemaPattern as string, typeNamePattern as string) as JavaResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the user-defined type (UDT) hierarchies defined in a particular schema in this database.

Notes: Only the immediate super type/ sub type relationship is modeled.

Only supertype information for UDTs matching the catalog, schema, and type name is returned. The type name parameter may be a fully-qualified name. When the UDT name supplied is a fully-qualified name, the catalog and schemaPattern parameters are ignored.

If a UDT does not have a direct super type, it is not listed here. A row of the ResultSet object returned by this method describes the designated UDT and a direct supertype. A row has the following columns:

TYPE_CAT String =>the UDT's catalog (may be null)

TYPE_SCHEM String =>UDT's schema (may be null)

TYPE_NAME String =>type name of the UDT

SUPERTYPE_CAT String =>the direct super type's catalog (may be null)

SUPERTYPE_SCHEM String =>the direct super type's schema (may be null)

SUPERTYPE_NAME String =>the direct super type's name

Note: If the driver does not support type hierarchies, an empty result set is returned.

Parameters:

catalog - a catalog name; "" retrieves those without a catalog; null means drop catalog name from the selection criteria

schemaPattern - a schema name pattern; "" retrieves those without a schema
 typeNamePattern - a UDT name pattern; may be a fully-qualified name

Returns:

a ResultSet object in which a row gives information about the designated UDT

Throws:

SQLException - if a database access error occurs

4.6.79 `getSystemFunctions` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a comma-separated list of system functions available with this database.

Notes: These are the Open Group CLI system function names used in the JDBC function escape clause.

4.6.80 `getTablePrivileges`(catalog as string, schemaPattern as string, tableNamePattern as string) as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the access rights for each table available in a catalog.

Notes: Note that a table privilege applies to one or more columns in the table. It would be wrong to assume that this privilege applies to all columns (this may be true for some systems but is not true for all.)

Only privileges matching the schema and table name criteria are returned. They are ordered by TABLE_SCHEM, TABLE_NAME, and PRIVILEGE.

Each privilege description has the following columns:

TABLE_CAT String =>table catalog (may be null)

TABLE_SCHEM String =>table schema (may be null)

TABLE_NAME String =>table name

GRANTOR =>grantor of access (may be null)

GRANTEE String =>grantee of access

PRIVILEGE String =>name of access (SELECT, INSERT, UPDATE, REFERENCES, ...)

IS_GRANTABLE String =>"true" if grantee is permitted to grant to others; "false" if not; null if unknown

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

tableNamePattern - a table name pattern; must match the table name as it is stored in the database

Returns:

ResultSet - each row is a table privilege description

Throws:

SQLException - if a database access error occurs

4.6.81 `getTables(catalog as string, schemaPattern as string, tableNamePattern as string)` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the tables available in the given catalog.

Notes: Only table descriptions matching the catalog, schema, table name and type criteria are returned.

They are ordered by TABLE_TYPE, TABLE_SCHEM and TABLE_NAME.

Each table description has the following columns:

TABLE_CAT String =>table catalog (may be null)

TABLE_SCHEM String =>table schema (may be null)

TABLE_NAME String =>table name

TABLE_TYPE String =>table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".

REMARKS String =>explanatory comment on the table

TYPE_CAT String =>the types catalog (may be null)

TYPE_SCHEM String =>the types schema (may be null)

TYPE_NAME String =>type name (may be null)

SELF_REFERENCING_COL_NAME String =>name of the designated "identifier" column of a typed table (may be null)

REF_GENERATION String =>specifies how values in SELF_REFERENCING_COL_NAME are created. Values are "SYSTEM", "USER", "DERIVED". (may be null)

Note: Some databases may not return information for all tables.

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

tableNamePattern - a table name pattern; must match the table name as it is stored in the database

types - a list of table types to include (optionally)

Returns:

ResultSet - each row is a table description

Throws:

SQLException - if a database access error occurs

See also:

- 4.6.82 getTables(catalog as string, schemaPattern as string, tableNamePattern as string, types() as string) as ResultSetMBS 188

4.6.82 getTables(catalog as string, schemaPattern as string, tableNamePattern as string, types() as string) as ResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of the tables available in the given catalog.

Notes: Only table descriptions matching the catalog, schema, table name and type criteria are returned.

They are ordered by TABLE_TYPE, TABLE_SCHEM and TABLE_NAME.

Each table description has the following columns:

TABLE_CAT String =>table catalog (may be null)

TABLE_SCHEM String =>table schema (may be null)

TABLE_NAME String =>table name

TABLE_TYPE String =>table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".

REMARKS String =>explanatory comment on the table

TYPE_CAT String =>the types catalog (may be null)

TYPE_SCHEM String =>the types schema (may be null)

TYPE_NAME String =>type name (may be null)

SELF_REFERENCING_COL_NAME String =>name of the designated "identifier" column of a typed table (may be null)

REF_GENERATION String =>specifies how values in SELF_REFERENCING_COL_NAME are created. Values are "SYSTEM", "USER", "DERIVED". (may be null)

Note: Some databases may not return information for all tables.

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

tableNamePattern - a table name pattern; must match the table name as it is stored in the database

types - a list of table types to include (optionally)

Returns:

ResultSet - each row is a table description

Throws:

SQLException - if a database access error occurs

See also:

- 4.6.81 `getTables(catalog as string, schemaPattern as string, tableNamePattern as string)` as `JavaResultSetMBS` 187

4.6.83 `getTableTypes` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the table types available in this database.

Notes: The table type is:

TABLE_TYPE String =>table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".

Returns:

a ResultSet object in which each row has a single String column that is a table type

Throws:

SQLException - if a database access error occurs

4.6.84 `getTimeDateFunctions` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a comma-separated list of the time and date functions available with this database.

4.6.85 `getTypeInfos` as `JavaResultSetMBS`

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of all the standard SQL types supported by this database.

Notes: They are ordered by DATA_TYPE and then by how closely the data type maps to the corresponding JDBC SQL type.

Each type description has the following columns:

TYPE_NAME String =>Type name
 DATA_TYPE int =>SQL data type from java.sql.Types
 PRECISION int =>maximum precision
 LITERAL_PREFIX String =>prefix used to quote a literal (may be null)
 LITERAL_SUFFIX String =>suffix used to quote a literal (may be null)
 CREATE_PARAMS String =>parameters used in creating the type (may be null)
 NULLABLE short =>can you use NULL for this type.
 typeNoNulls - does not allow NULL values
 typeNullable - allows NULL values
 typeNullableUnknown - nullability unknown
 CASE_SENSITIVE boolean=>is it case sensitive.
 SEARCHABLE short =>can you use "WHERE" based on this type:
 typePredNone - No support
 typePredChar - Only supported with WHERE .. LIKE
 typePredBasic - Supported except for WHERE .. LIKE
 typeSearchable - Supported for all WHERE ..
 UNSIGNED_ATTRIBUTE boolean =>is it unsigned.
 FIXED_PREC_SCALE boolean =>can it be a money value.
 AUTO_INCREMENT boolean =>can it be used for an auto-increment value.
 LOCAL_TYPE_NAME String =>localized version of type name (may be null)
 MINIMUM_SCALE short =>minimum scale supported
 MAXIMUM_SCALE short =>maximum scale supported
 SQL_DATA_TYPE int =>unused
 SQL_DATETIME_SUB int =>unused
 NUM_PREC_RADIX int =>usually 2 or 10

Returns:

a ResultSet object in which each row is an SQL type description

Throws:

SQLException - if a database access error occurs

This method is named `getTypeInfo` in Java and `getTypeInfos` in this plugin because Xojo has a global method and sees a conflict.

4.6.86 `getURL` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the URL for this DBMS.

Notes: Returns the URL for this DBMS or "" if it cannot be generated.

4.6.87 getUsername as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the user name as known to this database.

4.6.88 getVersionColumns(catalog as string, schema as string, table as string) as ResultSetMBS

Plugin Version: 9.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a description of a table's columns that are automatically updated when any value in a row is updated. They are unordered.

Notes: Each column description has the following columns:

SCOPE short =>is not used
 COLUMN_NAME String =>column name
 DATA_TYPE int =>SQL data type from java.sql.Types
 TYPE_NAME String =>Data source-dependent type name
 COLUMN_SIZE int =>precision
 BUFFER_LENGTH int =>length of column value in bytes

DECIMAL_DIGITS short =>scale

PSEUDO_COLUMN short =>whether this is pseudo column like an Oracle ROWID

versionColumnUnknown - may or may not be pseudo column

versionColumnNotPseudo - is NOT a pseudo column

versionColumnPseudo - is a pseudo column

Parameters:

catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

table - a table name; must match the table name as it is stored in the database

Returns:

a ResultSet object in which each row is a column description

4.6.89 importedKeyCascade as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: For the column UPDATE_RULE, indicates that when the primary key is updated, the foreign key (imported key) is changed to agree with it.

Notes: For the column DELETE_RULE, it indicates that when the primary key is deleted, rows that imported that key are deleted.

A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.90 importedKeyInitiallyDeferred as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates deferrability. See SQL-92 for a definition.

Notes: A possible value for the column DEFERRABILITY in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.91 importedKeyInitiallyImmediate as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates deferrability. See SQL-92 for a definition.

Notes: A possible value for the column DEFERRABILITY in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.92 importedKeyNoAction as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: For the columns UPDATE_RULE and DELETE_RULE, indicates that if the primary key has been imported, it cannot be updated or deleted.

Notes: A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.93 importedKeyNotDeferrable as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates deferrability. See SQL-92 for a definition.

Notes: A possible value for the column DEFERRABILITY in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.94 importedKeyRestrict as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: For the column UPDATE_RULE, indicates that a primary key may not be updated if it has been imported by another table as a foreign key.

Notes: For the column DELETE_RULE, indicates that a primary key may not be deleted if it has been imported by another table as a foreign key.

A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.95 importedKeySetDefault as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: For the columns UPDATE_RULE and DELETE_RULE, indicates that if the primary key is updated or deleted, the foreign key (imported key) is set to the default value.

Notes: A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.96 importedKeySetNull as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: For the columns UPDATE_RULE and DELETE_RULE, indicates that when the primary key is updated or deleted, the foreign key (imported key) is changed to NULL.

Notes: A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

4.6.97 insertsAreDetected(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether or not a visible row insert can be detected by calling the method ResultSet.rowInserted.

Notes: Parameters:

type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:

true if changes are detected by the specified result set type; false otherwise

4.6.98 isCatalogAtStart as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog appears at the start of a fully qualified table name. If not, the catalog appears at the end.

4.6.99 isReadOnly as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database is in read-only mode.

4.6.100 locatorsUpdateCopy as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether updates made to a LOB are made on a copy or directly to the LOB.

Notes: Returns:

true if updates are made to a copy of the LOB; false if updates are made directly to the LOB

4.6.101 nullPlusNonNullIsNull as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports concatenations between NULL and non-NULL values being NULL.

4.6.102 nullsAreSortedAtEnd as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether NULL values are sorted at the end regardless of sort order.

4.6.103 nullsAreSortedAtStart as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether NULL values are sorted at the start regardless of sort order.

4.6.104 nullsAreSortedHigh as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether NULL values are sorted high.

Notes: Sorted high means that NULL values sort higher than any other value in a domain. In an ascending order, if this method returns true, NULL values will appear at the end. By contrast, the method nullsAreSortedAtEnd indicates whether NULL values are sorted at the end regardless of sort order.

4.6.105 nullsAreSortedLow as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether NULL values are sorted low.

Notes: Sorted low means that NULL values sort lower than any other value in a domain. In an ascending order, if this method returns true, NULL values will appear at the beginning. By contrast, the method nullsAreSortedAtStart indicates whether NULL values are sorted at the beginning regardless of sort order.

4.6.106 othersDeletesAreVisible(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether deletes made by others are visible.

Notes: Parameters:

type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:

true if deletes made by others are visible for the given result set type; false otherwise

4.6.107 othersInsertsAreVisible(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether inserts made by others are visible.

Notes: Parameters:

type - the `ResultSet` type; one of `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

Returns:

true if inserts made by others are visible for the given result set type; false otherwise

4.6.108 `othersUpdatesAreVisible(type as Integer)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether updates made by others are visible.

Notes: Parameters:

type - the `ResultSet` type; one of `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

Returns:

true if updates made by others are visible for the given result set type; false otherwise

4.6.109 `ownDeletesAreVisible(type as Integer)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a result set's own deletes are visible.

Notes: type - the `ResultSet` type; one of `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

Returns true if deletes are visible for the given result set type; false otherwise

4.6.110 `ownInsertsAreVisible(type as Integer)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a result set's own inserts are visible.

