MBS Picture Plugin Documentation

Christian Schmitz

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0.1 Introduction

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

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Chapter 5

Barcode

5.1 class BarcodeScannerMBS

5.1.1 class BarcodeScannerMBS

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Deprecated: This item is deprecated and should no longer be used. You can use zxing classes instead.
Function: A class to read a barcode from a given picture.
Notes: Deprecated in favor of new zxing classes.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 14.2pr1
- MBS Real Studio Plugins, version 13.1pr11

5.1.2 Methods

5.1.3 Scan(p as picture) as boolean

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Scans for a barcode on the picture.
Notes: The barcode is searched on the middle vertical line from the left to right.

So the picture you pass can be as small as just one pixel height.
The barcode should be horizontal centered in that picture for best results.

Returns true on success and false on failure.
See also:

- 5.1.4 Scan(p as picture, lines() as Integer) as boolean 58

5.1.4 Scan(p as picture, lines() as Integer) as boolean

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Scans for a barcode on the picture.
Example:

```
dim i as Integer
dim lines(-1) as Integer
dim b as BarcodeScannerMBS
dim p as Picture
// set b to your scanner and p to your picture

for i=0 to 99
lines.append i*10 // search every 10th line on a 1000 pixel high image.
next

if b.scan(p,lines) then
// ok
end if
```

Notes: The barcode is searched on the lines with the given offsets from the left to right.

The lines array must have at least one entry specifying the lines to search on.
If the values in the lines array are out of bounds, they are ignored. The first line has the value 0.

So the picture you pass can be as small as just one pixel height.
The barcode should be horizontal centered in that picture for best results.

Returns true on success and false on failure.
See also:

- 5.1.3 Scan(p as picture) as boolean 57

5.1.5 Properties

5.1.6 Barcode as String

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The barcode result of the last scan.

Notes: If the last scan was successful, this property has a value.
If the last scan failed, this property is empty.
(Read and Write property)

5.1.7 CheckDigits as Boolean

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether to calculate the checksum.
Notes: Normal 12 or 13 digit barcodes have the last number being a checksum.
If it does not match, the barcode is declined.

Default is false.
(Read and Write property)

5.1.8 LastBarcode as String

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The barcode result of the last successful scan.
Notes: If a scan fails, this value still has the value of the last successful scan.
(Read and Write property)

5.1.9 LastPicture as Picture

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last picture used for the scan.
Notes: (Read and Write property)

5.1.10 MinimumLength as Integer

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum length of barcodes.
Notes: Set to 0 to disable.

To avoid false barcodes, any barcode is rejected which does not have the sufficient length.

Default is 13.
(Read and Write property)

5.1.11 Mode as Integer

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The mode of the scanner.
Notes: Mode 0 is to scan EANs.
Mode 1 is to scan 2/5 family barcodes.
(Read and Write property)

Chapter 6

Files

6.1 class FolderItem

6.1.1 class FolderItem

Platforms: macOS, Linux, Windows, Targets: All.

Function: One of Xojo's base classes.
Notes: Handles access to files.

6.1.2 Methods

6.1.3 FinderUpdateMBS as Integer

Platform: macOS, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** Updates the file or folder in the Finder.
Notes: Returns 0 for successfull and any Mac OS error code on a problem.
Returns -1 on Windows.
This function is called automatically when adding or removing an icon.
If you add a folder icon, use this function to update the Finder to display it.
Blog Entries

- MBS Xojo Plugins, version 20.6pr4
- MBS Xojo Plugins, version 18.5pr2

6.1.4 IconImageMBS(width as Integer, WindowsFlags as Integer=0) as picture

Plugin Version: 3.3, Platforms: macOS, Windows, Targets: All.

Function: Returns an picture with the icon image of a FolderItem.
Example:

```
Backdrop=SpecialFolder.Desktop.IconImageMBS(512)
```

Notes: May return a picture which is smaller as requested if the given picture size is not available. (Changed in v5.3 to return the requested size)
On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)
Good sizes on Mac OS are 16, 32, 48 and 128 pixels.
Returns nil on low memory.

Version 8.6: Now reads the 32bit image data if possible.

You can pass flags for Windows options:

SHGFI_ADDOVERLAYS	= &h20	Apply the appropriate overlays to the file's icon.
SHGFI_LINKOVERLAY	= &h8000	Adds the link overlay to the file's icon.
SHGFI_OPENICON	= 2	Retrieve the file's open icon
SHGFI_SELECTED	= &h10000	Blend the file's icon with the system highlight color.

This function can fail if the file does not exist.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.
Blog Entries

- MBS Xojo Plugins, version 19.2pr1
- MBS Xojo Plugins, version 18.1pr5
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS Real Studio Plugins, version 12.1pr2

6.1.5 IconMaskMBS(width as Integer, WindowsFlags as Integer=0) as picture

Plugin Version: 3.3, Platforms: macOS, Windows, Targets: All.

Function: Returns an picture with the icon mask of a FolderItem.
Example:

```
Backdrop=SpecialFolder.Desktop.IconMaskMBS(512)
```

Notes: May return a picture which is smaller as requested if the given picture size is not available. (Changed in v5.3 to return the requested size)
On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)
Good sizes on Mac OS are 16, 32, 48 and 128 pixels.
Returns nil on low memory.

Please use with IconImageMBS and not with IconMBS function.
Version 8.6: Now reads the 8 bit alpha values if possible.

You can pass flags for Windows options:

SHGFI_ADDOVERLAYS	= &h20	Apply the appropriate overlays to the file's icon.
SHGFI_LINKOVERLAY	= &h8000	Adds the link overlay to the file's icon.
SHGFI_OPENICON	= 2	Retrieve the file's open icon
SHGFI_SELECTED	= &h10000	Blend the file's icon with the system highlight color.

This function can fail if the file does not exist.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.
Blog Entries

- MBS Xojo Plugins, version 18.1pr5
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS Real Studio Plugins, version 12.1pr2
- MBS Real Studio Plugins, version 11.2pr2

6.1.6 IconMBS(width as Integer, WindowsFlags as Integer=0) as picture

Platforms: macOS, Windows, Targets: All.

Function: Returns an picture with the icon of a FolderItem for the given iconsize.
Example:

```
Backdrop=SpecialFolder.Desktop.IconMBS(512)

// newer way for Mac apps:

// get image
dim n as NSImageMBS = NSWorkspaceMBS.iconForFile(SpecialFolder.desktop)
// set the size we want
n.setSize 512,512
// make a copy as picture
Backdrop = n.CopyPictureWithMask
```

Notes: Changed in plugin version 7.7 to return a picture with mask of the given size.

On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)

Version 8.6: Now reads the 32bit image data with 8 bit alpha values if possible.

You can pass flags for Windows options:

SHGFI_ADDOVERLAYS	= &h20	Apply the appropriate overlays to the file's icon.
SHGFI_LINKOVERLAY	= &h8000	Adds the link overlay to the file's icon.
SHGFI_OPENICON	= 2	Retrieve the file's open icon
SHGFI_SELECTED	= &h10000	Blend the file's icon with the system highlight color.

This function can fail if the file does not exist.
Please note that icons on alias files takes much longer to get than normal files.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.

For Linux, please use LinuxIconMBS module.

6.1.7 SetDesktopPictureMBS as Integer

Plugin Version: 3.3, Platforms: macOS, Windows, Targets: All.

Function: Asks the Finder/Explorer to change the desktop picture.
Notes: File must be a valid folderitem for an existing file.

Returns a Mac OS or Windows error code or -1 if the function is not available.

Chapter 7

Graphics & Pictures

7.1 class Graphics

7.1.1 class Graphics

Platforms: macOS, Linux, Windows, Targets: All.

Function: Extends Xojo's Graphics Class.

7.1.2 Methods

7.1.3 PaintdesktopMBS

Platform: Windows, Targets: Desktop only.

Function: Draws on Windows the desktop into the current graphics port.
Notes: May not draw a desktop picture.

7.1.4 StretchDIBitsMBS(XDest as Integer, YDest as Integer, DestWidth as Integer, DestHeight as Integer, XSource as Integer, YSource as Integer, SourceWidth as Integer, SourceHeight as Integer, Bits as memoryblock, ImageWidth as Integer, ImageHeight as Integer, ImageBitCount as Integer) as boolean

Plugin Version: 10.1, Platform: Windows, Targets: Desktop only.

Function: The StretchDIBits function copies the color data for a rectangle of pixels in a DIB image to the

specified destination rectangle.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyBGRtoMemoryblockMBS(m,0) then

dim XDest as Integer = 0
dim YDest as Integer = 0
dim DestWidth as Integer = 100
dim DestHeight as Integer = 100
dim XSource as Integer = 0
dim YSource as Integer = 0
dim SourceWidth as Integer = 100
dim SourceHeight as Integer = 100
dim Bits as memoryblock = m
dim ImageWidth as Integer = 100
dim ImageHeight as Integer = 100
dim ImageBitCount as Integer = 24

call g.StretchDIBitsMBS(XDest, YDest, DestWidth, DestHeight, XSource, YSource, SourceWidth, Source-
Height, bits, ImageWidth, ImageHeight, ImageBitCount)

end if
```

Notes: If the destination rectangle is larger than the source rectangle, this function stretches the rows and columns of color data to fit the destination rectangle. If the destination rectangle is smaller than the source rectangle, this function compresses the rows and columns by using the specified raster operation.

You specify the dest rectangle in the graphics object, the source rectangle in the picture, the memoryblock with the bits, the size of the image and the bit count of the image (24 or 32).

The origin of a bottom-up DIB is the bottom-left corner; the origin of a top-down DIB is the upper-left corner.

StretchDIBits creates a mirror image of a bitmap if the signs of the nSrcWidth and nDestWidth parameters, or if the nSrcHeight and nDestHeight parameters differ. If nSrcWidth and nDestWidth have different signs,

the function creates a mirror image of the bitmap along the x-axis. If nSrcHeight and nDestHeight have different signs, the function creates a mirror image of the bitmap along the y-axis.

Returns true on success and false on failure.

7.2 module iOSPictureMBS

7.2.1 module iOSPictureMBS

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Global helper functions for pictures on iOS.
Blog Entries

- Video about MBS Xojo Plugins 21.1
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.1
- MBS Xojo Plugins, version 21.1pr8

Videos

- MBS Xojo Plugins 21.1

Xojo Developer Magazine

- 19.3, page 10: News

7.2.2 Methods

7.2.3 SaveImageAtPathToSavedPhotosAlbum(ImageFile as FolderItem, CompletionDelegate as ImageSaveCompletedMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Adds the specified image to the user,Äôs Camera Roll album.
Notes: ImageFile: The image file to write to the Camera Roll album.
CompletionDelegate: Optionally, the delegate which should be called after the image has been written to the Camera Roll album.

The use of the CompletionDelegate parameter is optional and necessary only if you want to be notified asynchronously when the function finishes writing the image to the user,Äôs Camera Roll or Saved Photos album. If you do not want to be notified, pass nil for these parameters.
When used on an iOS device without a camera, this method adds the image to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.4 SaveImageAtPathToSavedPhotosAlbum(ImagePath as String, CompletionDelegate as ImageSaveCompletedMBS) 71

7.2.4 SaveImageAtPathToSavedPhotosAlbum(ImagePath as String, CompletionDelegate as ImageSaveCompletedMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Adds the specified image to the user,Äôs Camera Roll album.
Notes: ImagePath: The image path to write to the Camera Roll album.
CompletionDelegate: Optionally, the delegate which should be called after the image has been written to the Camera Roll album.

The use of the CompletionDelegate parameter is optional and necessary only if you want to be notified asynchronously when the function finishes writing the image to the user,Äôs Camera Roll or Saved Photos album. If you do not want to be notified, pass nil for these parameters.
When used on an iOS device without a camera, this method adds the image to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.3 SaveImageAtPathToSavedPhotosAlbum(ImageFile as FolderItem, CompletionDelegate as ImageSaveCompletedMBS) 70

7.2.5 SaveVideoAtPathToSavedPhotosAlbum(VideoFile as FolderItem, CompletionDelegate as VideoSaveCompletedMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Adds the movie from the specified path to the user,Äôs Camera Roll album.
Notes: videoPath: The filesystem path to the movie file you want to save to the Camera Roll album.
CompletionDelegate: Optionally, the delegate which should be called after the movie has been written to the Camera Roll album.

Before calling this function, call the VideoAtPathIsCompatibleWithSavedPhotosAlbum function to determine if it is possible to save movies to the Camera Roll album. For a code example, refer to Camera Programming Topics for iOS.

The use of the CompletionDelegate parameter is optional and necessary only if you want to be notified asynchronously when the function finishes writing the movie to the user,Äôs Camera Roll or Saved Photos album. If you do not want to be notified, pass nil for these parameters.

When used on an iOS device without a camera, this method adds the movie to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.6 SaveVideoAtPathToSavedPhotosAlbum(VideoPath as String, CompletionDelegate as VideoSaveCompletedMBS) 72

7.2.6 SaveVideoAtPathToSavedPhotosAlbum(VideoPath as String, CompletionDelegate as VideoSaveCompletedMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Adds the movie from the specified path to the user,Äôs Camera Roll album.
Notes: videoPath: The filesystem path to the movie file you want to save to the Camera Roll album.
CompletionDelegate: Optionally, the delegate which should be called after the movie has been written to the Camera Roll album.

Before calling this function, call the VideoAtPathIsCompatibleWithSavedPhotosAlbum function to determine if it is possible to save movies to the Camera Roll album. For a code example, refer to Camera Programming Topics for iOS.

The use of the CompletionDelegate parameter is optional and necessary only if you want to be notified asynchronously when the function finishes writing the movie to the user,Äôs Camera Roll or Saved Photos album. If you do not want to be notified, pass nil for these parameters.

When used on an iOS device without a camera, this method adds the movie to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.5 SaveVideoAtPathToSavedPhotosAlbum(VideoFile as FolderItem, CompletionDelegate as VideoSaveCompletedMBS) 71

7.2.7 VideoAtPathIsCompatibleWithSavedPhotosAlbum(VideoFile as FolderItem) as Boolean

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Returns a Boolean value that indicates whether the specified video is compatible to save to the user,Äôs Camera Roll album.
Notes: VideoFile: The folderitem to the movie file you want to save.

Returns true if the video can be saved to the Camera Roll album or false if it cannot.

Not all devices are able to play video files placed in the user,Äôs Camera Roll album. Before attempting to save a video, call this function and check its return value to ensure that saving the video is supported for the current device. For a code example, refer to Camera Programming Topics for iOS.
When used on an iOS device without a camera, this method indicates whether the specified movie can be saved to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.8 VideoAtPathIsCompatibleWithSavedPhotosAlbum(VideoPath as String) as Boolean 73

7.2.8 VideoAtPathIsCompatibleWithSavedPhotosAlbum(VideoPath as String) as Boolean

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Returns a Boolean value that indicates whether the specified video is compatible to save to the user,Äôs Camera Roll album.
Notes: videoPath: The filesystem path to the movie file you want to save.

Returns true if the video can be saved to the Camera Roll album or false if it cannot.

Not all devices are able to play video files placed in the user,Äôs Camera Roll album. Before attempting to save a video, call this function and check its return value to ensure that saving the video is supported for the current device. For a code example, refer to Camera Programming Topics for iOS.
When used on an iOS device without a camera, this method indicates whether the specified movie can be saved to the Saved Photos album rather than to the Camera Roll album.
See also:

- 7.2.7 VideoAtPathIsCompatibleWithSavedPhotosAlbum(VideoFile as FolderItem) as Boolean 72

7.2.9 WriteImageToSavedPhotosAlbum(Pic as Picture, CompletionDelegate as ImageSaveCompletedMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: Adds the specified image to the user,Äôs Camera Roll album.
Example:

```
Dim pic As Picture = LogoMBS(500)

iOSPictureMBS.WriteImageToSavedPhotosAlbum(pic, AddressOf ImageSaved)
```

Notes: Pic: The image to write to the Camera Roll album.
CompletionDelegate: Optionally, the delegate which should be called after the image has been written to the Camera Roll album.

The use of the CompletionDelegate parameter is optional and necessary only if you want to be notified asynchronously when the function finishes writing the image to the user,Äôs Camera Roll or Saved Photos album. If you do not want to be notified, pass nil for these parameters.
When used on an iOS device without a camera, this method adds the image to the Saved Photos album rather than to the Camera Roll album.

7.2.10 Delegates

7.2.11 ImageSaveCompletedMBS(error as NSErrorMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: The delegate called when image saving is done.
Example:

```
// sample method you could reference via AddressOf
Sub ImageSaved(error as NSErrorMBS)
If error <>Nil Then
MessageBox "Failed to save"+EndOfLine+EndOfLine+error.LocalizedDescription
Else
MessageBox "Saved."
End If
End Sub
```

Notes: If error is nil, the save was successful.

7.2.12 VideoSaveCompletedMBS(videoPath as String, error as NSErrorMBS)

Plugin Version: 21.1, Platform: iOS, Targets: iOS only.

Function: The delegate called when video saving is done.
Notes: If error is nil, the save was successful.

7.3 Globals

7.3.1 NewPictureReaderMBS(pic as picture) as PictureReaderMBS

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a new picture reader.
Example:

```
dim pic as Picture = LogoMBS(500)
dim p as PictureReaderMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture reader
p=NewPictureReaderMBS(pic)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

dim sum as Double

for y=0 to h1
// Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

for x=0 to w1

sum = sum + m.UInt8Value(r)
sum = sum + m.UInt8Value(g)
sum = sum + m.UInt8Value(b)

r=r+bpp
g=g+bpp
b=b+bpp
next

next
```

```
// show the sum of all pixels:
MsgBox "Sum with plugin is: "+str(sum)


// now try same in RB code:

dim surface as RGBSurface = pic.RGBSurface
dim c as color

sum = 0.0

for y=0 to h1
for x=0 to w1
c = surface.Pixel(x,y)

sum = sum + c.red
sum = sum + c.Green
sum = sum + c.Blue

next

next

surface = nil

MsgBox "Sum with RB Code is: "+str(sum)
quit
```

Notes: Returns nil on failure.
Please report if nil is returned as it should work always (except for low memory).

7.3.2 NewPictureWriterMBS(width as Integer, height as Integer, AlphaChannel as boolean = false) as PictureWriterMBS

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a new picture writer.
Example:

```
dim p as PictureWriterMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture writer
```

```
p=NewPictureWriterMBS(512,512)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

for y=0 to h1
// Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

for x=0 to w1

m.UInt8Value(r)=x\2
m.UInt8Value(g)=y\2
m.UInt8Value(b)=x*y\2

r=r+bpp
g=g+bpp
b=b+bpp
next

next

// Use Render to make a picture object
dim pic as Picture = p.Render
Backdrop = pic
```

Notes: Returns nil on failure (low memory).
If alpha is requested, but not possible in the given version of Xojo (or Xojo), we return a picture without.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 14.2pr12

7.3.3 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

Plugin Version: 6.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p,q,k as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.ForeColor=rgb(127,127,127)
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// make the picture from this Memoryblock
q=MemoryblockARGBtoPictureMBS(m,0,100,100,false)

// make the mask from this Memoryblock
k=MemoryblockGrayToPictureMBS(m,kAlphaOffset,100,100,4)

// combine picture and mask
q.Mask.Graphics.DrawPicture k,0,0

Backdrop=q
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.

7.3.4 MemoryblockRGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 6.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then

q=MemoryblockRGBtoPictureMBS(m,0,100,100)

Backdrop=q

end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

7.3.5 BlendPicturesMBS(source as picture, sourcepercent as Double, dest as picture, destpercent as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Blends two pictures.
Example:

```
dim a,b,c as picture

a=New Picture(100,100,32)
b=New Picture(100,100,32)
' ... draw something in a and b
c=New Picture(100,100,32)
c=BlendPicturesMBS(a,0.5,b,0.5)
```

Notes: Percent is in range from 0 to 1. Values out of this range may work, but you get strange results.

Reason for returning nil:
- One of the two pictures used is nil.
- One of the pictures is not a 32bit bitmap picture.
- The two parameter pictures have not the same size as the others.

7.3.6 BlendPicturesWithMaskMBS(source as picture, dest as picture, mask as picture) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Blends two pictures.
Example:

```
dim a,b,c,m as picture

a=New Picture(100,100,32)
b=New Picture(100,100,32)
m=New Picture(100,100,32)
' ... draw something in a and b
c=BlendPicturesWithMaskMBS(a,b,m)
```

Notes: The mask defines how much from one picture is used.

Reason for returning false:
- One of the three pictures used is nil.
- One of the pictures is not a 32bit bitmap picture.
- The three parameter pictures have not the same size as the others.

7.3.7 CombinePicturesMBS(red as picture, blue as picture, green as picture) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Combines the red, green and blue channels of three images into the a new one.
Notes: Returns nil on any error.

7.3.8 MergePictureMBS(source1 as picture, source2 as picture) as picture

Plugin Version: 7.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Merges the two pictures into one.
Example:

```
// in RB this method would work like this:

dim i,j as Integer
dim col2 as color
dim r1,r2,g1,g2,b1,b2 as Integer
dim dest as Picture // destination
dim source1, source2 as Picture // source pictures

col2 = source1.graphics.pixel(i,j)
r1 = col2.red
g1 = col2.green
b1 = col2.blue
col2 = source2.graphics.pixel(i,j)
r2 = col2.red
g2 = col2.green
b2 = col2.blue

dest.graphics.pixel(i,j) = RGB(max(r1,r2), max(g1,g2), max(b1,b2))
```

Notes: Masks are ignored.
Returns nil on low memory.
Both pictures must have the same size and not be nil.

7.3.9 NewPictureWithColorMBS(width as Integer, height as Integer, c as color) as picture

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a new picture and fills it with the given color.
Example:

```
window1.backdrop = NewPictureWithColorMBS(200, 200, &c3366CC)
```

Notes: This function is mostly to check if the picture writer code in our plugins work.
Blog Entries

- MBS REALbasic Plugins, version 10.6pr4

7.3.10 RenderSamplesMBS(Samples as memoryblock, SampleCount as Integer, Smooth as Integer, Width as Integer, Height as Integer, outlinewidth as Integer, BackColor as color=&c88B5C4, ForeColor as color=&c274C5A, OutLineColor as color=&c203F4E, Bits as Integer = 8, AutoScale as boolean = false) as Picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Renders audio samples into a picture.
Notes: Samples has one byte for each audio value and 2 bytes for each stereo sample.
SampleCount: Number of Samples. = Samples.size/2
Smooth: How smooth the samples should be made.
Width: Width of picture
Height: Height of picture
outlinewidth: The width of the outline (0=no outline)
BackColor: The back color.
ForeColor: the fore color.
OutLineColor: The color for the outline.
Bits: Pass 7 for signed bytes, 8 for unsigned bytes, 15 for signed shorts and 16 for unsigned short values. Pass -32 for Float32 and -64 for Float64.
AutoScale: Whether to scale automatically depending on highest values.

See SoundFileMBS class to get samples cross platform.
Blog Entries

- MBS Xojo Plugins, version 20.3pr1

- MBS Xojo / Real Studio Plugins, version 14.2pr10
- MBS Real Studio Plugins, version 12.5pr7

7.3.11 TintPictureMBS(source as picture, GreyBase as color, SepiaBase as color) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Tints the image.
Example:

```
// The code does the same thing as this Xojo code:

Sub TintPicture(theImg as Picture, pGreyBase as Color, pSepiaBase as Color)
Dim theRGBSurface as RGBSurface
Dim theWidth, theHeight as Integer
Dim pColor as Color
Dim x, y as Integer
Dim theGrey as Integer

dim SepiaBaseR as Double
dim SepiaBaseG as Double
dim SepiaBaseB as Double

dim GreyBaseR as Double
dim GreyBaseG as Double
dim GreyBaseB as Double

SepiaBaseR=pSepiaBase.Red / 255.0
SepiaBaseG=pSepiaBase.Green / 255.0
SepiaBaseB=pSepiaBase.Blue / 255.0

GreyBaseR=pGreyBase.Red / 255.0
GreyBaseG=pGreyBase.Green / 255.0
GreyBaseB=pGreyBase.Blue / 255.0

theRGBSurface = theImg.RGBSurface

theWidth = theImg.Width-1
theHeight = theImg.Height-1

For x = 0 to theWidth
For y = 0 to theHeight
pColor = theImg.RGBSurface.Pixel( x, y )

theGrey = ( GreyBaseR * pColor.Red ) + ( GreyBaseG * pColor.Green ) + ( GreyBaseB * pColor.Blue )
theImg.RGBSurface.Pixel( x, y ) = RGB( theGrey * SepiaBaseR, theGrey * SepiaBaseG, theGrey * Sepi-
```

```
aBaseB )

Next
Next
End Sub
```

Notes: You can use the code to do something like a Sepia effect.
Returns a new picture on success.

7.3.12 BlendPicturesMBS(result as picture, source as picture, sourcepercent as Double, dest as picture, destpercent as Double, x as Integer, y as Integer, width as Integer, height as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Blends two pictures.
Example:

```
dim a,b,c as picture

a=New Picture(100,100,32)
b=New Picture(100,100,32)
' ... draw something in a and b
c=New Picture(100,100,32)
call BlendPicturesMBS(c, a,0.5,b,0.5, 0, 0, 100, 100)
```

Notes: Percent is in range from 0 to 1. Values out of this range may work, but you get strange results.

Reason for returning false:
- One of the pictures used is nil.
- The result picture must be a 24 bit or a 32 bit picture.
- The two parameter pictures have not the same size as the others.

7.3.13 BlendPicturesWithMaskMBS(result as picture, source as picture, dest as picture, mask as picture, x as Integer, y as Integer, width as Integer, height as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Blends two pictures.
Example:

```
dim a,b,c,m as picture

a=New Picture(100,100,32)
b=New Picture(100,100,32)
m=New Picture(100,100,32)
' ... draw something in a and b
call BlendPicturesWithMaskMBS(c,a,b,m,0,0,a.width,a.height)
```

Notes: The mask defines how much from one picture is used.

Reason for returning false:
- One of the pictures used is nil.
- The result picture must be a 24 bit or a 32 bit picture.
- The three parameter pictures have not the same size as the others.

7.3.14 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Blends a picture with another picture.
Notes: If DestImage is nil, white is used for the background.
If no mask is specified, a full black mask is used.
Result must be valid picture of right size.

Result must be a 24bit or 32bit picture.
See also:

- 7.3.15 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackgroundColour As Color) as boolean 85

7.3.15 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackgroundColour As Color) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Blends a picture with another picture.
Notes: If DestImage is nil, BackgroundColour is used for the background.

If no mask is specified, a full black mask is used.
Result must be valid picture of right size.

Result must be a 24bit or 32bit picture.
See also:

- 7.3.14 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer) as boolean 85

7.3.16 DiffPicturesMBS(source as picture, dest as picture, square as boolean) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the difference between two pictures.
Example:

```
// our test Picture
dim p as Picture = LogoMBS(500)

// compress with JPEG and 10%
dim d as string = PictureToJPEGStringMBS(p, 10)

// decompress
dim q as Picture = JPEGStringToPictureMBS(d, true)

// compare them
window1.Backdrop = DiffPicturesMBS(p, q, true)
```

Notes: Source and dest pictures must have same size. If square, the error is squared, so you see it much better.

Returns nil in case not enough memory is available or pictures do not have same size or are nil.

If both pictures are equal, all pixels in the returned picture are black.
See also Picture.isBlackMBS, and Picture.CompareMBS.
Blog Entries

- MBS Plugins 11.1 Release notes

- MBS Real Studio Plugins, version 11.1pr10

7.3.17 ColorizePictureMBS(Pict As Picture, Mask As Picture, foreR as Double, foreG as Double, foreB as Double, foreA as Double, backR as Double, backG as Double, backB as Double, backA as Double) as boolean

Plugin Version: 10.1, Platforms: macOS, Windows, Targets: All.

Function: Colorizes a picture.
Example:

```
dim p as Picture = SpecialFolder.Pictures.Child("test2.tif").OpenAsPicture

if ColorizePictureMBS(p, p.mask, 1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0, 0.1) then
Backdrop=p
end if
```

Notes: The given pictures are edited. As editing pictures works only on Mac and Windows if the pictures are 24 or 32 bit, this does not work on Linux.
Returns true on success and false on failure.

7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100

- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=New Picture(700,700,32)

if PictureCombineMBS(DestImage, image, Mask, DestX, DestY, SourceX, SourceY, Width, Height, true,&c777777,&c777777)
then
window1.Backdrop=DestImage
end if
```

Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97

- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.

DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102

- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=New Picture(700,700,32)

if PictureCombineMBS(DestImage,image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,true,&h777777,&h777777)
then
window1.Backdrop=DestImage
end if
```

Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position

Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as

Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87

- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as

Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93

- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97

- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position

Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 104

7.3.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
Blog Entries

- MBS Real Studio Plugins, version 13.1pr13
- MBS REALbasic plug-ins version 9.5

See also:

- 7.3.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 87
- 7.3.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 89
- 7.3.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 91
- 7.3.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 93
- 7.3.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 94
- 7.3.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 97
- 7.3.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 98
- 7.3.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 100
- 7.3.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 102

7.3.28 PictureCopyPixelFastMBS(DestImage As Picture, Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
const x=100 // mouse coordinates for example
const y=100

dim p,logo as picture

logo=LogoMBS(500)

p=New Picture(800,800,32)

p.Graphics.ForeColor=&cFFFFFF
p.Graphics.FillRect 0,0,p.Width,p.Height

if PictureCopyPixelFastMBS(p, logo, x-logo.Width/2, y-logo.Height/2, 0, 0, logo.Width, logo.Height) then
' ok
else
beep
end if

window1.Backdrop=p
```

Notes: Returns true on success and false on failure.

Parameters:
Source: the source picture, must not be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy

The destination image (self) can be either 24 bit or 32 bit.
The source image can have any bit depth and may be converted to 24 or 32 bit.

7.3.29 NewPictureEditorMBS(pic as picture) as PictureEditorMBS

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a new picture editor editing the given picture.
Example:

```
dim l as Picture = LogoMBS(500)
dim p as PictureEditorMBS

p = NewPictureEditorMBS(l)
```

Notes: Returns nil on failure.
Works only for bitmap images.

