

# MBS Main Plugin Documentation

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## 0.1 Introduction

This is the PDF version of the documentation for the Xojo (Real Studio) Plug-in from Monkeybread Software Germany. Plugin part: MBS Main Plugin

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# Chapter 5

## Cocoa

### 5.1 class NSAutoreleasePoolMBS

#### 5.1.1 class NSAutoreleasePoolMBS

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for memory management in Cocoa.

**Example:**

```
dim pool as NSAutoreleasePoolMBS

sub MyThread.Run
pool=new NSAutoreleasePoolMBS
// do work
end sub
```

**Notes:** If you use threads, you need to create a NSAutoreleasePoolMBS on the start to have correct Cocoa memory manager.

#### 5.1.2 Methods

#### 5.1.3 Constructor

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new Autorelease Pool.

**Example:**

```
// Cleanup memory for Cocoa objects

Sub Action() // in Timer
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS
End Sub
```

**Notes:** The example code above is not needed in REALbasic 2009r4 and above as the runtime does it automatically for you.

#### 5.1.4 Properties

#### 5.1.5 Handle as Integer

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internally used NSAutoreleasePool object.

**Notes:** (Read and Write property)

## 5.2 Globals

### 5.2.1 NSLogMBS(message as string)

Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes a message to the Console.app on Mac OS X.

**Example:**

```
Sub Log(message as string)
if TargetMacOS then
NSLogMBS message
else
System.DebugLog message
end if
```

End Sub

**Notes:** As with Mac OS X 10.8 the system.debugLog method does not write to Console.app. So use this function.

### 5.2.2 NSStringArraySortMBS(texts() as string, options as Integer) as string()

Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sorts array of string with options.

**Example:**

```
// constants for the function:
const NSCaseInsensitiveSearch = 1
const NSLiteralSearch = 2
const NSBackwardsSearch = 4
const NSAnchoredSearch = 8
const NSNumericSearch = 64
const NSDiacriticInsensitiveSearch = 128
const NSWidthInsensitiveSearch = 256
const NSForcedOrderingSearch = 512

const NSOrderedAscending = -1
const NSOrderedSame = 0
const NSOrderedDescending = 1

// test array

dim a() as string = array("Test 1", "Test 2", "Test 12")
```

```

// sort with Cocoa sorting
dim r() as string = NSStringArraySortMBS(a, NSDiacriticInsensitiveSearch + _
NSWidthInsensitiveSearch + _
NSCaseInsensitiveSearch + _
NSNumericSearch)

// sort with xoyo
a.sort

// show result
MsgBox "Cocoa: "+Join(r,",")+EndOfLine+_
"Xoyo: "+Join(a,",")

```

**Notes:** This function allows you to use NSStringCompareMBS for array sorting.

### 5.2.3 NSStringCompareMBS(s as string, t as string, options as Integer) as Integer

Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two things using the Cocoa string functions.

**Example:**

```

// constants for the function:
const NSCaseInsensitiveSearch = 1
const NSLiteralSearch = 2
const NSBackwardsSearch = 4
const NSAnchoredSearch = 8
const NSNumericSearch = 64
const NSDiacriticInsensitiveSearch = 128
const NSWidthInsensitiveSearch = 256
const NSForcedOrderingSearch = 512

const NSOrderedAscending = -1
const NSOrderedSame = 0
const NSOrderedDescending = 1

if NSStringCompareMBS("Hello","hello", NSCaseInsensitiveSearch)=0 then
msgbox "equal (correct)"
else
msgbox "not equal"
end if

if NSStringCompareMBS("Hello","hello", 0)=0 then
msgbox "equal"

```

```

else
msgbox "not equal (correct)"
end if

if NSStringCompareMBS("Hello","Hellö", NSDiacriticInsensitiveSearch)=0 then
msgbox "equal (correct)"
else
msgbox "not equal"
end if

```

**Notes:**

Following constants can be used for the compare:

NSCaseInsensitiveSearch	1	Case Insensitive
NSLiteralSearch	2	Exact character-by-character equivalence
NSBackwardsSearch	4	Search from end of source string
NSAnchoredSearch	8	Search is limited to start (or end, if NSBackwardsSearch) of source string
NSNumericSearch	64	Added in 10.2; Numbers within strings are compared using numeric value, that is, Foo2.txt < Foo7.txt < Foo25.txt; only applies to compare methods, not find
NSDiacriticInsensitiveSearch	128	If specified, ignores diacritics (o-umlaut = o)
NSWidthInsensitiveSearch	256	If specified, ignores width differences ('a' = UFF41)
NSForcedOrderingSearch	512	If specified, comparisons are forced to return either NSOrderedAscending or NSOrderedDescending if the strings are equivalent but not strictly equal, for stability when sorting (e.g. "aaa" > "AAA" with NSCaseInsensitiveSearch specified)

The constants NSDiacriticInsensitiveSearch, NSWidthInsensitiveSearch and NSForcedOrderingSearch are only for Mac OS X 10.5 and newer versions.

Returns value constants:

NSOrderedAscending	-1
NSOrderedSame	0
NSOrderedDescending	1

**5.2.4 NSMakePointMBS(x as Double, y as Double) as NSPointMBS**

Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSPoint object based on coordinates.

### 5.2.5 NSMakeRangeMBS(location as UInt32, length as UInt32) as NSRangeMBS

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new range with the given values.

### 5.2.6 NSMakeRectMBS(x as Double, y as Double, w as Double, h as Double) as NSRectMBS

Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSRect object based on coordinates and size.

### 5.2.7 NSMakeSizeMBS(w as Double, h as Double) as NSSizeMBS

Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSSize object based on a size.

## 5.3 class NSErrorMBS

### 5.3.1 class NSErrorMBS

Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for error information in the Cocoa World.

### 5.3.2 Methods

### 5.3.3 Constructor(Domain as String, Code as Integer, UserInfo as dictionary = nil)

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes error for a given domain and code with a given userInfo dictionary.

**Notes:**

domain: The error domain—this can be one of the predefined NSError domains, or an arbitrary string describing a custom domain. domain must not be nil.

code: The error code for the error.

dict: The userInfo dictionary for the error. userInfo may be nil.



### 5.3. CLASS NSERRORMBS

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Returns an NSErrorMBS object initialized for domain with the specified error code and the dictionary of arbitrary data userInfo.

See also:

- 5.3.4 Constructor(Handle as Integer) 33

#### 5.3.4 Constructor(Handle as Integer)

Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor for a handle value of NSError.

**Notes:**

Retains reference number and destructor later releases it.

Handle must be a NSError reference number and should not be zero.

See also:

- 5.3.3 Constructor(Domain as String, Code as Integer, UserInfo as dictionary = nil) 32

#### 5.3.5 error(Domain as String, Code as Integer, UserInfo as dictionary = nil) as NSErrorMBS

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and initializes an NSError object for a given domain and code with a given userInfo dictionary.

**Notes:**

domain: The error domain—this can be one of the predefined NSError domains, or an arbitrary string describing a custom domain. domain must not be nil.

code: The error code for the error.

dict: The userInfo dictionary for the error. userInfo may be nil.

Returns an NSErrorMBS object for domain with the specified error code and the dictionary of arbitrary data userInfo.

#### 5.3.6 NSCocoaErrorDomain as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The cocoa error domain.

#### 5.3.7 NSFilePathErrorKey as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** Contains the file path of the error.

### 5.3.8 `NSLocalizedStringDescriptionKey` as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** The corresponding value is a localized string representation of the error that, if present, will be returned by `localizedDescription`.

### 5.3.9 `NSLocalizedStringFailureReasonErrorKey` as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** The corresponding value is a localized string representation containing the reason for the failure that, if present, will be returned by `localizedFailureReason`.

### 5.3.10 `NSLocalizedStringRecoveryOptionsErrorKey` as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:**

The corresponding value is an array containing the localized titles of buttons appropriate for displaying in an alert panel.

The first string is the title of the right-most and default button, the second the one to the left, and so on. The recovery options should be appropriate for the recovery suggestion returned by `localizedRecoverySuggestion`.

### 5.3.11 `NSLocalizedStringRecoverySuggestionErrorKey` as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:**

The corresponding value is a string containing the localized recovery suggestion for the error.

This string is suitable for displaying as the secondary message in an alert panel.

### 5.3.12 NSMachErrorDomain as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Error domain for Mach errors.

### 5.3.13 NSOSStatusErrorDomain as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Error domain for Mac OS 9/Carbon errors.

### 5.3.14 NSPOSIXErrorDomain as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Error domain for unix errors.

### 5.3.15 NSRecoveryAttempterErrorKey as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:**

The corresponding value is an object that conforms to the NSErrorRecoveryAttempting informal protocol.

The recovery attempter must be an object that can correctly interpret an index into the array returned by recoveryAttempter.

### 5.3.16 NSStringEncodingErrorKey as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** The corresponding value is an NSNumber object containing the NSStringEncoding value.

### 5.3.17 NSUnderlyingErrorKey as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** The corresponding value is an error that was encountered in an underlying implementation and

caused the error that the receiver represents to occur.

### 5.3.18 NSURLErrorKey as String

Plugin Version: 18.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user info dictionary keys.

**Notes:** The corresponding value is an NSURL object.

### 5.3.19 Properties

#### 5.3.20 code as Integer

Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This is a domain specific error code.

**Notes:** (Read only property)

#### 5.3.21 description as string

Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the description for this object.

**Notes:** (Read only property)

#### 5.3.22 domain as string

Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The error domain.

**Notes:**

Domains are described by names that are arbitrary strings used to differentiate groups of codes; for custom domain using reverse-DNS naming will help avoid conflicts.

(Read only property)

#### 5.3.23 Handle as Integer

Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal used handle for the NSError reference.

**Notes:** (Read and Write property)

### 5.3.24 localizedDescription as string

Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The localized error description.

**Example:**

```
dim f as FolderItem=SpecialFolder.Desktop.Child("test.mov")
dim q as new QTKitMovieMBS(f)
dim e as NSErrorMBS

f=SpecialFolder.Desktop.Child("test2.aif")

MsgBox str(q.Handle)

if q.exportToFile(f,e,"AIFF","soun","") then
MsgBox "ok"
else
MsgBox "Fail"
end if

if e<>Nil then
MsgBox e.localizedDescription
end if
```

**Notes:**

The primary user-presentable message for the error. This method can be overridden by subclasses wishing to present better error strings. By default this looks for NSLocalizedDescriptionKey in the user info. If not present, it manufactures a string from the domain and code. Also, for some of the built-in domains it knows about, it might try to fetch an error string by calling a domain-specific function. In the absence of a custom error string, the manufactured one might not be suitable for presentation to the user, but can be used in logs or debugging.

(Read only property)

### 5.3.25 localizedFailureReason as string

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the localized explanation of the reason for the error.

**Notes:**

A string containing the localized explanation of the reason for the error. By default this method returns the object in the user info dictionary for the key NSLocalizedFailureReasonErrorKey.

This method can be overridden by subclasses to present customized error strings.

Available in Mac OS X v10.4 and later.

(Read only property)

### 5.3.26 `localizedRecoverySuggestion` as string

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the localized recovery suggestion for the error.

**Notes:**

Returns a string containing the localized recovery suggestion for the error. By default this method returns the object in the user info dictionary for the key `NSLocalizedStringRecoverySuggestionErrorKey`. If the user info dictionary doesn't contain a value for `NSLocalizedStringRecoverySuggestionErrorKey`, nil is returned.

The returned string is suitable for displaying as the secondary message in an alert panel.

This method can be overridden by subclasses to present customized recovery suggestion strings.

Available in Mac OS X v10.4 and later.

(Read only property)

### 5.3.27 `userInfo` as dictionary

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver's user info dictionary.

**Notes:**

The receiver's user info dictionary, or nil if the user info dictionary has not been set.

(Read only property)

## 5.4 class NExceptionHandlerMBS

### 5.4.1 class NExceptionHandlerMBS

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a global handler to catch unhandled cocoa exceptions.

**Notes:**

Previous plugin versions tried to show a dialog to inform you. Now you can intercept that. If code is in this event, we do not show the dialog from the plugin.

### 5.4.2 Methods

### 5.4.3 Disable

Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the global exception handler.

### 5.4.4 Enable

Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables the global exception handler.

**Notes:** By default the MBS Plugin automatically enables it when you use Cocoa classes.

### 5.4.5 Events

### 5.4.6 CaughtException(e as NExceptionHandlerMBS, IsMainThread as boolean)

Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An exception was caught.

**Notes:** If IsMainThread is true, you can show a dialog/window. But if it's false, you may be in trouble on a worker thread and showing a dialog can cause more trouble.

## 5.5 class NSExcptionMBS

### 5.5.1 class NSExcptionMBS

Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa exception class.

**Example:**

```
dim m1 as new NSMenuMBS
dim m2 as new NSMenuMBS
dim n as new NSMenuItemMBS
```

```
n.CreateMenuItem
```

```
m1.addItem n
m2.addItem n // raises an exception as a menuitem can't be in two menus.
```

```
Exception e as NSExcptionMBS
MsgBox e.Message
```

```
// e.reason: "Item to be inserted into menu already is in another menu"
// e.name: "NSInternalInconsistencyException"
// e.message: "A Cocoa NSInternalInconsistencyException was not handled: Item to be inserted into menu
already is in another menu"
```

**Notes:**

The plugin installs exception handling code. If you use the NSExcptionMBS class somewhere in your code, the NSExcption plugin part will be included and a NSExcptionMBS object will be subclass of the RuntimeException class.

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

### 5.5.2 Methods

#### 5.5.3 callStackSymbols as string()

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the current call symbols.

**Notes:**

This method returns an array of strings describing the call stack backtrace at the moment the exception was first raised. The format of each string is non-negotiable and is determined by the backtrace symbols API. (like BacktraceMBS function)



Available in OS X v10.6 and later. On older versions this array is empty.

#### 5.5.4 Constructor

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

#### 5.5.5 RaiseException(name as string, reason as string, userInfo as dictionary)

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Raises an exception. **Notes:** The plugin does not catch it right away here, so this is a way to pass back an exception to the Cocoa frameworks.

#### 5.5.6 Properties

##### 5.5.7 Name as string

Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the exception. (Its type)

**Notes:** (Read only property)

##### 5.5.8 Reason as string

Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reason the exception was raised.

**Notes:** (Read only property)

##### 5.5.9 UserInfo as Dictionary

Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary object containing application-specific data pertaining to the receiver.

**Notes:**

Returns nil if no application-specific data exists. As an example, if a method's return value caused the exception to be raised, the return value might be available to the exception handler through this method.

(Read only property)

### 5.5.10 Constants

#### 5.5.11 `NSDestinationInvalidException` = `"NSDestinationInvalidException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.12 `NSGenericException` = `"NSGenericException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.13 `NSInternalInconsistencyException` = `"NSInternalInconsistencyException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.14 `NSInvalidArgumentException` = `"NSInvalidArgumentException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.15 `NSInvalidReceivePortException` = `"NSInvalidReceivePortException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.16 `NSInvalidSendPortException` = `"NSInvalidSendPortException"`

Plugin Version: 7.4. **Function:** One of the exception names.

#### 5.5.17 `NSMallocException` = `"NSMallocException"`

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.18 NSObjectInaccessibleException = "NSObjectInaccessibleException"**

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.19 NSObjectNotAvailableException = "NSObjectNotAvailableException"**

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.20 NSPortReceiveException = "NSPortReceiveException"**

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.21 NSPortSendException = "NSPortSendException"**

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.22 NSPortTimeoutException = "NSPortTimeoutException"**

Plugin Version: 7.4. **Function:** One of the exception names.

**5.5.23 NSRangeException = "NSRangeException"**

Plugin Version: 7.4. **Function:** One of the exception names.

## 5.6 class NSPointMBS

### 5.6.1 class NSPointMBS

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the point structure in Cocoa.

**Example:**

```
dim n as NSPointMBS = NSMakePointMBS(500,600)
MsgBox n.String
```

### 5.6.2 Methods

### 5.6.3 Constructor

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty point.