Notes: type - the `ResultSet` type; one of `ResultSet.TYPE_FORWARD_ONLY`, `ResultSet.TYPE_SCROLL_INSENSITIVE`, or `ResultSet.TYPE_SCROLL_SENSITIVE`

Returns true if inserts are visible for the given result set type; false otherwise

4.6.111 ownUpdatesAreVisible(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether for the given type of ResultSet object, the result set's own updates are visible.

Notes: type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

4.6.112 procedureColumnIn as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column stores IN parameters.

Notes: A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

4.6.113 procedureColumnInOut as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column stores INOUT parameters.

Notes: A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

4.6.114 procedureColumnOut as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column stores OUT parameters.

Notes: A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

4.6.115 procedureColumnResult as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column stores results.

Notes: A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

4.6.116 `procedureColumnReturn` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the column stores return values.

Notes: A possible value for the column `COLUMN_TYPE` in the `ResultSet` returned by the method `getProcedureColumns`.

4.6.117 `procedureColumnUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that type of the column is unknown.

Notes: A possible value for the column `COLUMN_TYPE` in the `ResultSet` returned by the method `getProcedureColumns`.

4.6.118 `procedureNoNulls` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that NULL values are not allowed.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` object returned by the method `getProcedureColumns`.

4.6.119 `procedureNoResult` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the procedure does not return a result.

Notes: A possible value for column `PROCEDURE_TYPE` in the `ResultSet` object returned by the method `getProcedures`.

4.6.120 `procedureNullable` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that NULL values are allowed.

Notes: A possible value for the column `NULLABLE` in the `ResultSet` object returned by the method `getProcedureColumns`.

4.6.121 procedureNullableUnknown as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that whether NULL values are allowed is unknown.

Notes: A possible value for the column NULLABLE in the ResultSet object returned by the method getProcedureColumns.

4.6.122 procedureResultUnknown as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that it is not known whether the procedure returns a result.

Notes: A possible value for column PROCEDURE_TYPE in the ResultSet object returned by the method getProcedures.

4.6.123 procedureReturnsResult as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the procedure returns a result.

Notes: A possible value for column PROCEDURE_TYPE in the ResultSet object returned by the method getProcedures.

4.6.124 sqlStateSQL99 as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the value is an SQL99 SQLSTATE value.

Notes: A possible return value for the method SQLException.getSQLState.

4.6.125 sqlStateXOpen as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the value is an X/Open (now known as Open Group) SQL CLI SQLSTATE value.

Notes: A possible return value for the method SQLException.getSQLState.

4.6.126 storesLowerCaseIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores them in lower case.

4.6.127 storesLowerCaseQuotedIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case quoted SQL identifiers as case insensitive and stores them in lower case.

4.6.128 storesMixedCaseIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores them in mixed case.

4.6.129 storesMixedCaseQuotedIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case quoted SQL identifiers as case sensitive and as a result stores them in mixed case.

4.6.130 storesUpperCaseIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores them in upper case.

4.6.131 storesUpperCaseQuotedIdentifiers as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case quoted SQL identifiers as case insensitive and stores them in upper case.

4.6.132 supportsAlterTableWithAddColumn as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports ALTER TABLE with add column.

4.6.133 supportsAlterTableWithDropColumn as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports ALTER TABLE with drop column.

4.6.134 supportsANSI92EntryLevelSQL as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ANSI92 entry level SQL grammar.

4.6.135 supportsANSI92FullSQL as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ANSI92 full SQL grammar supported.

4.6.136 supportsANSI92IntermediateSQL as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ANSI92 intermediate SQL grammar supported.

4.6.137 supportsBatchUpdates as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports batch updates.

Notes: Returns:

true if this database supports batch updates; false otherwise

4.6.138 `supportsCatalogsInDataManipulation` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in a data manipulation statement.

4.6.139 `supportsCatalogsInIndexDefinitions` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in an index definition statement.

4.6.140 `supportsCatalogsInPrivilegeDefinitions` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in an index definition statement.

4.6.141 `supportsCatalogsInProcedureCalls` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in a procedure call statement.

4.6.142 `supportsCatalogsInTableDefinitions` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in a table definition statement.

4.6.143 `supportsColumnAliasing` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports column aliasing.

Notes: If so, the SQL AS clause can be used to provide names for computed columns or to provide alias names for columns as required.

4.6.144 supportsConvert as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the CONVERT function between SQL types.

See also:

- 4.6.145 supportsConvert(fromType as Integer, toType as Integer) as boolean

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4.6.145 supportsConvert(fromType as Integer, toType as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the CONVERT for two given SQL types.

Notes: Parameters:

fromType - the type to convert from; one of the type codes from the class JavaDatabaseMBS

toType - the type to convert to; one of the type codes from the class JavaDatabaseMBS

Returns:

true if so; false otherwise

See also:

- 4.6.144 supportsConvert as boolean

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4.6.146 supportsCoreSQLGrammar as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ODBC Core SQL grammar.

4.6.147 supportsCorrelatedSubqueries as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports correlated subqueries.

4.6.148 supportsDataDefinitionAndDataManipulationTransactions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports both data definition and data manipulation statements within a transaction.

4.6.149 supportsDataManipulationTransactionsOnly as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports only data manipulation statements within a transaction.

4.6.150 supportsDifferentTableCorrelationNames as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether, when table correlation names are supported, they are restricted to being different from the names of the tables.

4.6.151 supportsExpressionsInOrderBy as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports expressions in ORDER BY lists.

4.6.152 supportsExtendedSQLGrammar as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ODBC Extended SQL grammar.

4.6.153 supportsFullOuterJoins as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports full nested outer joins.

4.6.154 supportsGetGeneratedKeys as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether auto-generated keys can be retrieved after a statement has been executed.

Notes: Returns:

true if auto-generated keys can be retrieved after a statement has executed; false otherwise

4.6.155 supportsGroupBy as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports some form of GROUP BY clause.

4.6.156 supportsGroupByBeyondSelect as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports using columns not included in the SELECT statement in a GROUP BY clause provided that all of the columns in the SELECT statement are included in the GROUP BY clause.

4.6.157 supportsGroupByUnrelated as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports using a column that is not in the SELECT statement in a GROUP BY clause.

4.6.158 supportsIntegrityEnhancementFacility as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the SQL Integrity Enhancement Facility.

4.6.159 supportsLikeEscapeClause as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports specifying a LIKE escape clause.

4.6.160 `supportsLimitedOuterJoins` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database provides limited support for outer joins.

Notes: (This will be true if the method `supportsFullOuterJoins` returns true).

4.6.161 `supportsMinimumSQLGrammar` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the ODBC Minimum SQL grammar.

4.6.162 `supportsMixedCaseIdentifiers` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case unquoted SQL identifiers as case sensitive and as a result stores them in mixed case.

4.6.163 `supportsMixedCaseQuotedIdentifiers` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database treats mixed case quoted SQL identifiers as case sensitive and as a result stores them in mixed case.

4.6.164 `supportsMultipleOpenResults` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether it is possible to have multiple `ResultSet` objects returned from a `CallableStatement` object simultaneously.

Notes: Returns:

true if a `CallableStatement` object can return multiple `ResultSet` objects simultaneously; false otherwise

4.6.165 supportsMultipleResultSets as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports getting multiple ResultSet objects from a single call to the method execute.

4.6.166 supportsMultipleTransactions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database allows having multiple transactions open at once (on different connections).

4.6.167 supportsNamedParameters as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports named parameters to callable statements.

Notes: Returns:

true if named parameters are supported; false otherwise

4.6.168 supportsNonNullableColumns as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether columns in this database may be defined as non-nullable.

4.6.169 supportsOpenCursorsAcrossCommit as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports keeping cursors open across commits.

4.6.170 supportsOpenCursorsAcrossRollback as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports keeping cursors open across rollbacks.

4.6.171 supportsOpenStatementsAcrossCommit as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports keeping statements open across commits.

4.6.172 supportsOpenStatementsAcrossRollback as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports keeping statements open across rollbacks.

4.6.173 supportsOrderByUnrelated as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports using a column that is not in the SELECT statement in an ORDER BY clause.

4.6.174 supportsOuterJoins as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports some form of outer join.

4.6.175 supportsPositionedDelete as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a catalog name can be used in an index definition statement.

4.6.176 supportsPositionedUpdate as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports positioned UPDATE statements.

4.6.177 supportsResultSetConcurrency(type as Integer, concurrency as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the given concurrency type in combination with the given result set type.

4.6.178 supportsResultSetHoldability(holdability as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the given result set holdability.

Notes: Parameters:

holdability - one of the following constants: `ResultSet.HOLD_CURSORS_OVER_COMMIT` or `ResultSet.CLOSE_CURSORS_AT_COMMIT`

Returns:

true if so; false otherwise

4.6.179 supportsResultSetType(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the given result set type.

4.6.180 supportsSavepoints as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports savepoints.

Notes: Returns:

true if savepoints are supported; false otherwise

4.6.181 supportsSchemasInDataManipulation as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a schema name can be used in a data manipulation statement.

4.6.182 supportsSchemasInIndexDefinitions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a schema name can be used in an index definition statement.

4.6.183 supportsSchemasInPrivilegeDefinitions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a schema name can be used in a privilege definition statement.

4.6.184 supportsSchemasInProcedureCalls as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a schema name can be used in a procedure call statement.

4.6.185 supportsSchemasInTableDefinitions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a schema name can be used in a table definition statement.

4.6.186 supportsSelectForUpdate as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports SELECT FOR UPDATE statements.

4.6.187 supportsStatementPooling as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports statement pooling.

Notes: Returns:

true if so; false otherwise

4.6.188 supportsStoredProcedures as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports stored procedure calls that use the stored procedure escape syntax.

4.6.189 supportsSubqueriesInComparisons as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports subqueries in comparison expressions.

4.6.190 supportsSubqueriesInExists as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports subqueries in EXISTS expressions.

4.6.191 supportsSubqueriesInIns as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports subqueries in IN statements.

4.6.192 supportsSubqueriesInQuantifieds as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports subqueries in quantified expressions.

4.6.193 supportsTableCorrelationNames as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports table correlation names.

4.6.194 supportsTransactionIsolationLevel(level as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports the given transaction isolation level.

Notes: Parameters:

level - one of the transaction isolation levels defined in javaConnectionMBS

Returns:

true if so; false otherwise

4.6.195 supportsTransactions as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports transactions.

Notes: If not, invoking the method commit is a noop, and the isolation level is TRANSACTION_NONE.

4.6.196 supportsUnion as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports SQL UNION.

4.6.197 supportsUnionAll as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database supports SQL UNION ALL.

4.6.198 tableIndexClustered as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this table index is a clustered index.

Notes: A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

4.6.199 tableIndexHashed as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this table index is a hashed index.

Notes: A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

4.6.200 tableIndexOther as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this table index is not a clustered index, a hashed index, or table statistics; it is something other than these.

Notes: A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

4.6.201 tableIndexStatistic as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this column contains table statistics that are returned in conjunction with a table's index descriptions.

Notes: A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

4.6.202 typeNoNulls as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that a NULL value is NOT allowed for this data type.

Notes: A possible value for column NULLABLE in the ResultSet object returned by the method getTypeInfo.

4.6.203 typeNullable as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that a NULL value is allowed for this data type.

Notes: A possible value for column NULLABLE in the ResultSet object returned by the method getTypeInfo.

4.6.204 typeNullableUnknown as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that it is not known whether a NULL value is allowed for this data type.

Notes: A possible value for column NULLABLE in the ResultSet object returned by the method getTypeInfo.

4.6.205 typePredBasic as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that one can base all WHERE search clauses except WHERE . . . LIKE on this data type.

Notes: A possible value for column SEARCHABLE in the ResultSet object returned by the method getTypeInfo.

4.6.206 typePredChar as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that the only WHERE search clause that can be based on this type is WHERE . . . LIKE.

Notes: A possible value for column SEARCHABLE in the ResultSet object returned by the method getTypeInfo.

4.6.207 typePredNone as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that WHERE search clauses are not supported for this type.

Notes: A possible value for column SEARCHABLE in the ResultSet object returned by the method getTypeInfo.

4.6.208 typeSearchable as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that all WHERE search clauses can be based on this type.

Notes: A possible value for column SEARCHABLE in the ResultSet object returned by the method getTypeInfo.

4.6.209 updatesAreDetected(type as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether or not a visible row update can be detected by calling the method ResultSet.rowUpdated.

Notes: Parameters:

type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:

true if changes are detected by the result set type; false otherwise

4.6.210 usesLocalFilePerTable as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database uses a file for each table.