7.3.30 NewPictureMBS(width as Integer, height as Integer, pixeltype as Integer, buffer as memoryblock, rowbytes as Integer) as picture

Plugin Version: 8.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a picture from a memory block.
Notes: This wraps the REALBuildPictureFromBuffer plugin function and copies the pixels.

rowbytes must be the number of bytes per row. Typical width*3 or width*4.

Pixeltype constants:

kRBPixelRGB24	= 1	3 bytes/pixel: Red, Green, Blue
kRBPixelBGR24	= 2	3 bytes/pixel: Blue, Green, Red
kRBPixelXRGB32	= 3	4 bytes/pixel: Unused, Red, Green, Blue
kRBPixelBGRX32	= 4	4 bytes/pixel: Blue, Green, Red, Unused

Blog Entries

- MBS Xojo Plugins, version 19.3pr4
- MonkeyBread Software Releases the MBS Plugins 8.3

7.3.31 NewPictureWriterMBS(pic as picture, width as Integer, height as Integer) as PictureWriterMBS

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a new picture writer.
Notes: Returns nil on failure (low memory).
If you provide an existing picture we reuse it if it has the right size. But you can pass nil to get a new one always.

7.3.32 GetMBfromPictureMBS(pic as picture, mask as picture, mode as string) as memoryblock

Plugin Version: 10.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a memoryblock from the picture data with the given format.
Example:

```
dim p as Picture = LogoMBS(500)
dim m as MemoryBlock = GetMBfromPictureMBS(p, p.mask, "RGB32")
```

Notes: Returns nil on any error.
Mode can be a string with the following strings: RGB16, ARGB16, RGB16_565, ARGB32, RGB32, RGB24 or MASK8.
See the example project "Picture To Memoryblock.rbp" for the RB code matching the plugin code.
See also:

- 7.3.33 GetMBfromPictureMBS(pic as picture, mode as string) as memoryblock 108

7.3.33 GetMBfromPictureMBS(pic as picture, mode as string) as memoryblock

Plugin Version: 10.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a memoryblock from the picture data with the given format.
Example:

```
dim p as Picture = LogoMBS(500)
dim m as MemoryBlock = GetMBfromPictureMBS(p, "RGB32")
```

Notes: Same as the other GetMBfromPictureMBS function, but takes the mask from the picture.
Blog Entries

- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr3

See also:

- 7.3.32 GetMBfromPictureMBS(pic as picture, mask as picture, mode as string) as memoryblock 108

7.3.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 109

7.3.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyABGRtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockABGRtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 108

7.3.36 MemoryblockARGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyARGBtoMemoryblockMBS(m,0,0) then

dim x as Picture = New Picture(100,100,32)

q=MemoryblockARGBtoPictureMBS(x, m,0,100,100)

Backdrop=q

if x=q then
window1.Title = "reused picture"
else
window1.Title = "created new picture"
end if
end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.37 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 111

7.3.37 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyARGBtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockARGBtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.36 MemoryblockARGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 110

7.3.38 MemoryblockBGRAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockBGRAtoPictureMBS(nil, m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns nil on any error.

source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.39 MemoryblockBGRAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 113

7.3.39 MemoryblockBGRAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockBGRAtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns nil on any error.

source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.38 MemoryblockBGRAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 112

7.3.40 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyBGRtoMemoryblockMBS(m,0) then

dim x as Picture = New Picture(100,100,32)

q=MemoryblockBGRtoPictureMBS(x, m,0,100,100)

Backdrop=q

if x=q then
window1.Title = "reused picture"
else
window1.Title = "created new picture"
end if

end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.41 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 115

7.3.41 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.40 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture 114

7.3.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

Plugin Version: 6.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p,q,k as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.ForeColor=rgb(127,127,127)
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// make the picture from this Memoryblock
q=MemoryblockARGBtoPictureMBS(m,0,100,100,false)

// make the mask from this Memoryblock
k=MemoryblockGrayToPictureMBS(m,kAlphaOffset,100,100,4)

// combine picture and mask
q.Mask.Graphics.DrawPicture k,0,0

Backdrop=q
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!

Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture 117
- 7.3.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture 117

7.3.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Notes: This variantion of this method Multiplies the gray value with Red, Blue and Green and divided by 256.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture 115
- 7.3.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture 117

7.3.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Notes: This variantion of this method lookups the Red, Green and Blue values for the next pixel by using the gray value as index.

The arrays should have 256 elements.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture 115
- 7.3.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture 117

7.3.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)
```

```
if p.CopyRGBAtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockRGBAtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 119

7.3.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
// some memory with pixel data
dim m as MemoryBlock = NewMemoryBlock(100*100*32)

for i as Integer = 1 to 1000
// place random pixels
m.Int8Value(rnd*m.size) = rnd*256
next
```

```
// and make a picture
dim l as Picture = MemoryBlockRGBAtoPictureMBS(m, 0, 100, 100)

// display in window
window1.backdrop = l
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 118

7.3.47 MemoryblockRGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a memoryblock into a picture object.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then

dim x as Picture = New Picture(100,100,32)
```

```
q=MemoryblockRGBtoPictureMBS(x, m,0,100,100)

Backdrop=q

if x=q then
window1.Title = "reused picture"
else
window1.Title = "created new picture"
end if
end if
```

Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

7.3.48 PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 7.3.49 PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 122

7.3.49 PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.48 PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 121

7.3.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 7.3.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 123
- 7.3.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture 123

7.3.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 122
- 7.3.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture 123

7.3.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.
See also:

- 7.3.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 122
- 7.3.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 123

7.3.53 PtrBGRAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.54 PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 124

7.3.54 PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.

offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.53 PtrBGRAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 124

7.3.55 PtrBGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.56 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 125

7.3.56 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.

offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.55 PtrBGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 125

7.3.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture 126
- 7.3.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture 127

7.3.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: This variantion of this method Multiplies the gray value with Red, Blue and Green and divided by

256.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture 126
- 7.3.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture 127

7.3.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: This variantion of this method lookups the Red, Green and Blue values for the next pixel by using the gray value as index.

The arrays should have 256 elements.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer,

PixelByteSize as Integer) as picture 126

- 7.3.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture 126

7.3.60 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
See also:

- 7.3.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 128

7.3.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.60 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 128

7.3.62 PtrRGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.63 PtrRGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 129

7.3.63 PtrRGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Plugin Version: 12.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies image data from a pointer into a picture object.
Notes: Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in

the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 7.3.62 PtrRGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 129

7.3.64 MandelbrotSetMBS(Threaded as Integer, width as Integer, height as Integer, fx as Double = 4.0, fy as Double = 4.0, dx as Double = -2.0, dy as Double = -2.0, dest as picture = nil) as picture

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the mandelbrot picture.
Example:

```
Backdrop = MandelbrotSetMBS(0,300,300)
```

Notes: Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

Width & Height specifiy the output image size.
fx and fy are the scale values and dx/dy specify the the position of the mandelbrot image.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

The work is performed on a preemptive thread, so this function does not block the application and can yield time to other Xojo threads. Must be called in a Xojo thread to enjoy benefits. If called in main thread will block, but keep other background threads running.
If you run several threads calling MT methods, you can get all CPU cores busy while main thread shows GUI with progress window.
Blog Entries

- Multithreaded plugin functions can increase speed of Xojo application

- Problems with killing Xojo threads with plugin calls.

7.3.65 BinaryStringtoPictureMBS(data as String) as Picture

Platforms: macOS, Linux, Windows, Targets: All.

Deprecated: This item is deprecated and should no longer be used. You can use PNG format instead.
Function: Creates the picture back from the binary data inside the string.
Example:

```
dim pic as Picture = LogoMBS(500)

// encode
dim s as string = PicturetoBinaryStringMBS(pic)

// decode
Backdrop = BinaryStringtoPictureMBS(s)
```

Notes: Deprecated. Please do not use for old projects and convert existing images into a new format, e.g. PNG.

The format of the binary encoded picture data:

+ 0 Kenn, PPIC for Packed Picture
+ 4 Length of whole block
+ 8 Width (BigEndian)
+12 Height (BigEndian)
+16 Depth (BigEndian, 32 for 32bit)
+20 Offset of the binary data. maybe 40.
+24 Reserved for future use. Should be 0.
+40 Pixel Data, packed R, G, B in one byte per Subpixel.

300x300 Pixels will make up 300*300+40 ->270040 Bytes.

This method does not require Quicktime or any other OS Service, but it does no compression.

May be a good way to store pictures crossplatform inside a database. As Valentina can do its own Zip based compression, this may be a wonderfull way to store pictures uncompressed (or lossless compressed) inside the database.
Does not handle mask or alpha channel.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 17.0pr1

7.3.66 PicturetoBinaryStringMBS(p as picture) as string

Platforms: macOS, Linux, Windows, Targets: All.

Deprecated: This item is deprecated and should no longer be used. You can use PNG format instead.
Function: Creates a string with the picture content for saving.
Example:

```
dim s as string
dim pic as picture = LogoMBS(100)

s=PicturetoBinaryStringMBS(pic)
```

Notes: Deprecated. Please do not use for old projects and convert existing images into a new format, e.g. PNG.

The format of the binary encoded picture data:

+ 0 Kenn, PPIC for Packed Picture
+ 4 Length of whole block
+ 8 Width (BigEndian)
+12 Height (BigEndian)
+16 Depth (BigEndian, 32 for 32bit)
+20 Offset of the binary data. maybe 40.
+24 Reserved for future use. Should be 0.
+40 Pixel Data, packed R, G, B in one byte per Subpixel.

300x300 Pixels will make up 300*300+40 ->270040 Bytes.

This method does not require Quicktime or any other OS Service, but it does no compression.
Does not handle mask or alpha channel.

May be a good way to store pictures crossplatform inside a database. As Valentina can do its own Zip based compression, this may be a wonderfull way to store pictures uncompressed (or lossless compressed) inside the database.

The returned string has the encoding set to binary (no encoding). If you want to concat the string with another you should check the encoding. If you don't handle that RB may convert the JPEG data to UTF8 (Unicode) which will destroy it.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 17.0pr1

7.4 class PaletteCalculatorMBS

7.4.1 class PaletteCalculatorMBS

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: This class allows you to calculate an 8 bit image from a RGB image and back.
Notes: You can create the best matching palette for a given image.
If you have several images which should share the same palette, you can draw them first on one big picture before calculating the
Blog Entries

- MBS Xojo Plugins, version 20.2pr1
- MBS Xojo Plugins, version 18.5pr2
- MBS Xojo / Real Studio Plugins, version 15.4pr4
- MBS Real Studio Plugins, version 12.3pr3

7.4.2 Methods

7.4.3 CountColors as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Counts how many different colors are in the palette.

7.4.4 CreatePicturePalette(Pic as picture) as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a picture palette based on the picture.
Notes: This function checks which colors are very often used in the image and builds a palette which may be better for this image than the default system palette.

7.4.5 GetIndexOfColor(col as color) as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the index in the palette for the given color.
Notes: Returns -1 if the color is not found.
See also:

- 7.4.6 GetIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer 134

7.4.6 GetIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the index in the palette for the given color.
Notes: Returns -1 if the color is not found.
See also:

- 7.4.5 GetIndexOfColor(col as color) as Integer 133

7.4.7 GetNearestIndexOfColor(col as color) as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the index in the palette for the best matching color.
Notes: The best color is the color with the lowest value:
value=(r-col(index).red)^2+(g-col(index).green)^2+(b-col(index).blue)^2

Returns -1 if the color is not found (should never happen).
See also:

- 7.4.8 GetNearestIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer 134

7.4.8 GetNearestIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the index in the palette for the best matching color.
Notes: The best color is the color with the lowest value:
value=(r-col(index).red)^2+(g-col(index).green)^2+(b-col(index).blue)^2

Returns -1 if the color is not found (should never happen).
See also:

- 7.4.7 GetNearestIndexOfColor(col as color) as Integer 134

7.4.9 Transform(mem as memoryblock, width as Integer, height as Integer) as picture

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Transforms a 8 bit picture to a RGB picture.
Notes: The memoryblock must have the 8 bit picture data inside with each row being width bytes big. The

memoryblock must have at least width*height bytes.

Returns nil on any error.
See also:

- 7.4.10 Transform(Pic as picture) as memoryblock 135

7.4.10 Transform(Pic as picture) as memoryblock

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a memoryblock with 8 bit picture data.
Notes: The resulting memoryblock has width*height bytes.
Each RGB color in the picture is looked up in the palette and used to fill the memoryblock.
See also:

- 7.4.9 Transform(mem as memoryblock, width as Integer, height as Integer) as picture 134

7.4.11 TransformBetterDithering(Pic as picture) as memoryblock

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a memoryblock with 8 bit picture data.
Notes: The resulting memoryblock has width*height bytes.
Each RGB color in the picture is looked up in the palette and used to fill the memoryblock.
This method uses dithering to make the picture looking better than with a better transform using code like Floyd-Steinberg.

7.4.12 TransformFastDithering(Pic as picture) as memoryblock

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a memoryblock with 8 bit picture data.
Notes: The resulting memoryblock has width*height bytes.
Each RGB color in the picture is looked up in the palette and used to fill the memoryblock.
This method uses dithering to make the picture looking better than with a simple transform.

7.4.13 Properties

7.4.14 Count as Integer

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: How many colors are inside this PaletteMBS.
Notes: This property should be 2, 4, 16 or 256.
Default is 256.
(Read and Write property)

7.4.15 Col(i as Integer) as color

Plugin Version: 8.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: The color array.
Notes: Index goes from 0 to count-1.
(Read and Write computed property)

7.5 class Picture

7.5.1 class Picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Extends Xojo's Picture Class.

7.5.2 Methods

7.5.3 AddSteganographyMBS(flags as Integer, data as Memoryblock) as Picture

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds steganography to a new picture.
Example:

```
dim p as Picture = LogoMBS(500)
// this example uses chr(0) as end marker
dim s as string = "Hello World. This is just a test." + chr(0)
dim pic as Picture = p.AddSteganographyMBS(1, s)

dim data as MemoryBlock = pic.SteganographyMBS(1)
dim d as string = data.CString(0)

MsgBox d
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Returns a new picture or nil. The existing picture is not modified.

If you like to store data, please encrypt them and include some way that you find your data again, detect length of data, verify it's okay via checksum and than decrypt your data.
Please store image in a loss less format like PNG.
Function does not handle mask or alpha channel.

7.5.4 AddSteganographyPictureMBS(flags as Integer, data as Picture) as Picture

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds steganography to a new picture.

Example:

```
const AllChannels = &h111

dim p as new Picture(500, 500, 32)

dim w as new window1
w.Title = "white"
w.Backdrop = p

dim l as Picture = LogoMBS(500)

w = new window1
w.Title = "Logo"
w.Backdrop = l

// adds picture. You will normally not see the modification
dim x as Picture = p.AddSteganographyPictureMBS(AllChannels, l)

w = new window1
w.Title = "Logo hidden in white picture"
w.Backdrop = x

// as we store in lowest bit, this picture will look strange
dim y as Picture = x.SteganographyPictureMBS(AllChannels)

w = new window1
w.Title = "Logo extracted"
w.Backdrop = y
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Returns a new picture or nil. The existing picture is not modified.

Function does not handle mask or alpha channel.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr2

7.5.5 AutoLevelCopyMBS as picture

Plugin Version: 9.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Applies auto levels on the picture.
Notes: The histogram is built, white and back points are searched and all pixels adjusted.
Returns nil on any error.

Thanks to Jeff Thoman for his code.

This version of the method makes a copy of the picture so it works on any kind of picture.

Renamed in version 9.2 from AutoLevelMBS to AutoLevelCopyMBS.
Blog Entries

- MBS Real Studio Plugins, version 12.0pr4

7.5.6 AutoLevelMBS as boolean

Plugin Version: 9.1, Platforms: macOS, Windows, Targets: All.

Function: Applies auto levels on the picture.
Notes: The histogram is built, white and back points are searched and all pixels adjusted.
Returns true on success and false on any error.
Thanks to Jeff Thoman for his code.

This version of the method modifies the pixels on the picture. Works on 32bit and 24bit pictures.

If you get a type mismatch error on using this function, you may want to use AutoLevelCopyMBS which is the old behavior.
Blog Entries

- Using zbar library with Xojo

7.5.7 BitmapMBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the picture as a bitmap picture.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.BitmapMBS
canvas1.backdrop=p
```

Notes: A Xojo picture object may contain an icon, a bitmap, a picture handle or something else what Xojo will support as a picture in the future.
The picture editing functions of this plugin can only work with bitmap pictures and this clone function creates such pictures for you.
This function takes a look on the picture and returns it unchanged if it is allready a bitmap, but if not, the

picture is Cloned as a bitmap. If you prefer to get a copy of the picture as a bitmap picture, use clone instead.

The Cloned picture does not have a mask.
Blog Entries

- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr12

7.5.8 BlueChannelMBS as picture

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The blue channel of the picture copied into a new picture.
Example:

```
dim p as Picture = LogoMBS(500)
Backdrop = p.BlueChannelMBS
```

Blog Entries

- MBS REALbasic Plugins, version 10.6pr4

7.5.9 BlurMBS(Radius as Double, yield as Integer = 0) as picture

Plugin Version: 10.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Applies a blur effect to the image.
Example:

```
dim p as Picture = LogoMBS(500)
window1.Backdrop = p.BlurMBS(2)
```

Notes: This is not a gaussian blur, but a faster box blur.
Returns nil on any error.

Does ignore mask or alpha channel.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 13.5pr3
- MBS REALbasic Plugins, version 10.6pr10
- MBS Plugins 10.3 Release Notes

- MBS REALbasic Plugins, version 10.3pr7

7.5.10 BMPDataMBS(ResolutionValueDPI as Integer=72) as string

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a String with the BMP File content for the given picture.
Example:

```
// Make a picture
dim p as Picture = LogoMBS(100)

// Encode as BMP
dim s as string = p.BMPDataMBS

// display length in title
Title = str(lenb(s))

// and display picture
Backdrop= BMPStringtoPictureMBS(s)
```

Notes: Does not handle masks.
Returns an empty string on any error.

7.5.11 CalcSteganographyMBS(flags as Integer) as Integer

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the steganography size.
Example:

```
dim p as Picture = LogoMBS(500)

dim size1 as Integer = p.CalcSteganographyMBS(&h100)
MsgBox "Red only: "+str(size1)

dim size2 as Integer = p.CalcSteganographyMBS(&h111)
MsgBox "RGB only: "+str(size2)
```

Notes: Returns number of bytes that can be stored in an image of the size of this picture.
Flags can be a combination of red (&h100), green (&h010) and blue (&h001).

7.5.12 ChangeBrightnessAbsoluteMBS(Brightness as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness of an image.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessAbsoluteMBS(30)

// show in window
window1.Backdrop = n
```

Notes: To every pixel component the value is added.
Returns nil if the picture is no bitmap picture.
See also:

- 7.5.13 ChangeBrightnessAbsoluteMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture 142

7.5.13 ChangeBrightnessAbsoluteMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness of an image.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessAbsoluteMBS(10,20,30)

// show in window
window1.Backdrop = n
```

Notes: To every pixel component the value is added.
Returns nil if the picture is no bitmap picture.

PS: This function may be optimized, if someone needs it to be faster.

Basicly Picture.ChangeBrightnessAbsoluteMBS does this:

```
for each pixel in picture
pixel.red = pixel.red + r
pixel.green = pixel.green + g
pixel.blue = pixel.blue + b
next
```

and it limits the pixel values to the range 0 to 255.
See also:

- 7.5.12 ChangeBrightnessAbsoluteMBS(Brightness as Double) as picture 142

7.5.14 ChangeBrightnessLinearMBS(Brightness as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness of an image linear.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessLinearMBS(30)

// show in window
window1.Backdrop = n
```

Notes: Value is fraction of change. Range -255 to 255. For example 127 would move all colors half the way to white.
Returns nil if the picture is no bitmap picture.
See also:

- 7.5.15 ChangeBrightnessLinearMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture 143

7.5.15 ChangeBrightnessLinearMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness of an image linear.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)
```

```
dim n as Picture = p.ChangeBrightnessLinearMBS(10,20,30)

// show in window
window1.Backdrop = n
```

Notes: Returns nil if the picture is no bitmap picture.
PS: This function may be optimized, if someone needs it to be faster (e.g. using Altivec).
Blog Entries

- MBS Xojo Plugins, version 18.0pr9

See also:

- 7.5.14 ChangeBrightnessLinearMBS(Brightness as Double) as picture 143

7.5.16 ChangeContrastBrightnessAbsoluteMBS(Contrast as Double, Brightness as Double) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness and contrast of an image.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessAbsoluteMBS(0.5,30)

// show in window
window1.Backdrop = n
```

Notes: Returns nil if the picture is no bitmap picture.
See also:

- 7.5.17 ChangeContrastBrightnessAbsoluteMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture 145

7.5.17 ChangeContrastBrightnessAbsoluteMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness and contrast of an image.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessAbsoluteMBS(0.5, 0.5, 0.5, 10, 20, 30)

// show in window
window1.Backdrop = n
```

Notes: Returns nil if the picture is no bitmap picture.
See also:

- 7.5.16 ChangeContrastBrightnessAbsoluteMBS(Contrast as Double, Brightness as Double) as picture 144

7.5.18 ChangeContrastBrightnessLinearMBS(Contrast as Double, Brightness as Double) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness and contrast of an image linear.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessLinearMBS(0.5,30)

// show in window
window1.Backdrop = n
```

Notes: Returns nil if the picture is no bitmap picture.
Contrast range is 0 to 1.0.
Brightness range is -255 to 255.
See also:

- 7.5.19 ChangeContrastBrightnessLinearMBS(ContrastRed as Double, ContrastGreen as Double, Con-

trastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture 146

7.5.19 ChangeContrastBrightnessLinearMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the bightness and contrast of an image linear.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessLinearMBS(0.5, 0.5, 0.5, 10, 20, 30)

// show in window
window1.Backdrop = n
```

Notes: Returns nil if the picture is no bitmap picture.
Contrast range is 0 to 1.0.
Brightness range is -255 to 255.
See also:

- 7.5.18 ChangeContrastBrightnessLinearMBS(Contrast as Double, Brightness as Double) as picture 145

7.5.20 ChangeContrastMBS(Contrast as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the contrast of the picture.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastMBS(-0.5)

// show in window
window1.Backdrop = n
```

Notes: All three color channels are handled with the same contrast change.
Returns a picture on success or nil on any error.

Parameters can have any value.
(values >=0.0 will add contrast, values below 0.0 will reduce contrast till gray picture at -1.0, values below -1.0 will add contrast again and also invert the picture)
See also:

- 7.5.21 ChangeContrastMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double) as picture 147

7.5.21 ChangeContrastMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the contrast of the picture.
Example:

```
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastMBS(-0.5,0.0,0.5)

// show in window
window1.Backdrop = n
```

Notes: Three different values, one for each channel.
Returns a picture on success or nil on any error.
(values >=0.0 will add contrast, values below 0.0 will reduce contrast till gray picture at -1.0, values below -1.0 will add contrast again and also invert the picture)
See also:

- 7.5.20 ChangeContrastMBS(Contrast as Double) as picture 146

7.5.22 ChangeCustomMBS(a as Double, b as Double) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the picture with custom values.
Notes: Uses this formular:
NewPixelComponent=OldPixelComponent*a+b
See also:

- 7.5.23 ChangeCustomMBS(Ra as Double, Rb as Double, Ga as Double, Gb as Double, Ba as Double, Bb as Double) as picture 148

7.5.23 ChangeCustomMBS(Ra as Double, Rb as Double, Ga as Double, Gb as Double, Ba as Double, Bb as Double) as picture

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Changes the picture with custom values.
Notes: Uses this formular:
NewPixelComponent=OldPixelComponent*a+b
Blog Entries

- MBS Xojo / Real Studio Plugins, version 14.2pr5

See also:

- 7.5.22 ChangeCustomMBS(a as Double, b as Double) as picture 147

7.5.24 ChangeSaturationMBS(Amount as Integer) as picture

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a copy of the picture with a changed saturation.
Notes: Range of amount is from -255 to 255.

Value 0 does nothing.
Value -255 returns a gray level picture.
Blog Entries

- MBS REALbasic plug-ins version 9.4

7.5.25 cloneMBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Clones the picture as a bitmap.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.clonembs
canvas1.backdrop=p
```

Notes: A Xojo picture object may contain an icon, a bitmap, a picture handle or something else what Xojo will support as a picture in the future.
The picture editing functions of this plugin can only work with bitmap pictures and this clone function

creates such pictures for you.
If a picture is a bitmap can be easily tested with the graphics property like this:

```
if p.graphics=nil then // if no bitmap
p = p.clonembs // make one
end if
```

The Cloned picture does include the mask, if one exists.
See FAQ entry "How to duplicate a picture with mask or alpha channel?" on how to duplicate with mask.
See also:

- 7.5.26 CloneMBS(NewMask as Picture) as picture 149
- 7.5.27 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture 149
- 7.5.28 CloneMBS(width as Integer, height as Integer) as picture 150

7.5.26 CloneMBS(NewMask as Picture) as picture

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clones the picture as a bitmap.
Notes: Same as CloneMBS, but adds the mask.
See also:

- 7.5.25 cloneMBS as picture 148
- 7.5.27 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture 149
- 7.5.28 CloneMBS(width as Integer, height as Integer) as picture 150

7.5.27 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clones the picture as a bitmap.
Notes: Same as CloneMBS, but adds the mask.
See also:

- 7.5.25 cloneMBS as picture 148
- 7.5.26 CloneMBS(NewMask as Picture) as picture 149
- 7.5.28 CloneMBS(width as Integer, height as Integer) as picture 150

7.5.28 CloneMBS(width as Integer, height as Integer) as picture

Plugin Version: 7.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clones the picture as a bitmap with given size.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.clonembs(100,100)
canvas1.backdrop=p
```

Notes: A Xojo picture object may contain an icon, a bitmap, a picture handle or something else what Xojo will support as a picture in the future.
The picture editing functions of this plugin can only work with bitmap pictures and this clone function creates such pictures for you.
If a picture is a bitmap can be easily tested with the graphics property like this:

```
if p.graphics=nil then // if no bitmap
p=p.clonembs // make one
end if
```

The Cloned picture does not have a mask or alpha channel.
See FAQ entry "How to duplicate a picture with mask or alpha channel?" on how to duplicate with mask.
See also:

- 7.5.25 cloneMBS as picture 148
- 7.5.26 CloneMBS(NewMask as Picture) as picture 149
- 7.5.27 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture 149

7.5.29 ColorizeMBS(hue as Double, sat as Double, light as Double) as picture

Plugin Version: 12.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Colorizes a picture.
Notes: Hue, Sat and Light in range 0.0 to 1.0 please.
Returns new picture.
Blog Entries

- MBS Real Studio Plugins, version 12.5pr8

7.5.30 ColornessMBS(threshold as Integer = 10) as Double

Plugin Version: 12.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the color coverage of the picture.
Example:

```
dim file as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(file)

MsgBox str(pic.ColornessMBS)
```

Notes: Counts how many pixels have color and returns percentage depending on a given threshold.
Changed in 12.3pr5 to ignore nearly black pictures when counting.

This function loops over all pixels to calculate the difference between green and red channel and green and blue channel. If the differences are greater than the threshold, the pixel counts as colored.

Threshold is between 0 and 255. The value of 10 makes sure almost gray pictures don't count as colored ones.

Finally we calculate the percentage of colored pixels vs total pixels.
Blog Entries

- MBS Real Studio Plugins, version 11.4pr3

7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163

- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164

- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166

- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168

- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500
dim UseColours as Boolean = true
dim ForeColour as color = &cFF0000

image=LogoMBS(500)
Mask=nil
DestImage=New Picture(700,700,32)

if DestImage.CombineMBS(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,UseColours,ForeColour)
then
window1.Backdrop=DestImage
end if
```

Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157

- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164

- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color

MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=New Picture(700,700,32)

if DestImage.CombineMBS(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,true,&h777777,&h777777)
then
window1.Backdrop=DestImage
end if
```

Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166

- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168

- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX

as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151

- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157

- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163

- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

Plugin Version: 9.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Notes: Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.

ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 170

7.5.41 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

Plugin Version: 14.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Combines pixels of two images with the given mode.
Example:

```
dim pic as picture // some picture
dim other as picture // some other picture
dim result as picture = pic.CombineMBS(1, other)

// effects are made like this. If you have a suggestion for a new effect,
// send your suggestion to MBS support:
Function Combine(x as Integer, y as Integer) as Integer
Return BitwiseXor(x,y)
End Function
```

Notes: Each pixel is sent through an operation for each channel.
X, Y, Width and Height can limit effect of a certain portion of the source image.

Modes:

1	Bitwise XOR
2	Bitwise OR
3	Bitwise AND
4	Min
5	Max
6	AddPin (add with limit)
7	AddOver (add with overflow)
8	Difference
9	Difference squared (with limit 255)
10	Sub Pin (sub with limit)

Blog Entries

- MBS Xojo / Real Studio Plugins, version 14.3pr1
- MBS Real Studio Plugins, version 12.5pr13
- MBS REALbasic plug-ins version 9.5

See also:

- 7.5.31 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 151
- 7.5.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 153
- 7.5.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 155
- 7.5.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 157
- 7.5.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 159
- 7.5.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 161
- 7.5.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 163
- 7.5.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 164
- 7.5.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 166
- 7.5.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 168

7.5.42 CombinePixelMBS(Mode as Integer, SecondPicture As Picture) as picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Combines pixels of two images with the given mode.
Example:

```
dim pic as picture // some picture
dim other as picture // some other picture
dim result as picture = pic.CombinePixelMBS(1, other)

// effects are made like this. If you have a suggestion for a new effect,
// send your suggestion to MBS support:
Function Combine(x as color, y as color) As color
Return rgb(x.red+y.red, x.green+y.green, x.blue+y.blue)
End Function
```

Notes: Each pixel is sent through an operation.

Modes:

1 Average (50% first and 50% second picture)
2 Gray
3 LighterPixel
4 DarkerPixel
5 Difference Max
6 Difference Max Squared

7.5.43 CompareBrightnessMBS(other as picture, mode as Integer, threshold as Integer) as Double

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compares two pictures in brightness.
Example:

```
dim p as picture = New Picture(100,100,32)
dim q as Picture = New Picture(100,100,32)

dim diff as Double = p.CompareBrightnessMBS(q, 0, 0)

MsgBox str(Diff) // shows 0 = equal
```

Notes: Returns the percent of difference: Number of pixels where the squared color difference is bigger than the threshold divided by the total number of pixels.
If width and height are not equal, the result is 1.0.
If you need to check the mask also, please call this method a second time for the masks.

Modes:

0	y = 0.33 * R + 0.5 * G + 0.16 * B	Faster version of 3
1	y = 0.375 * R + 0.5 * G + 0.125 * B	Faster version of 3
2	y = 0.2126 * R + 0.7152 * G + 0.0722 * B	Photometric/digital ITU-R
3	y = 0.299 * R + 0.587 * G + 0.114 * B	Digital CCIR601

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for perfomance.

Only compares raw pixels without checking mask or alpha channel.

7.5.44 CompareMBS(other as picture, threshold as Integer) as Double

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compares two pictures.
Example:

```
dim p as picture = New Picture(100,100,32)
dim q as Picture = New Picture(100,100,32)

dim diff as Double = p.CompareMBS(q, 0)

MsgBox str(Diff) // shows 0 = equal

p.Graphics.ForeColor = &cFF0000
p.Graphics.FillRect 0, 0, p.Width, p.Height

q.Graphics.ForeColor = &cFF0001
q.Graphics.FillRect 0, 0, q.Width, q.Height

dim diff1 as Double = p.CompareMBS(q, 0)
dim diff2 as Double = p.CompareMBS(q, 2)

MsgBox str(Diff1)+" "+str(Diff2) // shows 1 (all pixels different) and shows 0 (all equal)
```

Notes: Returns the percent of difference: Number of pixels where the squared color difference is bigger than the threshold divided by the total number of pixels.
If width and height are not equal, the result is 1.0.
If you need to check the mask also, please call this method a second time for the masks.

Only compares raw pixels without checking mask or alpha channel.

7.5.45 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
See also:

- 7.5.46 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 174

7.5.46 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyABGRtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockABGRtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
Blog Entries

- MBS Real Studio Plugins, version 13.0pr6

See also:

- 7.5.45 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 174

7.5.47 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
dim m as MemoryBlock
dim p,q as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyARGBtoMemoryblockMBS(m,0,0) then

dim x as Picture = New Picture(100,100,32)

q=MemoryblockARGBtoPictureMBS(x, m,0,100,100)

Backdrop=q

if x=q then
window1.Title = "reused picture"
else
window1.Title = "created new picture"
end if
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the

memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 7.5.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 177
- 7.5.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 178

7.5.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 5.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
dim m as MemoryBlock
dim p as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
```

```
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.

If Alphavalue is in range of 0 to 255 the alpha value of all pixel is set to this value. If the AlphaValue is outside this range the alpha value is not touched for all pixels.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
See also:

- 7.5.47 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 176
- 7.5.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 178

7.5.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyARGBtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockARGBtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
Blog Entries

- MBS Real Studio Plugins, version 13.0pr6

See also:

- 7.5.47 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 176

- 7.5.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 177

7.5.50 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
See also:

- 7.5.51 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 181

7.5.51 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockBGRAtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other

threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
Blog Entries

- MBS Real Studio Plugins, version 13.0pr6

See also:

- 7.5.50 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 180

7.5.52 CopyBGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*3 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.53 CopyBGRXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.

destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.54 CopyBtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 5.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.ForeColor=rgb(127,127,127)
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
```

```
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy Blue channel from mask image into Memoryblock
if p.mask.CopyBtoMemoryblockMBS(m,kAlphaOffset,4) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This function takes the blue channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.55 CopyGtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 5.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100
```

```
p.mask.Graphics.ForeColor=rgb(127,127,127)
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This function takes the green channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.56 CopyMaskMBS as picture

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies the mask of the picture into a new and independend picture object.
Example:

```
dim p as Picture

p=New Picture(300,300,32)
```

```
p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,300,300

p.mask.Graphics.ForeColor=&cFFFFFF
p.mask.Graphics.Fillrect 0,0,300,300

p.mask.Graphics.ForeColor=&c000000
p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyMaskMBS
```

Notes: Returns nil on low memory.
Blog Entries

- MonkeyBread Software Releases the MBS REALbasic plug-ins 8.6

7.5.57 CopyPictureMBS as picture

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a clone of picture.
Notes: Can duplicate mask and alpha channel.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr2

7.5.58 CopyPictureWithMaskMBS as picture

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies the the picture into a new and independend picture object with mask.
Example:

```
dim p as Picture

p=New Picture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,300,300

p.mask.Graphics.ForeColor=&cFFFFFF
p.mask.Graphics.Fillrect 0,0,300,300

p.mask.Graphics.ForeColor=&c000000
```

```
p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyPictureWithMaskMBS
```

Notes: Returns nil on low memory.
Blog Entries

- MonkeyBread Software Releases the MBS REALbasic plug-ins 8.6

7.5.59 CopyPictureWithoutMaskMBS as picture

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies the the picture into a new and independend picture object without the mask.
Example:

```
dim p as Picture

p=New Picture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,300,300

p.mask.Graphics.ForeColor=&cFFFFFF
p.mask.Graphics.Fillrect 0,0,300,300

p.mask.Graphics.ForeColor=&c000000
p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyPictureWithoutMaskMBS
```

Notes: Returns nil on low memory.
Blog Entries

- MonkeyBread Software Releases the MBS REALbasic plug-ins 8.6

7.5.60 CopyPixelFastMBS(Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean

Plugin Version: 8.7, Platforms: macOS, Windows, Targets: All.

Function: Copies pixels from one picture into another picture with some options.
Example:

```
const x=100 // mouse coordinates for example
const y=100

dim p,logo as picture

logo=LogoMBS(500)

p=New Picture(800,800,32)

p.Graphics.ForeColor=&cFFFFFF
p.Graphics.FillRect 0,0,p.Width,p.Height

if p.CopyPixelFastMBS(logo, x-logo.Width/2, y-logo.Height/2, 0, 0, logo.Width, logo.Height) then
' ok
else
beep
end if

window1.Backdrop=p
```

Notes: Returns true on success and false on failure.

Parameters:
Source: the source picture, must not be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy

The destination image (self) can be either 24 bit or 32 bit.
The source image can have any bit depth and may be converted to 24 or 32 bit.

7.5.61 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
// get some picture
dim pic as Picture = LogoMBS(500)
// and a memoryblock of 1000 by 1000 pixels with 4 bytes per pixel
dim m as new MemoryBlock(1000* 1000 *4)

// calculate some offset for the image with 50 rows from top and 60 pixels from left
dim Offset50Lines as Integer = 1000*4 *50 +60*4

// copy picture to memoryblock
if pic.CopyRGBAtoMemoryblockMBS(m, Offset50Lines, 127, 0, pic.Height-1, 0, 4*1000) then

// show MemoryBlock content
Backdrop = MemoryblockRGBAtoPictureMBS(nil, m, 0, 1000, 1000)
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
See also:

- 7.5.62 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 190

7.5.62 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = &cFFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = &c000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyRGBAtoMemoryblockMBS(m, 0, p.Mask) then
// convert back
Backdrop = MemoryblockRGBAtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other

threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 13.2pr2
- MBS Real Studio Plugins, version 13.0pr6

See also:

- 7.5.61 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 188

7.5.63 CopyRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 5.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
dim m as MemoryBlock
dim p as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*3 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.64 CopyRGBXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.65 CopyRtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 5.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Example:

```
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(255,128,1)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.ForeColor=rgb(127,127,127)
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy Red channel from mask image into Memoryblock
if p.mask.CopyRtoMemoryblockMBS(m,kAlphaOffset,4) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This function takes the red channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.66 CopyXBGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.67 CopyXRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Plugin Version: 8.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies raw image data into a memoryblock.
Notes: Returns true on success.
destination should not be nil.

offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

7.5.68 CountColorMBS(col as color) as Integer

Plugin Version: 3.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Counts the pixels with the given colors.
Example:

```
dim p as Picture
dim n1,n2 as Integer

p=New Picture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,100,100

n1=p.CountColorMBS(&cFF0000)
n2=p.CountColorMBS(&cFFFFFF)

if n1=100*100 then
if n2=300*300-100*100 then
MsgBox "OK"
else
MsgBox "white failed"
end if
else
MsgBox "red failed"
```

```
end if
```

Notes: Returns the number of pixels found.
Blog Entries

- Tipp of the day: Blank HTMLViewer

7.5.69 CountColorsMBS(byref red as memoryblock, byref blue as memoryblock, byref green as memoryblock, byref count as Integer)

Plugin Version: 3.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Counts the color parts of each pixel.
Notes: red, blue and green are filled with 1024 bytes big memoryblocks. One 4 byte integer for each color value possible.
Count is filled with the number of pixels processed.

7.5.70 DrawPictureFMBS(pic as picture, x as Double, y as Double, alpha as Double = 1.0, yield as Integer = 0) as boolean

Plugin Version: 13.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Draws picture with floating point coordinates.
Notes: Supports a mask on the picture.
Returns true on success.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 13.5pr3

7.5.71 ExtractColorMBS(SearchColor as color, ReplaceWithColor as color, BackGroundColor as color) as picture

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the first color and writes matching pixels with the secon color.
Example:

```
dim p as Picture

p=New Picture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 000,100,100,100
```

```
p.Graphics.ForeColor=&c00FF00
p.Graphics.FillRect 100,100,100,100

p.Graphics.ForeColor=&c0000FF
p.Graphics.FillRect 200,100,100,100

p.Graphics.ForeColor=&c777700
p.Graphics.FillRect 100,200,100,100

// shows just a violet box on the left
backdrop=p.ExtractColorMBS(&cFF0000,&cFF00FF,&c000000)
```

Notes: All pixels which do not match the search color are written to the new picture using the given background color.
Returns nil on any error.

7.5.72 ExtractColorRectangleMaskMBS as picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a mask picture with all the rectangles marked visible which contain color.
Example:

```
dim invertedpic as picture
dim pic as Picture

pic=New Picture(300,300,32)
pic.graphics.drawpicture LogoMBS(100), 150,50

Backdrop=pic.ExtractColorRectangleMaskMBS
// marks black where the logo is drawn
```

Notes: If you have a picture which is mostly gray and you need to find a color picture inside, this method can be helpful.

In the returned picture all pixels are black which belong to a rectangle which contains color pixels in the original picture.
See also:

- 7.5.73 ExtractColorRectangleMaskMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture 198

7.5.73 ExtractColorRectangleMaskMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a mask picture with all the rectangles marked visible which contain color.
Notes: If you have a picture which is mostly gray and you need to find a color picture inside, this method can be helpful.

In the returned picture all pixels are black which belong to a rectangle which contains color pixels in the original picture.

All pixel outside the rectangle specified will be white.
See also:

- 7.5.72 ExtractColorRectangleMaskMBS as picture 197

7.5.74 FindPictureMBS(pic as picture, byref x as Integer, byref y as Integer, StartX as Integer = 0, StartY as Integer = 0, Tolerance as Integer = 3) as boolean

Plugin Version: 9.8, Platforms: macOS, Linux, Windows, Targets: All.

Function: Finds the given picture inside the picture.
Example:

```
// this is search image
dim p as new Picture(20,20,32)
p.Graphics.ForeColor = &c0000FF
p.Graphics.FillRect 0, 0, 20, 20

// this is target image
dim q as new Picture(500, 500, 32)

// with some color at Random position
q.Graphics.ForeColor = &c0000FF
q.Graphics.FillRect rnd*480, rnd*480, 30, 30

// do a search
dim x, y as Integer

if q.FindPictureMBS(p, x,y) then
// found image, so draw rectangle there

q.Graphics.ForeColor = &cFF0000
q.Graphics.DrawRect x, y, p.Width, p.Height
```

```
end if

window1.Backdrop = q
```

Notes: Returns true on success and fills x/y variables.
Pixels are compared exactly, so a little bit color correction and make the picture being not found.

StartX/StartY can give start position. Tolerance defines how much two pixel component values can differ and still be considered the same. This helps with color matching and other drawings which may alter pixels a little bit.
If function returns true, you can use x+1, y as the new start position and search again.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.4pr3
- MBS Xojo / Real Studio Plugins, version 13.4pr5

7.5.75 GetMaskMBS(create as boolean = true) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the mask for that picture.
Notes: Same as Picture.Mask in Xojo, but over the Plugin API.
We added it to test for leaks in plugin API.
Blog Entries

- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr3

7.5.76 GrayScale2MBS(mode as Integer) as boolean

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Turns picture into grayscale.
Example:

```
dim l as Picture = LogoMBS(500)
if l.GrayScale2MBS(0) then
Backdrop = l
end if
```

Notes: Returns true on success and false on failure.

Modes:

0	y = 0.33 * R + 0.5 * G + 0.16 * B	Faster version of 3
1	y = 0.375 * R + 0.5 * G + 0.125 * B	Faster version of 3
2	y = 0.2126 * R + 0.7152 * G + 0.0722 * B	Photometric/digital ITU-R
3	y = 0.299 * R + 0.587 * G + 0.114 * B	Digital CCIR601

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for perfomance.

GrayScaleMBS makes a copy of the picture while GrayScale2MBS edits in-place.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.1pr3

7.5.77 GrayScaleMBS(mode as Integer) as picture

Plugin Version: 10.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates a grayscale copy of the picture.
Example:

```
dim l as Picture = LogoMBS(500)
Backdrop = l.GrayScaleMBS(0)
```

Notes: If you have a mask on the picture, you need to draw that mask in the new picture's mask if you want to keep it.

Modes:

0	y = 0.33 * R + 0.5 * G + 0.16 * B	Faster version of 3
1	y = 0.375 * R + 0.5 * G + 0.125 * B	Faster version of 3
2	y = 0.2126 * R + 0.7152 * G + 0.0722 * B	Photometric/digital ITU-R
3	y = 0.299 * R + 0.587 * G + 0.114 * B	Digital CCIR601

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for perfomance.

GrayScaleMBS makes a copy of the picture while GrayScale2MBS edits in-place.

7.5.78 GreenChannelMBS as picture

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The green channel of the picture copied into a new picture.
Example:

```
dim p as Picture = LogoMBS(500)
Backdrop = p.GreenChannelMBS
```

Blog Entries

- MBS REALbasic Plugins, version 10.6pr4

7.5.79 HashMBS as UInt32

Plugin Version: 12.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates CRC 32 over all pixels.
Example:

```
dim p as new Picture(100, 100, 32)

dim hash1 as UInt32 = p.HashMBS

// one black pixel
p.Graphics.Pixel(50, 50) = &c000000

dim hash2 as UInt32 = p.HashMBS

MsgBox hex(hash1)+" "+hex(hash2)
```

Notes: You can use hash to see if two pictures have 100% identical pixel values. Changing just one pixel should give different number.
Does not include alpha channel or mask for the hash, but only RGB channels.
Blog Entries

- MBS Real Studio Plugins, version 12.1pr4

7.5.80 HasMaskMBS as boolean

Plugin Version: 6.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether this picture has a mask or not.

Notes: Returns true if yes or false if not.

7.5.81 HMirrorMBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture horizontally (flip).
Example:

```
// load picture
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as PNGPictureMBS = f.OpenAsPNGMBS

// get parts
dim pic as Picture = p.Pict.HMirrorMBS
dim mask as Picture = p.mask.HMirrorMBS

// save as png
dim g as FolderItem = SpecialFolder.Desktop.Child("output.png")
call g.SaveAsPNGMBS(pic, mask, 0)

// now apply mask to show it
pic.Mask = mask
Backdrop = pic
```

Notes: This method returns a copy of the picture mirrored.
Returns nil on low memory.

7.5.82 HMirrorPictureMBS as boolean

Plugin Version: 7.8, Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture horizontally (flip).
Example:

```
if pic.HMirrorPictureMBS then // mirror picture
canvas1.backdrop=pic
else
canvas1.backdrop=pic.HMirrorMBS // mirror a copy
end if
```

Notes: This methods mirrors the picture data itself. Returns true on success and false on failure. Only

bitmap pictures can be mirrored this way.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.4pr6
- MBS Real Studio Plugins, version 11.4pr1

7.5.83 InvertGrayMBS as picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Inverts the gray pixels inside the picture.
Example:

```
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertGrayMBS

Backdrop=invertedpic
```

Notes: Returns nil on any error.
See also:

- 7.5.84 InvertGrayMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture 203

7.5.84 InvertGrayMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture

Plugin Version: 9.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Inverts the gray pixels inside the picture.
Example:

```
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertGrayMBS(0,0,250,250)

Backdrop=invertedpic
```

Notes: Returns nil on any error.

The part of the picture which is not inverted will be all black.
See also:

- 7.5.83 InvertGrayMBS as picture 203

7.5.85 InvertMBS as picture

Plugin Version: 7.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Inverts the whole picture.
Example:

```
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertMBS

Backdrop=invertedpic
```

Notes: Supports RGB and RGBA pictures, but does not look into a mask as that is not needed.
Alpha stays untouched as only RGB is inverted.
Returns nil on any error.
See also:

- 7.5.86 InvertMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture 204

7.5.86 InvertMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Inverts the picture.
Example:

```
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertMBS(0,0,250,250)

Backdrop=invertedpic
```

Notes: Returns nil on any error.

The part of the picture which is not inverted will be all black.
Blog Entries

- MBS Xojo Plugins, version 18.2pr7

See also:

- 7.5.85 InvertMBS as picture 204

7.5.87 isBlackMBS as boolean

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if the picture has only black pixels.
Example:

```
dim p as Picture

// test white
p=New Picture(100,100,32)

MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test black
p.Graphics.ForeColor=&c000000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test red
p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)
```

See also:

- 7.5.88 isBlackMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean 205

7.5.88 isBlackMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if the picture has only black pixels in the given rectangle.
See also:

- 7.5.87 isBlackMBS as boolean 205

7.5.89 isGrayMBS(tolerance as Integer = 0) as boolean

Plugin Version: 12.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Checks if a picture has only shades of gray in all pixels.
Example:

```
dim p as new Picture(100,100,32)

// 1. test white picture

if p.isGrayMBS then
MsgBox "white picture is gray."
end if

// 2. test gray picture
dim g as Graphics = p.Graphics
g.ForeColor = &c777777
g.FillRect 0, 0, 100, 100

if p.isGrayMBS then
MsgBox "gray picture is gray."
end if

// 3. test gray picture with tolerance
g.ForeColor = &c777778
g.FillRect 0, 0, 100, 100

if p.isGrayMBS(0) then
MsgBox "gray (not correct)"
else
MsgBox "not gray (correct)"
end if

if p.isGrayMBS(1) then
MsgBox "gray (correct)"
else
MsgBox "not gray (not correct)"
end if

// 4. test gray picture with over tolerance
g.ForeColor = &c777779
g.FillRect 0, 0, 100, 100

if p.isGrayMBS(0) then
MsgBox "gray (not correct)"
else
MsgBox "not gray (correct)"
end if
```

```
if p.isGrayMBS(1) then
MsgBox "gray (not correct)"
else
MsgBox "not gray (correct)"
end if
```

Notes: Tolerance defines how big the difference between two channels can be. Typically a value smaller than 5. Pass 0 if you need exact gray scales.
Like the difference between &c000000 and &c000001 is not visible to most people, it can be ignored often.
See also:

- 7.5.90 isGrayMBS(tolerance as Integer, left as Integer,top as Integer,width as Integer,height as Integer) as boolean 207

7.5.90 isGrayMBS(tolerance as Integer, left as Integer,top as Integer,width as Integer,height as Integer) as boolean

Plugin Version: 12.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Checks if a picture has only shades of gray in all pixels.
Notes: Tolerance defines how big the difference between two channels can be. Typically a value smaller than 5. Pass 0 if you need exact gray scales.
Like the difference between &c000000 and &c000001 is not visible to most people, it can be ignored often.
Blog Entries

- MBS Real Studio Plugins, version 12.5pr8

See also:

- 7.5.89 isGrayMBS(tolerance as Integer = 0) as boolean 206

7.5.91 isWhiteMBS as boolean

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if the picture has only white pixels.
Example:

```
dim p as Picture

// test white
p=New Picture(100,100,32)

MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)
```

```
// test black
p.Graphics.ForeColor=&c000000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test red
p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)
```

See also:

- 7.5.92 isWhiteMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean 208

7.5.92 isWhiteMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if the picture has only white pixels in the given rectangle.
See also:

- 7.5.91 isWhiteMBS as boolean 207

7.5.93 MakeHBITMAPMBS as Ptr

Platform: Windows, Targets: All.

Function: Returns a HBITMAP handle to the picture.
Notes: Warning: This function works only right on HDIB pictures.

The picture is cloned but both pictures may use the same binary data in background.

You will have to free this handle with DeleteObject:
Declare Function DeleteObject Lib "gdi32" (hObject as Integer) as Integer
Xojo Developer Magazine

- 4.6, page 48: Drag, Drop, and Roll, How to add a huge amount of functionality with no bloat by Toby Rush
- 4.6, pages 42 to 43: Menu Glyphs, Icons for menu entries by Christian Schmitz

7.5.94 MirrorMBS as picture

Plugin Version: 7.8, Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture vertically and horizontally.
Example:

```
canvas1.backdrop=pic.MirrorMBS
```

Notes: Same as rotation by 180 degree.
This method returns a copy of the picture mirrored.
Returns nil on low memory.

7.5.95 MirrorPictureMBS as boolean

Plugin Version: 7.8, Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture vertically and horizontally.
Example:

```
if pic.MirrorPictureMBS then // mirror picture
canvas1.backdrop=pic
else
canvas1.backdrop=pic.MirrorMBS // mirror a copy
end if
```

Notes: Same as rotation by 180 degree.
This methods mirrors the picture data itself. Returns true on success and false on failure. Only bitmap pictures can be mirrored this way.
Blog Entries

- MBS Real Studio Plugins, version 11.4pr1

7.5.96 RedChannelMBS as picture

Plugin Version: 11.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The red channel of the picture copied into a new picture.
Example:

```
dim p as Picture = LogoMBS(500)
Backdrop = p.RedChannelMBS
```

Blog Entries

- MBS REALbasic Plugins, version 10.6pr4

7.5.97 ReplaceBlueChannelMBS(BlueChannel as picture) as picture

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a copy of the picture with the blue channel replaced with the blue channel of the given picture.
Notes: Returns nil on low memory.
Blog Entries

- MBS REALbasic plug-ins version 9.4

7.5.98 ReplaceColorMBS(SearchColor as color, ReplaceWithColor as color) as picture

Plugin Version: 7.7, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches the given color and replaces it with the second color.
Example:

```
dim p as Picture

p=New Picture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 000,100,100,100

p.Graphics.ForeColor=&c00FF00
p.Graphics.FillRect 100,100,100,100

p.Graphics.ForeColor=&c0000FF
p.Graphics.FillRect 200,100,100,100

p.Graphics.ForeColor=&c777700
p.Graphics.FillRect 100,200,100,100

// shows a violet box on the left. Other pixels unchanged
backdrop=p.ReplaceColorMBS(&cFF0000,&cFF00FF)
```

Notes: All other pixels are copied to the new picture.
Returns nil on any error.

7.5.99 ReplaceGreenChannelMBS(GreenChannel as picture) as picture

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a copy of the picture with the green channel replaced with the green channel of the given picture.
Notes: Returns nil on low memory.
Blog Entries

- MBS REALbasic plug-ins version 9.4

7.5.100 ReplaceRedChannelMBS(RedChannel as picture) as picture

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a copy of the picture with the red channel replaced with the red channel of the given picture.
Notes: Returns nil on low memory.
Blog Entries

- MBS REALbasic plug-ins version 9.4

7.5.101 Rotate180MBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Rotates the picture by 180¬∞ counter clockwise.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate180MBS
```

Notes: You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.
Blog Entries

- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr1

7.5.102 Rotate270MBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Rotates the picture by 270¬∞ counter clockwise.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate270MBS
```

Notes: You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.
Blog Entries

- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr1

7.5.103 Rotate90MBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Rotates the picture by 90¬∞ counter clockwise.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate90MBS
```

Notes: You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.
Blog Entries

- MBS Real Studio Plugins, version 12.0pr6
- The difference between WebPicture and Picture classes
- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr1

7.5.104 RotateImageAndMaskMBS(angle as Double, cut as boolean = False) as picture

Plugin Version: 13.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Rotates the picture by angle¬∞ counter clockwise.
Notes: Internally uses RotateMBS.
Works with masked and alpha channel pictures, but is faster with masked pictures.
Returns nil on any error.
if cut is true, the image is cut to the original size.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 13.4pr5

7.5.105 RotateMBS(angle as Double, background as color = &cFFFFFFFF) as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Rotates the picture by angle¬∞ counter clockwise.
Example:

```
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.RotateMBS(42.3,rgb(255,255,255))
```

Notes: The area around the picture is filled using the backcolor.

You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

Alpha channel support is half done. If it's working for you, please enjoy it. If not, please report.
Blog Entries

- MBS Real Studio Plugins, version 12.3pr14
- MBS Real Studio Plugins, version 12.0pr6
- MBS Plugins 11.1 Release notes
- MBS REALbasic Plugins, version 11.1pr1

7.5.106 RotateMemoryMBS(angle as Double) as Int64

Plugin Version: 10.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the memory needed to roatet the picture with the given angle.
Notes: RotateMBS needs temporary buffers and fails if somewhere between memory is low.
Blog Entries

- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr2

7.5.107 ScaleImageAndMaskMBS(width as Integer, height as Integer, AntiAlias as boolean=false, YieldTicks as Integer=0) as picture

Plugin Version: 7.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Scales the picture to the new size including mask (in case one exists).
Notes: This is a self made algorithm which produces nice pictures on all platforms.
It is slower than QuickDraw on Mac OS, but nicer than drawpicture on Windows.
Returns nil on low memory or invalid width and height values.

AntiAlias is set to false if width<=self.width or height<=self.height.

If YieldTicks is 0, no time is given to other threads in your application. If it is a value >0, this time is waited before a thread switch is done. Setting it to 1 will give away control to another thread after 1/60th of a second. We recommend a value of 3 to 5 for a good reponsibility of your application.

Version 19.4 or newer of our plugin includes scaling for pictures with alpha channel.
Blog Entries

- MBS Xojo Plugins, version 19.4pr7
- MBS Real Studio Plugins, version 12.0pr4

7.5.108 ScaleMBS(width as Integer, height as Integer, AntiAlias as boolean=false, YieldTicks as Integer=0) as picture

Plugin Version: 5.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Scales the picture to the new size.
Example:

```
dim pic as new Picture(100,100,32)

pic.Graphics.ForeColor=&cFF0000
pic.Graphics.FillOval 0,0,100,100

dim scaledPic as picture = pic.ScaleMBS(200,200)

// show scaledPic
window1.backdrop = scaledPic
```

Notes: This is a self made algorithm which produces nice pictures on all platforms.
It is slower than QuickDraw on Mac OS, but nicer than drawpicture on Windows.
Returns nil on low memory or invalid width and height values.

AntiAlias is set to false if width<=self.width or height<=self.height.

If YieldTicks is 0, no time is given to other threads in your application. If it is a value >0, this time is waited before a thread switch is done. Setting it to 1 will give away control to another thread after 1/60th of a second. We recommend a value of 3 to 5 for a good reponsibility of your application.

Scaling down does not use antialias. If you need full antialias, please use ScalingMBS function.

If input and output size is equal, you get your picture back unchanged.
This function does not handle masks. Please use pictures with mask and scale image and mask separately.

Version 19.4 or newer of our plugin includes scaling for pictures with alpha channel.
Blog Entries

- MBS Xojo Plugins, version 19.4pr7
- MBS Real Studio Plugins, version 12.0pr4
- MBS Real Studio Plugins, version 11.4pr3
- MBS Real Studio Plugins, version 11.2pr2
- MBS REALbasic Plugins, version 10.6pr10
- MBS REALbasic Plugins, version 10.6pr8
- MBS REALbasic Plugins, version 10.4pr9

7.5.109 ScalingMBS(mode as Integer, width as Integer, height as Integer, yield as Integer = 0) as picture

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Scales the picture to the given size.
Example:

```
dim p as Picture

p=LogoMBS(1000)

p=p.ScalingMBS(2, 4000, 4000)

backdrop=p
```

Notes: On low memory this function can return nil or the image may look bad. (e.g. all black)
The memory used for the temporary storage is original height * new width * 12 bytes plus some extra.
For scaling with the same size as the picture already has, the scaling is still performed.

Returns nil ony error. (e.g. destwidth=0)

Modes:

This function does not handle mask. Please use pictures with mask and scale image and mask separately.

Version 19.4 or newer of our plugin includes scaling for pictures with alpha channel.
Blog Entries

1 triangle
2 box, nereast neighbor
3 lanczos 3
4 lanczos 8
5 mitchell
6 poly 3
7 cubic

- MBS Xojo Plugins, version 19.4pr7
- MBS Xojo / Real Studio Plugins, version 13.5pr3
- MBS Xojo / Real Studio Plugins, version 13.4pr1
- MBS Real Studio Plugins, version 11.3pr14
- MonkeyBread Software Releases the MBS REALbasic plug-ins 9.2

7.5.110 ScrollHorizontalMBS(delta as Integer, wrap as boolean, scrollmask as boolean) as boolean

Plugin Version: 6.5, Platforms: macOS, Windows, Targets: All.

Function: Scrolls the image data horizontally.
Example:

```
dim p as Picture

p=LogoMBS(500) // any bitmap image

if p.ScrollHorizontalMBS(100,true,false) then
Title="ok"
end if

Backdrop=p
```

Notes: Returns true on success and false on failure.
Works only on Mac OS and Windows with 32bit bitmap images.
scrollmask defines whether a mask (if one exists) is also scrolled.
Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.1pr1

7.5.111 ScrollMBS(deltaX as Integer, deltaY as Integer, wrap as boolean, scrollmask as boolean) as boolean

Plugin Version: 6.5, Platforms: macOS, Windows, Targets: All.

Function: Combines calls to ScrollHorizontalMBS and ScrollVerticalMBS.
Notes: Returns true on success and false on failure.
Works only on Mac OS and Windows with 32bit bitmap images.
scrollmask defines whether a mask (if one exists) is also scrolled.
Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.

7.5.112 ScrollVerticalMBS(delta as Integer, wrap as boolean, scrollmask as boolean) as boolean

Plugin Version: 6.5, Platforms: macOS, Windows, Targets: All.

Function: Scrolls the image data vertically.
Example:

```
dim p as Picture

p=LogoMBS(500) // any bitmap image

if p.ScrollVerticalMBS(100,true,false) then
Title="ok"
end if

Backdrop=p
```

Notes: Returns true on success and false on failure.
Works only on Mac OS and Windows with 32bit bitmap images.
scrollmask defines whether a mask (if one exists) is also scrolled.
Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.

7.5.113 SetSteganographyMBS(flags as Integer, data as Memoryblock) as boolean

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds steganography to an existing picture.
Example:

```
dim p as Picture = LogoMBS(500)

// this example uses chr(0) as end marker
dim s as string = "Hello World. This is just a test." + chr(0)
if p.SetSteganographyMBS(1, s) then

dim data as MemoryBlock = p.SteganographyMBS(1)
dim d as string = data.CString(0)

Backdrop = p
Break
end if
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Returns true on success or false on failure.
If memoryblock provided is nil, this function fails.