**Example:**

```
dim p as new NSPointMBS
MsgBox p // shows { 0 ,0 }
```

See also:

- 5.6.4 Constructor(p as Ptr) 44
- 5.6.5 Constructor(s as string) 45
- 5.6.6 Constructor(x as Double, y as Double) 45

### 5.6.4 Constructor(p as Ptr)

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 5.6.3 Constructor 44
- 5.6.5 Constructor(s as string) 45
- 5.6.6 Constructor(x as Double, y as Double) 45

### 5.6.5 Constructor(s as string)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSPoint object using the given string.

**Example:**

```
dim p as new NSPointMBS(" { 3,4 } ")
MsgBox p // shows { 3 ,4 }
```

See also:

- 5.6.3 Constructor 44
- 5.6.4 Constructor(p as Ptr) 44
- 5.6.6 Constructor(x as Double, y as Double) 45

### 5.6.6 Constructor(x as Double, y as Double)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSPoint object using the given values.

See also:

- 5.6.3 Constructor 44
- 5.6.4 Constructor(p as Ptr) 44
- 5.6.5 Constructor(s as string) 45

### 5.6.7 Equal(other as NSPointMBS) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two points are equal.

### 5.6.8 Operator\_Convert as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```
dim p as new NSPointMBS(1,2)
MsgBox p // shows { 1 ,2 }
```

### 5.6.9 String as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this point.

**Example:**

```
dim p as new NSPointMBS(1,2)
```

```
MsgBox p.String // shows { 1,2 }
```

### 5.6.10 Zero as NSPointMBS

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a point with all values being zero.

### 5.6.11 Properties

#### 5.6.12 Handle as Ptr

Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.

**Notes:**

May be useful for passing to declares requiring a NSPoint\*.

Size of structure is 8 bytes for 32-bit (two singles) and 16 bytes for 64-bit (two doubles).

(Read only property)

#### 5.6.13 X as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal coordinate.

**Notes:** (Read and Write property)

#### 5.6.14 Y as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical coordinate.

**Notes:** (Read and Write property)

## 5.7 class NSRangeMBS

### 5.7.1 class NSRangeMBS

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This is the Cocoa class for a Range.

### 5.7.2 Methods

### 5.7.3 Constructor

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty range.

**Example:**

```
dim r as new NSRangeMBS
MsgBox r // { 0, 0 }
```

See also:

- 5.7.4 Constructor(Location as UInt32, Length as UInt32) 47
- 5.7.5 Constructor(p as Ptr) 47
- 5.7.6 Constructor(s as string) 48

### 5.7.4 Constructor(Location as UInt32, Length as UInt32)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new range with the given values.

See also:

- 5.7.3 Constructor 47
- 5.7.5 Constructor(p as Ptr) 47
- 5.7.6 Constructor(s as string) 48

### 5.7.5 Constructor(p as Ptr)

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 5.7.3 Constructor 47
- 5.7.4 Constructor(Location as UInt32, Length as UInt32) 47
- 5.7.6 Constructor(s as string) 48

### 5.7.6 Constructor(s as string)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSRange object using the given string.

**Example:**

```
dim r as new NSRangeMBS(" { 3, 4 } ")
MsgBox r // { 3, 4 }
```

See also:

- 5.7.3 Constructor 47
- 5.7.4 Constructor(Location as UInt32, Length as UInt32) 47
- 5.7.5 Constructor(p as Ptr) 47

### 5.7.7 Equal(other as NSRangeMBS) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two ranges are equal.

### 5.7.8 Intersection(other as NSRangeMBS) as NSRangeMBS

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the intersection of the two ranges.

### 5.7.9 LocationInRange(location as UInt32) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the location is in the range.



### 5.7.10 Operator\_Convert as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```
dim r as new NSRangeMBS(" { 3, 4 } ")
MsgBox r // { 3, 4 }
```

### 5.7.11 String as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this range.

**Example:**

```
dim r as new NSRangeMBS(" { 3, 4 } ")
MsgBox r.String // { 3, 4 }
```

### 5.7.12 Union(other as NSRangeMBS) as NSRangeMBS

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates the union of two ranges.

### 5.7.13 Properties

#### 5.7.14 Handle as Ptr

Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.

**Notes:**

May be useful for passing to declares requiring a NSRange\*.  
(Read only property)

#### 5.7.15 Length as UInt32

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The length of the range.

**Example:**

```
dim r as new NSRangeMBS(" { 3, 4 } ")  
MsgBox str(R.Length) // 4
```

**Notes:** (Read and Write property)

### 5.7.16 Location as UInt32

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position of the range.

**Notes:** (Read and Write property)

### 5.7.17 MaxRange as UInt32

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum value of the range.

**Notes:**

Same as location+length.  
(Read only property)

## 5.8 class NSRectMBS

### 5.8.1 class NSRectMBS

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the rect structure in Cocoa.

**Example:**

```
dim n as NSRectMBS = NSMakeRectMBS(100,200,500,600)
MsgBox n.String
```

### 5.8.2 Methods

### 5.8.3 Constructor

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty rectangle.

**Example:**

```
dim p as new NSRectMBS
MsgBox p // shows { { 0 ,0 } , { 0 ,0 } }
```

See also:

- 5.8.4 Constructor(p as Ptr) 51
- 5.8.5 Constructor(s as string) 52
- 5.8.6 Constructor(X as Double, Y as Double, W as Double, H as Double) 52

### 5.8.4 Constructor(p as Ptr)

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 5.8.3 Constructor 51
- 5.8.5 Constructor(s as string) 52
- 5.8.6 Constructor(X as Double, Y as Double, W as Double, H as Double) 52

### 5.8.5 Constructor(s as string)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSRect object using the given string.

**Example:**

```
dim p as new NSRectMBS(" { { 1,2 } , { 3,4 } } ")
MsgBox p // shows { { 1, 2 } , { 3, 4 } }
```

See also:

- 5.8.3 Constructor 51
- 5.8.4 Constructor(p as Ptr) 51
- 5.8.6 Constructor(X as Double, Y as Double, W as Double, H as Double) 52

### 5.8.6 Constructor(X as Double, Y as Double, W as Double, H as Double)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSRect object using the given values.

See also:

- 5.8.3 Constructor 51
- 5.8.4 Constructor(p as Ptr) 51
- 5.8.5 Constructor(s as string) 52

### 5.8.7 Contains(other as NSPointMBS) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the rectangle contains the given point.

See also:

- 5.8.8 Contains(other as NSRectMBS) as boolean 52

### 5.8.8 Contains(other as NSRectMBS) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the rectangle contains the given rectangle.

See also:

- 5.8.7 Contains(other as NSPointMBS) as boolean 52

**5.8.9 Equal(other as NSRectMBS) as boolean**

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two rectangles are equal.

**5.8.10 Inset(dx as Double, dy as Double) as NSRectMBS**

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Insets the rectangle by the given delta.

**Example:**

```
dim p as new NSRectMBS(1.1,2.2,3.3,4.4)
dim r as NSRectMBS = p.Inset(2,3)
MsgBox r.String // shows { { 3.1, 5.2 } , { -0.7, -1.6 } }
```

**5.8.11 Integral as NSRectMBS**

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the integral of the rectangle.

**Example:**

```
dim p as new NSRectMBS(1.1,2.2,3.3,4.4)
dim r as NSRectMBS = p.Integral
MsgBox r.String // shows { { 1, 2 } , { 4, 5 } }
```

**5.8.12 Intersection(other as NSRectMBS) as NSRectMBS**

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the intersection of two rectangles.

**5.8.13 Intersects(other as NSRectMBS) as boolean**

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the intersection of the rectangle with the other rectangle.

### 5.8.14 `Operator_Convert as String`

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```
dim p as new NSRectMBS(1,2,3,4)
MsgBox p // shows { { 1, 2 }, { 3, 4 } }
```

### 5.8.15 `String as String`

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this point.

**Example:**

```
dim p as new NSRectMBS(1,2,3,4)
MsgBox p.String // shows { { 1, 2 }, { 3, 4 } }
```

### 5.8.16 `Union(other as NSRectMBS) as NSRectMBS`

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the union of two rectangles.

### 5.8.17 `Zero as NSRectMBS`

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a rect with all values being zero.

### 5.8.18 `Properties`

### 5.8.19 `Handle as Ptr`

Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.

**Notes:**

May be useful for passing to declares requiring a `NSRect*`.

Size of structure is 16 bytes for 32-bit (four singles) and 32 bytes for 64-bit (four doubles).

(Read only property)

### 5.8.20 Height as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of this rectangle.

**Notes:** (Read and Write property)

### 5.8.21 IsEmpty as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the rectangle is empty.

**Notes:** (Read only property)

### 5.8.22 MaxX as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns maximum x coordinate.

**Notes:**

return x + width.

(Read only property)

### 5.8.23 MaxY as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns maximum y coordinate.

**Notes:**

return y + height.

(Read only property)

### 5.8.24 MidX as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns center x coordinate.

**Notes:** (Read only property)

### 5.8.25 MidY as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns center y coordinate.

**Notes:** (Read only property)

### 5.8.26 MinX as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns x coordinate.

**Notes:** (Read only property)

### 5.8.27 MinY as Double

Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns y coordinate.

**Notes:** (Read only property)

### 5.8.28 Origin as NSPointMBS

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The origin of the rectangle.

**Notes:** (Read and Write property)

### 5.8.29 Size as NSSizeMBS

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the rectangle.

**Notes:** (Read and Write property)

### 5.8.30 Width as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of this rectangle.

**Notes:** (Read and Write property)



### 5.8.31 X as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal coordinate.

**Notes:** (Read and Write property)

### 5.8.32 Y as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical coordinate.

**Notes:** (Read and Write property)

## 5.9 class NSSizeMBS

### 5.9.1 class NSSizeMBS

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the size structure in Cocoa.

**Example:**

```
dim n as NSSizeMBS = NSMakeSizeMBS(500,600)
MsgBox n.String
```

### 5.9.2 Methods

### 5.9.3 Constructor

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty size.

**Example:**

```
dim p as new NSSizeMBS
MsgBox p // shows { 0 ,0 }
```

See also:

- 5.9.4 Constructor(p as Ptr) 58
- 5.9.5 Constructor(s as string) 59
- 5.9.6 Constructor(Width as Double, Height as Double) 59

### 5.9.4 Constructor(p as Ptr)

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 5.9.3 Constructor 58
- 5.9.5 Constructor(s as string) 59
- 5.9.6 Constructor(Width as Double, Height as Double) 59

### 5.9.5 Constructor(s as string)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSSize object using the given string.

**Example:**

```
dim p as new NSSizeMBS(" { 1,2 } ")
MsgBox p // shows { 1, 2 }
```

See also:

- 5.9.3 Constructor 58
- 5.9.4 Constructor(p as Ptr) 58
- 5.9.6 Constructor(Width as Double, Height as Double) 59

### 5.9.6 Constructor(Width as Double, Height as Double)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSSize object using the given values.

See also:

- 5.9.3 Constructor 58
- 5.9.4 Constructor(p as Ptr) 58
- 5.9.5 Constructor(s as string) 59

### 5.9.7 Equal(other as NSSizeMBS) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two sizes are equal.

### 5.9.8 Operator\_Convert as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```
dim p as new NSSizeMBS(1,2)
MsgBox p // shows { 1, 2 }
```

### 5.9.9 String as String

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this size object.

**Example:**

```
dim p as new NSSizeMBS(1,2)
MsgBox p.String // shows { 1, 2 }
```

### 5.9.10 Zero as NSSizeMBS

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a size with all values being zero.

### 5.9.11 Properties

#### 5.9.12 Handle as Ptr

Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.

**Notes:**

May be useful for passing to declares requiring a NSSize\*.

Size of structure is 8 bytes for 32-bit (two singles) and 16 bytes for 64-bit (two doubles).

(Read only property)

#### 5.9.13 Height as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of this size.

**Notes:** (Read and Write property)

#### 5.9.14 Width as Double

Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of this size.

**Notes:** (Read and Write property)

# Chapter 6

## CoreImage

### 6.1 class NSAffineTransformMBS

#### 6.1.1 class NSAffineTransformMBS

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for transformation.

**Notes:** As being used by CoreImage and by the NS\* classes, it is a free plugin class requiring no registration.

#### 6.1.2 Methods

#### 6.1.3 appendTransform(transform as NSAffineTransformMBS)

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms the transformation by applying the given transform on the current one.

#### 6.1.4 CGAffineTransformToNSAffineTransform(CGAffineTransform as Variant) as NSAffineTransformMBS

Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts NSAffineTransformMBS to CGAffineTransformMBS.

**Example:**

```
dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
dim c as CGAffineTransformMBS = NSAffineTransformMBS.NSAffineTransformToCGAffineTransform(n)
dim r as NSAffineTransformMBS = NSAffineTransformMBS.CGAffineTransformToNSAffineTransform(c)
```

Break *// check in debugger*

**Notes:** To reduce plugin interdependencies, the parameter is declared as Variant and not as CGAffineTransformMBS.

### 6.1.5 Constructor

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new transformation.

**Notes:** On success the handle property will not be 0.

See also:

- 6.1.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, ty as Double) 62
- 6.1.7 Constructor(transform as NSAffineTransformMBS) 62

### 6.1.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, ty as Double)

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSAffineTransformMBS based on the given values.

See also:

- 6.1.5 Constructor 62
- 6.1.7 Constructor(transform as NSAffineTransformMBS) 62

### 6.1.7 Constructor(transform as NSAffineTransformMBS)

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new transformation based on the values of an existing transformation.

**Notes:** On success the handle property will not be 0.

See also:

- 6.1.5 Constructor 62
- 6.1.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, ty as Double) 62

### 6.1.8 `getValues(byref m11 as Double, byref m12 as Double, byref m21 as Double, byref m22 as Double , byref tx as Double, byref tY as Double)`

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies all the values from the internal matrix.

### 6.1.9 `invert`

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inverts the transformation.

### 6.1.10 `NSAffineTransformToCGAffineTransform(NSAffineTransform as NSAffineTransformMBS) as Variant`

Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts NSAffineTransformMBS to CGAffineTransformMBS.

**Example:**

```
dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
dim c as CGAffineTransformMBS = NSAffineTransformMBS.NSAffineTransformToCGAffineTransform(n)
dim r as NSAffineTransformMBS = NSAffineTransformMBS.CGAffineTransformToNSAffineTransform(c)
```

Break // *check in debugger*

**Notes:** To reduce plugin interdependencies, the result is declared as Variant and not as CGAffineTransformMBS.

### 6.1.11 `prependTransform(transform as NSAffineTransformMBS)`

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms the transformation by applying the given transform on the current one.

### 6.1.12 `rotateByDegrees(angle as Double)`

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rotates transformation by the given angle in degrees.

**Example:**

```
dim t as new NSAffineTransformMBS
t.rotateByDegrees 90 // roatet by 90 degrees
```

### 6.1.13 rotateByRadians(angle as Double)

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rotates transformation by the given angle in radians.

**Example:**

```
const pi=3.14159265
dim t as new NSAffineTransformMBS
t.rotateByDegrees pi // roatet by 180 degrees
```

### 6.1.14 scale(scale as Double)

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scales the transformation.

**Example:**

```
dim t as new NSAffineTransformMBS
t.scale 2.0 // double size
```

See also:

- 6.1.15 scale(scaleX as Double, scaleY as Double) 64

### 6.1.15 scale(scaleX as Double, scaleY as Double)

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scales transformation.

**Example:**

```
dim t as new NSAffineTransformMBS
t.scale 1,2
```

See also:

- 6.1.14 scale(scale as Double) 64



**6.1.16 setValues(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, tY as Double)**

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets all the values from the internal matrix.

**6.1.17 transform as NSAffineTransformMBS**

Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSAffineTransform object initialized to the identity matrix.