4.6.211 usesLocalFiles as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether this database stores tables in a local file.

4.6.212 versionColumnNotPseudo as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this version column is NOT a pseudo column.

Notes: A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.

4.6.213 versionColumnPseudo as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this version column is a pseudo column.

Notes: A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.

4.6.214 versionColumnUnknown as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates that this version column may or may not be a pseudo column.

Notes: A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.

4.7 class JavaExceptionMBS

4.7.1 class JavaExceptionMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The exception class used to report java exception.

Notes: For SQLExceptions the ErrorNumber property will be filled.

For all java exceptions the message property is filled.

Subclass of the RuntimeException class.

Blog Entries

- [Encrypted Access database in Xojo](#)

4.7.2 Methods

4.7.3 RaiseJavaException(message as string)

Plugin Version: 9.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: A method to test exception handling.

Example:

```
JavaExceptionMBS.RaiseJavaException "Just a test!"
```

Notes: This method raises a new JavaExceptionMBS with the given message.

4.8 class `JavaInputStreamMBS`

4.8.1 class `JavaInputStreamMBS`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The plugin class for an inputstream.

Example:

```
// your result set
dim r as JavaResultSetMBS

// get binary data for BLOB column named 'data'
dim myInputStream as JavaInputStreamMBS = r.getBinaryStream( "data" )
if myInputStream <>nil Then

// read byte for byte in a loop
// better use other read() method with buffer
dim data as string

Do
dim c as Integer = myInputStream.read
If c = -1 then exit

data = data + chr(c)
Loop

Dim myPicture as Picture = Picture.FromData(data)

// work with picture here
End If
```

Notes: This abstract class in java is the superclass of all classes representing an input stream of bytes.

Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MonkeyBread Software Releases the MBS Real Studio plug-ins in version 13.1](#)
- [MBS Real Studio Plugins, version 13.1pr7](#)

4.8.2 Methods

4.8.3 available as `Integer`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns an estimate of the number of bytes that can be read (or skipped over) from this input stream without blocking by the next invocation of a method for this input stream.

Notes: The next invocation might be the same thread or another thread. A single read or skip of this many bytes will not block, but may read or skip fewer bytes.

Note that while some implementations of `InputStream` will return the total number of bytes in the stream, many will not. It is never correct to use the return value of this method to allocate a buffer intended to hold all data in this stream.

A subclass' implementation of this method may choose to throw an `IOException` if this input stream has been closed by invoking the `close()` method.

The available method for class `InputStream` always returns 0.

This method should be overridden by subclasses.

Returns an estimate of the number of bytes that can be read (or skipped over) from this input stream without blocking or 0 when it reaches the end of the input stream.

Throws:

`IOException` - if an I/O error occurs.

4.8.4 close

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Closes this input stream and releases any system resources associated with the stream.

4.8.5 Constructor

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.8.6 mark(readlimit as Integer)

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Marks the current position in this input stream.

Notes: A subsequent call to the `reset` method repositions this stream at the last marked position so that subsequent reads re-read the same bytes.

The readlimit arguments tells this input stream to allow that many bytes to be read before the mark position gets invalidated.

The general contract of mark is that, if the method markSupported returns true, the stream somehow remembers all the bytes read after the call to mark and stands ready to supply those same bytes again if and whenever the method reset is called. However, the stream is not required to remember any data at all if more than readlimit bytes are read from the stream before reset is called.

Marking a closed stream should not have any effect on the stream.

The mark method of InputStream does nothing.

Parameters:

readlimit - the maximum limit of bytes that can be read before the mark position becomes invalid.

4.8.7 markSupported as boolean

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Tests if this input stream supports the mark and reset methods.

Notes: Whether or not mark and reset are supported is an invariant property of a particular input stream instance. The markSupported method of InputStream returns false.

Returns true if this stream instance supports the mark and reset methods; false otherwise.

4.8.8 read as Integer

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Reads the next byte of data from the input stream.

Notes: The value byte is returned as an int in the range 0 to 255. If no byte is available because the end of the stream has been reached, the value -1 is returned. This method blocks until input data is available, the end of the stream is detected, or an exception is thrown.

A subclass must provide an implementation of this method.

Returns the next byte of data, or -1 if the end of the stream is reached.

Throws:

IOException - if an I/O error occurs.

See also:

4.8. CLASS JAVAINPUTSTREAMMBS	221
• 4.8.9 read(bytes as JavaByteArrayMBS) as Integer	221
• 4.8.10 read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer	221

4.8.9 read(bytes as JavaByteArrayMBS) as Integer

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Reads some number of bytes from the input stream and stores them into the buffer array bytes.
Notes: The number of bytes actually read is returned as an integer. This method blocks until input data is available, end of file is detected, or an exception is thrown.

If the length of bytes is zero, then no bytes are read and 0 is returned; otherwise, there is an attempt to read at least one byte. If no byte is available because the stream is at the end of the file, the value -1 is returned; otherwise, at least one byte is read and stored into bytes.

The first byte read is stored into element bytes [0], the next one into bytes [1], and so on. The number of bytes read is, at most, equal to the length of bytes. Let k be the number of bytes actually read; these bytes will be stored in elements bytes [0] through bytes [k-1], leaving elements bytes [k] through bytes [bytes.length-1] unaffected.

The read(bytes) method for class InputStream has the same effect as:

```
read(bytes, 0, bytes.length)
```

Parameters:

bytes: the buffer into which the data is read.

Returns the total number of bytes read into the buffer, or -1 if there is no more data because the end of the stream has been reached.

Throws:

IOException - If the first byte cannot be read for any reason other than the end of the file, if the input stream has been closed, or if some other I/O error occurs.

NullPointerException - if bytes is null.

See also:

- 4.8.8 read as Integer 220
- 4.8.10 read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer 221

4.8.10 read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Reads up to Length bytes of data from the input stream into an array of bytes.

Notes: An attempt is made to read as many as Length bytes, but a smaller number may be read. The number of bytes actually read is returned as an integer.

This method blocks until input data is available, end of file is detected, or an exception is thrown.

If Length is zero, then no bytes are read and 0 is returned; otherwise, there is an attempt to read at least one byte. If no byte is available because the stream is at end of file, the value -1 is returned; otherwise, at least one byte is read and stored into bytes.

The first byte read is stored into element bytes [Offset], the next one into bytes [Offset+1], and so on. The number of bytes read is, at most, equal to Length. Let k be the number of bytes actually read; these bytes will be stored in elements bytes [Offset] through bytes [Offset+k-1], leaving elements bytes [Offset+k] through bytes [Offset+Length-1] unaffected.

In every case, elements bytes [0] through bytes [Offset] and elements bytes [Offset+Length] through bytes [bytes.length-1] are unaffected.

The read(bytes, Offset, Length) method for class InputStream simply calls the method read() repeatedly. If the first such call results in an IOException, that exception is returned from the call to the read(bytes, Offset, Length) method. If any subsequent call to read() results in a IOException, the exception is caught and treated as if it were end of file; the bytes read up to that point are stored into bytes and the number of bytes read before the exception occurred is returned. The default implementation of this method blocks until the requested amount of input data len has been read, end of file is detected, or an exception is thrown. Subclasses are encouraged to provide a more efficient implementation of this method.

Parameters:

bytes: the buffer into which the data is read.

Offset: the start offset in array bytes at which the data is written.

Length: the maximum number of bytes to read.

Returns the total number of bytes read into the buffer, or -1 if there is no more data because the end of the stream has been reached.

Throws:

IOException - If the first byte cannot be read for any reason other than end of file, or if the input stream has been closed, or if some other I/O error occurs.

NullPointerException - If bytes is null.

IndexOutOfBoundsException - If Offset is negative, Length is negative, or Length is greater than bytes.length - Offset

See also:

- 4.8.8 read as Integer 220
- 4.8.9 read(bytes as JavaByteArrayMBS) as Integer 221

4.8.11 reset

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Repositions this stream to the position at the time the mark method was last called on this input stream.

Notes: The general contract of reset is:

- If the method `markSupported` returns true, then:
- If the method `mark` has not been called since the stream was created, or the number of bytes read from the stream since `mark` was last called is larger than the argument to `mark` at that last call, then an `IOException` might be thrown.
- If such an `IOException` is not thrown, then the stream is reset to a state such that all the bytes read since the most recent call to `mark` (or since the start of the file, if `mark` has not been called) will be resupplied to subsequent callers of the `read` method, followed by any bytes that otherwise would have been the next input data as of the time of the call to `reset`.
- If the method `markSupported` returns false, then:
- The call to `reset` may throw an `IOException`.
- If an `IOException` is not thrown, then the stream is reset to a fixed state that depends on the particular type of the input stream and how it was created. The bytes that will be supplied to subsequent callers of the `read` method depend on the particular type of the input stream.

The method `reset` for class `InputStream` does nothing except throw an `IOException`.

Throws:

`IOException` - if this stream has not been marked or if the mark has been invalidated.

4.8.12 skip(count as Int64) as Int64

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Skips over and discards `count` bytes of data from this input stream.

Notes: The `skip` method may, for a variety of reasons, end up skipping over some smaller number of bytes, possibly 0. This may result from any of a number of conditions; reaching end of file before `count` bytes have been skipped is only one possibility. The actual number of bytes skipped is returned. If `count` is negative, no bytes are skipped.

The `skip` method of this class creates a byte array and then repeatedly reads into it until `count` bytes have been read or the end of the stream has been reached. Subclasses are encouraged to provide a more efficient implementation of this method. For instance, the implementation may depend on the ability to seek.

Parameters:

count: the number of bytes to be skipped.

Returns the actual number of bytes skipped.

Throws:

IOException - if the stream does not support seek, or if some other I/O error occurs.

4.9 class `JavaParameterMetaDataMBS`

4.9.1 class `JavaParameterMetaDataMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: An object that can be used to get information about the types and properties of the parameters in a `PreparedStatement` object.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.9.2 Methods

4.9.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.9.4 `getParameterClassName(param as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the fully-qualified name of the Java class whose instances should be passed to the method `PreparedStatement.setObject`.

Notes: Parameters:

`param` - the first parameter is 1, the second is 2, ...

Returns:

the fully-qualified name of the class in the Java programming language that would be used by the method `PreparedStatement.setObject` to set the value in the specified parameter. This is the class name used for custom mapping.

4.9.5 `getParameterCount as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the number of parameters in the `PreparedStatement` object for which this `ParameterMetaData` object contains information.

Notes: Returns:

the number of parameters

4.9.6 `getParameterMode(param as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated parameter's mode.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

mode of the parameter; one of `ParameterMetaData.parameterModeIn`, `ParameterMetaData.parameterModeOut`, or `ParameterMetaData.parameterModeInOut` `ParameterMetaData.parameterModeUnknown`.

4.9.7 `getParameterType(param as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated parameter's SQL type.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

SQL type from `java.sql.Types`

4.9.8 `getParameterTypeName(param as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated parameter's database-specific type name.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

type the name used by the database. If the parameter type is a user-defined type, then a fully-qualified type name is returned.

4.9.9 `getPrecision(param as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated parameter's number of decimal digits.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

precision

4.9.10 `getScale(param as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated parameter's number of digits to right of the decimal point.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

scale

4.9.11 `isNullable(param as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether null values are allowed in the designated parameter.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

the nullability status of the given parameter; one of `ParameterMetaData.parameterNoNulls`, `ParameterMetaData.parameterNullable`, or `ParameterMetaData.parameterNullableUnknown`

4.9.12 `isSigned(param as Integer) as boolean`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether values for the designated parameter can be signed numbers.

Notes: Parameters:

param - the first parameter is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.9.13 `parameterModeIn as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the parameter's mode is IN.

4.9.14 `parameterModeInOut as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the parameter's mode is INOUT.

4.9.15 `parameterModeOut` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the parameter's mode is OUT.

4.9.16 `parameterModeUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the mode of the parameter is unknown.

4.9.17 `parameterNoNulls` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that a parameter will not allow NULL values.

4.9.18 `parameterNullable` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that a parameter will allow NULL values.

4.9.19 `parameterNullableUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the nullability of a parameter is unknown.

4.10 class JavaPreparedStatementMBS

4.10.1 class JavaPreparedStatementMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: An object that represents a precompiled SQL statement.

Notes: A SQL statement is precompiled and stored in a PreparedStatement object. This object can then be used to efficiently execute this statement multiple times.

Note: The setter methods (setShort, setString, and so on) for setting IN parameter values must specify types that are compatible with the defined SQL type of the input parameter. For instance, if the IN parameter has SQL type INTEGER, then the method setInt should be used.

If arbitrary parameter type conversions are required, the method setObject should be used with a target SQL type.