If you like to store data, please encrypt them and include some way that you find your data again, detect length of data, verify it's okay via checksum and than decrypt your data.
Please store image in a loss less format like PNG.
Function does not handle mask or alpha channel.

7.5.114 SetSteganographyPictureMBS(flags as Integer, data as Picture) as boolean

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds steganography to an existing picture.
Example:

```
const AllChannels = &h111

dim p as new Picture(500, 500, 32)
dim l as Picture = LogoMBS(500)

dim w as new window1
w.Title = "Logo"
w.Backdrop = l

// adds picture. You will normally not see the modification
if p.SetSteganographyPictureMBS(AllChannels, l) then

w = new window1
```

```
w.Title = "Logo hidden in white picture"
w.Backdrop = p

// as we store in lowest bit, this picture will look strange
dim y as Picture = p.SteganographyPictureMBS(AllChannels)

w = new window1
w.Title = "Logo extracted"
w.Backdrop = y
end if
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Returns true on success or false on failure.

Function does not handle mask or alpha channel.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr2

7.5.115 SobelChannelsMBS(Red as boolean, Green as Boolean, Blue as boolean, direction1 as Integer = 1, direction2 as Integer = 3, swap as boolean = false) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the sobel operator.
Example:

```
dim m as Picture = LogoMBS(500)

// only green
Backdrop = m.SobelChannelsMBS(false, true, false)
```

Notes: Useful for edge detection.
See also SobelMBS function which takes similar operators.
You can set Red/Blue/Green parameters to define which channel is modified and which channel is just copied.
Pictures look quite funny. The channel who got the edge detection has bigger areas black or white so other colors in other channels have much more visible effect.
Blog Entries

- MBS Plugins 11.1 Release notes

7.5.116 SobelMBS(direction1 as Integer = 1, direction2 as Integer = 3, swap as boolean = false, gray as boolean = true) as picture

Plugin Version: 11.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates the sobel operator.
Example:

```
dim m as Picture = LogoMBS(500)

Backdrop = m.SobelMBS
```

Notes: Useful for edge detection.

direction1: The direction for first matrix.
direction2: The direction for first matrix.
swap: If false, you get white on black. If true you get black on white.
gray: whether to output gray image instead of RGB image.

Possible Matrix values:
-1: negative identity:
0: identity
1: west
2: east
3: north
4: south
5: south east
6: north west
7: north east
8: south west

You can add 10 to the 8 direction matrixes to get more weight.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 14.2pr7
- MBS Plugins 11.1 Release notes

7.5.117 SteganographyMBS(flags as Integer) as Memoryblock

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries steganography information inside the picture.
Example:

```
dim p as Picture = LogoMBS(500)

dim s as string = "Hello World. This is just a test." + chr(0)
if p.SetSteganographyMBS(1, s) then

dim data as MemoryBlock = p.SteganographyMBS(1)
dim d as string = data.CString(0)

Backdrop = p
Break
end if
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Blog Entries

- MBS Xojo / Real Studio Plugins, version 17.1pr1

7.5.118 SteganographyPictureMBS(flags as Integer) as Picture

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries steganography information inside the picture.
Example:

```
const AllChannels = &h111

dim p as new Picture(500, 500, 32)

dim w as new window1
w.Title = "white"
w.Backdrop = p

dim l as Picture = LogoMBS(500)

w = new window1
w.Title = "Logo"
w.Backdrop = l

// adds picture. You will normally not see the modification
dim x as Picture = p.AddSteganographyPictureMBS(AllChannels, l)

w = new window1
w.Title = "Logo hidden in white picture"
w.Backdrop = x

// as we store in lowest bit, this picture will look strange
```

```
dim y as Picture = x.SteganographyPictureMBS(AllChannels)

w = new window1
w.Title = "Logo extracted"
w.Backdrop = y
```

Notes: Flags can be a combination of red (&h100), green (&h010) and blue (&h001).
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr2

7.5.119 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Performs a transformation to the picture.
Example:

```
dim p as Picture = LogoMBS(500)

dim map(-1) as color

for r as Integer = 0 to 255
for g as Integer = 0 to 255
for b as Integer = 0 to 255
// index is r*65536+g*256+b

// we swap colors: r gives g, g gives b, b gives r
map.Append rgb(g,b,r)
next
next
next

Backdrop=p.ThreadedTransformMBS(0, map)
```

Notes: Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index (blue+green*256+blue*65536) in the arrays to get the new color value.

The arrays should have 2^24 entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.
See also:

- 7.5.120 ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture 224
- 7.5.121 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture 225
- 7.5.122 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture 226

7.5.120 ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Performs a transformation to the picture.
Example:

```
dim p as Picture = LogoMBS(500)

dim map(-1) as Integer

for r as Integer = 0 to 255
for g as Integer = 0 to 255
for b as Integer = 0 to 255
// index is r*65536+g*256+b

// we swap colors: r gives g, g gives b, b gives r
map.Append g*65536+b*256+r
next
next
next

Backdrop=p.ThreadedTransformMBS(0, map)
```

Notes: Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index (blue+green*256+blue*65536)

in the arrays to get the new color value.

The arrays should have 2^24 entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.
See also:

- 7.5.119 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture 223
- 7.5.121 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture 225
- 7.5.122 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture 226

7.5.121 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Performs a transformation to the picture.
Example:

```
dim p as Picture = LogoMBS(500)

dim red as MemoryBlock = NewMemoryBlock(256)
dim green as MemoryBlock = NewMemoryBlock(256)
dim blue as MemoryBlock = NewMemoryBlock(256)

for i as Integer=0 to 255
red.Byte(i)=i/2
green.Byte(i)=i/2
blue.Byte(i)=i/2
next

Backdrop=p.ThreadedTransformMBS(0, red, green, blue)
```

Notes: Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index in the memoryblocks to get the new color value.

The memoryblocks must have a size of 256 Bytes.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.
See also:

- 7.5.119 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture 223
- 7.5.120 ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture 224
- 7.5.122 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture 226

7.5.122 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Performs a transformation to the picture.
Example:

```
dim p as Picture = LogoMBS(500)

dim red(-1) as Integer
dim green(-1) as Integer
dim blue(-1) as Integer

for i as Integer=0 to 255
red.Append i/2
green.Append i/2
blue.Append i/2
next

Backdrop=p.ThreadedTransformMBS(0, red, green, blue)
```

Notes: Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index in the arrays to get the new color value.

The arrays should have 256 entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.
Blog Entries

- MBS Real Studio Plugins, version 13.0pr1
- Multithreading

See also:

- 7.5.119 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture 223
- 7.5.120 ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture 224
- 7.5.121 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture 225

7.5.123 ThresholdMBS(Threshold as integer) as picture

Plugin Version: 17.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates black and white picture.
Notes: With threshold value you define threshold in range from 0 to 255.
Normally you use 127 for turning picture to black & white.
Blog Entries

- MonkeyBread Software Releases the MBS Xojo Plugins in version 17.5
- MBS Xojo Plugins, version 17.5pr5

Xojo Developer Magazine

- 16.1, page 10: News

7.5.124 TransformColorsMBS(red as memoryblock, blue as memoryblock, green as memoryblock, dest as picture = nil) as picture

Plugin Version: 4.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Applies a transform table to the pixels.
Notes: Red, blue and green are 256 byte big memoryblocks with one byte for each value.

In RB the function does this:
color=rgb(red.byte [color.red] , green.byte [color.green] , blue.byte [color.blue])

If you pass a destination picture and it has right size, the plugin will recycle that instead of creating a new one to increase performance.
Blog Entries

- MBS Real Studio Plugins, version 13.0pr1

7.5.125 TrimMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Trims the picture to the given rectangle.
Example:

```
dim p as Picture = LogoMBS(500)

Backdrop = p.TrimMBS(100,100,300,300)
```

Notes: This method does not handle the mask.
So p.Trim(0,0,p.width,p.height) will give you a copy of the image pixels without mask.
left and top are zero based.

Use TrimWithMaskMBS if you need the mask to be trimmed.
Returns nil on low memory or bad parameters.

7.5.126 TrimWithMaskMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

Plugin Version: 8.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Trims the picture to the given rectangle.
Example:

```
dim p as picture
dim someimage as Picture = LogoMBS(100)

p=someimage.TrimWithMaskMBS(100,200,300,400)
```

Notes: left and top are zero based.
Returns nil on low memory or bad parameters.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr2

7.5.127 VMirrorMBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture vertically.
Example:

```
canvas1.backdrop=pic.VMirrorMBS
```

Notes: This method returns a copy of the picture mirrored.
Returns nil on low memory.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.2pr10

7.5.128 VMirrorPictureMBS as boolean

Plugin Version: 7.8, Platforms: macOS, Linux, Windows, Targets: All.

Function: Mirrors the picture vertically.
Example:

```
if pic.VMirrorPictureMBS then // mirror picture
canvas1.backdrop=pic
else
canvas1.backdrop=pic.VMirrorMBS // mirror a copy
end if
```

Notes: This methods mirrors the picture data itself. Returns true on success and false on failure. Only bitmap pictures can be mirrored this way.
Blog Entries

- MBS Real Studio Plugins, version 11.4pr1

7.5.129 Properties

7.5.130 EmbeddedMaskMBS(swap as boolean) as picture

Plugin Version: 4.0, Platforms: macOS, Linux, Targets: All.

Function: Read or write a picture mask.
Example:

```
// Export a mask picture:

dim f as FolderItem
dim t as TiffPictureMBS
dim m,p as Picture
dim q as QTGraphicsExporterMBS

p=New Picture(100,100,32)
p.Graphics.ForeColor=rgb(100,100,100)
p.Graphics.fillrect 0,0,100,100
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.fillrect 20,20,80,30

m=New Picture(100,100,32)
m.Graphics.ForeColor=rgb(255,255,255)
m.Graphics.FillRect 0,0,30,100
m.Graphics.ForeColor=rgb(200,200,200)
m.Graphics.FillRect 30,0,30,100
m.Graphics.ForeColor=rgb(100,100,100)
m.Graphics.FillRect 60,0,30,100

p.EmbeddedMaskMBS(true)=m
p.Mask.Graphics.DrawPicture m,0,0 // just for showing as a backdrop

q=new QTGraphicsExporterMBS

q.OpenExporter("TIFF")
q.Depth=32
q.InputPicture=p
q.CompressionQuality=1024
q.OutputFile=SpecialFolder.Desktop.Child("Hello.tif")
title=str(q.Export)

Backdrop=p
```

Notes: Only useful on 32bit images.
Xojo takes white for transparent, so you may need to swap this to black using the swap parameter.

Windows support removed somewhere in version 10.4 with internal changes. If you need this, please tell us. (Read and Write computed property)

7.6 class PictureConvolutionMBS

7.6.1 class PictureConvolutionMBS

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class for a Picture Convolution.
Example:

```
// blur

dim l as Picture = LogoMBS(500)
dim p as new PictureConvolutionMBS

p.hor(0) = 0.2
p.hor(1) = 0.2
p.hor(2) = 0.2
p.hor(3) = 0.2
p.hor(4) = 0.2

p.ver(0) = 0.2
p.ver(1) = 0.2
p.ver(2) = 0.2
p.ver(3) = 0.2
p.ver(4) = 0.2

p.ValueCount=5

p.SourcePicture=l

dim t as Integer=ticks
call p.run(7)
t=ticks-t

Title=str(t)

Backdrop=p.DestinationPicture
```

Blog Entries

- MBS Real Studio Plugins, version 13.0pr1

7.6.2 Methods

7.6.3 close

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

7.6.4 Run(channels as Integer) as boolean

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the picture effect.
Notes: Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimenstions of source and destination must be equal.

Channels is a combination of 1, 2 and 4. 1 for Red, 2 for Green and 4 for Blue.
The border (one pixel thick) is not filled in the destination picture.

This method does the following for each pixel:

```
// first horizontal fill the temporary picture
r=0
g=0
b=0

if RedChannel then
r = r + sourcepicture.pixel(x-1,y).red * Hor(0)
r = r + sourcepicture.pixel(x ,y).red * Hor(1)
r = r + sourcepicture.pixel(x+1,y).red * Hor(2)
else
r = sourcepicture.pixel(x,y)
end if

if GreenChannel then
g = g + sourcepicture.pixel(x-1,y).green * Hor(0)
g = g + sourcepicture.pixel(x ,y).green * Hor(1)
g = g + sourcepicture.pixel(x+1,y).green * Hor(2)
else
g = sourcepicture.pixel(x,y)
end if
```

```
if BlueChannel then
b = b + sourcepicture.pixel(x-1,y).blue * Hor(0)
b = b + sourcepicture.pixel(x ,y).blue * Hor(1)
b = b + sourcepicture.pixel(x+1,y).blue * Hor(2)
else
b = sourcepicture.pixel(x,y)
end if


temppicture.pixel(x,y)=rgb(r,g,b)


// now back from temporary picture to the destination picture


r=0
g=0
b=0


if RedChannel then
r = r + temppicture.pixel(x,y-1).red * Ver(0)
r = r + temppicture.pixel(x,y ).red * Ver(1)
r = r + temppicture.pixel(x,y+1).red * Ver(2)
else
r = temppicture.pixel(x,y)
end if


if GreenChannel then
g = g + temppicture.pixel(x,y-1).green * Ver(0)
g = g + temppicture.pixel(x,y ).green * Ver(1)
g = g + temppicture.pixel(x,y+1).green * Ver(2)
else
g = temppicture.pixel(x,y)
end if


if BlueChannel then
b = b + temppicture.pixel(x,y-1).blue * Ver(0)
b = b + temppicture.pixel(x,y ).blue * Ver(1)
b = b + temppicture.pixel(x,y+1).blue * Ver(2)
else
b = temppicture.pixel(x,y)
end if


destinationpicture.pixel(x,y)=rgb(r,g,b)
```

7.6.5 Properties

7.6.6 DestinationPicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destination picture.
Notes: If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

7.6.7 SourcePicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The source picture.
Notes: Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

7.6.8 ValueCount as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The number of values set in the Hor and Ver array.
Example:

```
dim p as new PictureConvolutionMBS

p.Hor(0)=0.25
p.Hor(1)=0.5
p.Hor(2)=0.25
p.ValueCount=3
```

Notes: The index in the arrays goes from 0 to ValueCount-1.
Default is 3.
Use values like 1, 3, 5, 7, 9, 11, 13, 15, 17 or 19.
(Read and Write property)

7.6.9 Hor(index as UInt32) as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The horizontal factors.
Notes: Index from 0 to 19.
(Read and Write computed property)

7.6.10 Ver(index as UInt32) as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The vertical factors.
Notes: Index from 0 to 19.
(Read and Write computed property)

7.7 class PictureEditorMBS

7.7.1 class PictureEditorMBS

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: class to edit picture data as a memoryblock in place.
Notes: This is the same code the plugin uses to edit pictures.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.0fc1
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS REALbasic plug-in 9.6

7.7.2 Methods

7.7.3 Data(Row as Integer) as MemoryBlock

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memoryblock with the original image data of the given row.
Notes: Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.

7.7.4 Properties

7.7.5 AllData as Memoryblock

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memoryblock with the original image data.
Notes: Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.

Returns nil for console pictures.
(Read only property)

7.7.6 AllDataCopy as Memoryblock

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies the data for the current picture into a new memoryblock.
Notes: Changes to this memoryblock will not be visible in the original picture.
(Read only property)

7.7.7 BlueOffset as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the blue channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.7.8 BytesPerPixel as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Number of bytes per pixel.
Notes: Most times 4, but for some platforms 3.
(Read only property)

7.7.9 DataPtr as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memory address where the data is stored.
Notes: Maybe useful for declares.
Returns nil for console pictures.
(Read only property)

7.7.10 GreenOffset as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the green channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.7.11 HasAlphaChannel as Boolean

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether an alpha channel exists.
Notes: (Read only property)

7.7.12 Height as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The height of the image in pixels.
Notes: (Read only property)

7.7.13 Picture as Picture

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The original picture reference.
Notes: (Read only property)

7.7.14 RedOffset as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the red channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.7.15 RowBytes as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The width of an image row in bytes.
Notes: RowBytes can be width*bytesPerPixel, but often it is not.
(Read only property)

7.7.16 Width as Integer

Plugin Version: 11.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The width of the image in pixels.
Notes: (Read only property)

7.8 class PictureLut3DMBS

7.8.1 class PictureLut3DMBS

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class for doing a LUT 3D on a picture.

7.8.2 Methods

7.8.3 close

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

7.8.4 Run as boolean

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the picture effect.
Notes: Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimenstions of source and destination must be equal.

7.8.5 Properties

7.8.6 DestinationPicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destination picture.
Notes: If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

7.8.7 MaxX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal x coordinate to use.
Notes: If 0 the width of the source picture defines this value.
(Read and Write property)

7.8.8 MaxY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal y coordinate to use.
Notes: If 0 the height of the source picture defines this value.
(Read and Write property)

7.8.9 MinX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal x coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.8.10 MinY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal y coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.8.11 SourcePicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The source picture.
Notes: Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

7.8.12 Table(r as UInt32, g as UInt32, b as UInt32, x as UInt32) as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The lut table.
Notes: Indexes r, g and b go from 0 to 16 while x goes from 0 to 2.
(Read and Write computed property)

7.9 class PictureMatrix3DMBS

7.9.1 class PictureMatrix3DMBS

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class for doing a 3D picture matrix.

7.9.2 Methods

7.9.3 close

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

7.9.4 Run as boolean

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the picture effect.
Notes: Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimenstions of source and destination must be equal.

7.9.5 Properties

7.9.6 DestinationPicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destination picture.
Notes: If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

7.9.7 MaxX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal x coordinate to use.
Notes: If 0 the width of the source picture defines this value.
(Read and Write property)

7.9.8 MaxY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal y coordinate to use.
Notes: If 0 the height of the source picture defines this value.
(Read and Write property)

7.9.9 MinX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal x coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.9.10 MinY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal y coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.9.11 SourcePicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The source picture.
Notes: Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

7.9.12 Matrix(x as UInt32, y as UInt32) as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The matrix to use.
Notes: The indexes x and y are 0 based.
(Read and Write computed property)

7.10 class PictureMatrixMBS

7.10.1 class PictureMatrixMBS

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class for matrix operations on a picture.
Notes: Can be used e.g. to sharpen a picture.
Blog Entries

- Better OutOfBoundsException

7.10.2 Methods

7.10.3 close

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

7.10.4 Run as boolean

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the process.
Notes: Returns true on success.

7.10.5 RunRGB(red as boolean, green as boolean, blue as boolean) as boolean

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the process for the given channels.
Notes: Returns true on success.
A few combinations are optimized for faster processing.
Still more optimization is possible.

7.10.6 Properties

7.10.7 DestinationPicture as Picture

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destination picture.
Notes: If this property is nil, a new picture will be placed here inside the Run method.
If you place a picture here, please use one created with New Picture with a 32bit depth.
(Read and Write property)

7.10.8 Displacement as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The displacement value.
Notes: See the example project for details.
(Read and Write property)

7.10.9 MaxX as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum x coordinate to use.
Notes: Just for limiting the working area to a part of the picture.
(Read and Write property)

7.10.10 MaxY as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum y coordinate to use.
Notes: Just for limiting the working area to a part of the picture.
(Read and Write property)

7.10.11 MinX as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum x coordinate to use.
Notes: Just for limiting the working area to a part of the picture.

(Read and Write property)

7.10.12 MinY as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum y coordinate to use.
Notes: Just for limiting the working area to a part of the picture.
(Read and Write property)

7.10.13 ScaleFactor as Double

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: A scaling factor.
Notes: See the example project for details.
(Read and Write property)

7.10.14 SourcePicture as Picture

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The source picture.
Notes: The run method will fail if this picture is not a 32bit deep picture created with New Picture.
(Read and Write property)

7.10.15 Matrix(x as UInt32, y as UInt32) as Integer

Plugin Version: 4.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The matrix used.
Notes: X and Y are in range from 0 to 4.
Values >255 are used for empty cells.
(Read and Write computed property)

7.11 class PictureMinMaxMBS

7.11.1 class PictureMinMaxMBS

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class to find the minimum/maximum pixel values.
Example:

```
dim pic as Picture = LogoMBS(500)
dim m as new PictureMinMaxMBS

if m.FindAll(pic) then
break // check values in debugger
end if
```

Notes: This class offers several Find functions.
Please choose carefully which one you use as it's faster to use e.g. FindRed instead of FindMinRed and FindMaxRed together.

7.11.2 Methods

7.11.3 FindAll(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum and maximum pixels.
Notes: Sets all fields.

7.11.4 FindBlue(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum and maximum blue pixels.
Notes: Sets BlueMaxX, BlueMax, BlueMinX, BlueMinY, BlueMin and BlueMaxY.

7.11.5 FindGreen(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum and maximum green pixels.

Notes: Sets GreenMaxX, GreenMax, GreenMinX, GreenMinY, GreenMin and GreenMaxY.

7.11.6 FindMaxAll(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the maximum pixels.
Notes: Sets RedMaxX, RedMax, RedMaxY, GreenMaxX, GreenMax, GreenMaxY, BlueMaxX, BlueMax and BlueMaxY.

7.11.7 FindMaxBlue(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the maximum blue pixel.
Notes: Sets BlueMaxX, BlueMax and BlueMaxY.

7.11.8 FindMaxGreen(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the maximum green pixel.
Notes: Sets GreenMaxX, GreenMax and GreenMaxY.

7.11.9 FindMaxRed(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the maximum red pixel.
Notes: Sets RedMaxX, RedMax and RedMaxY.

7.11.10 FindMaxSum(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the maximum sum pixel.
Notes: The sum of a pixel is the sum of all color channels of this pixel (red+Sum+blue).
Sets SumMaxX, SumMax and SumMaxY.

7.11.11 FindMinAll(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum pixels.
Notes: Sets RedMinX, RedMin, RedMinY, GreenMinX, GreenMin, GreenMinY, BlueMinX, BlueMin and BlueMinY.

7.11.12 FindMinBlue(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum blue pixel.
Notes: Sets BlueMinX, BlueMin and BlueMinY.

7.11.13 FindMinGreen(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum green pixel.
Notes: Sets GreenMinX, GreenMin and GreenMinY.

7.11.14 FindMinRed(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum red pixel.
Notes: Sets RedMinX, RedMin and RedMinY.

7.11.15 FindMinSum(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum sum pixel.
Notes: The sum of a pixel is the sum of all color channels of this pixel (red+green+blue).
Sets SumMinX, SumMin and SumMinY.

7.11.16 FindRed(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum and maximum red pixels.
Notes: Sets RedMaxX, RedMax, RedMinX, RedMinY, RedMin and RedMaxY.

7.11.17 FindSum(p as picture) as boolean

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Searches for the minimum and maximum sum pixels.
Notes: The sum of a pixel is the sum of all color channels of this pixel (red+Sum+blue).
Sets SumMaxX, SumMax, SumMinX, SumMinY, SumMin and SumMaxY.

7.11.18 Properties

7.11.19 BlueMax as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum blue color value.
Notes: Range: 0 to 255.
(Read and Write property)

7.11.20 BlueMaxX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum blue value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.21 BlueMaxY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum blue value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.22 BlueMin as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum blue color value.
Notes: Range: 0 to 255.
(Read and Write property)

7.11.23 BlueMinX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum blue value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.24 BlueMinY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum blue value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.25 GreenMax as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum green color value.
Notes: Range: 0 to 255
(Read and Write property)

7.11.26 GreenMaxX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum green value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.27 GreenMaxY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum green value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.28 GreenMin as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum green color value.
Notes: Range: 0 to 255
(Read and Write property)

7.11.29 GreenMinX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum green value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.30 GreenMinY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum green value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.31 RedMax as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum red color value.
Notes: Range: 0 to 255
(Read and Write property)

7.11.32 RedMaxX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum red value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.33 RedMaxY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum red value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.34 RedMin as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum red color value.
Notes: Range: 0 to 255
(Read and Write property)

7.11.35 RedMinX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum red value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.36 RedMinY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum red value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.37 SumMax as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximum sum color value.
Notes: sum=red+blue+green
Range: 0 to 765
(Read and Write property)

7.11.38 SumMaxX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum sum value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.39 SumMaxY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the maximum sum value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.11.40 SumMin as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimum sum color value.
Notes: sum=red+blue+green
Range: 0 to 765
(Read and Write property)

7.11.41 SumMinX as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum sum value.
Notes: Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

7.11.42 SumMinY as Integer

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The location of the pixel with the minimum sum value.
Notes: Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

7.12 class PictureReaderMBS

7.12.1 class PictureReaderMBS

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class to read picture data as a memoryblock.
Example:

```
dim pic as Picture = LogoMBS(500)
dim p as PictureReaderMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture reader
p=NewPictureReaderMBS(pic)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

dim sum as Double

for y=0 to h1
// Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

for x=0 to w1

sum = sum + m.UInt8Value(r)
sum = sum + m.UInt8Value(g)
sum = sum + m.UInt8Value(b)

r=r+bpp
g=g+bpp
b=b+bpp
next

next
```

```
// show the sum of all pixels:
MsgBox "Sum with plugin is: "+str(sum)


// now try same in RB code:

dim surface as RGBSurface = pic.RGBSurface
dim c as color

sum = 0.0

for y=0 to h1
for x=0 to w1
c = surface.Pixel(x,y)

sum = sum + c.red
sum = sum + c.Green
sum = sum + c.Blue

next

next

surface = nil

MsgBox "Sum with RB Code is: "+str(sum)
quit
```

Notes: This is the same code the plugin uses to read pictures.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.0fc1
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS Xojo / Real Studio Plugins, version 14.2pr5
- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr8
- MBS REALbasic plug-in 9.6

7.12.2 Methods

7.12.3 Data(Row as Integer) as MemoryBlock

Plugin Version: 10.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memoryblock with the original image data for this row.
Notes: Changes here will be visible in the picture. (except for platforms where a copy is made of the data)
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.
See also:

- 7.12.7 Data as Memoryblock 261

7.12.4 Properties

7.12.5 BlueOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the blue channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.12.6 BytesPerPixel as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Number of bytes per pixel.
Notes: Most times 4, but for some platforms 3.
(Read only property)

7.12.7 Data as Memoryblock

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memoryblock with the original image data.
Notes: Changes here will be visible in the picture. (except for platforms where a copy is made of the data)
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.
Returns nil for console pictures.
(Read only property)
See also:

• 7.12.3 Data(Row as Integer) as MemoryBlock 261

7.12.8 DataCopy as Memoryblock

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies the data for the current picture into a new memoryblock.
Notes: (Read only property)

7.12.9 DataPtr as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memory address where the data is stored.
Notes: Maybe useful for declares.
Returns nil for console pictures.
(Read only property)

7.12.10 GreenOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the green channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.12.11 HasAlphaChannel as Boolean

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether an alpha channel exists.
Notes: (Read only property)

7.12.12 Height as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The height of the image in pixels.
Notes: (Read only property)

7.12.13 Picture as Picture

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The original picture reference.
Notes: (Read only property)

7.12.14 RedOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The platform dependend offset of the red channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.12.15 RowBytes as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The width of an image row in bytes.
Notes: RowBytes can be width*bytesPerPixel, but often it is not.
(Read only property)

7.12.16 Width as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The width of the image in pixels.
Notes: (Read only property)

7.13 class PictureSepiaMBS

7.13.1 class PictureSepiaMBS

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class for doing a sepia effect.

7.13.2 Methods

7.13.3 close

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

7.13.4 Run as boolean

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Runs the picture effect.
Notes: Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimenstions of source and destination must be equal.