**Example:**

```
dim a as NSAffineTransformMBS = NSAffineTransformMBS.transform
MsgBox str(a.m11)+", "+str(a.m12)+", "+str(a.m21)+", "+str(a.m22)+", "+str(a.tx)+", "+str(a.ty)
```

**Notes:** This matrix transforms any point to the same point.

**6.1.18 transformBezierPath(NSBezierPath as Variant) as Variant**

Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms a bezier path with current transformation.

**6.1.19 transformPoint(byref x as Double, byref y as Double)**

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforming the given point.

**6.1.20 transformSize(byref width as Double, byref height as Double)**

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforming the given size.

**6.1.21 translate(deltaX as Double, deltaY as Double)**

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Translates by the given delta.

### 6.1.22 Properties

### 6.1.23 Data as MemoryBlock

Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The transform data structure.

**Example:**

```
dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
dim m as MemoryBlock = n.Data
```

Break // check in debugger

**Notes:**

Returns a copy of the structure as memoryblock.  
Can be set with memoryblock of right size and content.

Due to CoreGraphics using 32bit floats in 32bit app, you need to use SingleValue there in the memoryblock which has a size of 24 bytes.

For 64-bit application, the sizes double and you need to use DoubleValue.  
(Read and Write property)

### 6.1.24 m11 as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The matrix value at position 1/1.

**Notes:** (Read only property)

### 6.1.25 m12 as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The matrix value at position 1/2.

**Notes:** (Read only property)

### 6.1.26 m21 as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The matrix value at position 2/1.

**Notes:** (Read only property)

### 6.1.27 m22 as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The matrix value at position 2/2.

**Notes:** (Read only property)

### 6.1.28 tx as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The translate X value.

**Notes:** (Read only property)

### 6.1.29 ty as Double

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The translate Y value.

**Notes:** (Read only property)



# Chapter 7

## iCloud

### 7.1 class NSSortDescriptorMBS

#### 7.1.1 class NSSortDescriptorMBS

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The cocoa class for sort descriptions.

**Example:**

```
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.key)
```

**Notes:**

An instance of NSSortDescriptor describes a basis for ordering objects by specifying the property to use to compare the objects, the method to use to compare the properties, and whether the comparison should be ascending or descending. Instances of NSSortDescriptor are immutable.

You construct an instance of NSSortDescriptor by specifying the key path of the property to be compared, the order of the sort (ascending or descending), and (optionally) a selector to use to perform the comparison. The three-argument constructor allows you to specify other comparison selectors such as caseInsensitiveCompare: and localizedCompare:. Sorting raises an exception if the objects to be sorted do not respond to the sort descriptor's comparison selector.

Note: Many of the descriptions of NSSortDescriptor methods refer to "property key". This, briefly, is a string (key) that identifies a property (an attribute or relationship) of an object. You can find a discussion of this terminology in "Object Modeling" in Cocoa Fundamentals Guide and in Key-Value Coding Programming Guide.

There are a number of situations in which you can use sort descriptors, for example:

- To sort an array (an instance of NSArray or NSMutableArray—see `sortedArrayUsingDescriptors` and `sortUsingDescriptors`)
- To directly compare two objects (see `compareObject` method)
- To specify how the elements in a table view should be arranged (see `sortDescriptors`)
- To specify how the elements managed by an array controller should be arranged (see `sortDescriptors`)
- If you are using Core Data, to specify the ordering of objects returned from a fetch request (see `sortDescriptors`)

### 7.1.2 Methods

#### 7.1.3 `compareObject(obj1 as variant, obj2 as variant)` as Integer

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two objects.

**Notes:** Returns 1, -1 or 0 (zero for equal).

#### 7.1.4 `Constructor(key as string, ascending as boolean)`

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an NSSortDescriptor object initialized with a given property key path and sort order, and with the default comparison selector.

**Example:**

```
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.key)
```

**Notes:**

`key`: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

`ascending`: True if the receiver specifies sorting in ascending order, otherwise false.

On success the handle property is not zero.

Available in Mac OS X v10.3 and later.

If you implement the Compare event, we use it on OS X 10.6 and newer.

See also:

- 7.1.5 `Constructor(key as string, ascending as boolean, SelectorName as String)`

**7.1.5 Constructor(key as string, ascending as boolean, SelectorName as String)**

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an NSSortDescriptor object initialized with a given property key path and sort order, and with the default comparison selector.

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

On success the handle property is not zero.

Please pass valid name of a selector for the objects. Wrong selector causes trouble, e.g. "localizedCompare:". Available in Mac OS X v10.3 and later.

See also:

- 7.1.4 Constructor(key as string, ascending as boolean)

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**7.1.6 reversedSortDescriptor as NSSortDescriptorMBS**

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the receiver with the sort order reversed.

**Example:**

```
dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKey("Hello", true)
```

```
dim x as NSSortDescriptorMBS = n.reversedSortDescriptor
MsgBox x.key+" "+str(x.ascending)
```

**7.1.7 sortDescriptorWithKey(key as string, ascending as boolean) as NSSortDescriptorMBS**

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS

n = NSSortDescriptorMBS.sortDescriptorWithKey("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an `NSSortDescriptorMBS` object initialized with the specified key and ordering.  
Available in Mac OS X 10.3 and newer.

### 7.1.8 `sortDescriptorWithKeyComparator(key as string, ascending as boolean, Comparator as NSComparatorDelegateMBS, tag as Variant = nil) as NSSortDescriptorMBS`

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` object initialized to do with the given ordering and comparator delegate.

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding (see Key-Value Coding Programming Guide).

ascending: true if the receiver specifies sorting in ascending order, otherwise false.

Comparator: the comparator to use with delegate declaration "`NSComparatorDelegateMBS(obj1 as Variant, obj2 as Variant, tag as Variant) as Integer`".

### 7.1.9 `sortDescriptorWithKeyWithCaseInsensitiveCompare(key as string, ascending as boolean) as NSSortDescriptorMBS`

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS
```

```
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCaseInsensitiveCompare("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an `NSSortDescriptorMBS` object initialized with the specified key and ordering. With case insensitive string comparison.  
Available in Mac OS X 10.3 and newer.



### 7.1.10 `sortDescriptorWithKeyWithCompare(key as string, ascending as boolean)` as `NSSortDescriptorMBS`

Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS
```

```
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCompare("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an `NSSortDescriptorMBS` object initialized with the specified key and ordering. Uses selector "compare".

Available in Mac OS X 10.3 and newer.

See also:

- 7.1.11 `sortDescriptorWithKeyWithCompare(key as string, ascending as boolean, Options as Integer)`  
as `NSSortDescriptorMBS` 73

### 7.1.11 `sortDescriptorWithKeyWithCompare(key as string, ascending as boolean,` `Options as Integer)` as `NSSortDescriptorMBS`

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS
```

```
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCompare("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed

using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an `NSSortDescriptorMBS` object initialized with the specified key and ordering. Uses selector `"compare:options:"`.

Please pass options for `NSString` comparison. e.g. `NSNumericSearch`

Available in Mac OS X 10.3 and newer.

See also:

- 7.1.10 `sortDescriptorWithKeyWithCompare(key as string, ascending as boolean) as NSSortDescriptorMBS` 73

### 7.1.12 `sortDescriptorWithKeyWithLocalizedCaseInsensitiveCompare(key as string, ascending as boolean) as NSSortDescriptorMBS`

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS
```

```
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithLocalizedCaseInsensitiveCompare("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an `NSSortDescriptorMBS` object initialized with the specified key and ordering. With localized string comparison. With case insensitive string comparison.

Available in Mac OS X 10.3 and newer.

### 7.1.13 `sortDescriptorWithKeyWithLocalizedCompare(key as string, ascending as boolean) as NSSortDescriptorMBS`

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an `NSSortDescriptor` with the specified key and ordering.

**Example:**

```
dim n as NSSortDescriptorMBS
```

```
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithLocalizedCompare("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. With localized string comparison.

Available in Mac OS X 10.3 and newer.

### 7.1.14 sortDescriptorWithKeyWithSelector(key as string, ascending as boolean, SelectorName as String) as NSSortDescriptorMBS

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified selector, key and ordering.

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering.

Please pass valid name of a selector for the objects. Wrong selector causes trouble, e.g. "localizedCompare:". Available in Mac OS X 10.3 and newer.

### 7.1.15 Properties

### 7.1.16 ascending as boolean

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver specifies sorting in ascending order.

**Example:**

```
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.ascending)
```

**Notes:** (Read only property)

### 7.1.17 Handle as Integer

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the NSSortDescriptor object.

**Notes:** (Read and Write property)

### 7.1.18 key as string

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver's property key path.

**Example:**

```
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.key)
```

**Notes:**

This key path specifies the property that is compared during sorting.  
(Read only property)

### 7.1.19 selector as String

Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The selector used to sort.

**Notes:** (Read only property)

### 7.1.20 Events

### 7.1.21 Comparator(obj1 as Variant, obj2 as Variant) as Integer

Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The compare event.

### 7.1.22 Delegates

### 7.1.23 NSComparatorDelegateMBS(obj1 as Variant, obj2 as Variant, tag as variant) as Integer

Plugin Version: 18.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The delegate for use with sortDescriptorWithKeyComparator method.



# Chapter 8

## QuickTime

### 8.1 class QTAudioChannelDescriptionMBS

#### 8.1.1 class QTAudioChannelDescriptionMBS

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The description for an audio channel.

#### 8.1.2 Properties

#### 8.1.3 ChannelFlags as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Flags that control the interpretation of Coordinates.

**Notes:** (Read and Write property)

#### 8.1.4 ChannelLabel as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The AudioChannelLabel that describes the channel.

**Notes:** (Read and Write property)

### 8.1.5 Coordinates(index as Integer) as Double

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** An ordered triple that specifies a precise speaker location.

**Notes:**

Index from 0 to 2.

(Read and Write computed property)

### 8.1.6 Constants

#### 8.1.7 kAudioChannelCoordinates\_Azimuth = 0

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For spherical coordinates, 0 is front center, positive is right, negative is left. This is measured in degrees.

#### 8.1.8 kAudioChannelCoordinates\_BackFront = 1

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For rectangular coordinates, negative is back and positive is front.

#### 8.1.9 kAudioChannelCoordinates\_Distance = 2

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For spherical coordinates, the units are described by flags.

#### 8.1.10 kAudioChannelCoordinates\_DownUp = 2

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For rectangular coordinates, negative is below ground level, 0 is ground level, and positive is above ground level.

#### 8.1.11 kAudioChannelCoordinates\_Elevation = 1

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For spherical coordinates, +90 is zenith, 0 is horizontal, -90 is nadir. This is measured in degrees.



**8.1.12 kAudioChannelCoordinates\_LeftRight = 0**

Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.

**Notes:** For rectangular coordinates, negative is left and positive is right.

**8.1.13 kAudioChannelFlags\_AllOff = 0**

Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.

**Notes:** All flags off.

**8.1.14 kAudioChannelFlags\_Meters = 4**

Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.

**Notes:** Set to indicate the units are in meters, clear to indicate the units are relative to the unit cube or unit sphere.

**8.1.15 kAudioChannelFlags\_RectangularCoordinates = 1**

Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.

**Notes:** The channel is specified by the cartesian coordinates of the speaker position. This flag is mutually exclusive with kAudioChannelFlags\_SphericalCoordinates.

**8.1.16 kAudioChannelFlags\_SphericalCoordinates = 2**

Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.

**Notes:** The channel is specified by the spherical coordinates of the speaker position. This flag is mutually exclusive with kAudioChannelFlags\_RectangularCoordinates.

**8.1.17 kAudioChannelLabel\_Ambisonic\_W = 200**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.18 kAudioChannelLabel\_Ambisonic\_X = 201**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.19 kAudioChannelLabel\_Ambisonic\_Y = 202**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.20 kAudioChannelLabel\_Ambisonic\_Z = 203**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.21 kAudioChannelLabel\_Center = 3**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.22 kAudioChannelLabel\_CenterSurround = 9**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Back Center" or plain "Rear Surround"

**8.1.23 kAudioChannelLabel\_CenterSurroundDirect = 44**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** back center, non diffuse

**8.1.24 kAudioChannelLabel\_ClickTrack = 304**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.25 kAudioChannelLabel\_DialogCentricMix = 43**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.26 kAudioChannelLabel\_Discrete = 400**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.27 kAudioChannelLabel\_Discrete\_0 = & h10000**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.28 kAudioChannelLabel\_Discrete\_1 = & h10001**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.29 kAudioChannelLabel\_Discrete\_10 = & h1000A**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.30 kAudioChannelLabel\_Discrete\_11 = & h1000B**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.31 kAudioChannelLabel\_Discrete\_12 = & h1000C**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.32 kAudioChannelLabel\_Discrete\_13 = & h1000D**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.33 kAudioChannelLabel\_Discrete\_14 = & h1000E**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.34 kAudioChannelLabel\_Discrete\_15 = & h1000F**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.35 kAudioChannelLabel\_Discrete\_2 = & h10002**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.36 kAudioChannelLabel\_Discrete\_3 = & h10003**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**Example:**

```
// build 2 channels to go on channel 3& 4
dim d1 as new QTAudioChannelDescriptionMBS
dim d2 as new QTAudioChannelDescriptionMBS

d1.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d1.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_3
d2.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d2.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_4