In the following example of setting a parameter, con represents an active connection:

```
PreparedStatement pstmt = con.prepareStatement("UPDATE EMPLOYEES SET SALARY = ? WHERE ID = ?");
```

```
pstmt.setBigDecimal(1, 153833.00)
```

```
pstmt.setInt(2, 110592)
```

Subclass of the JavaStatementMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [MBS Real Studio Plugins, version 11.3pr1](#)

4.10.2 Methods

4.10.3 addBatch

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds a set of parameters to this PreparedStatement object's batch of commands.

4.10.4 clearParameters

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears the current parameter values immediately.

Notes: In general, parameter values remain in force for repeated use of a statement. Setting a parameter

value automatically clears its previous value. However, in some cases it is useful to immediately release the resources used by the current parameter values; this can be done by calling the method `clearParameters`.

4.10.5 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.10.6 `execute` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the SQL statement in this `PreparedStatement` object, which may be any kind of SQL statement.

Notes: Some prepared statements return multiple results; the `execute` method handles these complex statements as well as the simpler form of statements handled by the methods `executeQuery` and `executeUpdate`. The `execute` method returns a boolean to indicate the form of the first result. You must call either the method `getResultSet` or `getUpdateCount` to retrieve the result; you must call `getMoreResults` to move to any subsequent result(s).

Returns:

true if the first result is a `ResultSet` object; false if the first result is an update count or there is no result

4.10.7 `executeQuery` as `JavaResultSetMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the SQL query in this `PreparedStatement` object and returns the `ResultSet` object generated by the query.

Notes: Returns:

a `ResultSet` object that contains the data produced by the query; never null

4.10.8 `executeUpdate` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the SQL statement in this `PreparedStatement` object, which must be an SQL INSERT, UPDATE or DELETE statement; or an SQL statement that returns nothing, such as a DDL statement.

Notes: Returns:

either (1) the row count for INSERT, UPDATE, or DELETE statements or (2) 0 for SQL statements that

return nothing.

4.10.9 getMetaData as JavaResultSetMetaDataMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves a ResultSetMetaData object that contains information about the columns of the ResultSet object that will be returned when this PreparedStatement object is executed.

Notes: Because a PreparedStatement object is precompiled, it is possible to know about the ResultSet object that it will return without having to execute it. Consequently, it is possible to invoke the method getMetaData on a PreparedStatement object rather than waiting to execute it and then invoking the ResultSet.getMetaData method on the ResultSet object that is returned.

NOTE: Using this method may be expensive for some drivers due to the lack of underlying DBMS support.

Returns:

the description of a ResultSet object's columns or null if the driver cannot return a ResultSetMetaData object

4.10.10 getParameterMetaData as JavaParameterMetaDataMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the number, types and properties of this PreparedStatement object's parameters.

Notes: Returns:

a ParameterMetaData object that contains information about the number, types and properties of this PreparedStatement object's parameters

4.10.11 setBlob(parameterIndex as Integer, x as JavaBlobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Blob object.

Notes: The driver converts this to an SQL BLOB value when it sends it to the database.

Parameters:

i - the first parameter is 1, the second is 2, ...

x - a Blob object that maps an SQL BLOB value

4.10.12 setBoolean(parameterIndex as Integer, x as boolean)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java boolean value.

Notes: The driver converts this to an SQL BIT value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

x - the parameter value

4.10.13 setByte(parameterIndex as Integer, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java byte value.

Notes: The driver converts this to an SQL TINYINT value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

x - the parameter value

4.10.14 setBytes(parameterIndex as Integer, Value as String)

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java array of bytes.

Notes: The driver converts this to an SQL VARBINARY or LONGVARBINARY (depending on the argument's size relative to the driver's limits on VARBINARY values) when it sends it to the database.

parameterIndex: the first parameter is 1, the second is 2, ...

Value: the parameter value as a string.

4.10.15 setClob(parameterIndex as Integer, x as JavaClobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Clob object.

Notes: The driver converts this to an SQL CLOB value when it sends it to the database.

Parameters:

i - the first parameter is 1, the second is 2, ...
x - a Clob object that maps an SQL CLOB value

4.10.16 setDouble(parameterIndex as Integer, x as Double)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java double value.

Notes: The driver converts this to an SQL DOUBLE value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

4.10.17 setFloat(parameterIndex as Integer, x as single)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java float value.

Notes: The driver converts this to an SQL FLOAT value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

4.10.18 setInt(parameterIndex as Integer, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java int value.

Notes: The driver converts this to an SQL INTEGER value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

4.10.19 setLong(parameterIndex as Integer, x as Int64)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java long value.

Notes: The driver converts this to an SQL BIGINT value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

x - the parameter value

4.10.20 setNull(parameterIndex as Integer, sqlType as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to SQL NULL.

Notes: You must specify the parameter's SQL type.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

sqlType - the SQL type code defined in java.sql.Types

4.10.21 setShort(parameterIndex as Integer, x as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java short value.

Notes: The driver converts this to an SQL SMALLINT value when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

x - the parameter value

4.10.22 setString(parameterIndex as Integer, x as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the designated parameter to the given Java String value.

Notes: The driver converts this to an SQL VARCHAR or LONGVARCHAR value (depending on the argument's size relative to the driver's limits on VARCHAR values) when it sends it to the database.

Parameters:

parameterIndex - the first parameter is 1, the second is 2, ...

x - the parameter value

4.11 class ResultSetMBS

4.11.1 class ResultSetMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The class for a recordset in Java.

Notes: Nearly all methods on this class can raise java exceptions which you can get using the error property. (and errorstring and errorcode)

Subclass of the JavaObjectMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Prefetching records from databases](#)
- [Encrypted Access database in Xojo](#)
- [MBS Real Studio Plugins, version 13.1pr7](#)
- [MBS Real Studio Plugins, version 11.3pr1](#)

4.11.2 Methods

4.11.3 absolute(row as Integer) as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the given row number in this ResultSet object.

Example:

```
dim db as JavaConnectionMBS // your database
dim r as ResultSetMBS
dim s as JavaStatementMBS

// check second row
s=db.createStatement
r=s.executeQuery("SELECT * from myTable")

if r<>Nil then
if r.absolute(2) then
MsgBox str(R.getInt("test_id"))+" "+r.getString("test_val")
end if
end if
```

Notes: See the java documentation for details on java.sql.ResultSet.absolute.

4.11.4 afterLast

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the end of this ResultSet object, just after the last row.

Notes: See the java documentation for details on `java.sql.ResultSet.afterLast`.

4.11.5 beforeFirst

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the front of this ResultSet object, just before the first row.

Notes: See the java documentation for details on `java.sql.ResultSet.beforeFirst`.

4.11.6 cancelRowUpdates

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Cancels the updates made to the current row in this ResultSet object.

Notes: This method may be called after calling an updater method(s) and before calling the method `updateRow` to roll back the updates made to a row. If no updates have been made or `updateRow` has already been called, this method has no effect.

See the java documentation for details on `java.sql.ResultSet.cancelRowUpdates`.

4.11.7 clearWarnings

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears all warnings reported on this ResultSet object.

Notes: See the java documentation for details on `java.sql.ResultSet.clearWarnings`.

4.11.8 CLOSE_CURSORS_AT_COMMIT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that ResultSet objects should be closed when the method `Connection.commit` is called.

4.11.9 CONCUR_READ_ONLY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the concurrency mode for a ResultSet object that may NOT be updated.

4.11.10 CONCUR_UPDATABLE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the concurrency mode for a ResultSet object that may be updated.

4.11.11 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.11.12 deleteRow

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Deletes the current row from this ResultSet object and from the underlying database.

Notes: See the java documentation for details on java.sql.ResultSet.deleteRow.

4.11.13 FETCH_FORWARD as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the rows in a result set will be processed in a forward direction; first-to-last.

Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

4.11.14 FETCH_REVERSE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the rows in a result set will be processed in a reverse direction; last-to-first.

Notes: This constant is used by the method `setFetchDirection` as a hint to the driver, which the driver may ignore.

4.11.15 `FETCH_UNKNOWN` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the order in which rows in a result set will be processed is unknown.

Notes: This constant is used by the method `setFetchDirection` as a hint to the driver, which the driver may ignore.

4.11.16 `findColumn(column as string)` as Integer

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Maps the given `ResultSet` column name to its `ResultSet` column index.

Example:

```
dim r as JavaResultSetMBS // your result set
MsgBox str(r.findColumn("test_id"))+" "+str(r.findColumn("test_val"))
```

Notes: Returns 0 on any error.

See the java documentation for details on `java.sql.ResultSet.findColumn`.

4.11.17 `first` as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the first row in this `ResultSet` object.

Notes: See the java documentation for details on `java.sql.ResultSet.first`.

4.11.18 `getAsciiStream(column as Integer)` as `JavaInputStreamMBS`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of ASCII characters.

Notes: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of ASCII characters. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large `LONGVARCHAR` values. The JDBC driver will do any necessary conversion

from the database format into ASCII.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method `InputStream.available` is called whether there is data available or not.

Parameters:

column: the first column is 1, the second is 2, ...

Returns a Java input stream that delivers the database column value as a stream of one-byte ASCII characters; if the value is SQL NULL, the value returned is null

Throws:

`SQLException` - if the `columnIndex` is not valid; if a database access error occurs or this method is called on a closed result set.

See also:

- 4.11.19 `getAsciiStream(column as string)` as `JavaInputStreamMBS`

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4.11.19 `getAsciiStream(column as string)` as `JavaInputStreamMBS`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as an Array object in the Java programming language.

Notes: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of ASCII characters. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large `LONGVARCHAR` values. The JDBC driver will do any necessary conversion from the database format into ASCII.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method `available` is called whether there is data available or not.

Parameters:

column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified, then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of one-byte ASCII characters. If the value is SQL NULL, the value returned is null.

Throws:

`SQLException` - if the `columnLabel` is not valid; if a database access error occurs or this method is called on a closed result set

See also:

- 4.11.18 `getAsciiStream(column as Integer)` as `JavaInputStreamMBS`

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4.11.20 `getBinaryStream(column as Integer)` as `JavaInputStreamMBS`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of uninterpreted bytes.

Notes: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of uninterpreted bytes. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large `LONGVARBINARY` values.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method `InputStream.available` is called whether there is data available or not.

Parameters:

column: the first column is 1, the second is 2, ...

Returns a Java input stream that delivers the database column value as a stream of uninterpreted bytes; if the value is SQL NULL, the value returned is null

Throws:

`SQLException` - if the `columnIndex` is not valid; if a database access error occurs or this method is called on a closed result set

See also:

- 4.11.21 `getBinaryStream(column as string)` as `JavaInputStreamMBS`

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4.11.21 `getBinaryStream(column as string)` as `JavaInputStreamMBS`

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of uninterpreted bytes.

Notes: Retrieves the value of the designated column in the current row of this `ResultSet` object as a stream of uninterpreted bytes. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large `LONGVARBINARY` values.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method `available` is called whether there is data available or not.

Parameters:

column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified, then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of uninterpreted bytes; if the value is SQL NULL, the result is null.

Throws SQLException - if the columnLabel is not valid; if a database access error occurs or this method is called on a closed result set

See also:

- 4.11.20 `getBinaryStream(column as Integer)` as `JavaInputStreamMBS` 240

4.11.22 `getBlob(column as Integer)` as `JavaBlobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a `Blob` object in the Java programming language.

Notes: Column: the first column is 1, the second is 2, ...

Returns a `Blob` object representing the SQL BLOB value in the specified column

See also:

- 4.11.23 `getBlob(column as string)` as `JavaBlobMBS` 241

4.11.23 `getBlob(column as string)` as `JavaBlobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a `Blob` object in the Java programming language.

Notes: column: the name of the column from which to retrieve the value

Returns a `Blob` object representing the SQL BLOB value in the specified column

See also:

- 4.11.22 `getBlob(column as Integer)` as `JavaBlobMBS` 241

4.11.24 `getBoolean(column as Integer)` as `boolean`

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this `ResultSet` object as a `boolean`.

Notes: See the java documentation for details on `java.sql.ResultSet.getBoolean`.

See also:

- 4.11.25 `getBoolean(column as string)` as `boolean` 242

4.11.25 `getBoolean(column as string)` as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this `ResultSet` object as a boolean.

Notes: See the java documentation for details on `java.sql.ResultSet.getBoolean`.

See also:

- 4.11.24 `getBoolean(column as Integer)` as boolean 241

4.11.26 `getBytes(column as Integer)` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a byte in the Java programming language.

Notes: Parameters:

`columnIndex` - the first column is 1, the second is 2, ...