For each pixel this method does:

sourcepixel=sourcepicture.pixel(x,y)
r=sourcepixel.red
g=sourcepixel.green
b=sourcepixel.blue

sum = r * RedFactor + g * GreenFactor + b * BlueFactor

r = sum + SepiaColor.red
g = sum + SepiaColor.green
b = sum + SepiaColor.blue

destinationpicture.pixel(x,y) = rgb(r,g,b)

7.13.5 Properties

7.13.6 DestinationPicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destination picture.
Notes: If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

7.13.7 FactorBlue as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The blue factor.
Notes: (Read and Write property)

7.13.8 FactorGreen as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The green factor.
Notes: (Read and Write property)

7.13.9 FactorRed as Double

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The red factor.
Notes: (Read and Write property)

7.13.10 MaxX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal x coordinate to use.
Notes: If 0 the width of the source picture defines this value.
(Read and Write property)

7.13.11 MaxY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The maximal y coordinate to use.
Notes: If 0 the height of the source picture defines this value.
(Read and Write property)

7.13.12 MinX as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal x coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.13.13 MinY as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The minimal y coordinate to use.
Notes: Default is 0.
(Read and Write property)

7.13.14 SepiaBlue as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The sepia color to use.
Notes: Default is 0.
(Read and Write property)

7.13.15 SepiaGreen as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The sepia color to use.
Notes: Default is 0.
(Read and Write property)

7.13.16 SepiaRed as Integer

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The sepia color to use.
Notes: Default is 0.
(Read and Write property)

7.13.17 SourcePicture as Picture

Plugin Version: 4.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: The source picture.
Notes: Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

7.14 class PictureWriterMBS

7.14.1 class PictureWriterMBS

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class to build a picture by filling a memoryblock.
Example:

```
dim p as PictureWriterMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture writer
p=NewPictureWriterMBS(512,512)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

for y=0 to h1
// Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

for x=0 to w1

m.UInt8Value(r)=x\2
m.UInt8Value(g)=y\2
m.UInt8Value(b)=x*y\2

r=r+bpp
g=g+bpp
b=b+bpp
next

next

// Use Render to make a picture object
dim pic as Picture = p.Render
```

Backdrop = pic

Notes: This is the same code the plugin uses to create pictures.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 15.0fc1
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr8
- MBS REALbasic plug-in 9.6

7.14.2 Methods

7.14.3 Data(Row as Integer) as MemoryBlock

Plugin Version: 10.4, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The memoryblock with the original image data for the given row.
Notes: Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.
See also:

- 7.14.8 Data as Memoryblock 270

7.14.4 Render as picture

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Creates and returns a picture for this writer.
Notes: The writer is destroyed with this call, so do not use it any more.
(one picture can be created with one writer currently)

7.14.5 Properties

7.14.6 BlueOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The platform dependend offset of the blue channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.14.7 BytesPerPixel as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Number of bytes per pixel.
Notes: Most times 4, but for some platforms 3.
(Read only property)

7.14.8 Data as Memoryblock

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The memoryblock with the original image data.
Notes: Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Xojo on this memoryblock.
Returns nil for console pictures.
(Read only property)
See also:

- 7.14.3 Data(Row as Integer) as MemoryBlock 269

7.14.9 DataCopy as Memoryblock

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Copies the data for the current picture into a new memoryblock.
Notes: Changes to this memoryblock will not be visible in the rendered picture.
(Read only property)

7.14.10 DataPtr as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The memory address where the data is stored.
Notes: Maybe useful for declares.
Returns nil for console pictures.

(Read only property)

7.14.11 GreenOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The platform dependend offset of the green channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.14.12 HasAlphaChannel as Boolean

Plugin Version: 14.2, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Whether an alpha channel exists.
Example:

```
dim p as PictureWriterMBS = NewPictureWriterMBS(200, 200, true)

MsgBox "Alpha: "+str(p.HasAlphaChannel)

// get pointer to bytes
dim m as MemoryBlock = p.Data

// fill all with 127
m.FillBytesMBS 0, p.RowBytes * p.Height, 127

dim x as Picture = p.Render
Break
```

Notes: (Read only property)

7.14.13 Height as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The height of the image in pixels.
Notes: (Read only property)

7.14.14 Picture as Picture

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The buffer picture reference.
Notes: If the writer uses a RB picture as buffer it is available here.
(depends on the actual implementation for a given platform whether this property is used)
(Read only property)

7.14.15 RedOffset as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The platform dependend offset of the red channel in the RGB data.
Notes: A value between 0 and 3.
(Read only property)

7.14.16 RowBytes as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The width of an image row in bytes.
Notes: RowBytes can be width*bytesPerPixel, but often it is not.
(Read only property)

7.14.17 Width as Integer

Plugin Version: 6.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: The width of the image in pixels.
Notes: (Read only property)

Chapter 8

Icon Service

8.1 Globals

8.1.1 CompositeIconsMBS(ForeGround as IconMBS, BackGround as IconMBS) as IconMBS

Plugin Version: 5.1, Platform: macOS, Targets: Desktop, Console & Web.

Deprecated: This item is deprecated and should no longer be used. **Function:** Combines two icons.
Example:

```
dim i as IconMBS // global

Sub Open()
dim a,b as IconMBS

b=new IconMBS(SpecialFolder.Desktop)
a=new IconMBS(app.ApplicationFileMBS)

i=CompositeIconsMBS(a,b)

End Sub

Sub Paint(g As Graphics)
i.DrawIcon(g,0,0,128,128)
End Sub
```

Notes: Returns nil on any error (e.g. one of the two icons is invalid or nil).
Blog Entries

- MBS Xojo Plugins, version 20.6pr4

8.2 class IconMBS

8.2.1 class IconMBS

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: A class for an icon on Mac OS.
Notes: For Linux, please use LinuxIconMBS module.
Blog Entries

- MBS Plugins updated for Xojo 2019r2
- Removing 32-bit Carbon GUI classes
- IconFamilyMBS class deprecated
- MBS Xojo Plugins, version 17.6pr1
- MBS Xojo / Real Studio Plugins, version 15.4pr3
- MBS Xojo / Real Studio Plugins, version 14.2pr12
- MBS Real Studio Plugins, version 12.1pr2
- Getting icons from Files
- MonkeyBread Software Releases the MBS REALbasic plug-ins 9.2
- MonkeyBread Software Releases the MBS Plugins 8.1

8.2.2 Methods

8.2.3 Constructor(f as folderitem, NoBadge as boolean = false)

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Loads the icon for this file/folder/volume.
Example:

```
// in a paint event:

dim i as new IconMBS(SpecialFolder.Desktop)

i.DrawIcon(g, 0, 0, 128, 128)
```

Notes: The example "GetIcon.rb" shows how to get the file icons.
A custom icon is preferred (ID -16455).

NoBadge can be set to true to have no badges on the icon.
See also:

- 8.2.4 Constructor(type as string, creator as string) 275
- 8.2.5 Constructor(type as string, creator as string, extension as string, mime as string) 275

8.2.4 Constructor(type as string, creator as string)

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Loads the icon for this type and creator code combination.
Example:

```
// in a paint event:

dim i as new IconMBS("FNDR", "MACS")

i.DrawIcon(g, 0, 0, 128, 128)
```

Notes: The example "GetIcon.rb" shows how to get the predefined icons from the system.
See also:

- 8.2.3 Constructor(f as folderitem, NoBadge as boolean = false) 274
- 8.2.5 Constructor(type as string, creator as string, extension as string, mime as string) 275

8.2.5 Constructor(type as string, creator as string, extension as string, mime as string)

Plugin Version: 9.2, Platform: macOS, Targets: Desktop, Console & Web.

Function: Loads the icon base on the given information.
Example:

```
Sub Paint(g As Graphics)
// in a window paint event:

dim i as IconMBS
dim type, creator, extension, mime as string

type=""
```

```
creator=""
extension="jpg"
mime=""

i=new iconmbs(type, creator, extension, mime)
// draws jpeg icon
i.DrawIcon(g,0,0,128,128)

type=""
creator=""
extension=""
mime="video/quicktime"

i=new iconmbs(type, creator, extension, mime)
// draws quicktime movie icon
i.DrawIcon(g,128,0,128,128)

type="TEXT"
creator="MSWD"
extension=""
mime=""

i=new iconmbs(type, creator, extension, mime)
// draws microsoft word text file icon
i.DrawIcon(g,0,128,128,128)

type=""
creator="GKON"
extension="jpg"
mime=""

i=new iconmbs(type, creator, extension, mime)
// draws graphic converter jpeg file icon
i.DrawIcon(g,128,128,128,128)

End Sub
```

Notes: All parameters can be empty strings if you don't know this information.
Requires Mac OS X 10.3 to work properly.
See also:

- 8.2.3 Constructor(f as folderitem, NoBadge as boolean = false) 274

- 8.2.4 Constructor(type as string, creator as string) 275

8.2.6 DrawIconCGContext(CGContextHandle as Integer,x as Integer,y as Integer,width as Integer,height as Integer, align as Integer, transform as Integer, flags as Integer, labelColor as color)

Plugin Version: 8.1, Platform: macOS, Targets: Desktop, Console & Web.

Function: Draws the icon in a CoreGraphics Context.
Example:

```
Function GetIconImage(i as iconmbs, w as Integer, h as Integer) As picture
dim c as new CGPictureContextMBS(w,h)

const DrawNormal=0
const DrawNoImage=2
const DrawNoMask=4
const DrawSelected=&h8000

i.DrawIconCGContext(c.Handle, 0,0,w,h,0,0,DrawNoMask,&c000000)

c.Flush

Return c.CopyPicture
End Function
```

Notes: You must make sure that the CGContext handle you pass in is valid. You can use CGContextMBS class for this and use GetCurrentCGContextMBS or Window.CGContextMBS to get a context. Please note that coordinates have the origin typically on the lower left.

Flags:

DrawNormal	0
DrawNoImage	2
DrawNoMask	4
DrawSelected	32768

Align constants:

Transform constants:

None	0
VerticalCenter	1
Top	2
Bottom	3
HorizontalCenter	4
AbsoluteCenter	5
CenterTop	6
CenterBottom	7
Left	8
CenterLeft	9
TopLeft	10
BottomLeft	11
Right	12
CenterRight	13
TopRight	14
BottomRight	15

8.2.7 GetBackground as IconMBS

Plugin Version: 2.7, Platform: macOS, Targets: Desktop, Console & Web.

Function: If the icon is a composited one, this function returns the icon used for the background.
Notes: Returns nil on any error.
Lasterror ist set.

8.2.8 GetForeground as IconMBS

Plugin Version: 2.7, Platform: macOS, Targets: Desktop, Console & Web.

Function: If the icon is a composited one, this function returns the icon used for the foreground.
Notes: Returns nil on any error.
Lasterror ist set.

8.2.9 IsIconRefMaskEmpty as boolean

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Returns true if the mask of the icon is empty.
Example:

```
dim i as new IconMBS("FNDR", "MACS")

MsgBox str(i.IsIconRefMaskEmpty)
```

None	0
Disabled	1
Offline	2
Open	3
Label1	&h0100
Label2	&h0200
Label3	&h0300
Label4	&h0400
Label5	&h0500
Label6	&h0600
Label7	&h0700
Selected	&h4000
SelectedDisabled	&h4001
SelectedOffline	&h4002
SelectedOpen	&h4003

Notes: Lasterror is set.

8.2.10 PointInIcon(pointx as Integer,pointy as Integer,x as Integer,y as Integer,width as Integer,height as Integer,align as Integer) as boolean

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Tests whether a point is inside the icon's picture.
Notes: The coordinates for pointx/pointy and x/y must be in the same system.

Align constants:

8.2.11 RectInIcon(rectx as Integer,recty as Integer,rectwidth as Integer,rectheight as Integer,x as Integer,y as Integer,width as Integer,height as Integer,align as Integer) as boolean

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Tests whether a rectangle is inside the icon's picture.
Notes: The coordinates for both rectangles must be in the same coordinate system.

Align constants:

None	0
VerticalCenter	1
Top	2
Bottom	3
HorizontalCenter	4
AbsoluteCenter	5
CenterTop	6
CenterBottom	7
Left	8
CenterLeft	9
TopLeft	10
BottomLeft	11
Right	12
CenterRight	13
TopRight	14
BottomRight	15

This call may fail in some RB versions because of the count of parameters.

8.2.12 RetainCount as Integer

Plugin Version: 2.7, Platform: macOS, Targets: Desktop, Console & Web.

Function: How many references to this icon are hold on this Mac.
Example:

```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon

MsgBox str(i.RetainCount)
```

8.2.13 Properties

8.2.14 handle as Integer

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: The handle of this icon in memory.
Example:

```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
```

None	0
VerticalCenter	1
Top	2
Bottom	3
HorizontalCenter	4
AbsoluteCenter	5
CenterTop	6
CenterBottom	7
Left	8
CenterLeft	9
TopLeft	10
BottomLeft	11
Right	12
CenterRight	13
TopRight	14
BottomRight	15

```
MsgBox str(i.handle)
```

Notes: (Read and Write property)

8.2.15 LastError as Integer

Plugin Version: 2.7, Platform: macOS, Targets: Desktop, Console & Web.

Function: The last error code.
Example:

```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon

MsgBox str(i.LastError)
```

Notes: The last function was successfull if lasterror is 0.
If the last function was not available on this machine, the value is set to -1.
Other values are Mac OS error codes.
(Read and Write property)

8.2.16 Release as boolean

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: whether the destructor will release the handle.
Example:

```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon

MsgBox str(i.Release)
```

Notes: (Read and Write property)

8.2.17 valid as boolean

Plugin Version: 2.6, Platform: macOS, Targets: Desktop, Console & Web.

Function: Were the constructors successfull?
Example:

```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon

MsgBox str(i.valid)
```

Notes: (Read and Write property)

Chapter 9

Mac

9.1 Globals

9.1.1 SetDesktopPictureMBS(file as folderitem) as Integer

Plugin Version: 3.3, Platforms: macOS, Windows, Targets: All.

Function: Asks the Finder/Explorer to change the desktop picture.
Notes: File must be a valid folderitem for an existing file to define a new desktop picture.
Returns a Mac OS or Windows error code or -1 if the function is not available.

You can use file=nil to remove the desktop wallpaper on Windows.
Blog Entries

- MBS Plugins updated for Xojo 2019r2

Chapter 10

MemoryBlock

10.1 class Memoryblock

10.1.1 class Memoryblock

Platforms: macOS, Linux, Windows, Targets: All.

Function: Extends Xojo's Memoryblock class.

Chapter 11

Pictures Import and Export

11.1 Globals

11.1.1 BMPStringtoPictureMBS(data as string) as picture

Plugin Version: 8.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads a BMP picture from a string.
Example:

```
dim p as Picture = LogoMBS(500)
dim s as string = p.BMPDataMBS
dim q as Picture = BMPStringtoPictureMBS(s)
window1.Backdrop = q
```

Notes: This function is endian safe and supports 1, 4, 8, 16, 24, 32 bit BMP images.
For 32bit images the alpha value is ignored.
Returns nil on any error.
Only uncompressed BMP files are supported.
Blog Entries

- MBS Real Studio Plugins, version 12.5pr13
- MBS REALbasic Plugins, version 10.6pr9
- MonkeyBread Software Releases the MBS Plugins 8.2

Xojo Developer Magazine

- 21.5, page 74: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

Chapter 12

Screenshot

12.1 Globals

12.1.1 ScreenshotDisplayMBS(index as Integer) as picture

Plugin Version: 3.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the Screenshot from the display with the given index.
Example:

```
Backdrop = ScreenshotDisplayMBS(0)
```

Notes: Index starts at 0 for the main display.
Works on Linux only for first screen.

Plugin version 10.4 added support for multiple displays on Windows.
Blog Entries

- MBS Xojo / Real Studio Plugins, version 16.4pr7
- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr3

12.1.2 ScreenshotFromStringMBS(Width as Integer, Height as Integer, RowBytes as Integer, data as string) as picture

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates the picture from a string returnd by ScreenshotStringMBS.
Example:

```
dim p as Picture
dim s as string

dim w,h,r as Integer

s=ScreenshotStringMBS(w,h,r)

p=ScreenshotFromStringMBS(w,h,r,s)

Backdrop=p
```

Notes: Returns nil on any error.
(for example if width, height and rowwidth doesn't fit together.)

12.1.3 ScreenshotMBS as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a picture of the screen content in screen resolution.
Example:

```
dim p as picture
p=screenshotMBS
```

Notes: For a rectangle only you can use ScreenShotRectMBS.

Plugin Version 7.2 adds Windows Vista Support.
Blog Entries

- MBS Xojo Plugins, version 19.2pr6
- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr3
- MBS Plugins 10.3 Release Notes
- MBS REALbasic Plugins, version 10.3pr9

12.1.4 ScreenshotRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a picture of the screen rectangle in screen resolution.
Example:

```
// write picture of window to desktop
#if TargetMacOS then
const f = 1
#else
dim f as double = screen(0).ScaleFactor
#endif

dim p as Picture = ScreenshotRectMBS(self.left*F, self.top*F, self.Width*F, self.Height*F)
dim ff as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

p.Save(ff, p.SaveAsJPEG)
```

Notes: Improved in Version 3.2 to support multiple displays on Mac OS.

Plugin Version 10.4 adds Windows support.
Coordinates given in pixel on screen, so for High DPI on Windows, you need to multiply them before passing parameters.
Blog Entries

- MBS Xojo Plugins, version 20.3pr2
- MBS Real Studio Plugins, version 11.2pr2
- MBS REALbasic Plugins, version 11.0pr13
- MBS REALbasic Plugins Version 10.4 release notes
- MBS REALbasic Plugins, version 10.4pr3
- MBS REALbasic plug-ins version 9.3

Xojo Developer Magazine

- 7.4, page 8: News

12.1.5 ScreenshotStringDisplayMBS(byref Width as Integer, byref Height as Integer, byref RowBytes as Integer, index as Integer) as string

Plugin Version: 8.6, Platform: macOS, Targets: All.

Function: Returns a picture of the screen content in screen resolution.
Example:

```
dim s as string
dim w,h,r as Integer
dim index as Integer=0

s=ScreenshotStringDisplayMBS(w,h,r, index)
```

Notes: Returns nil on any error.
Use ScreenshotFromStringMBS to get the picture from the string.

12.1.6 ScreenshotStringMBS(byref Width as Integer, byref Height as Integer, byref RowBytes as Integer) as string

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a picture of the screen content in screen resolution.
Example:

```
dim s as string
dim w,h,r as Integer
s=ScreenshotStringMBS(w,h,r)
```

Notes: Returns nil on any error.
Use ScreenshotFromStringMBS to get the picture from the string.

Chapter 13

Twain

13.1 class TwainIdentityMBS

13.1.1 class TwainIdentityMBS

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Provides identification information about a TWAIN entity.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

13.1.2 Methods

13.1.3 Constructor

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The private constructor.

13.1.4 Properties

13.1.5 Id as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: A unique, internal identifier for the TWAIN entity.
Notes: This field is only filled by the Source Manager. Neither an application nor a Source should fill this field. The Source uses the contents of this field to "identify" which application is invoking the operation sent

to the Source.
(Read and Write property)

13.1.6 Manufacturer as String

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: String identifying the manufacturer of the application or Source. e.g. "Aldus".
Notes: (Read and Write property)

13.1.7 ProductFamily as String

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Tells an application that performs device-specific operations which product family the Source supports.
Notes: This is useful when a new Source has been released and the application doesn't know about the particular Source but still wants to perform Custom operations with it. e.g. "ScanMan".
(Read and Write property)

13.1.8 ProductName as String

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: A string uniquely identifying the Source.
Notes: This is the string that will be displayed to the user at Source select-time. This string must uniquely identify your Source for the user, and should identify the application unambiguously for Sources that care. e.g. "ScanJet IIc".
(Read and Write property)

13.1.9 ProtocolMajor as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Major number of latest TWAIN version that this element supports.
Notes: (Read and Write property)

13.1.10 ProtocolMinor as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Minor number of latest TWAIN version that this element supports.
Notes: (Read and Write property)

13.1.11 SupportedGroups as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Supported grosups.
Notes: The application will normally set this field to specify which Data Group(s) it wants the Source Manager to sort Sources by when presenting the Select Source dialog, or returning a list of available Sources. The application sets this prior to invoking a SelectDS operation.

- The application may also set this field to specify which Data Group(s) it wants the Source to be able to acquire and transfer. The application must do this prior to sending the Source its EnableDS operation.
- The Source must set this field to specify which Data Group(s) it can acquire. It will do this in response to a OpenDS.
- Beginning with TWAIN 2.0 the Source Manager reserves the most significant two byes in the SupportedGroups for the Data Flags (&h0001000 to &hFFFF0000).

DF_DSM2–identifies the Source Manager as TWAIN 2.0 compliant DF_APP2 –is set by an Application that is TWAIN 2.0 compliant DF_DS2–is set by a Source that is TWAIN 2.0 compliant
(Read and Write property)

13.1.12 Version as TwainVersionMBS

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The version information.
Notes: (Read and Write property)

13.2 class TwainImageInfoMBS

13.2.1 class TwainImageInfoMBS

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Describes the ”real” image data, that is, the complete image being transferred between the Source and application.
Notes: The Source may transfer the data in a different format–the information may be transferred in ”strips” or ”tiles” in either compressed or uncompressed form. See the TW_IMAGEMEMXFER structure for more information.
The term ”sample” is referred to a number of times in this structure. It holds the same meaning as in the TIFF specification. A sample is a contiguous body of image data that can be categorized by the channel or ”ink color” it was captured to describe. In an R-G-B (Red-Green-Blue) image, such as on your TV or computer's CRT, each color channel is composed of a specific color. There are 3 samples in an R-G-B; Red, Green, and Blue. A C-Y-M-K image has 4 samples. A Grayscale or Black and White image has a single sample.
Note: The value -1 in ImageWidth and ImageLength are special cases. It is possible for a Sourcetonot-knoweitheritsWidthorLength. Applicationsneedtoconsiderthiswhen allocating memory or otherwise dealing with the size of the Image.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

13.2.2 Methods

13.2.3 BitsPerSample(index as Integer) as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: For each sample, the number of bits of information.
Notes: 24-bit R-G-B will typically have 8 bits of information in each sample (8+8+8). Some 8-bit color is sampled at 3 bits Red, 3 bits Green, and 2 bits Blue. Such a scheme would put 3, 3, and 2 into the first 3 elements of this array. The supplied array allows up to 8 samples. Samples are not limited to 8 bits. However, both the application and Source must simultaneously support sample sizes greater than 8 bits per color.

Index from 0 to 7.

13.2.4 Constructor

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The private constructor.

13.2.5 Properties

13.2.6 BitsPerPixel as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The number of bits in each image pixel (or bit depth).
Notes: This value is invariant across the image. 24-bit R-G-B has BitsPerPixel = 24. 40-bit C-M-Y-K has BitsPerPixel=40. 8-bit Grayscale has BitsPerPixel = 8. Black and White has BitsPerPixel = 1.
(Read and Write property)

13.2.7 Compression as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The compression method used to process the data being transferred.
Notes: Default is no compression.
(plugin currently only supports no compression)
(Read and Write property)

13.2.8 ImageLength as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: How tall/long, in pixels, the image to be transferred is.
Notes: If the Source doesn't know, set this field to -1 (hand scanners may do this).
-1 can only be used if the application has set ICAP_UNDEFINEDIMAGESIZE to TRUE.
(the plugin doesn't support undefined image size)
(Read and Write property)

13.2.9 ImageWidth as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: How wide, in pixels, the entire image to be transferred is.
Notes: If the Source doesn't know, set this field to -1 (hand scanners may do this).
-1 can only be used if the application has set ICAP_UNDEFINEDIMAGESIZE to TRUE.
(the plugin doesn't support undefined image size)
(Read and Write property)

13.2.10 PixelType as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: This is the highest categorization for how the data being transferred should be interpreted by the application.
Notes: This is how the application can tell if the data is Black and White, Grayscale, or Color. Currently, the only color type defined is "tri-stimulus", or color described by three characteristics. Most popular color description methods use tri- stimulus descriptors. For simplicity, the constant used to identify tri-stimulus color is called TWPT_RBG, for R-G-B color. There is no default for this value. Fill this field with the appropriate TWPT_xxxx constant.

The plugin does currently only support RGB, GRAY, BW and PALETTE.
(Read and Write property)

13.2.11 Planar as Boolean

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Whether image is planar.
Notes: If SamplesPerPixel >1, indicates whether the samples follow one another on a pixel-by-pixel basis (R-G-B-R-G-B-R-G-B...) as is common with a one-pass scanner or all the pixels for each sample are grouped together (complete group of R, complete group of G, complete group of B) as is common with a three-pass scanner. If the pixel-by-pixel method (also known as "chunky") is used, the Source should set Planar = false. If the grouped method (also called "planar") is used, the Source should set Planar = true.
(Read and Write property)

13.2.12 RowBytes as Integer

Plugin Version: 12.5, Platforms: macOS, Windows, Targets: All.

Function: The number of bytes in a row.
Notes: This is not exactly the value as you may expect as Twain needs some rounding.
(Read and Write property)

13.2.13 SamplesPerPixel as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The number of samples being returned.
Notes: For R-G-B, this field would be set to 3. For C-M-Y-K, 4. For Grayscale or Black and White, 1.
(Read and Write property)

13.2.14 XResolution as Double

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Horizontal resolution.
Notes: In pixels per inch.
(Read and Write property)

13.2.15 YResolution as Double

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: Vertical resolution.
Notes: In pixels per inch.
(Read and Write property)

13.3 class TwainImageLayoutMBS

13.3.1 class TwainImageLayoutMBS

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The class for an image layout.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Real Studio Plugins, version 13.1pr4

13.3.2 Methods

13.3.3 Constructor

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The private constructor.

13.3.4 Properties

13.3.5 Bottom as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The bottom coordinate of the item.
Notes: (Read and Write property)

13.3.6 DocumentNumber as Integer

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The document number.
Notes: (Read and Write property)

13.3.7 FrameNumber as Integer

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The frame number.
Notes: (Read and Write property)

13.3.8 Height as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The height of the item.
Notes: (Read only property)

13.3.9 Left as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The left coordinate of the item.
Notes: (Read and Write property)

13.3.10 PageNumber as Integer

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The page number.
Notes: (Read and Write property)

13.3.11 Right as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The right coordinate of the item.
Notes: (Read and Write property)

13.3.12 Top as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The top coordinate of the item.
Notes: (Read and Write property)

13.3.13 Width as Double

Plugin Version: 13.1, Platforms: macOS, Windows, Targets: All.

Function: The width of the item.
Notes: (Read only property)

13.4 class TwainMBS

13.4.1 class TwainMBS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: The plugin class for scanning with TWAIN compatible scanners.
Notes: Use is like this:

- Declare subclass of TwainMBS so you can get events.
- Create new instance of your subclass and store object in some window/app/module property.
- For Windows call InstallEvent.
- To scan, call Acquire method.
- If driver runs synchronously, a modal window shows and you get back a picture object right away when scanning is done.
- If driver runs asynchronously, it shows a non modal window and you receive events.
- In TransferReady event you can call TransferImage method. In example a timer is triggered so this runs in the window.
- To cleanup, use DisableDS and CloseDS methods.
- We recommend only to have one instance of the TwainMBS object.

When Xojo or Xojo is used (32 bit), we can of course only see and use devices with 32 bit drivers.
Once Xojo will be ported to 64bit, we can only talk to 64bit drivers.

For 64-bit on Windows you can find 64-bit TwainDSM.dll here:
https://github.com/twain/twain-dsm
Blog Entries

- MBS Xojo Plugins, version 21.6pr3
- MBS Xojo / Real Studio Plugins, version 15.2pr8
- MBS Xojo / Real Studio Plugins, version 15.1pr9
- MBS Xojo / Real Studio Plugins, version 15.0pr10
- MBS Xojo / Real Studio Plugins, version 13.5pr8
- MBS Xojo / Real Studio Plugins, version 13.3pr1
- MonkeyBread Software Releases the MBS Real Studio plug-ins in version 13.1
- MBS Real Studio Plugins, version 13.0pr10
- MBS Real Studio Plugins, version 13.0pr7
- MBS Real Studio Plugins, version 12.5pr8

13.4.2 Methods

13.4.3 Acquire(modal as boolean = false, showUI as boolean = true) as picture

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Acquires a new picture.
Notes: Lasterror is set.
Plugin asks for asynchronously operation, so this function returns nil and success in lasterror.
If data source must be used with modal UI, this function returns with picture.

Modal can be true to ask for modal dialog. Seems to be only supported on Mac.

13.4.4 AllDevices as TwainIdentityMBS()

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Returns array with all devices.
Example:

```
dim twain as TwainMBS // your twain object
dim devices() as TwainIdentityMBS = twain.AllDevices
dim found as Boolean
dim NameToFind as string = "MyScanner123"

for each device as TwainIdentityMBS in devices

if device.ProductName = NameToFind then
found = true

// lets use this one
twain.SelectDS(device)

if twain.Lasterror <>0 then
MsgBox "Failed to select "+device.ProductName
else
'MsgBox "OK"
exit
end if
end if
next

if not found then
MsgBox "No scanner found named: "+NameToFind
end if
```

13.4.5 AppIdentity as TwainIdentityMBS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries app identity.
Notes: That's the identity the plugin used to register with twain library.

13.4.6 CanBW as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether device supports black and white pixel type.
Notes: Lasterror is set.

13.4.7 CanGray as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether device supports gray pixel type.
Notes: Lasterror is set.

13.4.8 CanPalette as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether current device supports palette pixel type.
Notes: Lasterror is set.

13.4.9 CanRGB as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether current device supports RGB pixel type.
Notes: Lasterror is set.

13.4.10 CloseDS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Close data source.
Notes: Lasterror is set.

13.4.11 CloseDSM

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Closes the data source manager.
Notes: Lasterror is set.

13.4.12 Constructor(Country as Integer, Language as Integer)

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Initializes Twain engine with given localization.
Notes: Lasterror is set.

13.4.13 DisableDS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Diables data source.
Notes: Lasterror is set.

13.4.14 DontUnload

Plugin Version: 12.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Informs the plugin to not unload the twain library.
Notes: This avoids a crash for some people.

13.4.15 DSIdentity as TwainIdentityMBS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries the details on the data source.
Notes: Lasterror is set.