dim a as new QTAudioChannelLayoutMBS

a.NumberChannelDescriptions = 2
a.ChannelDescriptions(0) = d1
a.ChannelDescriptions(1) = d2
a.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_DiscreteInOrder + 2
```

**8.1.37 kAudioChannelLabel\_Discrete\_4 = & h10004**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.38 kAudioChannelLabel\_Discrete\_5 = & h10005**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.39 kAudioChannelLabel\_Discrete\_6 = & h10006**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.40 kAudioChannelLabel\_Discrete\_65535 = & h1FFFF**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.41 kAudioChannelLabel\_Discrete\_7 = & h10007**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.42 kAudioChannelLabel\_Discrete\_8 = & h10008**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.43 kAudioChannelLabel\_Discrete\_9 = & h10009**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.44 kAudioChannelLabel\_ForeignLanguage = 305**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.45 kAudioChannelLabel\_Haptic = 45**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.46 kAudioChannelLabel\_HeadphonesLeft = 301**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.47 kAudioChannelLabel\_HeadphonesRight = 302**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.48 kAudioChannelLabel\_HearingImpaired = 40**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.49 kAudioChannelLabel\_Left = 1**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.50 kAudioChannelLabel\_LeftCenter = 7**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.51 kAudioChannelLabel\_LeftSurround = 5**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Back Left"

**8.1.52 kAudioChannelLabel\_LeftSurroundDirect = 10**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Side Left"

**8.1.53 kAudioChannelLabel\_LeftTotal = 38**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** matrix encoded 4 channels

**8.1.54 kAudioChannelLabel\_LeftWide = 35**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.55 kAudioChannelLabel\_LFE2 = 37**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.56 kAudioChannelLabel\_LFEScreen = 4**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.57 kAudioChannelLabel\_Mono = 42**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.58 kAudioChannelLabel\_MS\_Mid = 204**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.59 kAudioChannelLabel\_MS\_Side = 205**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.60 kAudioChannelLabel\_Narration = 41**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.61 kAudioChannelLabel\_RearSurroundLeft = 33**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.62 kAudioChannelLabel\_RearSurroundRight = 34**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.63 kAudioChannelLabel\_Right = 2**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.64 kAudioChannelLabel\_RightCenter = 8**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.65 kAudioChannelLabel\_RightSurround = 6**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Back Right"

**8.1.66 kAudioChannelLabel\_RightSurroundDirect = 11**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Side Right"

**8.1.67 kAudioChannelLabel\_RightTotal = 39**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** matrix encoded 4 channels

**8.1.68 kAudioChannelLabel\_RightWide = 36**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.69 kAudioChannelLabel\_TopBackCenter = 17**

Plugin Version: 11.3. **Function:** One of the channel label constants.



**8.1.70 kAudioChannelLabel\_TopBackLeft = 16**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.71 kAudioChannelLabel\_TopBackRight = 18**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.72 kAudioChannelLabel\_TopCenterSurround = 12**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.73 kAudioChannelLabel\_Unknown = & hFFFFFFFF**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** Unknown or unspecified other use.

**8.1.74 kAudioChannelLabel\_Unused = 0**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** Channel is present, but has no intended use or destination.

**8.1.75 kAudioChannelLabel\_UseCoordinates = 100**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** Channel is described by the Coordinates fields.

**8.1.76 kAudioChannelLabel\_VerticalHeightCenter = 14**

Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Top Front Center"

**8.1.77 kAudioChannelLabel\_VerticalHeightLeft = 13**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**Notes:** WAVE: "Top Front Left"

**8.1.78 kAudioChannelLabel\_VerticalHeightRight = 15**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**Notes:** WAVE: "Top Front Right"

**8.1.79 kAudioChannelLabel\_XY\_X = 206**

Plugin Version: 11.3. **Function:** One of the channel label constants.

**8.1.80 kAudioChannelLabel\_XY\_Y = 207**

Plugin Version: 11.3. **Function:** One of the channel label constants.

## 8.2 class QTAudioChannelLayoutMBS

### 8.2.1 class QTAudioChannelLayoutMBS

Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class is used to specify channel layouts in files and hardware.

**Notes:**

This class does not use QuickTime functions as it only wraps data structures. And it can be used with Mac App Store and AVFoundation.

Some channel abbreviations used for the constants:

- L - left
- R - right
- C - center
- Ls - left surround
- Rs - right surround
- Cs - center surround
- Rls - rear left surround
- Rrs - rear right surround
- Lw - left wide
- Rw - right wide
- Lsd - left surround direct
- Rsd - right surround direct
- Lc - left center
- Rc - right center
- Ts - top surround
- Vhl - vertical height left
- Vhc - vertical height center
- Vhr - vertical height right
- Lt - left matrix total. for matrix encoded stereo.
- Rt - right matrix total. for matrix encoded stereo.

## 8.2.2 Methods

### 8.2.3 GetNumberOfChannels(layoutTag as UInt32) as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Function to get the number of channels out of an AudioChannelLayoutTag.

**Notes:** The low 16 bits of an AudioChannelLayoutTag gives the number of channels except for kAudioChannelLayoutTag\_UseChannelDescriptions and kAudioChannelLayoutTag\_UseChannelBitmap.

### 8.2.4 Memory as Memoryblock

Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the audio channel layout as memoryblock, so you can pass it for declares.

## 8.2.5 Properties

### 8.2.6 ChannelBitmap as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** If ChannelLayoutTag is set to kAudioChannelLayoutTag\_UseChannelBitmap, this field is the channel usage bitmap.

**Notes:** (Read and Write property)

### 8.2.7 ChannelLayoutTag as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The AudioChannelLayoutTag that indicates the layout.

**Notes:** (Read and Write property)

### 8.2.8 NumberChannelDescriptions as UInt32

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of items in the ChannelDescriptions array.

**Notes:** (Read and Write property)

### 8.2.9 ChannelDescriptions(index as Integer) as QTAudioChannelDescription-MBS

Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** An array of AudioChannelDescriptions that describe the layout.

**Notes:**

Index from 0 to NumberChannelDescriptions-1.  
(Read and Write computed property)

#### 8.2.10 Constants

##### 8.2.11 kAudioChannelBit\_Center = 4

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

##### 8.2.12 kAudioChannelBit\_CenterSurround = 256

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**Notes:** WAVE: "Back Center"

##### 8.2.13 kAudioChannelBit\_Left = 1

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

##### 8.2.14 kAudioChannelBit\_LeftCenter = 64

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

##### 8.2.15 kAudioChannelBit\_LeftSurround = 16

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**Notes:** WAVE: "Back Left"

**8.2.16 kAudioChannelBit\_LeftSurroundDirect = 512**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.  
**Notes:** WAVE: "Side Left"

**8.2.17 kAudioChannelBit\_LFEScreen = 8**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.18 kAudioChannelBit\_Right = 2**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.19 kAudioChannelBit\_RightCenter = 128**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.20 kAudioChannelBit\_RightSurround = 32**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.  
**Notes:** WAVE: "Back Right"

**8.2.21 kAudioChannelBit\_RightSurroundDirect = 1024**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.  
**Notes:** WAVE: "Side Right"

**8.2.22 kAudioChannelBit\_TopBackCenter = 65536**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.23 kAudioChannelBit\_TopBackLeft = 32768**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.24 kAudioChannelBit\_TopBackRight = 131072**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.25 kAudioChannelBit\_TopCenterSurround = 2048**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**8.2.26 kAudioChannelBit\_VerticalHeightCenter = 8192**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**Notes:** WAVE: "Top Front Center"

**8.2.27 kAudioChannelBit\_VerticalHeightLeft = 4096**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**Notes:** WAVE: "Top Front Left"

**8.2.28 kAudioChannelBit\_VerticalHeightRight = 16384**

Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

**Notes:** WAVE: "Top Front Right"

**8.2.29 kAudioChannelLayoutTag\_AAC\_3\_0 = & h720003**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R

**8.2.30 kAudioChannelLayoutTag\_AAC\_4\_0 = & h740004**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Cs

**8.2.31 kAudioChannelLayoutTag\_AAC\_5\_0 = & h780005**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs

**8.2.32 kAudioChannelLayoutTag\_AAC\_5\_1 = & h7C0006**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs Lfe

**8.2.33 kAudioChannelLayoutTag\_AAC\_6\_0 = & h8D0006**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs Cs

**8.2.34 kAudioChannelLayoutTag\_AAC\_6\_1 = & h8E0007**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs Cs Lfe

**8.2.35 kAudioChannelLayoutTag\_AAC\_7\_0 = & h8F0007**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs Rls Rrs

**8.2.36 kAudioChannelLayoutTag\_AAC\_7\_1 = & h7F0008**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C Lc Rc L R Ls Rs Lfe



**8.2.37 kAudioChannelLayoutTag\_AAC\_Octagonal = & h900008**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** C L R Ls Rs Rls Rrs Cs

**8.2.38 kAudioChannelLayoutTag\_AAC\_Quadraphonic = & h6C0004**

Plugin Version: 11.3. **Function:** One of the AAC layout constants.

**Notes:** L R Ls Rs

**8.2.39 kAudioChannelLayoutTag\_AC3\_1\_0\_1 = & h950002**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** C LFE

**8.2.40 kAudioChannelLayoutTag\_AC3\_2\_1\_1 = & h990004**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** L R Cs LFE

**8.2.41 kAudioChannelLayoutTag\_AC3\_3\_0 = & h960003**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** L C R

**8.2.42 kAudioChannelLayoutTag\_AC3\_3\_0\_1 = & h980004**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** L C R LFE

**8.2.43 kAudioChannelLayoutTag\_AC3\_3\_1 = & h970004**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** L C R Cs

**8.2.44 kAudioChannelLayoutTag\_AC3\_3\_1\_1 = & h9A0005**

Plugin Version: 11.3. **Function:** One of the AC3 layout constants.

**Notes:** L C R Cs LFE

**8.2.45 kAudioChannelLayoutTag\_Ambisonic\_B\_Format = & h6B0004**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** W, X, Y, Z

**8.2.46 kAudioChannelLayoutTag\_AudioUnit\_4 = & h6C0004**

Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

**8.2.47 kAudioChannelLayoutTag\_AudioUnit\_5 = & h6D0005**

Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

**8.2.48 kAudioChannelLayoutTag\_AudioUnit\_5\_0 = & h760005**

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.

**Notes:** L R Ls Rs C

**8.2.49 kAudioChannelLayoutTag\_AudioUnit\_5\_1 = & h790006**

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.

**Notes:** L R C LFE Ls Rs

**8.2.50 kAudioChannelLayoutTag\_AudioUnit\_6 = & h6E0006**

Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

### 8.2.51 kAudioChannelLayoutTag\_AudioUnit\_6\_0 = & h8B0006

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R Ls Rs C Cs

### 8.2.52 kAudioChannelLayoutTag\_AudioUnit\_6\_1 = & h7D0007

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R C LFE Ls Rs Cs

### 8.2.53 kAudioChannelLayoutTag\_AudioUnit\_7\_0 = & h8C0007

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R Ls Rs C Rls Rrs

### 8.2.54 kAudioChannelLayoutTag\_AudioUnit\_7\_0\_Front = & h940007

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R Ls Rs C Lc Rc

### 8.2.55 kAudioChannelLayoutTag\_AudioUnit\_7\_1 = & h800008

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R C LFE Ls Rs Rls Rrs

### 8.2.56 kAudioChannelLayoutTag\_AudioUnit\_7\_1\_Front = & h7E0008

Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.  
**Notes:** L R C LFE Ls Rs Lc Rc

### 8.2.57 kAudioChannelLayoutTag\_AudioUnit\_8 = & h6F0008

Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

**8.2.58 kAudioChannelLayoutTag\_Binaural = & h6A0002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** Binaural stereo (left, right)

**8.2.59 kAudioChannelLayoutTag\_Cube = & h700008**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** left, right, rear left, rear right, top left, top right, top rear left, top rear right

**8.2.60 kAudioChannelLayoutTag\_DiscreteInOrder = & h930000**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Example:**

```
// build 2 channels to go on channel 3& 4
dim d1 as new QTAudioChannelDescriptionMBS
dim d2 as new QTAudioChannelDescriptionMBS

d1.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d1.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_3
d2.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d2.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_4