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See also:

- 4.11.27 `getBytes(column as string)` as Integer 242

4.11.27 `getBytes(column as string)` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a byte in the Java programming language.

Notes: Parameters:

`columnName` - the SQL name of the column

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See also:

- 4.11.26 `getBytes(column as Integer)` as Integer 242

4.11.28 `getBytes(column as Integer)` as string

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a byte array in the Java programming language.

Notes: `column`: the first column is 1, the second is 2, ...

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the plugin gives you the bytes as a string with no encoding.
See also:

- 4.11.29 `getBytes(column as string)` as string 243

4.11.29 `getBytes(column as string)` as string

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a byte array in the Java programming language.

Notes: the plugin gives you the bytes as a string with no encoding.

See also:

- 4.11.28 `getBytes(column as Integer)` as string 242

4.11.30 `getClob(column as Integer)` as `JavaClobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a `Clob` object in the Java programming language.

Notes: Column: the first column is 1, the second is 2, ...

Returns a `Clob` object representing the SQL CLOB value in the specified column

See also:

- 4.11.31 `getClob(column as string)` as `JavaClobMBS` 243

4.11.31 `getClob(column as string)` as `JavaClobMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a `Clob` object in the Java programming language.

Notes: column: the name of the column from which to retrieve the value

Returns a `Clob` object representing the SQL CLOB value in the specified column

See also:

- 4.11.30 `getClob(column as Integer)` as `JavaClobMBS` 243

4.11.32 `getConcurrency` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the concurrency mode of this ResultSet object.

Notes: The concurrency used is determined by the Statement object that created the result set.

Returns:

the concurrency type, either `ResultSet.CONCUR_READ_ONLY` or `ResultSet.CONCUR_UPDATABLE`

4.11.33 `getCursorName` as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the name of the SQL cursor used by this ResultSet object.

Notes: In SQL, a result table is retrieved through a cursor that is named. The current row of a result set can be updated or deleted using a positioned update/delete statement that references the cursor name. To insure that the cursor has the proper isolation level to support update, the cursor's SELECT statement should be of the form `SELECT FOR UPDATE`. If `FOR UPDATE` is omitted, the positioned updates may fail.

The JDBC API supports this SQL feature by providing the name of the SQL cursor used by a ResultSet object. The current row of a ResultSet object is also the current row of this SQL cursor.

Note: If positioned update is not supported, a `SQLException` is thrown.

Returns:

the SQL name for this ResultSet object's cursor

4.11.34 `getDouble(column as Integer)` as Double

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as a double.

Notes: See the java documentation for details on `java.sql.ResultSet.getDouble`.

See also:

- 4.11.35 `getDouble(column as string)` as Double 244

4.11.35 `getDouble(column as string)` as Double

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as a double.

Notes: See the java documentation for details on `java.sql.ResultSet.getDouble`.

See also:

- 4.11.34 `getDouble(column as Integer)` as Double 244

4.11.36 `getFloat(column as Integer)` as single

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a float in the Java programming language.

Notes: Parameters:

`columnIndex` - the first column is 1, the second is 2, ...

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See also:

- 4.11.37 `getFloat(column as string)` as single 245

4.11.37 `getFloat(column as string)` as single

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a float in the Java programming language.

Notes: Parameters:

`columnName` - the SQL name of the column

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See also:

- 4.11.36 `getFloat(column as Integer)` as single 245

4.11.38 `getInt(column as Integer)` as Integer

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this `ResultSet` object as an int.

Notes: Parameters:

`columnIndex` - the first column is 1, the second is 2, ...

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See the java documentation for details on `java.sql.ResultSet.getInt`.

See also:

- 4.11.39 `getInt(column as string)` as Integer 246

4.11.39 getInt(column as string) as Integer

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as an int.

Example:

```
dim r as JavaResultSetMBS // your result set
MsgBox str(R.getInt("test_id")+ " "+r.getString("test_val"))
```

Notes: See the java documentation for details on java.sql.ResultSet.getInt.

See also:

- 4.11.38 getInt(column as Integer) as Integer 245

4.11.40 getLong(column as Integer) as int64

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as an int64.

Notes: See the java documentation for details on java.sql.ResultSet.getLong.

See also:

- 4.11.41 getLong(column as string) as int64 246

4.11.41 getLong(column as string) as int64

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as an int64.

Notes: See the java documentation for details on java.sql.ResultSet.getLong.

See also:

- 4.11.40 getLong(column as Integer) as int64 246

4.11.42 getMetaData as JavaResultSetMetaDataMBS

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the number, types and properties of this ResultSet object's columns.

Notes: Returns:

the description of this ResultSet object's columns

4.11.43 `getRow` as Integer

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the current row number.

Notes: See the java documentation for details on `java.sql.ResultSet.getRow`.

4.11.44 `getShort(column as Integer)` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a short in the Java programming language.

Notes: Parameters:

`columnIndex` - the first column is 1, the second is 2, ...

Returns:

the column value; if the value is SQL NULL, the value returned is 0.

See also:

- 4.11.45 `getShort(column as string)` as Integer

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4.11.45 `getShort(column as string)` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the value of the designated column in the current row of this `ResultSet` object as a short in the Java programming language.

Notes: Parameters:

`columnName` - the SQL name of the column

Returns:

the column value; if the value is SQL NULL, the value returned is 0

See also:

- 4.11.44 `getShort(column as Integer)` as Integer

247

4.11.46 `getString(column as Integer)` as string

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this `ResultSet` object as a String.

Notes: See the java documentation for details on `java.sql.ResultSet.getString`.

See also:

- 4.11.47 `getString(column as string)` as string

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4.11.47 getString(column as string) as string

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the value of the designated column in the current row of this ResultSet object as a String.

Example:

```
dim r as JavaResultSetMBS // your result set
MsgBox str(R.getInt("test_id")+ " "+r.getString("test_val"))
```

Notes: See the java documentation for details on java.sql.ResultSet.getString.

See also:

- 4.11.46 getString(column as Integer) as string

247

4.11.48 getType as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the type of this ResultSet object.

Notes: The type is determined by the Statement object that created the result set.

Returns:

ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

4.11.49 getUnicodeStream(column as Integer) as JavaInputStreamMBS

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Deprecated. use getCharacterStream in place of getUnicodeStream

Notes: Retrieves the value of the designated column in the current row of this ResultSet object as a stream of two-byte 3 characters. The first byte is the high byte; the second byte is the low byte. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARCHAR values. The JDBC driver will do any necessary conversion from the database format into Unicode.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method InputStream.available is called, whether there is data available or not.

Parameters:

column: the first column is 1, the second is 2, ...

Returns a Java input stream that delivers the database column value as a stream of two-byte Unicode characters; if the value is SQL NULL, the value returned is null

Throws:

SQLException - if the columnIndex is not valid; if a database access error occurs or this method is called on a closed result set

SQLFeatureNotSupportedException - if the JDBC driver does not support this method

See also:

- 4.11.50 getUnicodeStream(column as string) as JavaInputStreamMBS

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4.11.50 getUnicodeStream(column as string) as JavaInputStreamMBS

Plugin Version: 13.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Deprecated. use getCharacterStream instead

Notes: Retrieves the value of the designated column in the current row of this ResultSet object as a stream of two-byte Unicode characters. The first byte is the high byte; the second byte is the low byte. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARCHAR values. The JDBC technology-enabled driver will do any necessary conversion from the database format into Unicode.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method InputStream.available is called, whether there is data available or not.

Parameters:

column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified, then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of two-byte Unicode characters. If the value is SQL NULL, the value returned is null.

Throws:

SQLException - if the columnLabel is not valid; if a database access error occurs or this method is called on a closed result set

SQLFeatureNotSupportedException - if the JDBC driver does not support this method

See also:

- 4.11.49 getUnicodeStream(column as Integer) as JavaInputStreamMBS

248

4.11.51 HOLD_CURSORS_OVER_COMMIT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that ResultSet objects should not be closed when the method Connection.commit is called.

4.11.52 insertRow

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Inserts the contents of the insert row into this ResultSet object and into the database.

Notes: See the java documentation for details on `java.sql.ResultSet.insertRow`.

4.11.53 isAfterLast as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the cursor is after the last row in this ResultSet object.

Notes: See the java documentation for details on `java.sql.ResultSet.isAfterLast`.

4.11.54 isBeforeFirst as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the cursor is before the first row in this ResultSet object.

Notes: Returns:

true if the cursor is before the first row; false if the cursor is at any other position or the result set contains no rows

See the java documentation for details on `java.sql.ResultSet.isBeforeFirst`.

4.11.55 isFirst as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the cursor is on the first row of this ResultSet object.

Notes: See the java documentation for details on `java.sql.ResultSet.isFirst`.

4.11.56 isLast as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the cursor is on the last row of this ResultSet object.

Notes: See the java documentation for details on `java.sql.ResultSet.isLast`.

4.11.57 last as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the last row in this ResultSet object.

Notes: See the java documentation for details on `java.sql.ResultSet.last`.

4.11.58 moveToCurrentRow

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the remembered cursor position, usually the current row.

Notes: This method has no effect if the cursor is not on the insert row.

See the java documentation for details on `java.sql.ResultSet.moveToCurrentRow`.

4.11.59 moveToInsertRow

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the insert row.

Notes: The current cursor position is remembered while the cursor is positioned on the insert row. The insert row is a special row associated with an updatable result set. It is essentially a buffer where a new row may be constructed by calling the updater methods prior to inserting the row into the result set. Only the updater, getter, and insertRow methods may be called when the cursor is on the insert row. All of the columns in a result set must be given a value each time this method is called before calling insertRow. An updater method must be called before a getter method can be called on a column value.

See the java documentation for details on `java.sql.ResultSet.moveToInsertRow`.

4.11.60 NextRecord as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor down one row from its current position.

Notes: See the java documentation for details on `java.sql.ResultSet.next`.

4.11.61 `previousRecord` as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor to the previous row in this `ResultSet` object.

Notes: See the java documentation for details on `java.sql.ResultSet.previous`.

4.11.62 `refreshRow`

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Refreshes the current row with its most recent value in the database.

Notes: This method cannot be called when the cursor is on the insert row.

The `refreshRow` method provides a way for an application to explicitly tell the JDBC driver to refetch a row(s) from the database. An application may want to call `refreshRow` when caching or prefetching is being done by the JDBC driver to fetch the latest value of a row from the database. The JDBC driver may actually refresh multiple rows at once if the fetch size is greater than one.

All values are refetched subject to the transaction isolation level and cursor sensitivity. If `refreshRow` is called after calling an updater method, but before calling the method `updateRow`, then the updates made to the row are lost. Calling the method `refreshRow` frequently will likely slow performance.

4.11.63 `relative(row as Integer)` as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves the cursor a relative number of rows, either positive or negative.

Notes: See the java documentation for details on `java.sql.ResultSet.relative`.

4.11.64 `rowDeleted` as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether a row has been deleted.

Notes: A deleted row may leave a visible "hole" in a result set. This method can be used to detect holes in a result set. The value returned depends on whether or not this `ResultSet` object can detect deletions.

Returns:

true if a row was deleted and deletions are detected; false otherwise

4.11.65 rowInserted as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the current row has had an insertion.

Notes: The value returned depends on whether or not this ResultSet object can detect visible inserts.

Returns:

true if a row has had an insertion and insertions are detected; false otherwise

4.11.66 rowUpdated as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves whether the current row has been updated.

Notes: The value returned depends on whether or not the result set can detect updates.

Returns:

true if both (1) the row has been visibly updated by the owner or another and (2) updates are detected

4.11.67 TYPE_FORWARD_ONLY as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object whose cursor may move only forward.

4.11.68 TYPE_SCROLL_INSENSITIVE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object that is scrollable but generally not sensitive to changes made by others.

4.11.69 TYPE_SCROLL_SENSITIVE as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating the type for a ResultSet object that is scrollable and generally sensitive to changes made by others.

4.11.70 updateBlob(column as Integer, value as JavaBlobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a java.sql.Blob value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the first column is 1, the second is 2, ...

value: the new column value

See also:

- 4.11.71 updateBlob(column as string, value as JavaBlobMBS) 254

4.11.71 updateBlob(column as string, value as JavaBlobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a java.sql.Blob value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the name of the column

value: the new column value

See also:

- 4.11.70 updateBlob(column as Integer, value as JavaBlobMBS) 254

4.11.72 updateBoolean(column as Integer, value as boolean)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a boolean value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.73 updateBoolean(column as string, value as boolean) 255

4.11.73 updateBoolean(column as string, value as boolean)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a boolean value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.72 updateBoolean(column as Integer, value as boolean) 254

4.11.74 updateByte(column as Integer, value as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a byte value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.75 updateByte(column as string, value as Integer) 255

4.11.75 updateByte(column as string, value as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a byte value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.74 updateByte(column as Integer, value as Integer) 255

4.11.76 updateBytes(column as Integer, Value as String)

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a byte array value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: column index starting at 1.