13.4.16 GetEnumerationCapability(ID as Integer, byref ItemType as Integer, byref Count as Integer, byref CurrentIndex as Integer, byref DefaultIndex as Integer) as Integer()

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries an enum capability.
Example:

```
dim t as TwainMBS // your twain object

// check supported sizes

const ICAP_SUPPORTEDSIZES = &h1122
dim type5 as Integer
dim EnumCount as Integer = 0
dim EnumItemType as Integer = 0
dim EnumCurrentIndex as Integer = 0
dim EnumDefaultIndex as Integer = 0
dim EnumValues() as Integer = t.GetEnumerationCapability(ICAP_SUPPORTEDSIZES, EnumItemType,
EnumCount, EnumCurrentIndex, EnumDefaultIndex)
dim e5 as Integer = t.Lasterror
dim c5 as Integer = t.ConditionCode
```

Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
This should work fine for all integer enum types like boolean, 8, 16 or 32 bit integers.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.17 GetIntegerCapability(ID as Integer, byref Type as Integer) as Integer

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries an integer capability.
Example:

```
dim t as TwainMBS // your twain object

t.OpenDS
```

```
if t.Lasterror <>0 then
MsgBox "Failed to open device: "+str(t.Lasterror)
Return
end if

const CAP_FEEDERENABLED = &h1002
const CAP_FEEDERLOADED = &h1003
const TWRC_FAILURE = 1
const TWCC_CAPUNSUPPORTED = 13

// query before
dim type1 as Integer
dim n1 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type1)
dim e1 as Integer = t.Lasterror
dim c1 as Integer = t.ConditionCode

// set on
t.SetBoolCapability CAP_FEEDERENABLED, true
dim e2 as Integer = t.Lasterror
dim c2 as Integer = t.ConditionCode

// query after
dim type3 as Integer
dim n3 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type3)
dim e3 as Integer = t.Lasterror
dim c3 as Integer = t.ConditionCode

// now query loaded?
dim type4 as Integer
dim n4 as Integer = t.GetIntegerCapability(CAP_FEEDERLOADED, type4)
dim e4 as Integer = t.Lasterror
dim c4 as Integer = t.ConditionCode

if e4 = TWRC_FAILURE AND c4 = TWCC_CAPUNSUPPORTED then
// not supported!
Break
end if
```

Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
This should work fine for all integer types like boolean, 8, 16 or 32 bit integers.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.18 ImageInfo as TwainImageInfoMBS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries information about current image.
Notes: Lasterror is set.

13.4.19 IsDSEnabled as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether data source is enabled.

13.4.20 OpenDS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Opens the data source.

13.4.21 OpenDSM

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Opens Data source Manager.
Notes: Lasterror is set.

13.4.22 ProcessEvents

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

Function: Process events in plugin.
Notes: Only for Windows needed for some Twain drivers. You call it after you run Acquire to let the plugin wait for the events to start the transfer.
When transfer is ready or dialog is cancelled, this method ends.
On Mac OS X or Linux this method does nothing so it's no problem calling it.

13.4.23 SelectDS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Queries dialog to ask the user to select a data source.
Notes: Lasterror is set.
See also:

- 13.4.24 SelectDS(device as TwainIdentityMBS) 310

13.4.24 SelectDS(device as TwainIdentityMBS)

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Selects the given device without dialog.
Example:

```
dim twain as TwainMBS // your twain object
dim devices() as TwainIdentityMBS = twain.AllDevices
dim found as Boolean
dim NameToFind as string = "MyScanner123"

for each device as TwainIdentityMBS in devices

if device.ProductName = NameToFind then
found = true

// lets use this one
twain.SelectDS(device)

if twain.Lasterror <>0 then
MsgBox "Failed to select "+device.ProductName
else
'MsgBox "OK"
exit
end if
end if
next

if not found then
MsgBox "No scanner found named: "+NameToFind
end if
```

Notes: Lasterror is set.
See also:

- 13.4.23 SelectDS 309

13.4.25 SetBoolCapability(ID as Integer, Value as Boolean)

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Sets a capability with boolean.
Example:

```
dim t as TwainMBS // your twain object

t.OpenDS

if t.Lasterror <>0 then
MsgBox "Failed to open device: "+str(t.Lasterror)
Return
end if

const CAP_FEEDERENABLED = &h1002
const CAP_FEEDERLOADED = &h1003
const TWRC_FAILURE = 1
const TWCC_CAPUNSUPPORTED = 13

// query before
dim type1 as Integer
dim n1 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type1)
dim e1 as Integer = t.Lasterror
dim c1 as Integer = t.ConditionCode

// set on
t.SetBoolCapability CAP_FEEDERENABLED, true
dim e2 as Integer = t.Lasterror
dim c2 as Integer = t.ConditionCode

// query after
dim type3 as Integer
dim n3 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type3)
dim e3 as Integer = t.Lasterror
dim c3 as Integer = t.ConditionCode

// now query loaded?
dim type4 as Integer
dim n4 as Integer = t.GetIntegerCapability(CAP_FEEDERLOADED, type4)
dim e4 as Integer = t.Lasterror
dim c4 as Integer = t.ConditionCode

if e4 = TWRC_FAILURE AND c4 = TWCC_CAPUNSUPPORTED then
// not supported!
Break
end if
```

Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a boolean.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.26 SetFloatCapability(ID as Integer, Value as Double)

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Sets a capability with floating point value.
Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a floating point value (FIX32).
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.27 SetInt32Capability(ID as Integer, Value as Int32)

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Sets a capability with 32 bit integer.
Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a 32 bit integer.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.28 SetUInt16Capability(ID as Integer, Value as UInt16)

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Sets a capability with 16 bit integer.
Notes: Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a 16 bit integer.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

13.4.29 SupportsMemoryTransfer as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether the twain data source supports memory transfers.
Notes: As our plugin uses only memory transfers, the source must support this in order to work with our plugin.

13.4.30 TransferImage as picture

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Transfers an image.
Notes: Lasterror is set.
Image data is converted to a normal RGB picture.
Can return nil on any error.
The events TransferStarted, TransferEnded and TransferProgress are called when a transfer is running.

13.4.31 Properties

13.4.32 AutoFeed as Integer

Plugin Version: 13.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether plugin should auto feed (if feeder is enabled).
Notes: Value is -1 if you didn't set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable auto feed. If the scanner does not support auto feeding, the scanner will ignore this setting.
(Read and Write property)

13.4.33 AutomaticBorderDetection as Integer

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether plugin should enable automatic border detection.
Notes: Value is -1 if you didn't set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable auto border detection. If the scanner does not support this feature, the scanner will ignore this setting.
0 = off, 1 = on, -1 = default/undefined.
(Read and Write property)

13.4.34 AutomaticBrightness as Integer

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Enables or disables the Source's Auto-brightness function (if any).
Notes: The plugin will apply this setting on the next scan.
Value is 0 to disable, 1 to enable or -1 if undefined/default.
(Read and Write property)

13.4.35 AutomaticRotate as Integer

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to enable automatic rotation when next scan starts.
Notes: Value is -1 if you didn't set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable automatic rotation. If the scanner does not support this feature, the scanner will ignore this setting.
(Read and Write property)

13.4.36 Brightness as Double

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: The brightness setting to use.
Notes: The plugin will apply this setting on the next scan.
Source should normalize the values into the range. Make sure that a '0' value is available as the Current Value when the Source starts up. If the Source's ¬± range is asymmetric about the '0' value, set range maxima to ¬±1000 and scale homogeneously from the '0' value in each direction. This will yield a positive range whose step size differs from the negative range's step size.
Plugin uses value -10000 for undefined/default.
(Read and Write property)

13.4.37 ConditionCode as Integer

Plugin Version: 14.2, Platforms: macOS, Windows, Targets: Desktop only.

Function: The condition code.
Notes: If error code in Lasterror is 1, this Condition value is set.
(-1 if unknown)

Possible codes:

TWCC_SUCCESS	0	Success
TWCC_BUMMER	1	Failure due to unknown causes
TWCC_LOWMEMORY	2	Not enough memory to perform operation
TWCC_NODS	3	No Data Source
TWCC_MAXCONNECTIONS	4	DS is connected to max possible applications
TWCC_OPERATIONERROR	5	DS or DSM reported error, application shouldn't
TWCC_BADCAP	6	Unknown capability
TWCC_BADPROTOCOL	9	Unrecognized MSG DG DAT combination
TWCC_BADVALUE	10	Data parameter out of range
TWCC_SEQERROR	11	DG DAT MSG out of expected sequence
TWCC_BADDEST	12	Unknown destination Application/Source in DSM_Entry
TWCC_CAPUNSUPPORTED	13	Capability not supported by source
TWCC_CAPBADOPERATION	14	Operation not supported by capability
TWCC_CAPSEQERROR	15	Capability has dependancy on other capability
TWCC_DENIED	16	File System operation is denied (file is protected)
TWCC_FILEEXISTS	17	Operation failed because file already exists.
TWCC_FILENOTFOUND	18	File not found
TWCC_NOTEMPTY	19	Operation failed because directory is not empty
TWCC_PAPERJAM	20	The feeder is jammed
TWCC_PAPERDOUBLEFEED	21	The feeder detected multiple pages
TWCC_FILEWRITEERROR	22	Error writing the file (meant for things like disk full conditions)
TWCC_CHECKDEVICEONLINE	23	The device went offline prior to or during this operation

(Read and Write property)

13.4.38 Contrast as Double

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: The contrast setting to use.
Notes: The plugin will apply this setting on the next scan.
Scale the values available internally into a homogeneous range between -1000 and 1000. Make sure that a '0' value is available as the Current value when the Source starts up. If the Source's ¬± range is asymmetric about the '0' value, set range maxima to ¬±1000 and scale homogeneously from the '0' value in each direction. This will yield a positive range whose step size differs from the negative range's step size.
(Read and Write property)

13.4.39 DiscardBlankPages as Integer

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to have the scanner ask to discard blank pages.
Notes: Value is -1 if you didn't set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable blank pages discarding. If the scanner does not support this feature, the scanner will ignore this setting.
(Read and Write property)

13.4.40 Duplex as Integer

Plugin Version: 13.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to enable duplex when next scan starts.
Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable duplex. If the scanner does not support duplex, the scanner will ignore this setting.
Value is -1 if not set, 0 to disable and 1 to enable.
(Read and Write property)

13.4.41 FeederEnabled as Integer

Plugin Version: 13.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to enable feeder when next scan starts.
Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable feeder. If the scanner does not support the feeder, the scanner will ignore this setting.
Value is -1 if not set, 0 to disable and 1 to enable.
(Read and Write property)

13.4.42 Gamma as Double

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Gamma correction value for the image data.
Notes: The plugin will apply this setting on the next scan.
Default value 2.2. The setting is -10000 if not set.
(Read and Write property)

13.4.43 Highlight as Double

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Specifies which value in an image should be interpreted as the lightest highlight.
Notes: The plugin will apply this setting on the next scan.
All values lighter than this value will be clipped to this value. Whether lighter values are smaller or larger can be determined by examining the Current value of PixelFlavor.
If more or less than 8 bits are used to describe the image, the actual data values should be normalized to fit within the 0-255 range. The normalization need not result in a homogeneous distribution if the original distribution was not homogeneous.

Value can be between 0 and 255.

Value can be between 0 and 255.
Plugin uses value -10000 for undefined/default.
(Read and Write property)

13.4.44 Lasterror as Integer

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: The last error code.
Notes: (Read and Write property)

13.4.45 Orientation as Integer

Plugin Version: 13.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: The orientation for the scanner.
Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable feeder. If the scanner does not support the feeder, the scanner will ignore this setting.

Value can be:

0	0 degree
1	90 degree
2	180 degree
3	270 degree
0	Portrait
3	Landscape

(Read and Write property)

13.4.46 Parent as Variant

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: The parent window.
Notes: Can reference a Window or DesktopWindow object.

(Read and Write property)

13.4.47 PendingTransferCount as Integer

Plugin Version: 13.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: How many pages are pending.
Notes: So when you transfer you can make a loop and run until PendingTransferCount is zero.
PendingTransferCount may be -1 or 65535 for unknown number of pages.
(Read and Write property)

13.4.48 PixelType as Integer

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: The pixel type requested.
Notes: Value can be 0 for BW, 1 for Gray, 2 for RGB, 3 for Palette.
The plugin can request als CMY (4), CMYK (5), YUV (6), YUVK (7) and CIEXYZ (8), but can't currently decode those.

Value is -1 if you didn't set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to use the given pixel type. If the scanner does not support this feature, the scanner will ignore this setting.
(Read and Write property)

13.4.49 ProvideSliceData as Boolean

Plugin Version: 12.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to pass Memoryblock with data with Progress event for new rows arrived.
Notes: (Read and Write property)

13.4.50 ProvideSlicePicture as Boolean

Plugin Version: 12.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Whether to pass picture with Progress event for new rows arrived.
Notes: (Read and Write property)

13.4.51 ResX as Double

Plugin Version: 13.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: The horizontal resolution for scanning.
Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to use this resolution. If the scanner does not support the resolution, the scanner will use the last valid setting.
Use -1 to use the default setting.
(Read and Write property)

13.4.52 ResY as Double

Plugin Version: 13.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: The vertical resolution for scanning.
Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to use this resolution. If the scanner does not support the resolution, the scanner will use the last valid setting.
Use -1 to use the default setting.
(Read and Write property)

13.4.53 Shadow as Double

Plugin Version: 13.5, Platforms: macOS, Windows, Targets: Desktop only.

Function: Specifies which value in an image should be interpreted as the darkest shadow.
Notes: The plugin will apply this setting on the next scan.
All values darker than this value will be clipped to this value.

Whether darker values are smaller or larger can be determined by examining the Current value of PixelFlavor.
Source

If more or less than 8 bits are used to describe the image, the actual data values should be normalized to fit within the 0-255 range. The normalization need not result in a homogeneous distribution if the original distribution was not homogeneous.
(Read and Write property)

13.4.54 DefaultDevice as TwainIdentityMBS

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: Desktop only.

Function: The default device.

Notes: (Read and Write computed property)

13.4.55 Imagelayout as TwainImageLayoutMBS

Plugin Version: 15.0, Platforms: macOS, Windows, Targets: Desktop only.

Function: Get/Set the image layout.
Notes: Lasterror is set. DataSource must be open.
(Read and Write computed property)

13.4.56 Events

13.4.57 CloseRequest

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: .

Function: Closes a request.
Notes: Lasterror is set.

13.4.58 TransferEnded(pic as picture, ImageInfo as TwainImageInfoMBS, sliced as boolean, layout as TwainImageLayoutMBS)

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: .

Function: The transfer finished.
Notes: Pic: The final picture. Nil if sliced is true.
ImageInfo: Details about the image format.
Sliced: Whether the image was transferred in slices.

13.4.59 TransferProgress(percent as Double, dataRead as Int64, DataSize as Int64, ImageInfo as TwainImageInfoMBS, NewDataSize as Integer, NewData as Memoryblock, NewPicture as Picture, layout as TwainImageLayoutMBS, Columns as Integer, Rows as Integer, XOffset as Integer, YOffset as Integer)

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: .

Function: The progress event.
Notes: Percent: The percent value (0 to 100) of the progress.
dataRead: Number of bytes read.

DataSize: Total size of image in bytes.
ImageInfo: Details about the image format.
NewDataSize: The number of bytes received.
NewData: The memoryblock for the new data. Use NewDataSize to copy right amount of data as this memoryblock has no size value set.
NewPicture: The picture for the new data.
Layout: The image layout.
Columns: Number of columns got in this slice.
Rows: Number of rows got in this slice.
XOffset: Column start for this slice.
YOffset: Row start for this slice.

NewData is only valid if you set ProvideSliceData to true.
NewPicture is only valid if you set ProvideSlicePicture to true.

13.4.60 TransferReady

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: .

Function: Called to tell you that a transfer is waiting.
Notes: The user pressed button to start scan.
Please call TransferImage method when you are ready.

13.4.61 TransferStarted(DataSize as Int64, ImageInfo as TwainImageInfoMBS, layout as TwainImageLayoutMBS) as boolean

Plugin Version: 12.3, Platforms: macOS, Windows, Targets: .

Function: A transfer started.
Notes: DataSize total numnber of bytes expected.
ImageInfo: details on the image we receive.

You can return true to have the plugin not created one big picture.
A 42 inch scanner normally creates huge images, so you only can process them in slices.

13.4.62 Constants

Country codes

Constant	Value	Description
TWCY_AFGHANISTAN	1001	
TWCY_ALBANIA	355	
TWCY_ALGERIA	213	
TWCY_AMERICANSAMOA	684	
TWCY_ANDORRA	033	
TWCY_ANGOLA	1002	
TWCY_ANGUILLA	8090	
TWCY_ANTIGUA	8091	
TWCY_ARGENTINA	54	
TWCY_ARMENIA	374	
TWCY_ARUBA	297	
TWCY_ASCENSIONI	247	
TWCY_AUSTRALIA	61	
TWCY_AUSTRIA	43	
TWCY_AZERBAIJAN	994	
TWCY_BAHAMAS	8092	
TWCY_BAHRAIN	973	
TWCY_BANGLADESH	880	
TWCY_BARBADOS	8093	
TWCY_BELARUS	375	
TWCY_BELGIUM	32	
TWCY_BELIZE	501	
TWCY_BENIN	229	
TWCY_BERMUDA	8094	
TWCY_BHUTAN	1003	
TWCY_BOLIVIA	591	
TWCY_BOSNIAHERZGO	387	
TWCY_BOTSWANA	267	
TWCY_BRAZIL	55	
TWCY_BRITAIN	6	
TWCY_BRITVIRGINIS	8095	
TWCY_BRUNEI	673	
TWCY_BULGARIA	359	
TWCY_BURKINAFASO	1004	
TWCY_BURMA	1005	
TWCY_BURUNDI	1006	
TWCY_CAMAROON	237	
TWCY_CAMBODIA	855	
TWCY_CANADA	2	
TWCY_CAPEVERDEIS	238	
TWCY_CAYMANIS	8096	
TWCY_CENTRALAFREP	1007	
TWCY_CHAD	1008	
TWCY_CHILE	56	
TWCY_CHINA	86	
TWCY_CHRISTMASIS	1009	
TWCY_COCOSIS	1009	
TWCY_COLOMBIA	57	
TWCY_COMOROS	1010	
TWCY_CONGO	1011	
TWCY_COOKIS	1012	
TWCY_COSTARICA	506	
TWCY_CROATIA	385	
TWCY_CUBA	005	
TWCY_CYPRUS	357	
TWCY_CZECHOSLOVAKIA	42	
TWCY_CZECHREPUBLIC	420	
TWCY_DENMARK	45	

Language codes

Constant	Value	Description
TWLG_AFRIKAANS	14	
TWLG_ALBANIA	15	
TWLG_ARABIC	16	
TWLG_ARABIC_ALGERIA	17	
TWLG_ARABIC_BAHRAIN	18	
TWLG_ARABIC_EGYPT	19	
TWLG_ARABIC_IRAQ	20	
TWLG_ARABIC_JORDAN	21	
TWLG_ARABIC_KUWAIT	22	
TWLG_ARABIC_LEBANON	23	
TWLG_ARABIC_LIBYA	24	
TWLG_ARABIC_MOROCCO	25	
TWLG_ARABIC_OMAN	26	
TWLG_ARABIC_QATAR	27	
TWLG_ARABIC_SAUDIARABIA	28	
TWLG_ARABIC_SYRIA	29	
TWLG_ARABIC_TUNISIA	30	
TWLG_ARABIC_UAE	31	
TWLG_ARABIC_YEMEN	32	
TWLG_ASSAMESE	87	
TWLG_BASQUE	33	
TWLG_BENGALI	88	
TWLG_BIHARI	89	
TWLG_BODO	90	
TWLG_BULGARIAN	35	
TWLG_BYELORUSSIAN	34	
TWLG_CATALAN	36	
TWLG_CHINESE	37	
TWLG_CHINESE_HONGKONG	38	
TWLG_CHINESE_PRC	39	
TWLG_CHINESE_SIMPLIFIED	41	
TWLG_CHINESE_SINGAPORE	40	
TWLG_CHINESE_TAIWAN	42	
TWLG_CHINESE_TRADITIONAL	43	
TWLG_CROATIA	44	
TWLG_CZECH	45	
TWLG_DAN	0	
TWLG_DANISH	0	
TWLG_DOGRI	91	
TWLG_DUT	1	
TWLG_DUTCH	1	
TWLG_DUTCH_BELGIAN	46	
TWLG_ENG	2	
TWLG_ENGLISH	2	
TWLG_ENGLISH_AUSTRALIAN	47	
TWLG_ENGLISH_CANADIAN	48	
TWLG_ENGLISH_IRELAND	49	
TWLG_ENGLISH_NEWZEALAND	50	
TWLG_ENGLISH_SOUTHAFRICA	51	
TWLG_ENGLISH_UK	52	
TWLG_ENGLISH_USA	13	
TWLG_ESTONIAN	53	
TWLG_FAEROESE	54	
TWLG_FARSI	55	
TWLG_FCF	3	
TWLG_FIN	4	
TWLG_FINNISH	4	
TWLG_FRENCH	5	

Pixel Format Constants

Constant	Value	Description
TWPT_BW	0	Black & White
TWPT_CIEXYZ	8	CIEXYZ
TWPT_CMY	4	CMY
TWPT_CMYK	5	CMYK
TWPT_GRAY	1	Grayscale
TWPT_PALETTE	3	Indexed color Palette
TWPT_RGB	2	RGB
TWPT_YUV	6	YUV
TWPT_YUVK	7	YUVK

Error codes

Constant	Value	Description
TWRC_CANCEL	3	Operation has been canceled.
TWRC_CHECKSTATUS	2	Intended for use with Capability and ImageLayout. Operation failed to com pletely perform the desired operation. For example, setting Brightness to when its range is -1000 to 1000 with a step of 200. The data source may op to set the value to 0 and return this status. The application should confirm its last setting, if it depends on getting th exact value it requested.
TWRC_DATANOTAVAILABLE	9	Intended for use with extended ImageInfo. There is no data available for th requested item. Scanning may continue. The decision to continue with scanning is at the di cretion of the application, depending on which field reported this status.
TWRC_DSEVENT	4	Intended for use with DAT_EVENT. The data source processed the event. The application must not take any further action on this message.
TWRC_ENDOFLIST	7	Intended for use with DAT_IDENTITY and DAT_FILESYSTEM. There are no more items to enumerate in this list. If a call is needed to clos the list, it must be called next.
TWRC_FAILURE	1	May be returned by any operation. An error has occurred. The application must call status functions, and refer to the condition code fo more information.
TWRC_INFONOTSUPPORTED	8	Intended for use with DAT_EXTIMAGEINFO. The requested TWEI_ data either not supported by this data source, or is not supported for this particula image. Scanning may continue. The decision to continue with scanning is at the di cretion of the application, depending on which field reported this status.
TWRC_NOTDSEVENT	5	Intended for use with DAT_EVENT. The data source did not process th event. The application passes the message to its own dialogs.
TWRC_SUCCESS	0	Operation was successful. The application continues as normal.
TWRC_XFERDONE	6	Intended for use with the Image Transfer operations. The image has been full transferred. The application must be in state 7. It should call GetImageInfo, if it needs t collect metadata for this image.

13.5 class TwainVersionMBS

13.5.1 class TwainVersionMBS

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

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

13.5.2 Methods

13.5.3 Constructor

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The private constructor.

13.5.4 Properties

13.5.5 Country as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The primary country where your Source or application is intended to be distributed.
Notes: e.g. Germany.
(Read and Write property)

13.5.6 Info as String

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: General information string - fill in as needed.
Notes: e.g. "1.0b3 Beta release".
(Read and Write property)

13.5.7 Language as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The primary language for your Source or application.
Notes: e.g. TWLG_GER.
(Read and Write property)

13.5.8 MajorNum as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: This refers to your application or Source's major revision number.
Notes: e.g. The 2 in "version 2.1".
(Read and Write property)

13.5.9 MinorNum as Integer

Plugin Version: 12.2, Platforms: macOS, Windows, Targets: All.

Function: The incremental revision number of your application or Source.
Notes: e.g. The 1 in "version 2.1".
(Read and Write property)

Chapter 14

Window

14.1 class DesktopWindow

14.1.1 class DesktopWindow

Plugin Version: 21.5, Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Extends Xojo's Window Class.
Example:

```
window1.HasNoTitleBarMBS = true
```

Notes: In Xojo 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

14.1.2 Methods

14.1.3 ScreenshotWindowMBS as picture

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

Function: Returns the content of the window buffer on Mac OS X.
Example:

```
dim p as Picture
p=mainwindow.screenshotWindowMBS
```

Notes: Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Xojo 2006 or newer, please add a self. on front of the method call in case you want to use the method on the current window.

14.1.4 ScreenshotWindowRectMBS(left as integer, top as integer, width as integer, height as integer) as picture

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

Function: Returns a part of the content of the window buffer on Mac OS X.
Example:

```
dim p as picture
p=mainwindow.ScreenshotWindowRectMBS(100,100,200,200)
```

Notes: Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Xojo 2006 or newer, please add a self. on front of the method call in case you want to use the method on the current window.

14.2 class Window

14.2.1 class Window

Platforms: macOS, Linux, Windows, Targets: Desktop only.

Function: Extends Xojo's Window Class.
Example:

```
window1.HasNoTitleBarMBS = true
```

Notes: In Xojo 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

14.2.2 Methods

14.2.3 ScreenshotWindowMBS as picture

Platform: macOS, Targets: Desktop only.

Function: Returns the content of the window buffer on Mac OS X.
Example:

```
dim p as Picture
p=mainwindow.screenshotWindowMBS
```

Notes: Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Xojo 2006 or newer, please add a self. on front of the method call in case you want to use the method on the current window.
Blog Entries

- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr2
- MBS Plugins 11.1 Release notes
- MBS Real Studio Plugins, version 11.1pr8

14.2.4 ScreenshotWindowRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

Plugin Version: 3.2, Platform: macOS, Targets: Desktop only.

Function: Returns a part of the content of the window buffer on Mac OS X.
Example:

```
dim p as picture
p=mainwindow.ScreenshotWindowRectMBS(100,100,200,200)
```

Notes: Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Xojo 2006 or newer, please add a self. on front of the method call in case you want to use the method on the current window.
Blog Entries

- MBS Xojo Plugins, version 22.2pr2
- MBS Plugins 11.1 Release notes
- MBS Real Studio Plugins, version 11.1pr8
- Tipp of the day: Blank HTMLViewer

Chapter 15

Windows

15.1 module WindowsBitmapMBS

15.1.1 module WindowsBitmapMBS

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Windows bitmap handling module.
Notes: In this module we collect a few useful conversion functions for handling bitmap in Xojo.
Please contact us if you have idea for new function.
Blog Entries

- MBS Releases the MBS Xojo / Real Studio plug-ins in version 15.1

Xojo Developer Magazine

- 13.4, page 10: News

15.1.2 Methods

15.1.3 BitmapToDIB(HBitmap as Ptr, HPalette as Ptr = nil) as Ptr

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Converts a HBitmap to a HDIB.
Notes: HPalette is optional a color palette handle for images with 8 bit or less per pixel.

15.1.4 DeleteBitmap(HBitmap as Ptr)

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Frees a HDIB or HBITMAP.
Notes: You need to free the images you allocate to make sure memory is released.

15.1.5 DIBToBitmap(HDIB as Ptr, HPalette as Ptr = nil) as Ptr

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Converts a HDIB to HBitmap.
Notes: HPalette is optional a color palette handle for images with 8 bit or less per pixel.
Returns nil in case of no memory.

15.1.6 DuplicateHBitmap(HBitmap as Ptr, Width as Integer, Height as Integer) as Ptr

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Duplicates a bitmap handle.
Notes: Please use DeleteBitmap later to free bitmap.

15.1.7 HBitmapInfo(HBitmap as Ptr, byref Width as Integer, byref Height as Integer, byref WidthBytes as Integer, byref Planes as Integer, byref BitsPixel as Integer) as Boolean

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Queries details about a bitmap handle.
Notes: Returns true on success.

15.1.8 HBitmapToPicture(HBitmap as Ptr, UsingDraw as boolean = false) as Picture

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Converts a HBITMAP to Xojo picture.
Notes: If UsingDraw is true, the plugin creates a new HBitmap and draws picture inside.
Else if UsingDraw is false, the plugin copies picture and mask into a new picture.

UsingDraw with false works only for 24 or 32 bit images with one plane.
See also:

- 15.1.9 HBitmapToPicture(HBitmap as Ptr, Width as Integer, Height as Integer) as Picture 335

15.1.9 HBitmapToPicture(HBitmap as Ptr, Width as Integer, Height as Integer) as Picture

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Converts a HBITMAP to Xojo picture.
Notes: Draws the HBitmap in a new picture of the given size.
This method can be used to resize the bitmap on the fly while drawing.
See also:

- 15.1.8 HBitmapToPicture(HBitmap as Ptr, UsingDraw as boolean = false) as Picture 334

15.1.10 PictureToHBitmap(Pic as Picture) as Ptr

Plugin Version: 15.1, Platform: Windows, Targets: All.

Function: Queries HBitmap of a picture.
Notes: As Xojo picture's are internally HBitmaps, the plugin returns the handle of the picture.
No copy is made and you should not free the image. If you need a copy, please use DuplicateHBitmap function.

Please use DeleteBitmap later to free bitmap.

Chapter 16

List of Questions in the FAQ

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Chapter 17

The FAQ

17.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):
Example:

```
Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.

// Examples:
// timeInSecs = 90, padHours = true; returns "00:01:30"
// timeInSecs = 1, padHours = false, padMinutes = true; returns "00:01"
// timeInSecs = 3601, padMinutes = false; returns "01:00:01"

dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string

hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60

if hours = 0 then
if padHours then
hoursString = "00:"
else
hoursString = ""
end if
```

```
else
hoursString = Format(hours, "##\:")
end if
if minutes = 0 then
if hours <>0 or padMinutes then
minutesString = "00:"
else
minutesString = ""
end if
else
minutesString = Format(minutes, "00\:")
end if

return hoursString + minutesString + Format(seconds, "00")
End Function
```

Notes: (from the rb mailinglist)

17.0.2 Do you have plugins for Android?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Since there is no plugin SDK for Android, we have no way to make a plugin for Android.
Notes: We support macOS, Windows, Linux and iOS.