dim a as new QTAudioChannelLayoutMBS

a.NumberChannelDescriptions = 2
a.ChannelDescriptions(0) = d1
a.ChannelDescriptions(1) = d2
a.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_DiscreteInOrder + 2
```

**Notes:** Needs to be ORed with the actual number of channels.

**8.2.61 kAudioChannelLayoutTag\_DTS\_3\_1 = & hA80004**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C L R LFE

**8.2.62 kAudioChannelLayoutTag\_DTS\_4\_1 = & hA90005**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C L R Cs LFE

**8.2.63 kAudioChannelLayoutTag\_DTS\_6\_0\_A = & hAA0006**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc Rc L R Ls Rs

**8.2.64 kAudioChannelLayoutTag\_DTS\_6\_0\_B = & hAB0006**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C L R Rls Rrs Ts

**8.2.65 kAudioChannelLayoutTag\_DTS\_6\_0\_C = & hAC0006**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C Cs L R Rls Rrs

**8.2.66 kAudioChannelLayoutTag\_DTS\_6\_1\_A = & hAD0007**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc Rc L R Ls Rs LFE

**8.2.67 kAudioChannelLayoutTag\_DTS\_6\_1\_B = & hAE0007**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C L R Rls Rrs Ts LFE

**8.2.68 kAudioChannelLayoutTag\_DTS\_6\_1\_C = & hAF0007**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C Cs L R Rls Rrs LFE

**8.2.69 kAudioChannelLayoutTag\_DTS\_6\_1\_D = & hB60007**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** C L R Ls Rs LFE Cs

**8.2.70 kAudioChannelLayoutTag\_DTS\_7\_0 = & hB00007**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc C Rc L R Ls Rs

**8.2.71 kAudioChannelLayoutTag\_DTS\_7\_1 = & hB10008**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc C Rc L R Ls Rs LFE

**8.2.72 kAudioChannelLayoutTag\_DTS\_8\_0\_A = & hB20008**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc Rc L R Ls Rs Rls Rrs

**8.2.73 kAudioChannelLayoutTag\_DTS\_8\_0\_B = & hB30008**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc C Rc L R Ls Cs Rs

**8.2.74 kAudioChannelLayoutTag\_DTS\_8\_1\_A = & hB40009**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc Rc L R Ls Rs Rls Rrs LFE

**8.2.75 kAudioChannelLayoutTag\_DTS\_8\_1\_B = & hB50009**

Plugin Version: 11.3. **Function:** One of the DTS layout constants.

**Notes:** Lc C Rc L R Ls Cs Rs LFE

**8.2.76 kAudioChannelLayoutTag\_DVD\_0 = & h640001**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** C (mono)

**8.2.77 kAudioChannelLayoutTag\_DVD\_1 = & h650002**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R

**8.2.78 kAudioChannelLayoutTag\_DVD\_10 = & h880004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE

**8.2.79 kAudioChannelLayoutTag\_DVD\_11 = & h890005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE Cs

**8.2.80 kAudioChannelLayoutTag\_DVD\_12 = & h790006**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE Ls Rs

**8.2.81 kAudioChannelLayoutTag\_DVD\_13 = & h730004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C Cs

**8.2.82 kAudioChannelLayoutTag\_DVD\_14 = & h750005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C Ls Rs

**8.2.83 kAudioChannelLayoutTag\_DVD\_15 = & h880004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE

**8.2.84 kAudioChannelLayoutTag\_DVD\_16 = & h890005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE Cs

**8.2.85 kAudioChannelLayoutTag\_DVD\_17 = & h790006**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C LFE Ls Rs

**8.2.86 kAudioChannelLayoutTag\_DVD\_18 = & h8A0005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R Ls Rs LFE

**8.2.87 kAudioChannelLayoutTag\_DVD\_19 = & h760005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R Ls Rs C

**8.2.88 kAudioChannelLayoutTag\_DVD\_2 = & h830003**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R Cs

**8.2.89 kAudioChannelLayoutTag\_DVD\_20 = & h7A0006**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R Ls Rs C LFE



**8.2.90 kAudioChannelLayoutTag\_DVD\_3 = & h840004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R Ls Rs

**8.2.91 kAudioChannelLayoutTag\_DVD\_4 = & h850003**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R LFE

**8.2.92 kAudioChannelLayoutTag\_DVD\_5 = & h860004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R LFE Cs

**8.2.93 kAudioChannelLayoutTag\_DVD\_6 = & h870005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R LFE Ls Rs

**8.2.94 kAudioChannelLayoutTag\_DVD\_7 = & h710003**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C

**8.2.95 kAudioChannelLayoutTag\_DVD\_8 = & h730004**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C Cs

**8.2.96 kAudioChannelLayoutTag\_DVD\_9 = & h750005**

Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.

**Notes:** L R C Ls Rs

**8.2.97 kAudioChannelLayoutTag\_EAC3\_6\_1\_A = & h9D0007**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Cs

**8.2.98 kAudioChannelLayoutTag\_EAC3\_6\_1\_B = & h9E0007**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Ts

**8.2.99 kAudioChannelLayoutTag\_EAC3\_6\_1\_C = & h9F0007**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Vhc

**8.2.100 kAudioChannelLayoutTag\_EAC3\_7\_1\_A = & hA00008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Rls Rrs

**8.2.101 kAudioChannelLayoutTag\_EAC3\_7\_1\_B = & hA10008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Lc Rc

**8.2.102 kAudioChannelLayoutTag\_EAC3\_7\_1\_C = & hA20008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Lsd Rsd

**8.2.103 kAudioChannelLayoutTag\_EAC3\_7\_1\_D = & hA30008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Lw Rw

**8.2.104 kAudioChannelLayoutTag\_EAC3\_7\_1\_E = & hA40008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Vhl Vhr

**8.2.105 kAudioChannelLayoutTag\_EAC3\_7\_1\_F = & hA50008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Cs Ts

**8.2.106 kAudioChannelLayoutTag\_EAC3\_7\_1\_G = & hA60008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Cs Vhc

**8.2.107 kAudioChannelLayoutTag\_EAC3\_7\_1\_H = & hA70008**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs LFE Ts Vhc

**8.2.108 kAudioChannelLayoutTag\_EAC\_6\_0\_A = & h9B0006**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs Cs

**8.2.109 kAudioChannelLayoutTag\_EAC\_7\_0\_A = & h9C0007**

Plugin Version: 11.3. **Function:** One of the EAC layout constants.

**Notes:** L C R Ls Rs Rls Rrs

**8.2.110 kAudioChannelLayoutTag\_Emagic\_Default\_7\_1 = & h810008**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R Ls Rs C LFE Lc Rc

**8.2.111 kAudioChannelLayoutTag\_Hexagonal = & h6E0006**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** L R Ls Rs C Cs – 60 degree speaker separation

**8.2.112 kAudioChannelLayoutTag\_ITU\_1\_0 = & h640001**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** C

**8.2.113 kAudioChannelLayoutTag\_ITU\_2\_0 = & h650002**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R

**8.2.114 kAudioChannelLayoutTag\_ITU\_2\_1 = & h830003**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R Cs

**8.2.115 kAudioChannelLayoutTag\_ITU\_2\_2 = & h840004**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R Ls Rs

**8.2.116 kAudioChannelLayoutTag\_ITU\_3\_0 = & h710003**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R C

**8.2.117 kAudioChannelLayoutTag\_ITU\_3\_1 = & h730004**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R C Cs

**8.2.118 kAudioChannelLayoutTag\_ITU\_3\_2 = & h750005**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R C Ls Rs

**8.2.119 kAudioChannelLayoutTag\_ITU\_3\_2\_1 = & h790006**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.

**Notes:** L R C LFE Ls Rs

**8.2.120 kAudioChannelLayoutTag\_ITU\_3\_4\_1 = & h800008**

Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.

**Notes:** L R C LFE Ls Rs Rls Rrs

**8.2.121 kAudioChannelLayoutTag\_MatrixStereo = & h670002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** A matrix encoded stereo stream (Lt, Rt)

**8.2.122 kAudioChannelLayoutTag\_MidSide = & h680002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** mid/side recording

**8.2.123 kAudioChannelLayoutTag\_Mono = & h640001**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** a standard mono stream

**8.2.124 kAudioChannelLayoutTag\_MPEG\_1\_0 = & h640001**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** C

**8.2.125 kAudioChannelLayoutTag\_MPEG\_2\_0 = & h650002**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R

**8.2.126 kAudioChannelLayoutTag\_MPEG\_3\_0\_A = & h710003**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R C

**8.2.127 kAudioChannelLayoutTag\_MPEG\_3\_0\_B = & h720003**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** C L R

**8.2.128 kAudioChannelLayoutTag\_MPEG\_4\_0\_A = & h730004**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R C Cs

**8.2.129 kAudioChannelLayoutTag\_MPEG\_4\_0\_B = & h740004**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** C L R Cs

**8.2.130 kAudioChannelLayoutTag\_MPEG\_5\_0\_A = & h750005**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R C Ls Rs

**8.2.131 kAudioChannelLayoutTag\_MPEG\_5\_0\_B = & h760005**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R Ls Rs C

**8.2.132 kAudioChannelLayoutTag\_MPEG\_5\_0\_C = & h770005**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L C R Ls Rs

**8.2.133 kAudioChannelLayoutTag\_MPEG\_5\_0\_D = & h780005**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** C L R Ls Rs

**8.2.134 kAudioChannelLayoutTag\_MPEG\_5\_1\_A = & h790006**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R C LFE Ls Rs

**8.2.135 kAudioChannelLayoutTag\_MPEG\_5\_1\_B = & h7A0006**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R Ls Rs C LFE

**8.2.136 kAudioChannelLayoutTag\_MPEG\_5\_1\_C = & h7B0006**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L C R Ls Rs LFE

**8.2.137 kAudioChannelLayoutTag\_MPEG\_5\_1\_D = & h7C0006**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** C L R Ls Rs LFE

**8.2.138 kAudioChannelLayoutTag\_MPEG\_6\_1\_A = & h7D0007**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R C LFE Ls Rs Cs

**8.2.139 kAudioChannelLayoutTag\_MPEG\_7\_1\_A = & h7E0008**

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.

**Notes:** L R C LFE Ls Rs Lc Rc



### 8.2.140 kAudioChannelLayoutTag\_MPEG\_7\_1\_B = & h7F0008

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** C Lc Rc L R Ls Rs LFE

### 8.2.141 kAudioChannelLayoutTag\_MPEG\_7\_1\_C = & h800008

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R C LFE Ls Rs Rls Rrs

### 8.2.142 kAudioChannelLayoutTag\_Octagonal = & h6F0008

Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** L R Ls Rs C Cs Lw Rw – 45 degree speaker separation

### 8.2.143 kAudioChannelLayoutTag\_Pentagonal = & h6D0005

Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** L R Ls Rs C – 72 degree speaker separation

### 8.2.144 kAudioChannelLayoutTag\_Quadraphonic = & h6C0004

Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** L R Ls Rs – 90 degree speaker separation

### 8.2.145 kAudioChannelLayoutTag\_SMPTE\_DTV = & h820008

Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:**

L R C LFE Ls Rs Lt Rt  
(kAudioChannelLayoutTag\_ITU\_5\_1 plus a matrix encoded stereo mix)

**8.2.146 kAudioChannelLayoutTag\_Stereo = & h650002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** A standard stereo stream (L R) - implied playback

**8.2.147 kAudioChannelLayoutTag\_StereoHeadphones = & h660002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** A standard stereo stream (L R) - implied headphone playback

**8.2.148 kAudioChannelLayoutTag\_TMH\_10\_2\_full = & h920015**

Plugin Version: 11.3. **Function:** One of the TMH layout constants.

**Notes:** TMH\_10\_2\_std plus: Lc Rc HI VI Haptic

**8.2.149 kAudioChannelLayoutTag\_TMH\_10\_2\_std = & h910010**

Plugin Version: 11.3. **Function:** One of the TMH layout constants.

**Notes:** L R C Vhc Lsd Rsd Ls Rs Vhl Vhr Lw Rw Csd Cs LFE1 LFE2

**8.2.150 kAudioChannelLayoutTag\_Unknown = & hFFFF0000**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** needs to be ORed with the actual number of channels

**8.2.151 kAudioChannelLayoutTag\_UseChannelBitmap = & h10000**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** Use the bitmap to define the mapping.

**8.2.152 kAudioChannelLayoutTag\_UseChannelDescriptions = 0**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** Use the array of AudioChannelDescriptions to define the mapping.

**8.2.153 kAudioChannelLayoutTag\_XY = & h690002**

Plugin Version: 11.3. **Function:** One of the general layout constants.

**Notes:** Coincident mic pair (often 2 figure 8's)



# Chapter 9

## Registration

### 9.1 module MBS

#### 9.1.1 module MBS

Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The module with version details.

#### 9.1.2 Methods

#### 9.1.3 Target as string

Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the target where the plugin was compiled for.

**Example:**

```
MsgBox mbs.Target
```

**Notes:** Can be Win32, Linux, Carbon, Carbon-PPC or Cocoa.

### 9.1.4 Constants

#### 9.1.5 BuildNumber = 19798

Plugin Version: 9.5. **Function:** The build number of the plugins.

**Example:**

```
# if mbs.BuildNumber>15000 then  
  
// use some new MBS feature  
  
MsgBox "OK"  
  
# endif
```

**Notes:** The constant value is not in this documentation as it changes too often.

#### 9.1.6 CompileDate = "Nov 26 2018"

Plugin Version: 9.5. **Function:** The compilation date of the plugin.

**Notes:** The constant value is not in this documentation as it changes too often.

#### 9.1.7 CompileTime = "10:32:47"

Plugin Version: 9.5. **Function:** The compilation time of the plugin.

**Example:**

```
MsgBox mbs.CompileTime
```

**Notes:** The constant value is not in this documentation as it changes too often.

#### 9.1.8 ComputerName = "MyMac"

Plugin Version: 14.0. **Function:** The computer the IDE was launched on for building an app.

**Example:**

```
MsgBox mbs.ComputerName
```

**Notes:**

Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.

The constant value is not in this documentation as it changes too often.

### 9.1.9 Copyright = "© 2017 by Monkeybread Software"

Plugin Version: 9.5. **Function:** The plugin copyright string.

**Example:**

```
MsgBox mbs.Copyright
```

### 9.1.10 HasAudioPlugin = true

Plugin Version: 16.4. **Function:** Whether the Audio plugin is installed.

**Example:**

```
# if MBS.HasAudioPlugin then  
MsgBox "Audio Plugin is installed."  
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.11 HasAVFoundationPlugin = true

Plugin Version: 16.4. **Function:** Whether the AVFoundation plugin is installed.

**Example:**

```
# if MBS.HasAVFoundationPlugin then  
MsgBox "AVFoundation Plugin is installed."  
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.12 HasBarcodePlugin = true

Plugin Version: 16.4. **Function:** Whether the Barcode plugin is installed.

**Example:**

```
# if MBS.HasBarcodePlugin then
MsgBox "Barcode Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.13 HasCanonEOSDigitalPlugin = true

Plugin Version: 16.4. **Function:** Whether the CanonEOSDigital plugin is installed.

**Example:**

```
# if MBS.HasCanonEOSDigitalPlugin then
MsgBox "CanonEOSDigital Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.14 HasChartDirectorPlugin = true

Plugin Version: 16.4. **Function:** Whether the ChartDirector plugin is installed.

**Example:**

```
# if MBS.HasChartDirectorPlugin then
MsgBox "ChartDirector Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.



### 9.1.15 HasCocoaBasePlugin = true

Plugin Version: 16.4. **Function:** Whether the CocoaBase plugin is installed.

**Example:**

```
# if MBS.HasCocoaBasePlugin then
MsgBox "CocoaBase Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.16 HasCocoaControlsPlugin = true

Plugin Version: 16.4. **Function:** Whether the CocoaControls plugin is installed.

**Example:**

```
# if MBS.HasCocoaControlsPlugin then
MsgBox "CocoaControls Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.17 HasCocoaExtrasPlugin = true

Plugin Version: 16.4. **Function:** Whether the CocoaExtras plugin is installed.

**Example:**

```
# if MBS.HasCocoaExtrasPlugin then
MsgBox "CocoaExtras Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.18 HasCocoaPlugin = true

Plugin Version: 16.4. **Function:** Whether the Cocoa plugin is installed.

**Example:**

```
# if MBS.HasCocoaPlugin then
MsgBox "Cocoa Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.19 HasCompressionPlugin = true

Plugin Version: 16.4. **Function:** Whether the Compression plugin is installed.

**Example:**

```
# if MBS.HasCompressionPlugin then
MsgBox "Compression Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.20 HasComputerControlPlugin = true

Plugin Version: 16.4. **Function:** Whether the ComputerControl plugin is installed.

**Example:**

```
# if MBS.HasComputerControlPlugin then
MsgBox "ComputerControl Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.21 HasControlsPlugin = true

Plugin Version: 16.4. **Function:** Whether the Controls plugin is installed.

**Example:**

```
# if MBS.HasControlsPlugin then
MsgBox "Controls Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.22 HasCUPSPlugin = true

Plugin Version: 16.4. **Function:** Whether the CUPS plugin is installed.

**Example:**

```
# if MBS.HasCUPSPlugin then
MsgBox "CUPS Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.23 HasCURLPlugin = true

Plugin Version: 16.4. **Function:** Whether the CURL plugin is installed.

**Example:**

```
# if MBS.HasCURLPlugin then
MsgBox "CURL Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.24 HasDataTypesPlugin = true

Plugin Version: 16.4. **Function:** Whether the DataTypes plugin is installed.

**Example:**

```
# if MBS.HasDataTypesPlugin then
MsgBox "DataTypes Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.25 HasDirectShowPlugin = true

Plugin Version: 16.4. **Function:** Whether the DirectShow plugin is installed.

**Example:**

```
# if MBS.HasDirectShowPlugin then
MsgBox "DirectShow Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.26 HasDonglePlugin = true

Plugin Version: 16.4. **Function:** Whether the Dongle plugin is installed.

**Example:**

```
# if MBS.HasDonglePlugin then
MsgBox "Dongle Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.27 HasDynaPDFPlugin = true

Plugin Version: 16.4. **Function:** Whether the DynaPDF plugin is installed.

**Example:**

```
# if MBS.HasDynaPDFPlugin then
MsgBox "DynaPDF Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.28 HasEncryptionPlugin = true

Plugin Version: 16.4. **Function:** Whether the Encryption plugin is installed.

**Example:**

```
# if MBS.HasEncryptionPlugin then
MsgBox "Encryption Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.29 HasGIFPlugin = true

Plugin Version: 16.4. **Function:** Whether the GIF plugin is installed.

**Example:**

```
# if MBS.HasGIFPlugin then
MsgBox "GIF Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.30 HasGraphicsMagickPlugin = true

Plugin Version: 16.4. **Function:** Whether the GraphicsMagick plugin is installed.

**Example:**

```
# if MBS.HasGraphicsMagickPlugin then
MsgBox "GraphicsMagick Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.31 HasImageMagickPlugin = true

Plugin Version: 16.4. **Function:** Whether the ImageMagick plugin is installed.

**Example:**

```
# if MBS.HasImageMagickPlugin then
MsgBox "ImageMagick Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.32 HasJavaPlugin = true

Plugin Version: 16.4. **Function:** Whether the Java plugin is installed.

**Example:**

```
# if MBS.HasJavaPlugin then
MsgBox "Java Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.33 HasJPEGPlugin = true

Plugin Version: 16.4. **Function:** Whether the JPEG plugin is installed.

**Example:**

```
# if MBS.HasJPEGPlugin then
MsgBox "JPEG Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.34 HasLargePicturePlugin = true

Plugin Version: 16.4. **Function:** Whether the LargePicture plugin is installed.

**Example:**

```
# if MBS.HasLargePicturePlugin then
MsgBox "LargePicture Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.35 HasLCMS2Plugin = true

Plugin Version: 16.4. **Function:** Whether the LCMS2 plugin is installed.

**Example:**

```
# if MBS.HasLCMS2Plugin then
MsgBox "LCMS2 Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.36 HasLCMSPlugin = true

Plugin Version: 16.4. **Function:** Whether the LCMS plugin is installed.

**Example:**

```
# if MBS.HasLCMSPlugin then
MsgBox "LCMS Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.37 HasLeopardPlugin = true

Plugin Version: 16.4. **Function:** Whether the Leopard plugin is installed.

**Example:**

```
# if MBS.HasLeopardPlugin then
MsgBox "Leopard Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.38 HasLinuxPlugin = true

Plugin Version: 16.4. **Function:** Whether the Linux plugin is installed.

**Example:**

```
# if MBS.HasLinuxPlugin then
MsgBox "Linux Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.



### 9.1.39 HasLionPlugin = true

Plugin Version: 16.4. **Function:** Whether the Lion plugin is installed.

**Example:**

```
# if MBS.HasLionPlugin then
MsgBox "Lion Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.40 HasMac64bitPlugin = true

Plugin Version: 16.4. **Function:** Whether the Mac64bit plugin is installed.

**Example:**

```
# if MBS.HasMac64bitPlugin then
MsgBox "Mac64bit Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.41 HasMacOSXCFPlugin = true

Plugin Version: 16.4. **Function:** Whether the MacOSXCF plugin is installed.

**Example:**

```
# if MBS.HasMacOSXCFPlugin then
MsgBox "MacOSXCF Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.42 HasMacOSXCGPlugin = true

Plugin Version: 16.4. **Function:** Whether the MacOSXCG plugin is installed.

**Example:**

```
# if MBS.HasMacOSXCGPlugin then
MsgBox "MacOSXCG Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.43 HasMacOSXPlugin = true

Plugin Version: 16.4. **Function:** Whether the MacOSX plugin is installed.

**Example:**

```
# if MBS.HasMacOSXPlugin then
MsgBox "MacOSX Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.44 HasMacPlugin = true

Plugin Version: 16.4. **Function:** Whether the Mac plugin is installed.

**Example:**

```
# if MBS.HasMacPlugin then
MsgBox "Mac Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.45 HasMainPlugin = true

Plugin Version: 16.4. **Function:** Whether the Main plugin is installed.