Value: The new byte array as a string.

See also:

- 4.11.77 updateBytes(column as string, Value as String) 256

4.11.77 updateBytes(column as string, Value as String)

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a byte array value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: The column name.

Value: The new byte array as a string.

See also:

- 4.11.76 updateBytes(column as Integer, Value as String) 256

4.11.78 updateClob(column as Integer, value as JavaClobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a java.sql.Clob value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the first column is 1, the second is 2, ...

value: the new column value

See also:

- 4.11.79 updateClob(column as string, value as JavaClobMBS) 257

4.11.79 updateClob(column as string, value as JavaClobMBS)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a java.sql.Clob value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the name of the column

value: the new column value

See also:

- 4.11.78 updateClob(column as Integer, value as JavaClobMBS)

256

4.11.80 updateDouble(column as Integer, value as Double)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a double value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.81 updateDouble(column as string, value as Double)

257

4.11.81 updateDouble(column as string, value as Double)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a double value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.80 updateDouble(column as Integer, value as Double)

257

4.11.82 updateFloat(column as Integer, value as single)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a float value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.83 updateFloat(column as string, value as single) 258

4.11.83 updateFloat(column as string, value as single)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a float value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.82 updateFloat(column as Integer, value as single) 258

4.11.84 updateInt(column as Integer, value as Integer)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with an int value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.85 updateInt(column as string, value as Integer) 259

4.11.85 updateInt(column as string, value as Integer)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with an int value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.84 updateInt(column as Integer, value as Integer)

258

4.11.86 updateLong(column as Integer, value as int64)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a long value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.87 updateLong(column as string, value as int64)

259

4.11.87 updateLong(column as string, value as int64)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a long value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.86 updateLong(column as Integer, value as int64)

259

4.11.88 updateNull(column as Integer)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gives a nullable column a null value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

See also:

- 4.11.89 updateNull(column as string) 260

4.11.89 updateNull(column as string)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a null value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

See also:

- 4.11.88 updateNull(column as Integer) 260

4.11.90 updateRow

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the underlying database with the new contents of the current row of this ResultSet object.

Example:

```
dim r as JavaResultSetMBS
dim db as JavaConnectionMBS // your database
dim s as JavaStatementMBS

s=db.createStatement
r=s.executeQuery("SELECT test_id from myTable")

if r<>Nil then
while r.NextRecord
```

```

r.updateInt("test_id",10+r.getInt("test_id"))
r.updateRow
wend
end if

```

Notes: This method cannot be called when the cursor is on the insert row.

See the java documentation for details on `java.sql.ResultSet.updateRow`.

4.11.91 updateShort(column as Integer, value as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a short value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the `updateRow` or `insertRow` methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.92 updateShort(column as string, value as Integer) 261

4.11.92 updateShort(column as string, value as Integer)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a short value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the `updateRow` or `insertRow` methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.91 updateShort(column as Integer, value as Integer) 261

4.11.93 updateString(column as Integer, value as string)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a String value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnIndex - the first column is 1, the second is 2, ...

x - the new column value

See also:

- 4.11.94 updateString(column as string, value as string) 262

4.11.94 updateString(column as string, value as string)

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Updates the designated column with a String value.

Notes: The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

columnName - the name of the column

x - the new column value

See also:

- 4.11.93 updateString(column as Integer, value as string) 262

4.11.95 wasNull as boolean

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Reports whether the last column read had a value of SQL NULL.

Notes: See the java documentation for details on java.sql.ResultSet.wasNull.

4.11.96 Properties

4.11.97 FetchDirection as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gives a hint as to the direction in which the rows in this ResultSet object will be processed.

Notes: The initial value is determined by the Statement object that produced this ResultSet object. The fetch direction may be changed at any time.

Parameters:

direction - an int specifying the suggested fetch direction; one of ResultSet.FETCH_FORWARD, ResultSet.FETCH_REVERSE, or ResultSet.FETCH_UNKNOWN

(Read and Write computed property)

4.11.98 FetchSize as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gives the JDBC driver a hint as to the number of rows that should be fetched from the database when more rows are needed for this ResultSet object.

Notes: If the fetch size specified is zero, the JDBC driver ignores the value and is free to make its own best guess as to what the fetch size should be. The default value is set by the Statement object that created the result set. The fetch size may be changed at any time.

Parameters:

rows - the number of rows to fetch

(Read and Write computed property)

4.12 class `JavaResultSetMetaDataMBS`

4.12.1 class `JavaResultSetMetaDataMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: An object that can be used to get information about the types and properties of the columns in a `ResultSet` object.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.12.2 Methods

4.12.3 `columnNoNulls` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that a column does not allow NULL values.

4.12.4 `columnNullable` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that a column allows NULL values.

4.12.5 `columnNullableUnknown` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the nullability of a column's values is unknown.

4.12.6 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.12.7 `getCatalogName(Column as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the designated column's table's catalog name.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

the name of the catalog for the table in which the given column appears or "" if not applicable

4.12.8 `getColumnClassName(Column as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the fully-qualified name of the Java class whose instances are manufactured if the method `ResultSet.getObject` is called to retrieve a value from the column.

Notes: `ResultSet.getObject` may return a subclass of the class returned by this method.

Parameters:

column - the first column is 1, the second is 2, ...

Returns:

the fully-qualified name of the class in the Java programming language that would be used by the method `ResultSet.getObject` to retrieve the value in the specified column. This is the class name used for custom mapping.

4.12.9 `getColumnCount as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the number of columns in this `ResultSet` object.

4.12.10 `getColumnDisplaySize(Column as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates the designated column's normal maximum width in characters.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

the normal maximum number of characters allowed as the width of the designated column

4.12.11 getColumnLabel(Column as Integer) as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the designated column's suggested title for use in printouts and displays.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

the suggested column title

4.12.12 getColumnName(Column as Integer) as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get the designated column's name.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

column name

4.12.13 getColumnType(Column as Integer) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated column's SQL type.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

SQL type from java.sql.Types

4.12.14 getColumnTypeName(Column as Integer) as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the designated column's database-specific type name.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

type name used by the database. If the column type is a user-defined type, then a fully-qualified type name is returned.

4.12.15 `getPrecision(Column as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get the designated column's number of decimal digits.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

precision

4.12.16 `getScale(Column as Integer) as Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the designated column's number of digits to right of the decimal point.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

scale

4.12.17 `getSchemaName(Column as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Get the designated column's table's schema.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

schema name or "" if not applicable

4.12.18 `getTableName(Column as Integer) as string`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gets the designated column's table name.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

table name or "" if not applicable

4.12.19 isAutoIncrement(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the designated column is automatically numbered, thus read-only.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.20 isCaseSensitive(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether a column's case matters.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.21 isCurrency(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the designated column is a cash value

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.22 isDefinitelyWritable(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether a write on the designated column will definitely succeed.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.23 isNullable(Column as Integer) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates the nullability of values in the designated column.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

the nullability status of the given column; one of columnNoNulls, columnNullable or columnNullableUnknown

4.12.24 isReadOnly(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the designated column is definitely not writable.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.25 isSearchable(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether the designated column can be used in a where clause.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.26 isSigned(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether values in the designated column are signed numbers.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.12.27 isWritable(Column as Integer) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Indicates whether it is possible for a write on the designated column to succeed.

Notes: Parameters:

column - the first column is 1, the second is 2, ...

Returns:

true if so; false otherwise

4.13 class `JavaRuntimeMBS`

4.13.1 class `JavaRuntimeMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The java class for runtime information.

Notes: Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.13.2 Methods

4.13.3 `availableProcessors` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the number of processors available to the Java virtual machine.

Notes: This value may change during a particular invocation of the virtual machine. Applications that are sensitive to the number of available processors should therefore occasionally poll this property and adjust their resource usage appropriately.

4.13.4 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.13.5 `freeMemory` as `Int64`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the amount of free memory in the Java Virtual Machine.

Notes: Calling the `gc` method may result in increasing the value returned by `freeMemory`.

4.13.6 `gc`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Invokes the garbage collection.

Notes: Calls "`System.gc`" in Java.

4.13.7 `maxMemory` as `Int64`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the maximum amount of memory that the Java virtual machine will attempt to use.

Notes: If there is no inherent limit then the value `Long.MAX_VALUE` will be returned.

4.13.8 `totalMemory` as `Int64`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Returns the total amount of memory in the Java virtual machine.

Notes: The value returned by this method may vary over time, depending on the host environment.

Note that the amount of memory required to hold an object of any given type may be implementation-dependent.

4.14 class JavaSavepointMBS

4.14.1 class JavaSavepointMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The representation of a savepoint, which is a point within the current transaction that can be referenced from the Connection.rollback method. When a transaction is rolled back to a savepoint all changes made after that savepoint are undone.

Notes: Savepoints can be either named or unnamed. Unnamed savepoints are identified by an ID generated by the underlying data source.

Subclass of the JavaObjectMBS class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

4.14.2 Methods

4.14.3 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.14.4 getSavepointId as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the generated ID for the savepoint that this Savepoint object represents.

4.14.5 getSavepointName as string

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the name of the savepoint that this Savepoint object represents.

4.15 class `JavaStatementMBS`

4.15.1 class `JavaStatementMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The object used for executing a static SQL statement and returning the results it produces.

Notes: By default, only one `ResultSet` object per `Statement` object can be open at the same time. Therefore, if the reading of one `ResultSet` object is interleaved with the reading of another, each must have been generated by different `Statement` objects. All execution methods in the `Statement` interface implicitly close a statement's current `ResultSet` object if an open one exists.

Subclass of the `JavaObjectMBS` class.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [Prefetching records from databases](#)
- [MBS Xojo / Real Studio Plugins, version 15.1pr1](#)

4.15.2 Methods

4.15.3 `addBatch(sql as string)`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Adds the given SQL command to the current list of commands for this `Statement` object.

Notes: The commands in this list can be executed as a batch by calling the method `executeBatch`.

NOTE: This method is optional.

Parameters:

`sql` - typically this is a static SQL `INSERT` or `UPDATE` statement

4.15.4 `cancel`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Cancels this `Statement` object if both the DBMS and driver support aborting an SQL statement.

Notes: This method can be used by one thread to cancel a statement that is being executed by another thread.

4.15.5 clearBatch

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Empties this Statement object's current list of SQL commands.

Notes: NOTE: This method is optional.

4.15.6 clearWarnings

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Clears all the warnings reported on this Statement object.

Notes: After a call to this method, the method getWarnings will return null until a new warning is reported for this Statement object.

4.15.7 close

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Releases this Statement object's database and JDBC resources immediately instead of waiting for this to happen when it is automatically closed.

Notes: It is generally good practice to release resources as soon as you are finished with them to avoid tying up database resources.

Calling the method close on a Statement object that is already closed has no effect.

Note: A Statement object is automatically closed when it is garbage collected. When a Statement object is closed, its current ResultSet object, if one exists, is also closed.

4.15.8 CLOSE_ALL_RESULTS as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that all ResultSet objects that have previously been kept open should be closed when calling getMoreResults.

4.15.9 CLOSE_CURRENT_RESULT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the current ResultSet object should be closed when calling getMoreResults.

4.15.10 Constructor

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.15.11 `execute(sql as string)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the given SQL statement, which may return multiple results.

Notes: In some (uncommon) situations, a single SQL statement may return multiple result sets and/or update counts. Normally you can ignore this unless you are (1) executing a stored procedure that you know may return multiple results or (2) you are dynamically executing an unknown SQL string.

The `execute` method executes an SQL statement and indicates the form of the first result. You must then use the methods `getResultSet` or `getUpdateCount` to retrieve the result, and `getMoreResults` to move to any subsequent result(s).

Parameters:

`sql` - any SQL statement

Returns:

true if the first result is a `ResultSet` object; false if it is an update count or there are no results

See also:

- 4.15.12 `execute(sql as string, autoGeneratedKeys as Integer)` as boolean

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4.15.12 `execute(sql as string, autoGeneratedKeys as Integer)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the given SQL statement, which may return multiple results, and signals the driver that any auto-generated keys should be made available for retrieval.

Notes: The driver will ignore this signal if the SQL statement is not an `INSERT` statement.

In some (uncommon) situations, a single SQL statement may return multiple result sets and/or update counts. Normally you can ignore this unless you are (1) executing a stored procedure that you know may return multiple results or (2) you are dynamically executing an unknown SQL string.

The `execute` method executes an SQL statement and indicates the form of the first result. You must then use the methods `getResultSet` or `getUpdateCount` to retrieve the result, and `getMoreResults` to move to any

subsequent result(s).