17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use functions from NSColor to get proper highlight color in RGB:
Example:

```
Function ProperHighlightColor(active as Boolean) As Color
#if TargetCocoa
Dim theColor As NSColorMBS
If active Then
theColor = NSColorMBS.alternateSelectedControlColor
Else
theColor = NSColorMBS.secondarySelectedControlColor
End If

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibrate-
```

```
dRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
#else
return HighlightColor
#endif
End Function
```

Notes: As you see we convert color to Calibrated RGB for best results.
See also:

- 17.0.4 How to catch delete key? 349
- 17.0.5 How to convert cmyk to rgb? 350
- 17.0.6 How to delete a folder? 351
- 17.0.7 How to detect if CPU if 64bit processor? 352
- 17.0.8 How to query variant type string for a variant? 353
- 17.0.9 How to refresh a htmlviewer on Windows? 354

17.0.4 How to catch delete key?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code in keydown event catches delete or backspace keys.
Example:

```
Function KeyDown(Key As String) As Boolean
if asc(key) = 8 or asc(key) = 127 then
MsgBox "Delete"
Return true
end if
End Function
```

See also:

- 17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 348

- 17.0.5 How to convert cmyk to rgb? 350
- 17.0.6 How to delete a folder? 351
- 17.0.7 How to detect if CPU if 64bit processor? 352
- 17.0.8 How to query variant type string for a variant? 353
- 17.0.9 How to refresh a htmlviewer on Windows? 354

17.0.5 How to convert cmyk to rgb?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

The following is the code to convert cmyk values to an RGB color datatype.
It's just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :)
Example:

```
Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color
// converts c,m,y,k values (0-100) to color data type RGB
// place this in a method. Supply C,M,Y,K values-
// it returns color datatype


dim color_RGB as color
dim r, g, b as Integer

r=255-round(2.55*(c+k))
if r<0 then
r=0
end if
g=255-round(2.55*(m+k))
if g<0 then
g=0
end if
b=255-round(2.55*(y+k))
if b<0 then
b=0
end if

color_RGB=RGB(r,g,b)

return color_RGB

End Function
```

Notes:

(from the rb mailinglist)
See also:

- 17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 348
- 17.0.4 How to catch delete key? 349
- 17.0.6 How to delete a folder? 351
- 17.0.7 How to detect if CPU if 64bit processor? 352
- 17.0.8 How to query variant type string for a variant? 353
- 17.0.9 How to refresh a htmlviewer on Windows? 354

17.0.6 How to delete a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

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
fo.delete
else ' file
```

```
fo.Delete
end if
next

f.Delete
End Sub
```

See also:

- 17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 348
- 17.0.4 How to catch delete key? 349
- 17.0.5 How to convert cmyk to rgb? 350
- 17.0.7 How to detect if CPU if 64bit processor? 352
- 17.0.8 How to query variant type string for a variant? 353
- 17.0.9 How to refresh a htmlviewer on Windows? 354

17.0.7 How to detect if CPU if 64bit processor?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Via CPUID you can ask CPU:
Example:

```
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
MsgBox "64-bit CPU"
else
MsgBox "32-bit CPU"
end if
```

Notes: Should work on all intel compatible CPUs.
See also:

- 17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 348
- 17.0.4 How to catch delete key? 349
- 17.0.5 How to convert cmyk to rgb? 350
- 17.0.6 How to delete a folder? 351
- 17.0.8 How to query variant type string for a variant? 353
- 17.0.9 How to refresh a htmlviewer on Windows? 354

17.0.8 How to query variant type string for a variant?

Plugin Version: 20.5, Platforms: macOS, Linux, Windows.

Answer: The following example function returns type string for variant.
Example:

```
Public Function VariantTypeString(v as Variant) as string
// Xojo's VarType doesn't know Unsigned integers
'Dim type As Integer = VarType(v)

// MBS VarType can detect unsigned integer
Dim type As Integer = GetVariantTypeMBS(v)

Dim IsArray As Boolean = BitwiseAnd(type, Variant.TypeArray) = Variant.TypeArray

// type without array
type = BitwiseAnd(type, Bitwise.OnesComplement(Variant.TypeArray))

// build a dictionary to map types on first call
Static TypeMap As Dictionary
If TypeMap = Nil Then
TypeMap = New Dictionary
TypeMap.Value(Variant.TypeBoolean) = "Boolean"
TypeMap.Value(Variant.TypeCFStringRef) = "CFStringRef"
TypeMap.Value(Variant.TypeColor) = "Color"
TypeMap.Value(Variant.TypeCString) = "CString"
TypeMap.Value(Variant.TypeCurrency) = "Currency"
TypeMap.Value(Variant.TypeDate) = "Date"
TypeMap.Value(Variant.TypeDateTime) = "DateTime"
TypeMap.Value(Variant.TypeDouble) = "Double"
TypeMap.Value(Variant.TypeInt32) = "Int32"
TypeMap.Value(Variant.TypeInt64) = "Int64"
TypeMap.Value(Variant.TypeInteger) = "Integer"
TypeMap.Value(Variant.TypeNil) = "Nil"
TypeMap.Value(Variant.TypeObject) = "Object"
TypeMap.Value(Variant.TypeOSType) = "OSType"
TypeMap.Value(Variant.TypePString) = "PString"
TypeMap.Value(Variant.TypePtr) = "Ptr"
TypeMap.Value(Variant.TypeSingle) = "Single"
TypeMap.Value(Variant.TypeString) = "String"
TypeMap.Value(Variant.TypeStructure) = "Structure"
TypeMap.Value(Variant.TypeText) = "Text"
TypeMap.Value(Variant.TypeWindowPtr) = "WindowPtr"
TypeMap.Value(Variant.TypeWString) = "WString"

// MBS extra types
TypeMap.Value(Variant.TypeInt32+100) = "UInt32"
TypeMap.Value(Variant.TypeInt64+100) = "UInt64"
```

```
End If

// lookup type

#if DebugBuild then
If Not TypeMap.HasKey(type) Then
Break // missing type
End If
#endif

If IsArray Then
Return "Array of " + TypeMap.Lookup(type,"?")
Else
Return TypeMap.Lookup(type,"?")
End If
End Function
```

See also:

- 17.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 348
- 17.0.4 How to catch delete key? 349
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17.0.9 How to refresh a htmlviewer on Windows?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can ask the browser to reload the website with this code line:
Example:

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

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17.0.10 Is there an example for vector graphics in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this example inside the paint event of a window:
Example:

```
dim v as Group2D
dim r as RectShape
dim s as StringShape

const pi=3.14

s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0

r=new RectShape

r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50

v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150

g.DrawObject v
```

17.0.11 Picture functions do not preserve resolution values?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the picture functions return pictures with no/default resolution values.
Example:

```
dim l as Picture = LogoMBS(500)

l.HorizontalResolution = 300
l.VerticalResolution = 300

dim r as Picture = l.Rotate90MBS

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)

r.HorizontalResolution = l.HorizontalResolution
r.VerticalResolution = l.VerticalResolution

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

Notes: So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can't really set this easily from plugin code.

17.0.12 A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Fill a memoryblock like this:
Example:

```
Dim MB As Memoryblock
MB = NewMemoryBlock(8)
MB.Short(0) = window1.Top
MB.Short(2) = window1.Left
MB.Short(4) = window1.Height+window1.Top // bottom
MB.Short(6) = window1.Width+window1.Left // right
```

17.0.13 API client not supported?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you get this exception message on SQLConnectionMBS.Connect, we may have a problem.
Notes: First case is that the given thing is not supported (e.g. MS SQL directly on Mac).
Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

17.0.14 Can I access Access Database with Java classes?

Plugin Version: all, Platform: Windows.

Answer: You can use ucanaccess to access databases created with Microsoft
Example:

```
dim options(-1) as string

// load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count
dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <>Nil and f.Exists Then
libjs.append f.NativePath+";"
End If
Next

// now init virtual machine
dim librery as string = Join(libjs, "")
dim vm as new JavaVMMBS(librery)

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

17.0.15 Can I create PDF from Xojo Report using DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, we have a graphics class integration for DynaPDF.
Notes: Since MBS Plugin in version 19.2, we can integrate reports with Xojo.

17.0.16 Can I use AppleScripts in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Example:

```
dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

// shows something like "My Application.fcgi.debug"
```

Notes: This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.

17.0.17 Can I use graphics class with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sorry, no. We can't provide a graphics subclass from plugin.
Notes: The is a feature request to allow graphics subclasses:
Feedback case 11391: feedback://showreport?report_id=11391

17.0.18 Can I use sockets on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Notes: You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCPSocket, EasyUDPSocket, AutoDiscovery, our Bonjour classes or our CURL* classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using SMTPSocket may be a good idea for sending emails from the server like notifications.

17.0.19 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our ChartDirector plugin works just fine on the Xojo Web Edition.
Example:

```
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are 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(&hFFFFFF)

// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)

// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)

dim t as CDTextBoxMBS = c.setLabelStyle("arialbd.ttf", 10, &h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.soft-
Lighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)

// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, &hbbffffff, 0)

// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle "arialbd.ttf",18

dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster

ImageView1.Picture=wp
```

Notes: Be aware that our plugin produces pictures for you, which you assign to ImageViews. Tranfserring 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.

17.0.20 Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our DynaPDF plugin works just fine on the Xojo Web Edition.
Notes: PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Xojo Web Edition.

17.0.21 Can I use your plugin controls on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: No.

17.0.22 Can you get an unique machine ID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There is nothing like an unique machine ID.
Notes: 1:
You can use the MAC IDs of the network interfaces.
This can be changed by the user with software tools.
And the list of network interfaces changes if user reorder the interfaces.

2:
You can use the system folder creation date/time.
This may stay equal after cloning machines or after migration to new PC.

3:
You can use the Mac Serialnumber.
Mac only and it can happen that a Mac does not have a serial number.

4:
You can use the x86 CPU ID.
This is x86 CPU only and does not avoid running on the same CPU in different PCs.

17.0.23 ChartDirector: Alignment Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Alignment Specification
Notes: In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using TextBox.setAlignment.

The ChartDirector API defines several constants for the alignment options.

Constant	Value	Description
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.

17.0.24 ChartDirector: Color Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Color Specification
Notes: Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports col-

ors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports ”dynamic” colors. A dynamic color is a color that changes depending on the position of the pixels. The ”dynamic” colors that ChartDirector supports include ”pattern colors”, ”metal colors”, ”gradient colors”, ”zone colors” and ”dash line colors”.

ChartDirector supports specifying colors indirectly using ”palette colors”. When a ”palette color” is used, the color is specified as an index to a palette. The actual color is looked up from the palette.ARGB Color
ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AARRGGBB, 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 all at. 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 looks shiny and metallic. ChartDirector supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using CDBaseChartMBS.metalColor, CDBaseChartMBS.goldColor and CDBaseChartMBS.silverColor. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.Gradient Color
A gradient color is a color that changes progressively across a direction.

Gradient colors are created using BaseChart.gradientColor, BaseChart.gradientColor2, DrawArea.gradientColor and DrawArea.gradientColor2. The gradientColor method creates a 2-point gradient color that changes from color A to color B. The gradientColor2 method creates a multi-point gradient colors that changes from color A to B to C ....

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to DrawArea.gradientColor2 for details.Dash Line Colors
A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using BaseChart.dashLineColor and DrawArea.dashLineColor. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any ChartDirector API that expects a color as its input.Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using Layer.xZoneColor, Layer.yZoneColor, XYChart.xZoneColor or XYChart.yZoneColor.Palette Colors
Palette colors are colors of the format FFFFnnnn, where the least significant 16 bits (nnnn) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by

looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

ConstantValueDescription

Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.

ConstantDescription

17.0.25 ChartDirector: Font Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

Answer: ChartDirector: Font Specification
Notes: Font Name
In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information
In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location
ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the " [windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the " [windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at
http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355
is highly recommended. Please refer to
http://www.microsoft.com/typography/faq/faq8.htm
on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "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 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.

17.0.26 ChartDirector: Mark Up Language

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Mark Up Language
Notes: ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text.Font Styles
You can change the style of the text by using CDML tags. For example, the line:

<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
will result in the following text rendered:

In general, all tags in CDML are enclosed by <* and *>. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include <* in text without being interpreted as CDML tags, use «* as the escape sequence.

The following table describes the supported font style attributes in CDML. See Font Specification for details on various font attributes.

AttributeDescription

Set the following text to be in superscript style. This attribute does not need to have a value. (You may use ”super” as the attribute instead of ”super=1”.)

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.

xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

section. You may use <*/font*>to terminate a style section, which will restore the font styles to the state before the style section.Blocks and Lines
In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("\n") or with <*br*>. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO<
will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using <*block*>as the start tag and

<*/*>as the end tag.

When a block ends, font styles will be restored to the state before entering the block.Embedding Images
CDML supports embedding images in text using the following syntax:

<*img=my_image_file.png*>
where my_image_file.png is the path name of the image file.

For example, the line:

<*size=20*>A <*img=sun.png*>day
will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath or DrawArea.setSearchPath on the directory that ChartDirector will search for the file.

The <*img*>tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and height.Blocks Attributes
CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the <*block*>tag to control the alignment and orientation of the sub-blocks. The <*img=my_image_file.png*>is treated as a block for layout purposes.

For example, the line:

<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
will result in the following text rendered:

The the above starts <*block,valign=absmiddle*>which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside <*block*>tag:

AttributeDescription

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign	The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

17.0.27 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Parameter Substitution and Formatting
Notes: ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.
Format Strings
In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

" { label } ({ percent } %)"

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

" { label } : US$ { value | 2 } K ({ percent } %)"

The sector label will then become something like "ABC: US$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

"USD { value } (Euro { = { value } *0.9 })"

In the above, " { value } " will be substituted with the actual value of the sector. The expression " { = { value } *0.9 } " will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "%" (modulo) and "^" (exponentiation). Operators "*", "/", "%", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers
The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers
The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis
The following table describes the parameters available for pie charts.

Number Formatting
For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2,. } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

{ [param] | [a] [b] [c] [d] }

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting
For parameters that are dates/times, the formatting options can be specified using the following syntax:

{ [param] | [datetime_format_string] }

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' } '. (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format { value | mmm '<*color=dd0000*>'yyyy } will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*>is a CDML tag to specify red text color). Note that the <*color=dd0000*>tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.
Escaping URL/HTML/CDML characters
Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '&' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "%XX" (eg. "?" will become "%3F"). After that, it will modify HTML special characters to the HTML escape format "&#nn;" (eg. ">" will become ">".). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } " and { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

17.0.28 ChartDirector: Shape Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Shape Specification
Notes: Several ChartDirector API accept shape specification as arguments. For example, BarLayer.setBarShape and BarLayer.setBarShape2 can be used to specify shapes of bars in bar charts, while DataSet.setDataSymbol, DataSet.setDataSymbol4, PolarLayer.setDataSymbol and PolarLayer.setDataSymbol4 can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see DataSet.setDataSymbol2, DataSet.setDataSymbol3, PolarLayer.setDataSymbol2 and PolarLayer.setDataSymbol3.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a ChartDirector method for parameterized shapes. For example, a circle is represented by an explicit constant CircleShape (=7). On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the PolygonShape method, passing in the number of sides as argument.

The following table illustrates the various ChartDirector shapes:

Custom Shapes

In ChartDirector, custom shapes are specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

ChartDirector will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various ChartDirector API.

As an example, the shape of the standard diamond shape in ChartDirector is represented as an array with 8 numbers:

0, 0, 500, 500, 0, 1000, -500, 500

17.0.29 Copy styled text?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to quickly copy styled text from one textarea to another?
Example:

```
#if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
#elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
#else
TextArea1.StyledText = TextArea2.StyledText
#endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

17.0.30 Do you have code to validate a credit card number?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can check the checksum to tell if a credit card number is not valid.
Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue <10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End IF
```

Notes: Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

17.0.31 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all.

Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.
Notes: Please first go to X-Rite and get a SDK license.
Than we can talk about the plugin.

17.0.32 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the plugin can work with multiple recordsets.
Notes: You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all records in the first result set. Than 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.

17.0.33 Does the plugin home home?

Plugin Version: all, Platform: macOS.

Answer: Yes, we like to know who is using the plugin, so the plugin may contact our server.
Example:

none.

Notes: Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall.
Blocking the transfer will not disable the plugin or change the features.
Or contact us for a plugin version which explicitly does not contain this feature.

17.0.34 folderitem.absolutepath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Paths on a Mac are not unique, so use them only to display them to the user.
Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + ":" + s
nf = nf.parent
wend
Return s
End Function
```

17.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Platform: macOS.

Answer: This code implements animations for a tabpanel change:
Example:

```
// in a tabpanel.change event:

dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
```

```
// watch the value of the clicked tab versus the last tab
if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value
```

Notes: See CGS* classes for more details.

17.0.36 How about Plugin support for older OS X?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We support in general Mac OS X 10.5 and newer.
Notes: All the 64-bit plugins on Mac require OS X 10.7.
Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6.
Also for SQL Plugin the built in SQLite library requires 10.6.

17.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all.

Answer: Look on the CPU family returned by sysctl:
Example:

```
Function is64bit() As Boolean

#if TargetLittleEndian

dim m as MemoryBlock = NewMemoryBlock(8)
dim family as Integer
dim s as string

m=SystemControlNameToMIBMBS("hw.cpufamily")
m=SystemControlMBS(m)

if m<>nil then
m.LittleEndian=True
family=m.Long(0)

const CPUFAMILY_INTEL_6_14 = &h73d67300 //* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
const CPUFAMILY_INTEL_6_15 = &h426f69ef //* "Intel Core 2 Duo" */
const CPUFAMILY_INTEL_6_23 = &h78ea4fbc //* Penryn */
const CPUFAMILY_INTEL_6_26 = &h6b5a4cd2 //* Nehalem */

Select case family
case CPUFAMILY_INTEL_6_14
Return false
case CPUFAMILY_INTEL_6_15
Return true
case CPUFAMILY_INTEL_6_23
Return true
case CPUFAMILY_INTEL_6_26
Return true
// newer CPUs may be missing here
end Select

end if

#endif

Return false

Exception
Return false
End Function
```

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

17.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Platform: Windows.

Answer: The following code will remove the close item from the system menu of the window.
Example:

```
#if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as
Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, &HF060, &H0
#endif
```

Notes: The window may not be updated directly.

17.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
```

```
loop until m.byte(n)=0
#endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

17.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Platform: macOS.

Answer: You need to get a media reservation.
Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation.
See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

17.0.41 How can I get text from a PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Crossplatform you can use DynaPDF Pro.
Notes: On Mac OS X you can also use PDFKit for the same job.
While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

17.0.42 How can I get text from a Word Document?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: to get the text string from a doc file, use the NSAttributedStringMBS class.
Notes: The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the NSAttributedStringMBS.initWithDocFormat(data as string) as boolean method.

17.0.43 How can I get the item string for a given file creator?

Plugin Version: all.

Answer: Try this function:
Example:

```
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer

Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")

listBox1.deleteAllRows

m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <>0 then
listBox1.addRow "<Not found.>"
return
end if

do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if

end if
```

```
loop

End Sub
```

Notes: Change ”Translation” to ”CarbonLib” for Mac OS X.

17.0.44 How can I launch an app using it’s creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent ”odoc” with the creator code to the Finder (”MACS”):
Example:

```
Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent(”aevt”,”odoc”,”MACS”)
A.ObjectSpecifierParam(”—-”) = GetUniqueIDObjectDescriptor(”appf”,nil,C)
return A.Send
End Function
```

17.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please use the ldd command in the terminal.
Notes: You build an app on any platform, but for Linux.
For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter.
It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
```

```
/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$
```

As you see all library have been found and their load address is printed behind the na,e.
If a library is missing, you usually see the address missing there or being zero.

17.0.46 How can I validate an email address?

Plugin Version: all, Platforms: macOS, Linux, Windows.

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

17.0.47 How do I decode correctly an email subject?

Plugin Version: all, Platforms: macOS, Linux, Windows.

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.
This is no longer needed when using MimeEmailMBS class which decodes for you.

17.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.
Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.
For Cocoa, please use enabled property of NSTabViewItemMBS class.

17.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <>nil then
root = f // f might be the volume
do
dum = root.parent
if dum <>nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

17.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFObjectMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages",".GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

17.0.51 How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if
```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

17.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.
Example:

```
dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if
```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn't provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource #-8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

17.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.
Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)

ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

17.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A
and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have
255 different colors. If the bars are longer than 255 pixels, would
this look nice?
Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

```
c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub
```

Notes:

Try the code above in a window paint event handler.

17.0.55 How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPreferencesMBS class like in this example:
Example:

```
// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CFObjectMBS = 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.

17.0.56 How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a binarystream you can set the length property to truncate.

17.0.57 How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—-")=f
if not ae.send then
//something went wrong
```

```
end if
```

Notes: The folderitem.finderupdate from the MBS Plugin does something like this.

17.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.
Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the QTGrabberClassMBS
- Mass storage devices using the folderitem class.
- Serial devices using the System.SerialPort function.
- HID USB devices can be used with MacHIDMBS, WinHIDMBS or LinuxHIDInterface class.
- Any USB device may be used with MacUSBMBS or WinUSBMBS classes.

In general it is always the best to take the most high level access to have others do the work for the details.

17.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use FolderItem.AddCustomIcon or NSWorkspaceMBS.setIcon functions.
Notes: Please close any open stream for the file you want to add an icon.

17.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:
Example:

```
Function Computername() As string
```

```
dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function
```

Notes: Code above is for Mac OS 9!
Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

17.0.61 How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable"" YES")
```

Notes: This will set the NSHighResolutionCapable flag to YES.

17.0.62 How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS
```

```
End Sub
```

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the NSAutoreleasePools for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc_msgSend call.

17.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.
Notes: In environment variables, the paths like ORACLE_HOME must be defined.
On Mac OS X you also need to define DYLD_LIBRARY_PATH to point to the dylib files from oracle.

For that you need to modify /etc/launchd.conf for Mac OS X 10.8 and newer.
In older versions those variables in .MacOSX/environment.plist file in user's home.

Another way for the case you bundle things inside your app is to use the LSEnvironment key in info.plist.
In info.plist it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

17.0.64 How to avoid ___NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own NSAutoreleasePool on a thread like this:
Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

```
end sub
```

Notes: For more details read here:
http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

17.0.65 How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:
Example:

```
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

17.0.66 How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) 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)

17.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.
Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is catched, a flag is set and you can ask later in your normal application flow for the result.

17.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:
Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

17.0.69 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

<key>CFBundleExecutable</key>
<string>Executable file name here</string>

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

<key>CFBundleName</key>
<string>Name for menu here</string>

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at http://www.bitjuggler.com/products/appbundler/ .

17.0.70 How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:
Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count

for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)

if item<>Nil and item.Directory then
Return true
end if
```

```
next

End Function
```

Notes: We use trueitem() here to avoid resolving alias/link files.
Also we check for nil as we may not have permission to see all items.
And if one is a directory, we return without checking the rest.

17.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:
Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

17.0.72 How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:
Example:

```
Function OutlookInstalled() As Boolean
#if TargetWin32 then

try
dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

Return true

catch r as RegistryAccessErrorException
// not installed
Return false

end try

#else

// Windows only, so false on other platforms
Return false

#endif

End Function
```

17.0.73 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.
Example:

```
dim result as Integer

IF TargetMacOS THEN
```

```
CONST smScriptLang = 28
CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF
```

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

17.0.74 How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.
Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature.
We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

cd <Path to folder of app>

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder.
If you have helper apps you need to sign them first.
You can use a build step to automatically sign your app on build.

17.0.75 How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):
Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock

Declare Function CollapseWindow Lib "Carbon" (window as Integer,collapse as Integer) as Integer

IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF

err = CollapseWindow(w.MacWindowPtr, state)

End Sub
```

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set.
For Windows the MBS Plugin has a window.isiconicmbs property.

17.0.76 How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color

h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth

if d1<>d2 then
Return 1
elseif w1<>w2 then
```

```
return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function
```

Notes: Remember that this only works on bitmap pictures, so the picture.BitmapMBS function may be useful.

17.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.
Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.
- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure –enable-embed –with-curl -enable-ftp –enable-zip –enable-sockets –enable-static –enable-soap –with-zlib –with-bz2 –enable-exif –enable-bcmath –enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole _yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;".
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use ”make clean” before you start ”make all” again.

Feel free to install additional libraries and add more packages to the configure line.

17.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return ”Andriod”
case WebSession.BrowserType.Blackberry
Return ”Blackberry”
case WebSession.BrowserType.Chrome
Return ”Chrome”
case WebSession.BrowserType.ChromeOS
Return ”ChromeOS”
case WebSession.BrowserType.Firefox
Return ”Firefox”
case WebSession.BrowserType.InternetExplorer
Return ”InternetExplorer”
case WebSession.BrowserType.Opera
Return ”Opera”
case WebSession.BrowserType.Safari
Return ”Safari”
case WebSession.BrowserType.SafariMobile
Return ”SafariMobile”
case WebSession.BrowserType.Unknown
Return ”Unknown”
else
Return ”Unkown: ”+str(integer(s))
end Select

End Function
```

17.0.79 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

17.0.80 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```
case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

17.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough it's not perfect.
You need to set lc to the current color you use.
Example:

```
dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear
```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

17.0.82 How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:
Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

17.0.83 How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.
Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: TextInputStream will read any input line endings and with delimiter property in TextOutputStream you can easily define your new delimiter.

17.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:
Notes: JPEG:

JPEGStringToPictureMBS(buf as string) as picture
JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean) as picture
PictureToJPEGStringMBS(pic as picture,quality as Integer) as string

PNG:

PictureToPNGStringMBS(pic as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PNGStringToPictureMBS(data as string, gamma as single) as picture
PNGStringToPNGPictureMBS(data as string, gamma as single) as PNGpictureMBS

Tiff:

TIFFStringToPictureMBS(data as string) as picture
TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

BMP:

BMPStringtoPictureMBS(data as string) as picture
Picture.BMPDataMBS(ResolutionValueDPI as Integer=72) as string

GIF:

GifStringToGifMBS(data as string) as GIFMBS
GifStringToPictureMBS(data as string) as Picture

17.0.85 How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:
Example:

```
Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

17.0.86 How to copy an dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:
Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an dictionary of objects, you need to change code to also make a copy of those objects.

17.0.87 How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```
dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))
```

Notes: If result is not 0, the method fails.

17.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars
```

```
// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if
```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

17.0.89 How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

17.0.90 How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.
Example:

```
dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99
```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99

dim r As ResourceFork 'ResourceFork is needed for a clip file

// Please define a file type Any
r=f.CreateResourceFork("Any")

// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")

dim m as new MemoryBlock(8)

m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height

r.AddResource(m,"RECT",256,"")

'Values taken from a sample file and irrelevant to the problem
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAAABAAAAAAAAAABUQ0lQAAAAA
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

17.0.91 How to create a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check our DynaPDF plugin and the examples.
Notes: An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X.
For Windows, we can only suggest our DynaPDF plugin.

17.0.92 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Platform: macOS.

Answer: You can use code like the one below:
Example:

```
Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
dim a as new EmailAttachment

a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMEType = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename

Return a
End Function
```

Notes: Compared to sample code from Xojo documentation, we set the mime type correct for PDF.
The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients.
"prvw" is the creator code for Apple's preview app.

17.0.93 How to create PDF for image files?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use DynaPDF like this:
Example:

```
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight
as Integer) As Boolean
// have files?
If pdfFile = Nil Then Return False
If jpgFiles = Nil Then Return False

If jpgFiles.Ubound <0 Then Return False

// new DynaPDF
Dim pdf As New MyDynapdfMBS

// page width/height in MilliMeter
Dim pdfWidth as Integer = PageWidth * 72 / 25.4
Dim pdfHeight as Integer = PageHeight * 72 / 25.4

// put your license here
Call pdf.SetLicenseKey "Starter"

// create pdf
Call pdf.CreateNewPDF pdfFile
```

```
// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
Next

// close
Call pdf.CloseFile

Return True
End Function
```

Notes: This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

17.0.94 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a few tips on how to translate command line CURL calls to plugin calls.
Notes: curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456 –data-binary @DocumentRegister.docx -H ”Content-Type: application/msword”

- The option -v means verbose. You can use OptionVerbose and listen for messages in the DebugMessage event.
- The option -X PUT means we want to do a HTTP PUT Request. So set OptionPut to true. Also you will want to set OptionUpload to true as you upload data.
- We have the URL which you put into OptionURL property.

- The –data-binary option tells CURL to pass the given data. With the @ before the data, it is intrepreted 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/f2f4e540bf8bb60f61cfcd4328001c59 -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)

17.0.95 How to delete file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// delete file
dim ws() As String
ws.Append "DELE Temp.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use DELE and the file path.

17.0.96 How to detect display resolution changed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X simply listen for display changed notifications.
Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

17.0.97 How to detect retina?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use Window.BackingScaleFactorMBS to query the factor.
Example:

```
msgbox str(window1.BackingScaleFactorMBS)
```

17.0.98 How to disable force quit?

Plugin Version: all, Platform: macOS.

Answer:

Please visit this website and get the control panel for Mac OS 9 there:
http://www3.sk.sympatico.ca/tinyjohn/DFQ.html

For Mac OS X use the MBS Plugin with the SetSystemUIModeMBS method.
Notes:

Please use presentationOptions in NSApplicationMBS for Cocoa applications.

17.0.99 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Platform: Windows.

Answer: You can use this code in the htmlviewer open event:
Example:

```
if targetwin32 then
htmlviewer1._ole.Content.value("Silent") = True
end if
```

Notes: This disables the error dialogs from Internet Explorer.

17.0.100 How to display a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.
Notes: An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it.
On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

17.0.101 How to do a lottery in RB?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)

for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max

d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub
```

```
Sub Open()
// Test it

dim za(0) as Integer ' the array of the numbers

lotto 49,6,za ' 6 of 49 in Germany


' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za
End Sub
```

17.0.102 How to do an asycron DNS lookup?

Plugin Version: all, Platform: Windows.

Answer: use CFHostMBS class (Mac OS X only).
Notes: Xojo internal functions and plugin DNS functions are sycronized.
You can use DNSLookupThreadMBS class for doing them asyncron.

17.0.103 How to draw a dushed pattern line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
// call like this: DrawDushedPatternLine g,0,0,width,height,10

Sub DrawDushedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen
```

```
b=true
x=x1
while (x<x2) and (y<y2)
ox=x
oy=y

x=x+dx
y=y+dy

if b then
g.DrawLine ox,oy,x,y
end if

b=not b
wend


End Sub
```

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Xojo code, so it even works on Windows.

17.0.104 How to draw a nice antialiased line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough 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.