**Example:**

```
# if MBS.HasMainPlugin then
MsgBox "Main Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.46 HasMarkdownPlugin = true

Plugin Version: 16.4. **Function:** Whether the Markdown plugin is installed.

**Example:**

```
# if MBS.HasMarkdownPlugin then
MsgBox "Markdown Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.47 HasMavericksPlugin = true

Plugin Version: 16.4. **Function:** Whether the Mavericks plugin is installed.

**Example:**

```
# if MBS.HasMavericksPlugin then
MsgBox "Mavericks Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.48 HasMountainLionPlugin = true

Plugin Version: 16.4. **Function:** Whether the MountainLion plugin is installed.

**Example:**

```
# if MBS.HasMountainLionPlugin then
MsgBox "MountainLion Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.49 HasNetworkPlugin = true

Plugin Version: 16.4. **Function:** Whether the Network plugin is installed.

**Example:**

```
# if MBS.HasNetworkPlugin then
MsgBox "Network Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.50 HasNikonCameraPlugin = true

Plugin Version: 16.4. **Function:** Whether the NikonCamera plugin is installed.

**Example:**

```
# if MBS.HasNikonCameraPlugin then
MsgBox "NikonCamera Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.51 HasOCRPlugin = true

Plugin Version: 16.4. **Function:** Whether the OCR plugin is installed.

**Example:**

```
# if MBS.HasOCRPlugin then
MsgBox "OCR Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.52 HasOverlayPlugin = true

Plugin Version: 16.4. **Function:** Whether the Overlay plugin is installed.

**Example:**

```
# if MBS.HasOverlayPlugin then
MsgBox "Overlay Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.53 HasPHPPlugin = true

Plugin Version: 16.4. **Function:** Whether the PHP plugin is installed.

**Example:**

```
# if MBS.HasPHPPlugin then
MsgBox "PHP Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.54 HasPicturePlugin = true

Plugin Version: 16.4. **Function:** Whether the Picture plugin is installed.

**Example:**

```
# if MBS.HasPicturePlugin then
MsgBox "Picture Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.55 HasPNGPlugin = true

Plugin Version: 16.4. **Function:** Whether the PNG plugin is installed.

**Example:**

```
# if MBS.HasPNGPlugin then
MsgBox "PNG Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.56 HasQTKitPlugin = true

Plugin Version: 16.4. **Function:** Whether the QTKit plugin is installed.

**Example:**

```
# if MBS.HasQTKitPlugin then
MsgBox "QTKit Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.57 HasQuickTimePlugin = true

Plugin Version: 16.4. **Function:** Whether the QuickTime plugin is installed.

**Example:**

```
# if MBS.HasQuickTimePlugin then
MsgBox "QuickTime Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.58 HasRegExPlugin = true

Plugin Version: 16.4. **Function:** Whether the RegEx plugin is installed.

**Example:**

```
# if MBS.HasRegExPlugin then
MsgBox "RegEx Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.59 HasSmartCardPlugin = true

Plugin Version: 16.4. **Function:** Whether the SmartCard plugin is installed.

**Example:**

```
# if MBS.HasSmartCardPlugin then
MsgBox "SmartCard Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.60 HasSnowLeopardPlugin = true

Plugin Version: 16.4. **Function:** Whether the SnowLeopard plugin is installed.

**Example:**

```
# if MBS.HasSnowLeopardPlugin then
MsgBox "SnowLeopard Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.61 HasSQLPlugin = true

Plugin Version: 16.4. **Function:** Whether the SQL plugin is installed.

**Example:**

```
# if MBS.HasSQLPlugin then
MsgBox "SQL Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.62 HasTAPIPlugin = true

Plugin Version: 16.4. **Function:** Whether the TAPI plugin is installed.

**Example:**

```
# if MBS.HasTAPIPlugin then
MsgBox "TAPI Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.



### 9.1.63 HasTidyPlugin = true

Plugin Version: 16.4. **Function:** Whether the Tidy plugin is installed.

**Example:**

```
# if MBS.HasTidyPlugin then
MsgBox "Tidy Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.64 HasTiffPlugin = true

Plugin Version: 16.4. **Function:** Whether the Tiff plugin is installed.

**Example:**

```
# if MBS.HasTiffPlugin then
MsgBox "Tiff Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.65 HasTwainPlugin = true

Plugin Version: 16.4. **Function:** Whether the Twain plugin is installed.

**Example:**

```
# if MBS.HasTwainPlugin then
MsgBox "Twain Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.66 HasUSBPlugin = true

Plugin Version: 16.4. **Function:** Whether the USB plugin is installed.

**Example:**

```
# if MBS.HasUSBPlugin then
MsgBox "USB Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.67 HasUtilPlugin = true

Plugin Version: 16.4. **Function:** Whether the Util plugin is installed.

**Example:**

```
# if MBS.HasUtilPlugin then
MsgBox "Util Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.68 HasVLCPlugin = true

Plugin Version: 16.4. **Function:** Whether the VLC plugin is installed.

**Example:**

```
# if MBS.HasVLCPlugin then
MsgBox "VLC Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.69 HasWIAPLugin = true

Plugin Version: 16.4. **Function:** Whether the WIA plugin is installed.

**Example:**

```
# if MBS.HasWIAPLugin then
MsgBox "WIA Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.70 HasWinDragDropPlugin = true

Plugin Version: 16.4. **Function:** Whether the WinDragDrop plugin is installed.

**Example:**

```
# if MBS.HasWinDragDropPlugin then
MsgBox "WinDragDrop Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.71 HasWinICMPlugin = true

Plugin Version: 16.4. **Function:** Whether the WinICM plugin is installed.

**Example:**

```
# if MBS.HasWinICMPlugin then
MsgBox "WinICM Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.72 HasWinPlugin = true

Plugin Version: 16.4. **Function:** Whether the Win plugin is installed.

**Example:**

```
# if MBS.HasWinPlugin then
MsgBox "Win Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.73 HasXLPlugin = true

Plugin Version: 16.4. **Function:** Whether the XL plugin is installed.

**Example:**

```
# if MBS.HasXLPlugin then
MsgBox "XL Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.74 HasXMPPPlugin = true

Plugin Version: 16.4. **Function:** Whether the XMP plugin is installed.

**Example:**

```
# if MBS.HasXMPPPlugin then
MsgBox "XMP Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 9.1.75 `HostName = "MyMac"`

Plugin Version: 14.0. **Function:** The host the IDE was launched on for building an app.

**Example:**

```
MsgBox mbs.HostName
```

**Notes:**

Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.

The constant value is not in this documentation as it changes too often.

### 9.1.76 `UserName = "Christian Schmitz"`

Plugin Version: 14.0. **Function:** The user name of the user who launched the IDE.

**Example:**

```
MsgBox mbs.UserName
```

**Notes:**

Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.

The constant value is not in this documentation as it changes too often.

### 9.1.77 `Version = "MBS Xojo Plugin 18.5 (build 19798) Mon Nov 26 09:24:55 2018 (GMT)"`

Plugin Version: 9.5. **Function:** The plugin version string.

**Example:**

```
MsgBox mbs.Version
```

### 9.1.78 `VersionString = "18.5"`

Plugin Version: 11.1. **Function:** The plugin version string (only, the number part).

**Example:**

MsgBox mbs.VersionString

**Notes:** e.g. "11.1"

### 9.1.79 Website = "http://www.monkeybreadsoftware.de"

Plugin Version: 9.5. **Function:** The URL for the Monkeybread Software website.

**Notes:** ShowURL mbs.Website

### 9.1.80 Year = 2018

Plugin Version: 9.5. **Function:** The year of the plugin.

**Example:**

MsgBox str(mbs.Year)

## 9.2 Globals

### 9.2.1 LogoMBS(size as Integer = 0, WithAlphaChannel as boolean = false) as Picture

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the MBS logo picture.

**Example:**

```
window1.Backdrop = LogoMBS(500)
```

**Notes:**

Best size is 500 pixel.

This function exists to provide a sample picture for examples.

If WithAlphaChannel is true and alpha channel pictures are supported, the plugin returns a picture with alpha channel. (Cocoa, Windows or Linux target on Real Studio 2011r4).

Due to a bug in console runtime from Real Software this function can only produce useful pictures with 500 pixel size in console or web applications.

### 9.2.2 MBSPluginCompileDate as string

Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compilation date of the plugins.

**Example:**

```
MsgBox MBSPluginCompileDate
```

**Notes:**

e.g. "Aug 27 2006"

Actually the compilation date of the Version Plugin part which defines this function.

### 9.2.3 MBSPluginCompileTime as string

Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compilation Time of the plugins.

**Example:**

MsgBox MBSPluginCompileTime

**Notes:**

e.g. "19:40:16"

Actually the compilation date of the Version Plugin part which defines this function.

### 9.2.4 MBSPluginVersion as string

Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a version string from the plugin.

**Example:**

MsgBox "Build with Real Studio "+RBVersionString+" and "+MBSPluginVersion

**Notes:** You can show that in your about box so your users can tell you which plugin they use.

### 9.2.5 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as Integer) as boolean

Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function to register the plugins.

**Example:**

```
const name = "Joe Smith"
const serialnumber = 123456789
const enddate = 200710
```

```
if not RegisterMBSPlugin(name,"MBS2007", enddate, serialnumber) then
msgBox "something wrong with the serial number of the plugins!"
end if
```

**Notes:**

Returns true if name and serial number is accepted.

While you are running your project in Xojo (or Real Studio) you don't need to register, but if you compile for any target, you should or nice popup windows will show that the app is not registered.



Register in an application subclass to make registering as early as possible.

In case you get this message: "RegisterMBSPlugin()", giving the message "This item conflicts with another item of the same name" you have something else in your plugins folder, e.g. a html file.

Possible reasons for this failing:

- The calculations you make on the strings or serial number do not create the same value on every machine (Intel vs. PPC, e.g. endian problems)
- You use MBS functions before calling registration function (e.g. you register in window.open event and use the plugin for a control.)
- You mix different plugin versions in your Realbasic folder.

This function works only for 2007 and newer serial numbers.

See also:

- 9.2.6 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as string) as boolean 145

### 9.2.6 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as string) as boolean

Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function to register the plugins.

**Example:**

```
const name = "Joe Smith"
const serialnumber = "123456"
const enddate = 200710

if not RegisterMBSPlugin(name, "MBS Complete", enddate, serialnumber) then
  msgBox "something wrong with the serial number of the plugins!"
end if
```

**Notes:**

Returns true if name and serial number is accepted.

While you are running your project in Xojo (or Real Studio) you don't need to register, but if you compile for any target, you should or nice popup windows will show that the app is not registered.

Register in an application subclass to make registering as early as possible.

In case you get this message: "RegisterMBSPlugin()", giving the message "This item conflicts with another item of the same name" you have something else in your plugins folder, e.g. a html file.

Possible reasons for this failing:

- The calculations you make on the strings or serial number do not create the same value on every machine (Intel vs. PPC, e.g. endian problems)
- You use MBS functions before calling registration function (e.g. you register in window.open event and use the plugin for a control.)
- You mix different plugin versions in your Realbasic folder.

This function works only for 2015 and newer serial numbers.

See also:

- 9.2.5 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as Integer) as boolean 144

### 9.2.7 SetRegistrationMessageMBS(ID as Integer, message as string)

Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines what messages to show.

**Example:**

```
SetRegistrationMessageMBS(0, "This application is broken. Please reinstall!")
```

**Notes:**

ID currently can only be 0 and is reserved for future flags.

Currently this changes the message which is shown if plugins of different versions are found.

This typically happens if installers mix old and new libraries in an app and the user should be asked to reinstall the application.

# Chapter 10

## System

### 10.1 module BuildConstantsMBS

#### 10.1.1 module BuildConstantsMBS

Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with build constants for you.

**Example:**

```
MsgBox BuildConstantsMBS.DateTime
```

#### 10.1.2 Constants

#### 10.1.3 Date = "26.11.2018"

Plugin Version: 11.0. **Function:** The constant for the date.

**Example:**

```
MsgBox BuildConstantsMBS.Date
```

**Notes:**

Format is dd.mm.yyyy like 24.12.2010.

This is the date when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

#### 10.1.4 DateTime = "Mon Nov 26 15:28:29 2018"

Plugin Version: 11.0. **Function:** The constant for the date and time.

**Example:**

```
MsgBox BuildConstantsMBS.DateTime
```

**Notes:** This is the time when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

#### 10.1.5 Day = 26

Plugin Version: 11.0. **Function:** The day.

#### 10.1.6 Hour = 15

Plugin Version: 11.0. **Function:** The hour.

#### 10.1.7 Minute = 28

Plugin Version: 11.0. **Function:** The minute.

#### 10.1.8 Month = 11

Plugin Version: 11.0. **Function:** The month.

#### 10.1.9 Second = 29

Plugin Version: 11.0. **Function:** The second.

#### 10.1.10 Time = "15:28:29"

Plugin Version: 11.0. **Function:** The constant for the time.

**Example:**

MsgBox BuildConstantsMBS.Time

**Notes:**

Format is like hh:mm:ss like 11:22:33.

This is the time when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

**10.1.11 Year = 2018**

Plugin Version: 11.0. **Function:** The year.

## 10.2 Globals

### 10.2.1 InstallSystemExceptionHandlerMBS(Message as string = "")

Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Installs an exception handler to show a message dialog with custom message before the app crashes.

**Example:**

```
InstallSystemExceptionHandlerMBS "My message"
```

**Notes:**

If message is empty, the default message is "An unhandled C++ exception occurred. The application will now quit. A common reason for this is simply running out of memory."

The plugin allocates some memory which we release later to make sure there is free memory for the message box.

On Windows this method does not work as currently we use static runtime on Windows which does not allow the plugin to access the runtime inside the RB framework.

## 10.3 class GlobalExceptionHandlerMBS

### 10.3.1 class GlobalExceptionHandlerMBS

Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Installs an exception handler to show a message dialog with custom message before the app crashes.

**Notes:**

The plugin allocates some memory which we release later to make sure there is free memory for the message box.

On Windows this method does not work as currently we use static runtime on Windows which does not allow the plugin to access the runtime inside the RB framework.

### 10.3.2 Events

### 10.3.3 GotException

Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when an unhandled C++ exception was raised.

**Notes:** Your application is in a very instable state when this event is called. Don't do much here and quit soon with ExitMBS/AbortMBS.