Parameters:

sql - any SQL statement

autoGeneratedKeys - a constant indicating whether auto-generated keys should be made available for retrieval using the method `getGeneratedKeys`; one of the following constants: `Statement.RETURN_GENERATED_KEYS` or `Statement.NO_GENERATED_KEYS`

Returns:

true if the first result is a `ResultSet` object; false if it is an update count or there are no results

See also:

- 4.15.11 `execute(sql as string)` as boolean

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4.15.13 `executeBatch` as `Integer`()

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Submits a batch of commands to the database for execution and if all commands execute successfully, returns an array of update counts.

4.15.14 `executeQuery(sql as string)` as `JavaResultSetMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the given SQL statement, which returns a single `ResultSet` object.

Notes: Parameters:

sql - an SQL statement to be sent to the database, typically a static SQL `SELECT` statement

Returns:

a `ResultSet` object that contains the data produced by the given query; never null

4.15.15 `executeUpdate(Sql as string)` as `Integer`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the given SQL statement, which may be an `INSERT`, `UPDATE`, or `DELETE` statement or an SQL statement that returns nothing, such as an SQL `DDL` statement.

Notes: Parameters:

sql - an SQL `INSERT`, `UPDATE` or `DELETE` statement or an SQL statement that returns nothing

Returns:

either the row count for `INSERT`, `UPDATE` or `DELETE` statements, or 0 for SQL statements that return nothing

See also:

- 4.15.16 `executeUpdate(Sql as string, autoGeneratedKeys as Integer)` as `Integer`

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4.15.16 executeUpdate(Sql as string, autoGeneratedKeys as Integer) as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Executes the given SQL statement and signals the driver with the given flag about whether the auto-generated keys produced by this Statement object should be made available for retrieval.

Notes: Parameters:

sql - must be an SQL INSERT, UPDATE or DELETE statement or an SQL statement that returns nothing
 autoGeneratedKeys - a flag indicating whether auto-generated keys should be made available for retrieval; one of the following constants: Statement.RETURN_GENERATED_KEYS Statement.NO_GENERATED_KEYS

Returns:

either the row count for INSERT, UPDATE or DELETE statements, or 0 for SQL statements that return nothing

See also:

- 4.15.15 executeUpdate(Sql as string) as Integer

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4.15.17 EXECUTE_FAILED as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that an error occurred while executing a batch statement.

4.15.18 getGeneratedKeys as ResultSetMBS

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves any auto-generated keys created as a result of executing this Statement object.

Notes: If this Statement object did not generate any keys, an empty ResultSet object is returned.

Returns:

a ResultSet object containing the auto-generated key(s) generated by the execution of this Statement object

4.15.19 getMoreResults as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves to this Statement object's next result, returns true if it is a ResultSet object, and implicitly closes any current ResultSet object(s) obtained with the method getResultSet.

Notes: There are no more results when the following is true:

```
// stmt is a Statement object
((stmt.getMoreResults() == false) && (stmt.getUpdateCount() == -1))
```

Returns:

true if the next result is a ResultSet object; false if it is an update count or there are no more results

See also:

- 4.15.20 `getMoreResults(current as Integer)` as boolean

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4.15.20 `getMoreResults(current as Integer)` as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Moves to this Statement object's next result, deals with any current ResultSet object(s) according to the instructions specified by the given flag, and returns true if the next result is a ResultSet object.

Notes: There are no more results when the following is true:

```
// stmt is a Statement object
((stmt.getMoreResults() == false) && (stmt.getUpdateCount() == -1))
```

Parameters:

current - one of the following Statement constants indicating what should happen to current ResultSet objects obtained using the method `getResultSet`: `Statement.CLOSE_CURRENT_RESULT`, `Statement.KEEP_CURRENT_RESULT`, or `Statement.CLOSE_ALL_RESULTS`

Returns:

true if the next result is a ResultSet object; false if it is an update count or there are no more results

See also:

- 4.15.19 `getMoreResults` as boolean

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4.15.21 `getResultSet` as `JavaResultSetMBS`

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the current result as a ResultSet object.

Notes: This method should be called only once per result.

Returns:

the current result as a ResultSet object or null if the result is an update count or there are no more results

4.15.22 `getResultSetConcurrency` as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the result set concurrency for ResultSet objects generated by this Statement object.

Notes: Returns:

either ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

4.15.23 getResultSetHoldability as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the result set holdability for ResultSet objects generated by this Statement object.

Notes: Returns:

either ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

4.15.24 getResultSetType as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the result set type for ResultSet objects generated by this Statement object.

Notes: Returns:

one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

4.15.25 getUpdateCount as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Retrieves the current result as an update count; if the result is a ResultSet object or there are no more results, -1 is returned.

Notes: This method should be called only once per result.

Returns:

the current result as an update count; -1 if the current result is a ResultSet object or there are no more results

4.15.26 KEEP_CURRENT_RESULT as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that the current ResultSet object should not be closed when calling getMoreResults.

4.15.27 NO_GENERATED_KEYS as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that generated keys should not be made available for retrieval.

4.15.28 RETURN_GENERATED_KEYS as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that generated keys should be made available for retrieval.

4.15.29 setCursorName(name as string)

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the SQL cursor name to the given String, which will be used by subsequent Statement object execute methods.

Notes: This name can then be used in SQL positioned update or delete statements to identify the current row in the ResultSet object generated by this statement. If the database does not support positioned update/delete, this method is a noop. To insure that a cursor has the proper isolation level to support updates, the cursor's SELECT statement should have the form SELECT FOR UPDATE. If FOR UPDATE is not present, positioned updates may fail.

Note: By definition, the execution of positioned updates and deletes must be done by a different Statement object than the one that generated the ResultSet object being used for positioning. Also, cursor names must be unique within a connection.

Parameters:

name - the new cursor name, which must be unique within a connection

4.15.30 SUCCESS_NO_INFO as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The constant indicating that a batch statement executed successfully but that no count of the number of rows it affected is available.

4.15.31 Properties

4.15.32 EscapeProcessing as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Whether escape processing is on or off.

Notes: If escape scanning is on (the default), the driver will do escape substitution before sending the SQL statement to the database. Note: Since prepared statements have usually been parsed prior to making this call, disabling escape processing for PreparedStatements objects will have no effect.

Parameters:

enable - true to enable escape processing; false to disable it
(Read and Write computed property)

4.15.33 FetchDirection as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The fetch direction.

Notes: Gives the driver a hint as to the direction in which rows will be processed in ResultSet objects created using this Statement object. The default value is ResultSet.FETCH_FORWARD.

Note that this method sets the default fetch direction for result sets generated by this Statement object. Each result set has its own methods for getting and setting its own fetch direction.

Parameters:

direction - the initial direction for processing rows
(Read and Write computed property)

4.15.34 FetchSize as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Gives the JDBC driver a hint as to the number of rows that should be fetched from the database when more rows are needed.

Notes: The number of rows specified affects only result sets created using this statement. If the value specified is zero, then the hint is ignored. The default value is zero.

Parameters:

rows - the number of rows to fetch
(Read and Write computed property)

4.15.35 MaxFieldSize as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum number of bytes that can be returned for character and binary column values in a ResultSet object produced by this Statement object.

Notes: This limit applies only to BINARY, VARBINARY, LONGVARBINARY, CHAR, VARCHAR, and LONGVARCHAR columns. If the limit is exceeded, the excess data is silently discarded.

(Read and Write computed property)

4.15.36 MaxRows as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The maximum number of rows that a ResultSet object produced by this Statement object can contain.

Notes: If this limit is exceeded, the excess rows are silently dropped.

(Read and Write computed property)

4.15.37 QueryTimeout as Integer

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The number of seconds the driver will wait for a Statement object to execute. If the limit is exceeded, a SQLException is thrown.

Notes: Returns:

the current query timeout limit in seconds; zero means there is no limit

(Read and Write computed property)

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? 297
- 6.0.5 How to convert cmyk to rgb? 298
- 6.0.6 How to delete a folder? 299
- 6.0.7 How to detect if CPU is 64bit processor? 300
- 6.0.8 How to query variant type string for a variant? 301
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296

- 6.0.5 How to convert cmyk to rgb? 298
- 6.0.6 How to delete a folder? 299
- 6.0.7 How to detect if CPU is 64bit processor? 300
- 6.0.8 How to query variant type string for a variant? 301
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296
- 6.0.4 How to catch delete key? 297
- 6.0.6 How to delete a folder? 299
- 6.0.7 How to detect if CPU is 64bit processor? 300
- 6.0.8 How to query variant type string for a variant? 301
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296
- 6.0.4 How to catch delete key? 297
- 6.0.5 How to convert cmyk to rgb? 298
- 6.0.7 How to detect if CPU is 64bit processor? 300
- 6.0.8 How to query variant type string for a variant? 301
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296
- 6.0.4 How to catch delete key? 297
- 6.0.5 How to convert cmyk to rgb? 298
- 6.0.6 How to delete a folder? 299
- 6.0.8 How to query variant type string for a variant? 301
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296
- 6.0.4 How to catch delete key? 297
- 6.0.5 How to convert cmyk to rgb? 298
- 6.0.6 How to delete a folder? 299
- 6.0.7 How to detect if CPU is 64bit processor? 300
- 6.0.9 How to refresh a htmlviewer on Windows? 302

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? 296
- 6.0.4 How to catch delete key? 297
- 6.0.5 How to convert cmyk to rgb? 298

- 6.0.6 How to delete a folder? 303
- 6.0.7 How to detect if CPU is 64bit processor? 299
- 6.0.8 How to query variant type string for a variant? 300

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 Axis.setTitlePos 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 Axis.setTitlePos 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 Axis.setTitlePos 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 Axis.setTitlePos 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.

Font Index
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.

Font Size
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.

Font Color
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.

Font Angle
This is the angle in degrees by which the font should be rotated anti-clockwise.

Vertical Layout
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.

AttributeDescription

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 name. If a library is missing, you usually see the address missing there or being zero.


```

while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result

```

Notes: May not look nice depending on the controls used.
This is no longer needed when using MimeEmailMBS class which decodes for you.

6.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.

Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.

For Cocoa, please use enabled property of NSTabViewItemMBS class.

6.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:

Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <> nil then
root = f // f might be the volume
do
dum = root.parent
if dum <> nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

6.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
dim p as new CFPREFERENCESMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFOBJECTMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages","GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

6.0.51 How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if

```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

6.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.

Example:

```

dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if

```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn't provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource #-8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

6.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.

Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)
```

```
ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

6.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have 255 different colors. If the bars are longer than 255 pixels, would this look nice?

Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

```

c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub

```

Notes:

Try the code above in a window paint event handler.

6.0.55 How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPREFERENCESMBS class like in this example:

Example:

```

// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPREFERENCESMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser,
pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

```

```

// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if

```

Notes: You can use the `CFPreferencesMBS.SetValue` to change a value and `CFPreferencesMBS.Synchronize` to write the values to disc. You may need to restart the `Dock.app` if you modified things.

6.0.56 How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a `binarystream` you can set the `length` property to truncate.

6.0.57 How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—")=f
if not ae.send then
//something went wrong

```

end if

Notes: The `folderitem.finderupdate` from the MBS Plugin does something like this.

6.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.

Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the `QTGrabberClassMBS`
- Mass storage devices using the `folderitem` class.
- Serial devices using the `System.SerialPort` function.
- HID USB devices can be used with `MacHIDMBS`, `WinHIDMBS` or `LinuxHIDInterface` class.
- Any USB device may be used with `MacUSBMBS` or `WinUSBMBS` classes.

In general it is always the best to take the most high level access to have others do the work for the details.

6.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use `FolderItem.AddCustomIcon` or `NSWorkspaceMBS.setIcon` functions.

Notes: Please close any open stream for the file you want to add an icon.

6.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:

Example:

Function `Computername()` *As string*

```

dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function

```

Notes: Code above is for Mac OS 9!

Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

6.0.61 How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable""
YES")

```

Notes: This will set the NSHighResolutionCapable flag to YES.

6.0.62 How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:

Example:

```

// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

```

```

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS

```

End Sub

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the `NSAutoreleasePools` for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a `objc_msgSend` call.

6.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.

Notes: In environment variables, the paths like `ORACLE_HOME` must be defined.

On Mac OS X you also need to define `DYLD_LIBRARY_PATH` to point to the dylib files from oracle.

For that you need to modify `/etc/launchd.conf` for Mac OS X 10.8 and newer.

In older versions those variables in `.MacOSX/environment.plist` file in user's home.

Another way for the case you bundle things inside your app is to use the `LSEnvironment` key in `info.plist`. In `info.plist` it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

6.0.64 How to avoid `___NSAutoreleaseNoPool` console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own `NSAutoreleasePool` on a thread like this:

Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

```
end sub
```

Notes: For more details read here:

http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

6.0.65 How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:

Example:

```
// First way:
app.FrontMostMBS = true
```

```
// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true
```

```
// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)
```

```
// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

6.0.66 How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code txt) to the frontmost application:

Example:

```
Dim A As AppleEvent
A = NewAppleEvent("misc", "actv", "")
If Not A.Send then
Beep
end if
```

Notes: (Code is Mac only)

6.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.

Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is caught, a flag is set and you can ask later in your normal application flow for the result.

6.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:

Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

6.0.69 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

```
<key>CFBundleExecutable</key>
<string>Executable file name here</string>
```

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

```
<key>CFBundleName</key>
<string>Name for menu here</string>
```

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at <http://www.bitjuggler.com/products/appbundler/>.

6.0.70 How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:

Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count
```

```
for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)
```

```
if item<>Nil and item.Directory then
Return true
end if
```

next

End Function

Notes: We use trueitem() here to avoid resolving alias/link files. Also we check for nil as we may not have permission to see all items. And if one is a directory, we return without checking the rest.

6.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:

Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

6.0.72 How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:

Example:

```
Function OutlookInstalled() As Boolean
    #if TargetWin32 then

    try
    dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

    Return true

    catch r as RegistryAccessErrorException
    // not installed
    Return false

    end try

    #else

    // Windows only, so false on other platforms
    Return false

    #endif

End Function
```

6.0.73 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.

Example:

```
dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
```

```

CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

```

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

6.0.74 How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.

Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature. We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of app>
```

```

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

```

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder. If you have helper apps you need to sign them first.

You can use a build step to automatically sign your app on build.

6.0.75 How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):

Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock
```

```
Declare Function CollapseWindow Lib "Carbon" (window as Integer, collapse as Integer) as Integer
```

```
IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF
```

```
err = CollapseWindow(w.MacWindowPtr, state)
```

```
End Sub
```

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set. For Windows the MBS Plugin has a window.isiconicmbs property.

6.0.76 How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:

Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color
```

```
h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth
```

```
if d1<>d2 then
Return 1
elseif w1<>w2 then
```

```

return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function

```

Notes: Remember that this only works on bitmap pictures, so the `picture.BitmapMBS` function may be useful.

6.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.
- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure --enable-embed --with-curl --enable-ftp --enable-zip --enable-sockets --enable-static --enable-soap --with-zlib --with-bz2 --enable-exif --enable-bcmath --enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole __yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;"
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.

6.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return "Andriod"
case WebSession.BrowserType.Blackberry
Return "Blackberry"
case WebSession.BrowserType.Chrome
Return "Chrome"
case WebSession.BrowserType.ChromeOS
Return "ChromeOS"
case WebSession.BrowserType.Firefox
Return "Firefox"
case WebSession.BrowserType.InternetExplorer
Return "InternetExplorer"
case WebSession.BrowserType.Opera
Return "Opera"
case WebSession.BrowserType.Safari
Return "Safari"
case WebSession.BrowserType.SafariMobile
Return "SafariMobile"
case WebSession.BrowserType.Unknown
Return "Unknown"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.79 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

6.0.80 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```

case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

```

End Function

6.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you although it's not perfect.
You need to set lc to the current color you use.

Example:

```

dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear

```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

6.0.82 How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:

Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

6.0.83 How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.

Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: `TextInputStream` will read any input line endings and with `delimiter` property in `TextOutputStream` you can easily define your new delimiter.

6.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:

Notes: JPEG:

`JPEGStringToPictureMBS(buf as string)` as picture
`JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean)` as picture
`PictureToJPEGStringMBS(pic as picture,quality as Integer)` as string

PNG:

`PictureToPNGStringMBS(pic as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PNGStringToPictureMBS(data as string, gamma as single)` as picture
`PNGStringToPNGPictureMBS(data as string, gamma as single)` as PNGpictureMBS

Tiff:

`TIFFStringToPictureMBS(data as string)` as picture
`TIFFStringToTiffPictureMBS(data as string)` as TiffPictureMBS

BMP:

`BMPStringtoPictureMBS(data as string)` as picture
`Picture.BMPDataMBS(ResolutionValueDPI as Integer=72)` as string

GIF:

`GifStringToGifMBS(data as string)` as GIFMBS
`GifStringToPictureMBS(data as string)` as Picture

6.0.85 How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:

Example:

```
Function CopyArray(a() as Double) as Double()  
dim r() as Double  
for each v as Double in a  
r.Append v  
next  
Return r  
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

6.0.86 How to copy a dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:

Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary  
dim r as new Dictionary  
for each key as Variant in d.keys  
r.Value(key) = d.Value(key)  
next  
Return r  
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of a dictionary of objects, you need to change code to also make a copy of those objects.

6.0.87 How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```

dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))

```

Notes: If result is not 0, the method fails.

6.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every
year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars

```

```

// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if

```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

6.0.89 How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

6.0.90 How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.

Example:

```

dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99

```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99
```

```
dim r As ResourceFork 'ResourceFork is needed for a clip file
```

```
// Please define a file type Any
r=f.CreateResourceFork("Any")
```

```
// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")
```

```
dim m as new MemoryBlock(8)
```

```
m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height
```

```
r.AddResource(m,"RECT",256,"")
```

```
'Values taken from a sample file and irrelevant to the problem
```

```
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAAABAAAAAAAAAAABUQ0IQAAAAA")
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

```



```

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 urlO as string = app.audioFileOGG.URL
dim urlM as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+urlO+""" type=""audio/ogg""
/><source src="""+urlM+""" type=""audio/mpeg"" />Your browser does not support the audio ele-
ment.</audio>"
```

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once we got the object, we call it's play method to start playback.

```
me.ExecuteJavaScript("document.getElementById('mymusic').play();")
```

same for pause:

```
me.ExecuteJavaScript("document.getElementById('mymusic').pause();")
```

and finally for changing volume:

```
me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+"");")
```

6.0.177 How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.

Notes: Learn more here:

<http://docs.xojo.com/index.php/XMLDocument.Transform>

6.0.178 How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.

Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20

```

Notes: And you can use normal graphics class for that.

6.0.179 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS objec to query this value:

Example:

```

Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function

```

Notes: Thanks for Josh Hoggan for this example code.

6.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

6.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow """
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

6.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

6.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```

if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if

```

Notes: PDFKit works only on Mac OS X.

6.0.184 How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```

dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if

```

6.0.185 How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value. Don't forget to implement the read event and return data there as requested.

6.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90–∞ rotation.

Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90–∞
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

```
c = nil

// show in PDF viewer
destfile.Launch
```

Notes: This code is Mac only as it needs CoreGraphics.

6.0.187 How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:

Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

6.0.188 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.

Notes: The package is called ia32-libs for ubuntu (and others).

Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

6.0.189 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.

Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

6.0.190 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:

Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtf")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
```

```

else
MsgBox e.LocalizedDescription
end if

```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

6.0.191 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?

Example:

```

Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub

```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

6.0.192 How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Pic-
ture
// 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. pdfib for some classes)

6.0.219 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?

Example:

' Window.Open Event of a blank project:

```
dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

6.0.220 Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.

Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.

If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

```
IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class
```

6.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:

Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

6.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:

Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

6.0.223 List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.

Notes: <http://www.monkeybreadsoftware.de/xojo/winerror.shtml>

6.0.224 Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.

Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

6.0.225 My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:

Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error "Premature end of script headers" in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don't have code in app.open, session.open and other events which crashes app right at launch?
- You don't have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

6.0.226 SQLiteDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLiteDatabaseMBS, it must be initialized.

Example:

```
dim d as new SQLiteDatabaseMBS
```

Notes: This happens normally when you use "new SQLiteDatabaseMBS".

But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happened, yet.

So please simply add a line "dim d as new SQLiteDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

6.0.227 Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

Notes:

Xojo seems not to support Textconverters at all on Windows.

6.0.228 The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:

Notes: Cocoa NSObject to Variant:

```

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTime ->QTimeMBS
NSValue with QTimeRange ->QTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

```

- ->*MBS

Variant to Cocoa NSObject:

```

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

```

NSPointMBS ->NSValue with NSPoint
 NSRangeMBS ->NSValue with NSRange
 NSBurnMBS ->NSBurn
 NSViewMBS ->NSView
 NSFontMBS ->NSFont
 NSParagraphStyleMBS ->NSParagraphStyle
 NSAttributedStringMBS ->NSAttributedString
 WebPolicyDelegateMBS ->WebPolicyDelegate
 WebUIDelegateMBS ->WebUIDelegate
 WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
 WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
 NSIndexSetMBS ->NSIndexSet
 QTTimeMBS ->QTTime
 QTTimeRangeMBS ->QTTimeRange
 Array of Variant ->NSArray
 Array of String ->NSArray
 CFStringMBS ->NSString
 CFNumberMBS ->NSNumber
 CFDataMBS ->NSData
 CFURLMBS ->NSURL
 CFArrayMBS ->NSArray
 CFDictionaryMBS ->NSDictionary
 CFBinaryDataMBS ->NSData

Carbon CTypeRef to Variant:

CFDictionaryRef ->Dictionary
 CFStringRef ->String
 CFDataRef ->String
 CFURL ->String
 CFNumber ->Integer/Double/Int64
 CFArray ->Array
 CFDate ->date
 nil ->nil
 CGColorSpace ->CGColorSpaceMBS
 CGColor ->CGColorMBS
 CGImage ->CGImageMBS
 CF* ->CF*MBS

Variant to Carbon CTypeRef:

Dictionary ->CFDictionaryRef
 Boolean ->CFBooleanRef
 Color ->CFNumberRef
 Integer ->CFNumberRef

Int64 ->CFNumberRef
 Single ->CFNumberRef
 Double ->CFNumberRef
 String ->CFStringRef
 Color ->CGColorRef
 Date ->CFDateRef
 nil ->nil
 Memoryblock ->CFDataRef
 FolderItem ->CFURLRef
 Dictionary ->CFDictionaryRef
 Array of Variant/String/Date/Double/Single/Int64/Integer ->CFArray
 CGRectMBS ->CGRect as CFDataRef
 CGSizeMBS ->CGSize as CFDataRef
 CGPointMBS ->CGPoint as CFDataRef
 CGColorMBS ->CGColor
 CGColorSpaceMBS ->CGColorSpace
 CGImageMBS ->CGImage
 CGDataConsumerMBS ->CGDataConsumer
 CGDataProviderMBS ->CGDataProvider
 CF*MBS ->CF*

Strings without encodings should be put into dictionaries as memoryblocks.

6.0.229 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

6.0.230 What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

6.0.231 What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.

Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so”
- libgtk-x11-2.0.so.0”
- /usr/lib/libgtk-x11-2.0.so”
- /usr/lib32/libgtk-x11-2.0.so”
- /usr/lib/libgtk-x11-2.0.so.0”
- /usr/lib32/libgtk-x11-2.0.so.0”

gdk is loaded with this paths:

- libgdk-x11-2.0.so”
- libgdk-x11-2.0.so.0”
- /usr/lib/libgdk-x11-2.0.so”
- /usr/lib32/libgdk-x11-2.0.so”
- /usr/lib/libgdk-x11-2.0.so.0”
- /usr/lib32/libgdk-x11-2.0.so.0”

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

6.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

6.0.233 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant "SmallSystem" to use for a font name.

For older versions try this code:

Example:

```

Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontName as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock

const smSystemScript = -1

Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style

err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub

```

6.0.234 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.

Notes: With version 15.4 you can build applications for OS X 10.4 and newer.

For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

6.0.235 What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.

Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.

For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

6.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.

Notes: We stopped including 32-bit code for macOS in version 23.1.

Please use older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

6.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Timer is server side and WebTimer client side.

Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

6.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.

Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, Deref, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUNDBAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARDIZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TERMINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREGISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

6.0.239 What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

6.0.240 What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.

Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

6.0.241 What to do with a NSImageCacheException?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for NSExcptionMBS in order to catch this exception.

Notes: You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So basically you pass in the base image and for whatever size an image is needed, the NSImage class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

6.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

6.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.

Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.

e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.

If encoding is set to none, it may get confused for non-ascii text.

6.0.244 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetActiveDisplayList.

6.0.245 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

6.0.246 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

6.0.247 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

6.0.248 Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:

Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

6.0.249 Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basically it's not useful. If you want to check whether you have a network, than do a DNS resolve:

Example:

```

// two independent domain names
const domain1 = "www.google.com"
const domain2 = "www.macs.w.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if

```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

6.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.

Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

6.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.

Notes: These classes have been removed: 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,,