17.0.105 How to dump java class interface?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In terminal you can use ”javap -s <classname>” to display the class with the method names and parameters.
Notes: For example show ResultSet class: javap -s java.sql.ResultSet

17.0.106 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this function:
Example:

```
Function Duplicate(extends p as Picture) As Picture
#if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
#endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes: Simply copy it to a module and call it like this: q = p.duplicate.
The code above works with old Xojo versions because of the #if even if your RS version does not support alpha channel pictures. This way it's future proof.

17.0.107 How to enable assistive devices?

Plugin Version: all, Platform: macOS.

Answer: You can use AppleScript code like below:
Notes: tell application "System Events"
activate

set UI elements enabled to true

return UI elements enabled
end tell

You can run this with AppleScriptMBS class.

17.0.108 How to encrypt a file with Blowfish?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")

// read input
dim bi as BinaryStream = BinaryStream.Open(fi)
dim si as string = bi.Read(bi.Length)
bi.Close

// encrypt
dim so as string = BlowfishMBS.Encrypt("MyKey",si)

// write output
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write so
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

17.0.109 How to extract text from HTML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:
Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)

MsgBox text // shows: Gr√º√üe
```

Notes: You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.
DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like ä to √§.

17.0.110 How to find empty folders in a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this code:
Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

17.0.111 How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Platform: macOS.

Answer: You can try Launch Services.
Example:

```
dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.NativePath
```

17.0.112 How to find network interface for a socket by it's name?

Plugin Version: all, Platform: macOS.

Answer: You can use our plugin to build a lookup table.
Example:

```
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
dim IPv4s() as string = n.IPv4s
dim IPv6s() as string = n.IPv6s

for each IPv4 as string in IPv4s
map.Value(IPv4) = n.Name
next
for each IPv6 as string in IPv6s
map.Value(IPv6) = n.Name
next
if n.MAC<>"" then
map.Value(n.MAC) = n.Name
```

```
end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function
```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

17.0.113 How to find version of Microsoft Word?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.microsoft.Word","")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion","")
```

Notes: Older versions of Word can be found with creator code "MSWD".

17.0.114 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Platform: macOS.

Answer: You probably connect with SSL and you have no valid certificate.
Example:

```
dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.NativePath
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
```

Notes: You can either use the code above to disable the SSL verification and have no security.
Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:
http://curl.haxx.se/ca/

17.0.115 How to format double with n digits?

Plugin Version: all, Platform: macOS.

Answer: You can use the FormatMBS function for this.
Example:

```
dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
```

```
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)
```

Notes: see FormatMBS for details.
In general %f is normal style, %e is scientific and %g is whichever gives best result for given space.

17.0.116 How to get a time converted to user time zone in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.GMTOffset property.
Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

17.0.117 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: This function returns a handle for the frontmost window:
Example:

```
Function GetForegroundWindowHandle() as Integer
#if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
#endif
End Function
```

17.0.118 How to get CFAbsoluteTime from date?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use code like this:
Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianDateMBS
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.

17.0.119 How to get client IP address on web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.RemoteAddress property.
Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

17.0.120 How to get fonts to load in charts on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.
Example:

```
if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype;/usr/share/fonts/truetype/msttcorefonts"
else
// on Mac and Windows we use system fonts.
end if

// also you can later switch default fonts:

dim Chart as CDBaseChartMBS // your chart

#If TargetARM And TargetLinux Then
// use specific fonts on Linux on Raspberry Pi
Call Chart.setDefaultFonts("/usr/share/fonts/truetype/piboto/PibotoLt-Regular.ttf","/usr/share/fonts/truetype/piboto/Pi
#EndIf
```

Notes: On macOS, iOS and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

17.0.121 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.
Example:

```
dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
// on Mac and Windows we use system fonts.
end if
```

Notes: On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

17.0.122 How to get GMT time and back?

Plugin Version: all, Platform: macOS.

Answer: You can use the date class and the GMTOffset property.
Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+" "+str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+" ("+str(d.GMTOffset)+") "+str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+" ("+str(e.GMTOffset)+") "+str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+" ("+str(f.GMTOffset)+") "+str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

17.0.123 How to get good crash reports?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check this website from the webkit website:
Notes: http://webkit.org/quality/crashlogs.html

17.0.124 How to get list of all threads?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the runtime module like in this function:
Example:

```
Function Threads() As Thread()
#pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function
```

Notes: This returns an array of all thread objects currently in memory.
The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

17.0.125 How to get parameters from webpage URL in Xojo Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the Webpage.ParametersReceived event.
Example:

```
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->"+Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Xojo 2010r5. Please use DefineEncoding.

17.0.126 How to get the color for disabled textcolor?

Plugin Version: all, Platform: macOS.

Answer: Ask the appearance manager:
Example:

```
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as Boolean, outColor as Ptr) as Integer

dim i as Integer
dim col as MemoryBlock

col = newMemoryBlock(6)

i = GetThemeTextColor(inColor, inDepth, inColorDev, col)

return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
End Function
```

Notes: The color for this is:

```
const kThemeTextColorDialogInactive = 2.

c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

17.0.127 How to get the current free stack space?

Plugin Version: all, Platform: macOS.

Answer: You can something like the code below:
Example:

```
Sub ShowStackSize()
dim threadid as Integer
dim size as Integer

declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
declare function ThreadCurrentStackSpace lib "Carbon" (threadid as Integer, byref size as Integer) as short

if GetCurrentThread(threadid)=0 then
if 0=ThreadCurrentStackSpace(threadid,size) then
MsgBox str(size)
end if
end if
```

```
End Sub
```

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use #if if you like for that.

17.0.128 How to get the current timezone?

Plugin Version: all, Platforms: macOS, Windows.

Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:
Example:

```
Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

#if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info
if false then
// bad, because it does not work on Intel Macs:
'offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), &hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
```

```
offset = offset \60
return offset

#endif

#if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// – Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

#endif

End Function
```

17.0.129 How to get the current window title?

Plugin Version: all, Platform: macOS.

Answer: The code below returns the current window title for the frontmost window on Mac OS X if Accessibilty services are
Example:

```
Function CurrentWindowTitle() As string
// your application needs permissions for accessibility to make this work!

dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS
```

```
SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function
```

17.0.130 How to get the cursor blink interval time?

Plugin Version: all, Platform: macOS.

Answer: On Mac OS you can use GetCaretTime from the toolbox.
Example:

```
declare function GetCaretTime lib "Carbon" () as Integer

MsgBox str(GetCaretTime())+" ticks"
```

Notes: 60 ticks make one second.

17.0.131 How to get the list of the current selected files in the Finder?

Plugin Version: all, Platform: macOS.

Answer:

Use the AppleScript like this one:

```
tell application "finder"
return selection
end tell
```

Which translates into this AppleEvent:

```
Process("Finder").SendAE "core,getd,'—-':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"
```

and as Xojo code it looks like this:
Example:

```
dim ae as appleevent
dim o1 as appleeventObjectSpecifier
dim f as folderItem
dim aList as appleeventdescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—-")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItemItem(i)

dateiname=f.name
// editfield1 with property "mulitline=true"!
editfield1.text=editfield1.text + dateiname + chr(13)
next
```

```
end if
```

17.0.132 How to get the Mac OS system version?

Plugin Version: all, Platform: macOS.

Answer: The following code queries the value and displays the version number:
Example:

```
dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+"."+str(Second)+"."+str(third)
else
msgbox "Mac OS "+str(First)+"."+str(Second)+"."+str(third)
end if
```

17.0.133 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)
```

```
For i =Len(s)-1 DownTo 1
s=Left(s,i)+"."+Mid(s,i+1)
Next
MsgBox "Systemversion: Mac OS " + s
end if
```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

17.0.134 How to get the screensize excluding the task bar?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Use the Screen class with the available* properties.

17.0.135 How to get the size of the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Make yourself a class for the WindowRect with four properties:

```
Bottom as Integer
Left as Integer
Right as Integer
Top as Integer
```

Add the following method to your class:

```
Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
#if targetwin32 then
Declare Function GetWindowRect Lib "user32.dll" (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)
```

```
#endif
End Sub
```

Good to use for the MDI Master Window!

17.0.136 How to get the source code of a HTMLViewer?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
// for Windows:

msgbox HTMLViewer1.IEHTMLTextMBS

// for MacOS with WebKit 2.x:

msgbox HTMLViewer1.WKWebViewMBS.HTMLText
```

17.0.137 How to get Xojo apps running Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You need to install some requuire 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.

17.0.138 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sometimes it may be better to use an extra application to process images.
Notes: A typical 32 bit app made with Xojo can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

17.0.139 How to handle tab key for editable cells in listbox?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this function:
Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event

Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
```

```
// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function
```

Notes: You call it from CellKeyDown event like this:

```
EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler
```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

17.0.140 How to hard link MapKit framework?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:
Example:

```
Sub ReferenceMapKit()
// just put this in window or app class

#if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
#endif

End Sub
```

Notes: No need to call the method.
Just having it in a window or app, will cause the compiler to hard link the framework.

17.0.141 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.
Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Xojo Web Edition.

17.0.142 How to hide all applications except mine?

Platform: macOS.

Answer: The code below will on Mac OS hide all applications except your one:
Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

17.0.143 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Platform: Windows.

Answer: Set Internet Explorer to silent mode with code like this:
Example:

```
htmlviewer1._ole.Content.value("Silent") = True
```

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

17.0.144 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you want to hide something in a chart, simply assign the kTransparent constant as color.

17.0.145 How to hide the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")

HideCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

17.0.146 How to insert image to NSTextView or TextArea?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to insert file:
Example:

```
// insert a file to textview

Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
// read to file
```

```
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// build wrapper
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
fileWrapper.preferredFilename = f.name

// make attachment
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttach-
ment(fileAttachment)

// add to a NSTextViewMBS
textview.insertText attributedString

End Sub
```

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

17.0.147 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You can use javascript to change the current window's location.
Example:

```
// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""#16"""
end if
```

17.0.148 How to keep a movieplayer unclickable?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.
Example:

```
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function
```

17.0.149 How to keep my web app from using 100% CPU time?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Linux and MacOS you can use renice command in the terminal. On Windows use the task manager to reduce priority.
Notes: If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

nohup /webapps/MyApp/MyApp &

you can simply have a second line saying this:

renice 20 $!

which tells the system to lower priority to lowest value for the latest background process.

17.0.150 How to kill a process by name?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can kill a process (or application) by name if you loop over all the processes and kill the one you need.
Example:

```
dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess
```

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

17.0.151 How to know how many CPUs are present?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

```
Function GetCPUCount() as Integer
Declare Function MPProcessors Lib "Carbon" () as Integer

Return MPProcessors()
End Function
```

Notes: Your app will than need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

17.0.152 How to know the calling function?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use a helper function like this this code:
Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function

#Pragma BreakOnExceptions false

try

// raise a dummy exception
dim r as new NilObjectException
raise r

catch x as NilObjectException

// get stack
dim stack() as string = x.Stack

// pick function name and return
dim name as string = stack(2)
Return name

end try
End Function
```

Notes: You need to include function names in your application.

17.0.153 How to launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):
Example:

```
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—-") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occured"
else

end if
```

17.0.154 How to launch disc utility?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this code:
Example:

```
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.apple.DiskUtility","")

if f<>Nil then
f.Launch
end if
```

Notes: This works even if people renamed the disc utility or moved it to another folder.

17.0.155 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You may try to embed your changes to the database between two transaction calls.
Example:

```
dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"
```

Notes: This can increase speed by some factors.

17.0.156 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Platform: macOS.

Answer: You can use code like this:
Example:

```
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function
```

Notes: The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points.
You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

17.0.157 How to make a window borderless on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this declares:
Example:

```
// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).

Const SWP_NOMOVE = &H2
Const SWP_FRAMECHANGED = &H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = &H80880000

Dim styleFlags as Integer

#If TargetWin32 Then

Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer

styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )

#EndIf
```

17.0.158 How to make an alias using AppleEvents?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
dim ev as AppleEvent
dim myResult as boolean
dim properties as AppleEventRecord

ev = NewAppleEvent("core","crel","MACS")
ev.MacTypeParam("kocl") = "alis"
ev.FolderItemParam("to ") = target
ev.FolderItemParam("insh") = folder

properties=new AppleEventRecord
```

```
properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

myResult = ev.send
// true on success, false on error
End Sub
```

Notes: Call it like this:
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"

Seems to not work on Mac OS X 10.6

17.0.159 How to make AppleScripts much faster?

Plugin Version: all, Platform: macOS.

Answer: use "ignoring application responses" like in this example:

```
Notes: on run { fn,fpx,fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx,fpy
end ignoring
end run
```

17.0.160 How to make double clicks on a canvas?

Plugin Version: all, Platform: macOS.

Answer:

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

```
dim doubleClickTime, currentClickTicks as Integer

#if targetMacOS then
Declare Function GetDblTime Lib "Carbon" () as Integer
doubleClickTime = GetDblTime()
#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 occured close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
DoubleClick //a double click has occured 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
```

17.0.161 How to make my Mac not sleeping?

Plugin Version: all, Platform: macOS.

Answer: Just inform the Mac OS about some system activity with code like this:
Example:

```
Sub UpdateSystemActivity()

#if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const 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.

17.0.162 How to make my own registration code scheme?

Plugin Version: all, Platform: Windows.

Answer: There are excellent articles about how to make a 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 Xojo as a starting point?

17.0.163 How to make small controls on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
'/*
'* Use the control's default drawing variant. This does not apply to
'* Scroll Bars, for which Normal is Large.
'*/
const kControlSizeNormal = 0

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
'* controls.
'*/
const kControlSizeSmall = 1

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Indeterminate Progress Bar, Progress Bar and Round Button
'* controls.
'*/
const kControlSizeLarge = 2
```

```
'/*
'* Control drawing variant determined by the control's bounds. This
'* ControlSize is only available with Scroll Bars to support their
'* legacy behavior of drawing differently within different bounds.
'*/
const kControlSizeAuto = &hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OSType, 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))
```

17.0.164 How to mark my Mac app as background only?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")
```

Notes: This will set the NSUIElement flag to YES.

17.0.165 How to move a file or folder to trash?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function MoveToTrash(f as FolderItem) As Boolean
#if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFileOperationDefaultOptions)
```

```
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.

17.0.166 How to move an application to the front using the creator code?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:
Example:

```
dim a as appleevent

a=newappleEvent("misc","actv","ttxt")
```

```
if a.send then
end if
```

Notes: (Code is Mac only)

17.0.167 How to move file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTO with the new file name. To delete use DELE and the file path.

17.0.168 How to normalize string on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)
```

```
Return m.str
End Function
```

Notes: This uses Apple's CFString functions to normalize unicode variants.

17.0.169 How to obscure the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub ObscureCursor Lib "Carbon" ()

ObscureCursor
```

Notes: The MBS Plugin has this function, but it's not supported for Windows.

17.0.170 How to open icon file on Mac?

Plugin Version: all, Platform: macOS.

Answer: Use the NSImageMBS class like this:
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")
dim n as new NSImageMBS(f)

window1.Backdrop = n.CopyPictureWithMask
```

17.0.171 How to open PDF in acrobat reader?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
```

```
// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if
```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

17.0.172 How to open printer preferences on Mac?

Plugin Version: all, Platform: macOS.

Answer: You can use our OpenMacOSXPreferencesPaneMBS function like this:
Example:

```
dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
MsgBox "OK"
elseif e = -43 then
MsgBox "File not found."
else
MsgBox "Error: "+str(e)
end if
```

17.0.173 How to open special characters panel on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have functions for that in Cocoa and Carbon.
Example:

```
dim a as new NSApplicationMBS
a.orderFrontCharacterPalette
```

Notes: For Cocoa, you can use orderFrontCharacterPalette method in NSApplicationMBS class.

Or simply for Carbon and Cocoa the ShowCharacterPaletteMBS method.

17.0.174 How to optimize picture loading in Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebPicture class.
Notes: Take your picture and create a WebPicture object. Store this WebPicture in a property of the WebPage, Session or app (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.
Having pictures in App or some module reuses the same picture for all sessions which reduces memory footprint.
This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our Map example.

17.0.175 How to parse XML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
dim s as string = "<test><test /></test>"

try
```

```
dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try
```

Notes: If you got an exception, you have a parse error.

17.0.176 How to play audio in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the HTML5 audio tag and control it with javscript.
Notes: This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Xojo 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```
audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"
```

```
audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"
```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Than we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

dim urlo as string = app.audioFileOGG.URL
dim urlm as string = app.audioFileM4V.URL
me.Source = ”<audio id=””mymusic”” preload=””auto””><source src=””””+urlo+”””” type=””audio/ogg”” /><source src=””””+urlm+”””” type=””audio/mpeg”” />Your browser does not support the audio element.</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)+”;”)

17.0.177 How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.
Notes: Learn more here:
http://docs.xojo.com/index.php/XMLDocument.Transform

17.0.178 How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.
Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```
// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

Notes: And you can use normal graphics class for that.

17.0.179 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS objec to query this value:
Example:

```
Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function
```

Notes: Thanks for Josh Hoggan for this example code.

17.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

17.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow ""
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

17.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

17.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```
if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if
```

Notes: PDFKit works only on Mac OS X.

17.0.184 How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if
```

17.0.185 How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value.
Don't forget to implement the read event and return data there as requested.

17.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90¬∞ rotation.
Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90¬∞
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

```
c = nil

// show in PDF viewer
destfile.Launch
```

Notes: This code is Mac only as it needs CoreGraphics.

17.0.187 How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:
Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

17.0.188 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.
Notes: The package is called ia32-libs for ubuntu (and others).
Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

17.0.189 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.
Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

17.0.190 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:
Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtfd")

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 underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

17.0.191 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?
Example:

```
Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub
```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

17.0.192 How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

```
Function ProportinalScaledWithMask(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.

17.0.193 How to scale a picture proportionally?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

```
Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)
```

```
// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function
```

Notes: This does not handle mask, but you can scale the mask the same way and assign it to the new picture.
(see other FAQ entry with mask)

17.0.194 How to scale/resize a CIImageMBS?

Plugin Version: all, Platform: Windows.

Answer: Use the CIFilterLanczosScaleTransform filter to scale down a picture to a specific size.
Example:

```
Dim pic As Picture = LogoMBS(500)
Dim image As CIImageMBS = CIImageMBS.imageWithPicture(pic)

Dim filter As New CIFilterLanczosScaleTransformMBS

Const targetWidth = 600.0
Const targetHeight = 400.0

Dim scale As Double = targetHeight / image.Extent.Height
Dim aspect As Double = targetWidth / (image.Extent.Width * scale)

filter.inputImage = image
filter.inputScale = scale
filter.inputAspectRatio = aspect

Dim result As Picture = filter.outputImage.RenderPicture

Backdrop = result
```

Notes: This is same code as our scaleTo convenience method.

17.0.195 How to scale/resize a picture?

Plugin Version: all, Platform: Windows.

Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.
Example:

```
dim Original,Scaled as Picture

Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)
```

Notes: The plugin ways:
- GraphicsMagick can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure Xojo:
- make a new picture and draw the old one with new size inside.

17.0.196 How to search with regex and use unicode codepoints?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can specify unicode characters in search string with backslash x and digits.
Example:

```
dim r as RegExMbs
dim s as string
dim c as Integer
```

```
s="123 √§√√º ABC 456"

r=new RegExMBS
if r.Compile(".√.") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile(".\xF6.") then // finds √ using Unicode codepoint
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if
```

17.0.197 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

```
Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)
```

```
If S=F.name Then
Return True
End If
Next
end if
End if
End Function
```

17.0.198 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You use the pragma cache_size command on the database.
Example:

```
// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"
```

Notes: Default cache size is 2000 pages which is not much.
You get best performance if whole database fits in memory.
At least you should try to have a cache big enough so you can do queries in memory.
You only need to call this pragma command once after you opened the database.

17.0.199 How to set the modified dot in the window?

Plugin Version: all, Platform: macOS.

Answer: Try this declares:
Example:

```
window1.ModifiedMBS=true
```

17.0.200 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the
Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL
```

Notes: See our Create PDF example for the Xojo Web Edition.

17.0.201 How to show Keyboard Viewer programmatically?

Platform: macOS.

Answer: Use Xojo or AppleScript to launch the KeyboardViewerServer.app.
Example:

```
dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer"""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-Support/KeyboardViewerServer.app"""
lines.append ""
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)

a.Compile text
a.Execute
```

Notes: AppleScript code:

```
set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/KeyboardViewerServer.app"

set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theApplication))
if isRunning then tell application POSIXPath to quit
delay 0.15

ignoring application responses
tell application POSIXPath to run
end ignoring
```

17.0.202 How to show the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub ShowCursor Lib "Carbon" ()

ShowCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

17.0.203 How to shutdown a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","shut","MACS")
if not ae.send then
msgBox "The computer couldn't be shutdown."
end if
```

Notes: Or toolbox call (Attention: This method will stop the computer immediataly: No document asked to be saved, all applications quitting without knowing).

```
Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower
```

17.0.204 How to sleep a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

17.0.205 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Here a few speed tips:
Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

17.0.206 How to use PDFLib in my RB application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The PDFlib plugin was discontinued in favor of our DynaPDF plugin.
Notes: If you need help to move, please contact us.

17.0.207 How to use quotes in a string?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Just double them.
Example:

```
msgbox "This String contains ""quotes""."
```

17.0.208 How to use Sybase in Web App?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use our MBS Xojo SQL Plugin to connect to a Sybase Database in your web application.
Notes: If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.
The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
SetEnv SYBASE /opt/sybase
```

17.0.209 How to use the Application Support folder?

Plugin Version: all, Platform: macOS.

Answer:

I was saving a registration code for an app to the Preferencefolder.
People on the list have suggested that it would be better in
the ApplicationSupportFolder. How do I save the file called CWWPrefs
into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

```
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

Example:

```
dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.NativePath
```

Notes:

You may not be able to write there with a normal user account!

17.0.210 How to use the IOPMCopyScheduledPowerEvents function in Xojo?

Plugin Version: all, Platform: macOS.

Answer: You can use the following code which does this using the SoftDeclareMBS class.
Example:

```
Sub Open()
dim c as CFDateMBS
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights
```

```
Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As 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 CFDictionaries
'* 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.

17.0.211 How to validate a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:
Example:

```
Function IsGUID(guid as string) As Boolean
dim r as new RegEx

r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$ "

Return r.Search(guid)<>nil
End Function
```

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

17.0.212 How to walk a folder hierarchie non recursively?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this one:
Example:

```
Sub Walk(folder as FolderItem)
dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count
for i as Integer = 1 to c
dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then
// no permission
elseif item.Visible then // only visible

if item.Directory then
folders.Append item
```

```
else
// work with file here
end if

end if

next

wend
End Sub
```

Notes: As you see we go with a long loop which runs until we don't have more folders to process.
We ignore items we can't access due to permission limits.
And we only work visible items.
If you like, check folderitem.isBundleMBS on item to handle packages and applications better on Mac OS X.

17.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Platform: macOS.

Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.
Notes: We splitted the plugin because the Xojo IDE on Windows crashed on compilation.

17.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There are two main reasons.
Notes: 1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.
On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.
In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the 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
textasciitilde /Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

17.0.215 I want to accept Drag & Drop from iTunes

Plugin Version: all, Platform: macOS.

Answer: You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.
Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub

Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")
```

```
// Parse XML
o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBSCFStringMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then
MsgBox file.NativePath
end if
end if
end if
next
end if
end if
end if
End Sub
```

Notes: The code above inside a window on Xojo 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

17.0.216 I'm drawing into a listbox but don't see something.

Plugin Version: all.

Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position
Example:

```
Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function
```

Notes: Try this in a listbox. The Graphics object there has a cliping and an offset which the plugin doesn't know about.

17.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Platform: macOS.

Answer:

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.
Notes:

See Window.Transition functions.

17.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Platforms: macOS, Linux, Windows.

Answer: Stand alone.
Notes: Xojo compiles all used plugins into the application binary.
Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

17.0.219 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?
Example:

```
' Window.Open Event of a blank project:

dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

17.0.220 Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.
Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.
If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class

17.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:
Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

17.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:
Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

17.0.223 List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.
Notes: http://www.monkeybreadsoftware.de/xojo/winerror.shtml

17.0.224 Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.
Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

17.0.225 My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:
Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error ”Premature end of script headers” in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don’t have code in app.open, session.open and other events which crashes app right at launch?
- You don”t have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

17.0.226 SQLDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLDatabaseMBS, it must be initialized.
Example:

```
dim d as new SQLDatabaseMBS
```

Notes: This happens normally when you use ”new SQLDatabaseMBS”.
But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happend, yet.
So please simply add a line ”dim d as new SQLDatabaseMBS” to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

17.0.227 Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output.
This should be fixed with RB5.
Notes:

Xojo seems not to support Textconverters at all on Windows.

17.0.228 The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:
Notes: Cocoa NSObject to Variant:

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

- ->*MBS

Variant to Cocoa NSObject:

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

NSPointMBS ->NSValue with NSPoint
NSRangeMBS ->NSValue with NSRange
NSBurnMBS ->NSBurn
NSViewMBS ->NSView
NSFontMBS ->NSFont
NSParagraphStyleMBS ->NSParagraphStyle
NSAttributedStringMBS ->NSAttributedString
WebPolicyDelegateMBS ->WebPolicyDelegate
WebUIDelegateMBS ->WebUIDelegate
WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
NSIndexSetMBS ->NSIndexSet
QTTimeMBS ->QTTime
QTTimeRangeMBS ->QTTimeRange
Array of Variant ->NSArray
Array of String ->NSArray
CFStringMBS ->NSString
CFNumberMBS ->NSNumber
CFDataMBS ->NSData
CFURLMBS ->NSURL
CFArrayMBS ->NSArray
CFDictionaryMBS ->NSDictionary
CFBinaryDataMBS ->NSDate

Carbon CFTypeRef 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.

17.0.229 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

17.0.230 What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.
Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

17.0.231 What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.
Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so"
- libgtk-x11-2.0.so.0"
- /usr/lib/libgtk-x11-2.0.so"
- /usr/lib32/libgtk-x11-2.0.so"
- /usr/lib/libgtk-x11-2.0.so.0"
- /usr/lib32/libgtk-x11-2.0.so.0"

gdk is loaded with this paths:

- libgdk-x11-2.0.so"
- libgdk-x11-2.0.so.0"
- /usr/lib/libgdk-x11-2.0.so"
- /usr/lib32/libgdk-x11-2.0.so"
- /usr/lib/libgdk-x11-2.0.so.0"
- /usr/lib32/libgdk-x11-2.0.so.0"

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

17.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

17.0.233 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant "SmallSystem" to use for a font name.
For older versions try this code:
Example:

```
Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontStyle 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
```

17.0.234 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.
Notes: With version 15.4 you can build applications for OS X 10.4 and newer.
For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

17.0.235 What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.
Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.
For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

17.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.
Notes: We stopped including 32-bit code for macOS in version 23.1.
Please us older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

17.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Time is server side and WebTimer client side.
Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

17.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.
Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, DEREF, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTEXT, 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.

17.0.239 What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

17.0.240 What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like ”This item conflicts with another item of the same name” when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.
Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

17.0.241 What to do with a NSImageCacheException?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for NSExceptionMBS 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.

17.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

17.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.
Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.
e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.
If encoding is set to none, it may get confused for non-ascii text.

17.0.244 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetActiveDisplayList.

17.0.245 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

17.0.246 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

17.0.247 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

17.0.248 Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:
Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

17.0.249 Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basicly it's not useful. If you want to check whether you have a network, than do a DNS resolve:
Example:

```
// two independend domain names
const domain1 = "www.google.com"
const domain2 = "www.macsw.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if
```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

17.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.
Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

17.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.
Notes: This classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

17.0.252 Where to get information about file formats?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Please visit this web page:
http://www.wotsit.org

17.0.253 Where to register creator code for my application?

Plugin Version: all, Platform: macOS.

Answer:

Register at Apple:
http://developer.apple.com/dev/cftype/information.html

17.0.254 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins for Xojo until 64bit target is available.
Notes: For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit
- MediaLibrary
- Social
- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

17.0.255 Which plugins are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.
Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

17.0.256 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install DirectX from Microsoft on your Windows.

17.0.257 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.
Notes: This bug is for several older Windows 95 editions.

17.0.258 Why do I hear a beep on keydown?

Plugin Version: all, Platform: Windows.

Answer: When the user presses a key, RB goes through all keydown event handlers till on returns true.
Notes: If no keydown event handler returns true for the key, a beep is performed.

17.0.259 Why does folderitem.item return nil?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Because Xojo fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.
Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

17.0.260 Why doesn't showurl work?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

There are three main reasons:

1. showurl is not supported by Xojo in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

17.0.261 Why don't the picture functions not work on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please make sure libcairo is installed.
Notes: For accessing pictures on Linux, the MBS Plugin relays on the cairo library.
Please install the package if you don't have it already.
Our plugin looks for library called libcairo.so or libcairo.so.2.

17.0.262 Why have I no values in my chart?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You have no data points visible, there may be several reasons:
Notes: For example one of the data values may be infinite or invalid.
Or the scaling may be out of range, so you simply see nothing.

17.0.263 Will application size increase with using plugins?

Plugin Version: all, Platform: Windows.

Answer: All plugins used by your application will be included in the application.
Notes: If you use no plugins, your application will not change size.
And if you use one class from the plugins, your application size will increase by a few kilobytes.
The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

17.0.264 XLS: Custom format string guidelines

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.
Notes: Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

#,###.00_); [Red] (#,###.00);0.00;"sales "@

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.
Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.
[Red] [<=100] ; [Blue] [>100]
If the cell value does not meet any of the criteria, then pound signs ("#") are displayed across the width of the cell.
Dates and times

Examples

17.0.265 Xojo doesn't work with your plugins on Windows 98.

Plugin Version: all, Platform: Windows.

Answer: Please upgrade your Windows version.

17.0.266 Xojo or my RB application itself crashes on launch on Mac OS Classic. Why?

Plugin Version: all.

Answer:

You may check if the application has enough memory to be loaded.
RB should have on Mac OS Classic more than 20 MB of RAM.
I prefered to use 50 MB and for an application a 10 MB partition is a good way to start.

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see Axis.setLabels 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 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 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 LineLayer.setSymbolScale.
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.

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 PolarLayer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.

Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b] The thousand separator. Should be a non-alphanumeric character (not 0-9, A-Z, a-z). Use ' textasciitilde ' for no thousand separator. The default is ' textasciitilde ', which can be modified using BaseChart.setNumberFormat.

[c] The decimal point character. The default is '.', which can be modified using BaseChart.setNumberFormat.

[d] The negative sign character. Use ' textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6. 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val(”x7”)
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format #.00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is #.##, and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and adds 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„