# Chapter 11

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# Chapter 12

## The FAQ

### 12.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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)

## 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.NSCalibratedRGBColorSpace)
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:

- 12.0.3 How to catch delete key? 165
- 12.0.4 How to convert cmyk to rgb? 165
- 12.0.5 How to delete a folder? 167
- 12.0.6 How to detect if CPU if 64bit processor? 168
- 12.0.7 How to refresh a htmlviewer on Windows? 168

### 12.0.3 How to catch delete key?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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:

- 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 164
- 12.0.4 How to convert cmyk to rgb? 165
- 12.0.5 How to delete a folder? 167
- 12.0.6 How to detect if CPU if 64bit processor? 168
- 12.0.7 How to refresh a htmlviewer on Windows? 168

### 12.0.4 How to convert cmyk to rgb?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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:

- 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 164
- 12.0.3 How to catch delete key? 165
- 12.0.5 How to delete a folder? 167
- 12.0.6 How to detect if CPU is 64bit processor? 168
- 12.0.7 How to refresh a htmlviewer on Windows? 168

## 12.0.5 How to delete a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following is the code 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
else ' file
fo.Delete
end if
next
```

```
f.Delete
End Sub
```

See also:

- 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 164
- 12.0.3 How to catch delete key? 165
- 12.0.4 How to convert cmyk to rgb? 165
- 12.0.6 How to detect if CPU if 64bit processor? 168
- 12.0.7 How to refresh a htmlviewer on Windows? 168

### 12.0.6 How to detect if CPU is 64bit processor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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:

- 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 164
- 12.0.3 How to catch delete key? 165
- 12.0.4 How to convert cmyk to rgb? 165
- 12.0.5 How to delete a folder? 167
- 12.0.7 How to refresh a htmlviewer on Windows? 168

### 12.0.7 How to refresh a htmlviewer on Windows?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can ask the browser to reload the website with this code line:

**Example:**

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

- 12.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 164
- 12.0.3 How to catch delete key? 165
- 12.0.4 How to convert cmyk to rgb? 165
- 12.0.5 How to delete a folder? 167
- 12.0.6 How to detect if CPU is 64bit processor? 168



### 12.0.8 Is there an example for vector graphics in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

```

### 12.0.9 Picture functions do not preserve resolution values?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.10 A toolbox call needs a rect - how do I give it one?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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
```

**12.0.11 API client not supported?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.12 Can I access Access Database with Java classes?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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>

### 12.0.13 Can I create PDF from Real Studio Report using DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can't provide a graphics subclass from plugin.

**Notes:**

The is a feature request to allow graphics subclasses:

Feedback case 11391: [feedback://showreport?report\\_id=11391](http://feedback://showreport?report_id=11391)

### 12.0.14 Can I use AppleScripts in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.15 Can I use graphics class with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can't provide a graphics subclass from plugin.

**Notes:**

The is a feature request to allow graphics subclasses:  
Feedback case 11391: [feedback://showreport?report\\_id=11391](https://feedback.adobe.com/showreport?report_id=11391)

### 12.0.16 Can I use OGG with REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** There is a QuickTime plugin for OGG which works with REALbasic.

**Notes:** That should be a solution for playback and recording on Mac and Windows.

### 12.0.17 Can I use sockets on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, but they run on the server, not on the client.

**Notes:**

You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCP-Socket, 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.

### 12.0.18 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our ChartDirector plugin works just fine on the Real Studio 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 choosen 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 & hbbbbbb
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(& hFFFFFFF)

// 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.

**12.0.19 Can I use your DynaPDF plugin on a web application?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our DynaPDF plugin works just fine on the Real Studio 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 Real Studio Web Edition.  
<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

**12.0.20 Can I use your plugin controls on a web application?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** No.

**12.0.21 Can you get an unique machine ID?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.22 ChartDirector: Alignment Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

### 12.0.23 ChartDirector: Color Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Color Specification

#### Notes:

Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports colors 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-



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.

RRGGBB, 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 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

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.

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.

### ConstantDescription

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.

## 12.0.24 ChartDirector: Font Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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](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 "FONTPATH".

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.

**Indirect Font Names**  
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.

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.

#### Font Size

The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. `TextBox.setFontSize`) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.

#### Font Color

This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)

#### 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.

## 12.0.25 ChartDirector: Mark Up Language

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

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.

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".)

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.

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 section. You may use `</font*>` to terminate a style section, which will restore the font styles to the state before the style section.

**Blocks and Lines**

In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters (`"\n"`) or with `<br*>`. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

```
<*size=15*><*block*><*color=FF*>BLOCK<br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<br*>TWO
```

will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using `<*block*>` as the start tag and `<*/*>` as the end tag.

When a block ends, font styles will be restored to the state before entering the block.

**Embedding Images**

CDML supports embedding images in text using the following syntax:

```
<*img=my_image_file.png*>
```

where `my_image_file.png` is the path name of the image file.

For example, the line:

```
<*size=20*>A <*img=sun.png*>day
```

will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either `png`, `jpg`, `jpeg`, `gif`, `wbmp` or `wmp` (case insensitive).

Please refer to `BaseChart.setSearchPath` or `DrawArea.setSearchPath` on the directory that ChartDirector will search for the file.

The `<*img*>` tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and

## height.Blocks Attributes

CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the `<*block*>` tag to control the alignment and orientation of the sub-blocks. The `<*img=my_image_file.png*>` is treated as a block for layout purposes.

For example, the line:

```
<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
```

will result in the following text rendered:

The the above starts `<*block,valign=absmiddle*>` which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside `<*block*>` tag:

## AttributeDescription

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.

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

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.

## 12.0.26 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

#### 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

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 <code>BaseChart.addExtraField</code> or <code>BaseChart.addExtraField2</code> .

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 "& amps;# nn;" (eg. ">" will become "& amps;# 62;"). 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.

### 12.0.27 ChartDirector: Shape Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

### 12.0.28 Copy styled text?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.29 Do you have code to validate a credit card number?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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)

**12.0.30 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?**

Plugin Version: all, Console & Web: No. **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.

**12.0.31 Does SQL Plugin handle stored procedures with multiple result sets?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.32 Does the plugin home home?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.33 folderitem.absolutePath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

### 12.0.34 Future of editablemovie class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In short, it will go away, so switch to plugin functions soon.

**Notes:**

The editableMovie class has been deprecated.

Deprecated means that Real Software will remove it someday, but as of today (and probably a few more years) the class will be available and running. Just not forever. The reason is that Apple deprecated the old QuickTime APIs and they are not available for 64 bit.

For 64 bit, you can move to our QTKit plugin.

We expect the old QuickTime classes in Real Studio and our plugins will continue to work in 32 bit applications. Even if editableMovie class is removed next year from Real Studio, our plugin still provides movie class extensions to do similar functions.

### 12.0.35 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?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.36 How about Plugin support for older OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.37 How can I detect whether an Intel CPU is a 64bit CPU?**

Plugin Version: all, Console & Web: No. **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.

### 12.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

#### 12.0.40 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, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

#### 12.0.41 How can I get text from a PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

#### 12.0.42 How can I get text from a Word Document?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.



### 12.0.43 How can I get the item string for a given file creator?

Plugin Version: all, Console & Web: No. **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.

#### 12.0.44 How can I launch an app using it's creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

#### 12.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Please use the ldd command in the terminal.

**Notes:**

You build an app on any platform, but for Linux.

For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
```

```

libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$

```

As you see all library have been found and their load address is printed behind the na,e. If a library is missing, you usually see the address missing there or being zero.

## 12.0.46 How can I validate an email address?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:  
**Example:**

```

Dim re As RegEx
re = New RegEx

```

```
Dim rm As RegExMatch
```

```
re.SearchPattern = "[a-z0-9!# $ % & '*/+=?^_`{ | }
textasciitilde - ]+(?:\. [a-z0-9!# $ % & '*/+=?^_`{ | }
textasciitilde - ]+)*@(?: [a-z0-9 ](?: [a-z0-9- ]*[a-z0-9 ])?\.)+[a-z0-9 ](?: [a-z0-9- ]*[a-z0-9 ])?"
```

```
rm = re.Search(editField1.Text)
```

```
if rm = Nil Then
```

```
StaticText2.text = editField1.Text + " not valid email"
```

```
Else
```

```
StaticText2.Text = editField1.Text + " is valid"
```

```
End if
```

### Notes:

Adapted from:

<http://www.regular-expressions.info/email.html>

## 12.0.47 How do I check if the QuickTime component for the JPEG exporting is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the PictureToString functions will work, you may try this function:

### Example:

```
Function IsQTJPEGExporerAvailable() As boolean
```

```
dim q as QTComponentInformationMBS
```

```
// search for QuickTime JPEG exporter codec
```

```
q=new QTComponentInformationMBS
```

```
while q.NextComponent
```

```
if q.Type="imco" and q.SubType="jpeg" then
```

```
Return true
```

```
end if
```

```
wend
```

```
Return false // not found
```

```
End Function
```

### Notes:

It should work like this for other types like:

```

"tiff" ->TIFF
"PNTG" ->Mac Paint
"gif " ->GIF
"WRLE" ->Windows BMP
"tga " ->Targa
"png " ->PNG
etc.

```

### 12.0.48 How do I check if the QuickTime component for the JPEG importing is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the StringToPicture functions will work, you may try this function:

**Example:**

```

Function IsQTJPEGImporterAvailable() As boolean
dim q as QTComponentInformationMBS

```

```

// search for QuickTime JPEG importer codec
q=new QTComponentInformationMBS

```

```

while q.NextComponent
if q.Type="imdc" and q.SubType="jpeg" then
Return true
end if
wend

```

```

Return false // not found
End Function

```

**Notes:**

It should work like this for other types like:

```

"tiff" ->TIFF
"PNTG" ->Mac Paint
"gif " ->GIF
"WRLE" ->Windows BMP
"tga " ->Targa
"png " ->PNG
etc.

```

### 12.0.49 How do I check if the QuickTime component for the Sequence grabber is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the QTGrabberClass will work, you can use this code:

**Example:**

```
Function IsQTGrabberAvailable() As boolean
dim q as QTComponentInformationMBS

q=new QTComponentInformationMBS

while q.NextComponent
if q.Type="barg" then
Return true
end if
wend

Return false // not found
End Function
```

**Notes:** Don't forget that you need to check for each other component you use like the compression functions.

### 12.0.50 How do I decode correctly an email subject?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following code can be used to decode an email subject including several encodings including Base 64.

**Example:**

```
dim src as string // input

dim theRegex as Regex
dim theRegexMatch as RegexMatch
dim result, infoCharset, encodedPart as string
dim theStart as Integer

if instr(src, "=?") >0 then
theRegex = new Regex
theRegex.Options.Greedy = false
theRegex.searchPattern = "(.*)=?(.+)\?(Q | B)\?(.+)\?="
theRegexMatch = theRegex.search(src)
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.

### 12.0.51 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.52 How do I find the root volume for a file?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

**12.0.53 How do I get the current languages list?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

## 12.0.54 How do I get the Mac OS Version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.55 How do I get the printer name?

Plugin Version: all, Console & Web: No. **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 in 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.

### 12.0.56 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

## 12.0.57 How do I make a smooth color transition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.58 How do I read the applications in the dock app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.59 How do I truncate a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In a `binarystream` you can set the `length` property to truncate.

### 12.0.60 How do update a Finder's windows after changing some files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.61 How to access a USB device directly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.62 How to add icon to file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.63 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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).

### 12.0.64 How to automatically enable retina in my apps?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.65 How to avoid leaks with Cocoa functions?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 REALbasic 2009r4 the code above should not be needed as REALbasic runtime does automatically handle the NSAutoreleasePools for you. For older REALbasic versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use REALbasic 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc\_msgSend call.

### 12.0.66 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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>
```

### 12.0.67 How to avoid \_\_\_NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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](http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html)



### 12.0.68 How to bring app to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.69 How to bring my application to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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)

### 12.0.70 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.71 How to change name of application menu?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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.

### 12.0.72 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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/> .

### 12.0.73 How to check if a folder/directory has subfolders?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.74 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.75 How to check if Microsoft Outlook is installed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

```

### 12.0.76 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.77 How to code sign my app with plugins?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 Mac and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of 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.

### 12.0.78 How to collapse a window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.79 How to compare two pictures?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.80 How to compile PHP library?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.81 How to convert a `BrowserType` to a `String` with `WebSession.Browser`?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

**12.0.82 How to convert a `EngineType` to a `String` with `WebSession.Engine`?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

```

### 12.0.83 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

```

### 12.0.84 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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("Björn, this text should be converted")
Mac2PC.clear
```

**Notes:** You have to call Mac2PC.clear after every conversion to reset the encoding engine.

### 12.0.85 How to convert ChartTime back to Xojo date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.86 How to convert line endings in text files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.87 How to convert picture to string and back?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

### 12.0.88 How to copy an array?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.89 How to copy a dictionary?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 an dictionary of objects, you need to change code to also make a copy of those objects.

**12.0.90 How to copy parts of a movie to another one?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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.

### 12.0.91 How to create a birthday like calendar event?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.92 How to create a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the UUIDMBS class for this.

### 12.0.93 How to create a Mac picture clip file?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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("AQAAAAAAAAAAAAAAAAACAFRDRVIAAABAAAAAAAAAABUQ0IQAAAAA")
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

**Notes:** In general Apple has deprecated this, but a few application still support clippings.

### 12.0.94 How to create a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.95 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

## 12.0.96 How to create PDF for image files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.97 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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. Pas 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)

### 12.0.98 How to delete file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.99 How to detect display resolution changed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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".

### 12.0.100 How to detect retina?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use Window.BackingScaleFactorMBS to query the factor.

**Example:**

```
msgbox str(window1.BackingScaleFactorMBS)
```

### 12.0.101 How to disable force quit?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.102 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.103 How to display a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.104 How to do a lottery in RB?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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)
```



You can use `DNSLookupThreadMBS` class for doing them asynchron.

### 12.0.106 How to draw a dashed pattern line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

**Example:**

*// call like this: DrawDashedPatternLine g,0,0,width,height,10*

```
Sub DrawDashedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen

b=true
x=x1
while (x<x2) and (y<y2)
ox=x
oy=y

x=x+dx
y=y+dy

if b then
g.DrawLine ox,oy,x,y
end if

b=not b
wend

End Sub
```

**Notes:** It would be possible to add this to the plugin, but I think it's better if you do it in plain Realbasic code, so it even works on Windows.



### 12.0.107 How to draw a nice antialiased line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.108 How to draw with CGContextMBS using my own handle?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

**Example:**

```
Soft Declare Function QDBeginCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer)
as Integer
dim contextRef as Integer
call QDBeginCGContext(g.handle(graphics.HandleTypeCGrafPtr), contextRef)
dim c as new CGContextMBS(contextRef)
```

```
c.BeginPath
c.SetLineWidth(3)
c.SetRGBFillColor(1,0,0,0.5)
c.FillRect(CGMakeRectMBS(0,0,100,100))
c.DrawPath(c.kCGPathFillStroke)
c.Flush // and so on
```

```
Soft Declare Function QDEndCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer)
as Integer
dim h as Integer = c.Handle
call QDEndCGContext(g.handle(graphics.HandleTypeCGrafPtr), h)
c.Handle=0
```

**Notes:** Basicly you can provide your own handle to CGContextMBS. But if you do not set it back to 0 the CGContextMBS destructor will release the handle which can result into a crash. (if the reference count is wrong)

### 12.0.109 How to dump java class interface?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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

### 12.0.110 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 Real Studio versions because of the `#` if even if your RS version does not support alpha channel pictures. This way it's future proof.

### 12.0.111 How to enable assistive devices?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.112 How to encrypt a file with Blowfish?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.113 How to extract text from HTML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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: Grü&szlig;e

**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 &auml; to ä.

### 12.0.114 How to find empty folders in a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

**12.0.115 How to find iTunes on a Mac OS X machine fast?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try Launch Services.

**Example:**

```
dim f as FolderItem
```

```
f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")
```

```
MsgBox f.AbsolutePath
```

**12.0.116 How to find network interface for a socket by it's name?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.117 How to find version of Microsoft Word?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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".

### 12.0.118 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.UnixpathMBS
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/>

### 12.0.119 How to format double with n digits?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.120 How to get a time converted to user time zone in a web app?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

**12.0.121 How to get an handle to the frontmost window on Windows?**

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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
```

### 12.0.122 How to get CFAbsoluteTime from date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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.

### 12.0.123 How to get client IP address on web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the `WebSession.RemoteAddress` property.

**Example:**

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

### 12.0.124 How to get fonts to load in charts on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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"
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.

### 12.0.125 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.126 How to get GMT time and back?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.127 How to get good crash reports?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Check this website from the webkit website:

**Notes:** <http://webkit.org/quality/crashlogs.html>

**12.0.128 How to get list of all threads?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.129 How to get parameters from webpage URL in Real Studio Web Edition?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 Real Studio 2010r5. Please use DefineEncoding.

**12.0.130 How to get Real Studio apps running Linux?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.131 How to get the color for disabled textcolor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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" ...

### 12.0.132 How to get the current free stack space?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 you like for that.

### 12.0.133 How to get the current timezone?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:**

You can use the TimeZoneMBS class or the CTimeZoneMBS 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

```

### 12.0.134 How to get the current window title?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
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

```

**12.0.135 How to get the cursor blink interval time?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.136 How to get the list of the current selected files in the Finder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 Realbasic 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
```

### 12.0.137 How to get the Mac OS system version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

### 12.0.138 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.139 How to get the screensize excluding the task bar?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

**Notes:** Use the Screen class with the available\* properties.

### 12.0.140 How to get the size of the frontmost window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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!

### 12.0.141 How to get the source code of a HTMLViewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

**Example:**

*// for Windows:*

```
msgbox HTMLViewer1.IEHTMLTextMBS
```

*// for Mac OS X:*

```
msgbox HTMLViewer1.mainFrameMBS.dataSource.data
```

### 12.0.142 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sometimes it may be better to use an extra application to process images.

**Notes:**

A typical 32 bit app made with Xojo (Real Studio) 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.

### 12.0.143 How to handle tab key for editable cells in listbox?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.144 How to hard link MapKit framework?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.145 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 Real Studio Web Edition.

### 12.0.146 How to hide all applications except mine?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **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

```

### 12.0.147 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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).



### 12.0.148 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you want to hide something in a chart, simply assign the kTransparent constant as color.

### 12.0.149 How to hide the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.150 How to insert image to NSTextView or TextArea?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.151 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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""
elseif TargetMacOS then
call HTMLViewer1.EvaluateJavaScriptMBS "window.location = ""# 16""
else
// not supported
end if
```

### 12.0.152 How to keep a movieplayer unclickable?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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
```

### 12.0.153 How to keep my web app from using 100% CPU time?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Linux and Mac OS X 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.

### 12.0.154 How to kill a process by name?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.155 How to know how many CPUs are present?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this function:

**Example:**

```
Function GetCPUCount() as Integer
Declare Function MPProcessors Lib "Carbon" () as Integer

Return MPProcessors()
End Function
```

**Notes:** Your app will then 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.

### 12.0.156 How to know if a movie is finished?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** This code can help you although it's not perfect:

**Example:**

```
Declare Function IsMovieDone Lib "QuickTime" (theMovie as Integer) as Integer
```

```
if IsMovieDone(moviePlayer1.movie.handle) <>0 then
//movie is finished
end if
```

**Notes:** But be carefull! It crashes sometimes for an unknown reason!?

### 12.0.157 How to know if QuickTime is installed on any target and can play MPEG 4 movies?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Try this code:

**Example:**

```
dim q as QTComponentInformationMBS

q=new QTComponentInformationMBS

// "eat " = Movie importers
while q.NextComponentOfType("eat ")
if q.SubType="MP4 " then
MsgBox "found: "+q.Name+ " codec"
end if
wend
```

**Notes:** If you find a MP4 movie importing codec you can be sure that a MP4 movie can be opened.

### 12.0.158 How to know if QuickTime is installed on any target?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Try this function:

**Example:**

```
Dim theEffect as QTEffect

theEffect=GetQTCrossFadeEffect

if theEffect = nil then
msgBox "QuickTime is not installed."
else
msgBox "Quicktime is installed."
end if
```

**Notes:** The problem with this code is that it checks only if the QuickTime part of the cross fade effect is available. Use the QTComponentInformationMBS to check for the features you really need.

### 12.0.159 How to know the calling function?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.160 How to launch an app using it's creator code?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

**12.0.161 How to launch disc utility?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.162 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You may try to embed your changes to the database between two transaction calls.

**Example:**

```
dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"
```

**Notes:** This can increase speed by some factors.

### 12.0.163 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.164 How to make a window borderless on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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

```

### 12.0.165 How to make an alias using AppleEvents?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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

**12.0.166 How to make an application smaller?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

If you use an older copy of REALbasic, you should try to compile for 68k only instead of PPC. It's a little bit slower, but code is much smaller.

On any Mac OS target you can save your images as JPEG and drop the into your application. REALbasic will include them as JPEGs into the Mac applications (convert to BMP for Windows). This will make the resources of your application smaller, but requires that the user has QuickTime 2.5 or newer installed.

**12.0.167 How to make AppleScripts much faster?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

**12.0.168 How to make double clicks on a canvas?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 GetDbfTime Lib "Carbon" () as Integer
doubleClickTime = GetDbfTime()
# 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
```

### 12.0.169 How to make my Mac not sleeping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 HDActivity = 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.

**12.0.170 How to make my own registration code scheme?**

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** There are excellent articles about how to make a registratin code scheme, but you can also simply use our RegistrationEngineMBS class.

**Notes:** If you need a license text, why not use the one from Real Studio as a starting point?

**12.0.171 How to make small controls on Mac OS X?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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))

```

### 12.0.172 How to mark my Mac app as background only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

**12.0.173 How to move a file or folder to trash?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.174 How to move an application to the front using the creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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)

### 12.0.175 How to move file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.176 How to normalize string on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.177 How to obscure the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.178 How to open icon file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```



### 12.0.179 How to open PDF in acrobat reader?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.180 How to open printer preferences on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

### 12.0.181 How to open special characters panel on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.182 How to optimize picture loading in Web Edition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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:

<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

### 12.0.183 How to parse XML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.184 How to play audio in a web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the HTML5 audio tag and control it with javascript.

**Notes:**

See our web apps here:

<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

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 Real Studio 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. Then 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)+";")
```

### 12.0.185 How to pretty print xml?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the XML Transform method with the right XLS.

#### Notes:

Learn more here:

<http://docs.xojo.com/index.php/XMLDocument.Transform>

### 12.0.186 How to print to PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.187 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.188 How to quit windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.189 How to read a CSV file correctly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.190 How to read the command line on windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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 Realbasic versions have a system.commandline property.

**12.0.191 How to render PDF pages with PDF Kit?**

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

**12.0.192 How to restart a Mac?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```



### 12.0.193 How to resume ftp upload with curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.194 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.195 How to rotate image with CoreImage?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 Real Studio picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask
```

```
Backdrop = pic
```

### 12.0.196 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.197 How to save a quicktime movie as a reference movie?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Example code is below:

**Example:**

```
// save as reference movie
dim f as FolderItem
dim m as movie

f=SpecialFolder.Desktop.Child("test.mov")
m=f.OpenAsMovie

f=SpecialFolder.Desktop.Child("new movie.mov")

msgbox str(m.SaveMBS(f,false,false))
```

### 12.0.198 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use `NSPrint-InfoMBS` 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.

**12.0.199 How to save RTFD?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With NSTextViewMBS you can use this code to save to RTFD:

**Example:**

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtf")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then

else
  MsgBox e.LocalizedDescription
end if
```

**Notes:** For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

**12.0.200 How to scale a picture proportionally with mask?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** For a proportional scaling, we calculate the new picture size relative to the target maximum size.

**Example:**

```

Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if

// return result
Return NewPic
End Function

```

**Notes:** This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

### 12.0.201 How to scale a picture proportionally?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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)

**12.0.202 How to scale/resize a picture?**

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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:

- The GWorld class which uses QuickTime. Includes nice Bicubic scaling with QuickTime 6.
- QTGraphicsImporterMBS and QTGraphicsExporterMBS 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 REALbasic:

- make a new picture and draw the old one with new size inside.

### 12.0.203 How to search with regex and use unicode codepoints?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 äöü ABC 456"

r=new RegExMBS
if r.Compile("ö.") 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 ö 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
```

### 12.0.204 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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

```

### 12.0.205 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.



### 12.0.206 How to set the modified dot in the window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declares:

**Example:**

```
window1.ModifiedMBS=true
```

### 12.0.207 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 Real Studio Web Edition.  
<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

### 12.0.208 How to show Keyboard Viewer programmatically?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use Realbasic 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/Key-
boardViewerServer.app"

```

```

set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theAp-
plication))
if isRunning then tell application POSIXPath to quit
delay 0.15

```

```

ignoring application responses
tell application POSIXPath to run
end ignoring

```

## 12.0.209 How to show the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare:

### Example:

```
Declare Sub ShowCursor Lib "Carbon" ()
```

```
ShowCursor
```

**Notes:** The MBS Plugin has this function and supports it on Windows, too.

### 12.0.210 How to shutdown a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 ShutDownPower Lib "Carbon" ()
ShutDownPower
```

### 12.0.211 How to sleep a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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
```

### 12.0.212 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.213 How to use PDFLib in my RB application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The PDFlib plugin was discontinued in favor of our DynaPDF plugin.  
**Notes:** If you need help to move, please contact us.

### 12.0.214 How to use quotes in a string?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Just double them.

**Example:**

```
msgbox "This String contains ""quotes"""
```

### 12.0.215 How to use Sybase in Web App?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use our MBS Real Studio 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
```

### 12.0.216 How to use the Application Support folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.UnixpathMBS
```

**Notes:** You may not be able to write there with a normal user account!

### 12.0.217 How to use the IOPMCopyScheduledPowerEvents function in Real-basic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 cfarrayMBS
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.

### 12.0.218 How to validate a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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".

### 12.0.219 How to walk a folder hierarchie non recursively?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.220 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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 Real Studio IDE on Windows crashed on compilation.

### 12.0.221 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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 tempory 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 `~/Library/Caches` and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

### 12.0.222 I want to accept Drag & Drop from iTunes

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to accept `AcceptMacDataDrop "itun"` and `Handle the DropObject`.

**Example:**

```

Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub

Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")

// Parse XML
o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBS CFStringMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then

```

```

MsgBox file.UnixpathMBS
end if
end if
end if
next
end if
end if
end if
End Sub

```

**Notes:** The code above inside a window on Realbasic 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

### 12.0.223 I'm drawing into a listbox but don't see something.

Plugin Version: all, Console & Web: No. **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.

### 12.0.224 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.225 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?

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Stand alone.

**Notes:**

REALbasic compiles all used plugins into the application binary.

Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

### 12.0.226 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.227 Is there a case sensitive Dictionary?

Plugin Version: all, Console & Web: No. **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

### 12.0.228 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.229 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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

```

### 12.0.230 Is there an easy way I can launch the Quicktime preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the code below:  
**Example:**

```

dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("QuickTime")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if

```

### 12.0.231 List of Windows Error codes?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have a list of windows error codes on our website.

**Notes:** <http://www.monkeybreadsoftware.de/xojo/winerror.shtml>

### 12.0.232 Midi latency on Windows problem?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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)

### 12.0.233 My Xojo Web App does not launch. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Here is a list of checks to do for linux apache installations with Xojo or Real Studio 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?



**12.0.234 Pictures are not shown in my application. Why?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:**

On Mac OS Classic, please check the memory partition size which may be too low.  
Else (most times on Windows) you are simple missing the part of QuickTime to load images.

**12.0.235 Realbasic doesn't work with your plugins on Windows 98.**

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Upgrade your Windows version or complain to Realssoftware.

**12.0.236 REALbasic or my RB application itself crashes on launch on Mac OS Classic. Why?**

Plugin Version: all, Console & Web: No. **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.

**12.0.237 SQLiteDatabase not initialized error?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

**12.0.238 Textconverter returns only the first x characters. Why?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

Some older REALbasic versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

**Notes:** REALbasic seems not to support Textconverters at all on Windows.

### 12.0.239 The type translation between CoreFoundation/Foundation and Realbasic data types.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The plugin does conversion between Cocoa/Carbon data types and native REALbasic data types. The following list help you knowing what the current plugins support:

**Notes:**

Cocoa NSObject to Variant:

```

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

```

- ->\*MBS

Variant to Cocoa NSObject:

```

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate

```

MemoryBlock ->NSData  
 String ->NSString  
 NSImageMBS ->NSImage  
 NSAttributedStringMBS ->NSAttributedString  
 NSColorMBS ->NSColor  
 NSRectMBS ->NSValue with NSRect  
 NSSizeMBS ->NSValue with NSSize  
 NSPointMBS ->NSValue with NSPoint  
 NSRangeMBS ->NSValue with NSRange  
 NSBurnMBS ->NSBurn  
 NSViewMBS ->NSView  
 NSFontMBS ->NSFont  
 NSParagraphStyleMBS ->NSParagraphStyle  
 NSAttributedStringMBS ->NSAttributedString  
 WebPolicyDelegateMBS ->WebPolicyDelegate  
 WebUIDelegateMBS ->WebUIDelegate  
 WebFrameLoadDelegateMBS ->WebFrameLoadDelegate  
 WebResourceLoadDelegateMBS ->WebResourceLoadDelegate  
 NSIndexSetMBS ->NSIndexSet  
 QTTimeMBS ->QTTime  
 QTTimeRangeMBS ->QTTimeRange  
 Array of Variant ->NSArray  
 Array of String ->NSArray  
 CFStringMBS ->NSString  
 CFNumberMBS ->NSNumber  
 CFDataMBS ->NSData  
 CFURLMBS ->NSURL  
 CFArrayMBS ->NSArray  
 CFDictionaryMBS ->NSDictionary  
 CFBinaryDataMBS ->NSData

Carbon CTypeRef to Variant:

CFDictionaryRef ->Dictionary  
 CFStringRef ->String  
 CFDataRef ->String  
 CFURL ->String  
 CFNumber ->Integer/Double/Int64  
 CFArray ->Array  
 CFDate ->date  
 nil ->nil  
 CGColorSpace ->CGColorSpaceMBS  
 CGColor ->CGColorMBS  
 CGImage ->CGImageMBS  
 CF\* ->CF\*MBS

Variant to Carbon CFTypeRef:

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.

### 12.0.240 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.241 What classes to use for hotkeys?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

**Notes:** CarbonHotKeyMBS will also work fine in Cocoa apps.

### 12.0.242 What do I need for Linux to get picture functions working?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.243 What does the NAN code mean?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

**12.0.244** What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

REALbasic 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
```

**12.0.245** What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.246 What is last plugin version to run on PPC?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.247 What is the difference between Timer and WebTimer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Time is server side and WebTimer client side.

**Notes:** Timer is the normal timer class in Real Studio. 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.

### 12.0.248 What is the list of Excel functions?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.249 What is the replacement for PluginMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the SoftDeclareMBS class to load libraries dynamically.

### 12.0.250 What to do on Realbasic reporting a conflict?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

REALbasic 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.



### 12.0.251 What to do with a NSImageCacheException?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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 basicly 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.

### 12.0.252 What to do with MySQL Error 2014?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can get this error on MySQL if you have a recordset open while you create another one.

### 12.0.253 What ways do I have to ping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You have different ways

**Notes:**

1. Use the shell class and the ping utility.
2. Use the MBS Network Plugin and there the SuperSocket part:
  - a) On Windows the ICMPpingMBS works to ping.
  - b) On Mac OS X it uses OpenTransport and needs root rights. You need to use sudo to run this application. This does not work on Intel Macs, because the plugin is not endian safe.

3. The DarwinPingMBS.Ping method:

Compiled for Mac OS X Macho target it works as a synchronized ping method.  
The Windows version had a bug and was fixed in plugin version 8.2pr4. So it works now.

4. The DarwinPingMBS.SimplePing method:

Works on Mac OS X Macho target.

But this method can be called from a thread to make it working in background.

### 12.0.254 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetActiveDisplayList.

### 12.0.255 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithPoint.

### 12.0.256 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithRect.

### 12.0.257 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetOnlineDisplayList.

### 12.0.258 Where is GetObjectClassNameMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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.

### 12.0.259 Where is NetworkAvailableMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **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, then 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.

### 12.0.260 Where is StringHeight function in DynaPDF?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.261 Where is XLSDocumentMBS class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This class has been removed in favor of XLBookMBS class.

**Notes:** These classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

**12.0.262 Where to get information about file formats?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

Please visit this web page:

<http://www.wotsit.org>

**12.0.263 Where to register creator code for my application?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Register at Apple:

<http://developer.apple.com/dev/cftype/information.html>

**12.0.264 Which Mac OS X frameworks are 64bit only?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.265 Which plugins are 64bit only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.266 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Some RB versions require that you install DirectX from Microsoft on your Windows.

### 12.0.267 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.268 Why do I hear a beep on keydown?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

### 12.0.269 Why does folderitem.item return nil?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Because Realbasic 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.

### 12.0.270 Why doesn't showurl work?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

There are three main reasons:

1. showurl is not supported by REALbasic 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.

### 12.0.271 Why don't the picture functions not work on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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.

### 12.0.272 Why have I no values in my chart?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **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.

### 12.0.273 Will application size increase with using plugins?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **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.

## 12.0.274 XLS: Custom format string guidelines

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **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

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
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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,,