

MBS Tiff Plugin Documentation

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0.1 Introduction

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

0.2 Content

- 1 List of all topics 3
- 2 List of all classes 13
- 3 List of all global methods 15
- 4 All items in this plugin 17
- 7 List of Questions in the FAQ 97
- 8 The FAQ 107

Chapter 1

List of Topics

• 6 TIFF	23
– 4.1.1 class Folderitem	17
* 4.1.3 OpenAsTiffMBS(HeaderOnly as boolean=false) as TiffPictureMBS	17
– ?? Globals	??
* 6.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer	26
* 6.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer	23
* 6.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	25
* 6.1.8 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	31
* 6.1.9 CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	31
* 6.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer	26
* 6.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer	28

- * 6.1.2 TIFFStringToPictureMBS(data as string) as picture 25
- * 6.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS 25

	5
• 5 Pictures Import and Export	19
– ?? Globals	??
* 5.1.1 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer	19
* 5.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer	20

• 6 TIFF	23
– ?? Globals	??
* 6.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer	26
* 6.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer	23
* 6.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	25
* 6.1.8 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	31
* 6.1.9 CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer	31
* 6.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer	26
* 6.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer	28
* 6.1.2 TIFFStringToPictureMBS(data as string) as picture	25
* 6.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS	25
– 6.2.1 class TiffPictureMBS	31
* 6.2.3 AddCustomTag(Tag as Integer, FieldReadCount as Integer, FieldWriteCount as Integer, FieldType as Integer, FieldBit as Integer, OkToChange as Integer, PassCount as Integer, FieldName as string) as boolean	32
* 6.2.4 AddImage as boolean	32
* 6.2.5 close	33
* 6.2.6 CombinePictureWithMask as picture	34
* 6.2.7 Create(file as folderitem) as boolean	34
* 6.2.8 Create(file as folderitem, endian as Integer) as boolean	35
* 6.2.9 CreateString(Size as Integer) as boolean	35
* 6.2.10 CreateString(Size as Integer, Mode as string) as boolean	36
* 6.2.11 Flush as boolean	36
* 6.2.12 FlushData as boolean	36
* 6.2.13 GetColorMap(byref red as memoryblock, byref green as memoryblock, byref blue as memoryblock) as boolean	37

* 6.2.14 GetColorProfile as string	37
* 6.2.15 GetData(Tag as Integer) as string	37
* 6.2.16 GetField(Tag as Integer, mem as memoryblock) as boolean	38
* 6.2.17 GetFieldByte(Tag as Integer, byref value as Integer) as boolean	38
* 6.2.18 GetFieldCount(Tag as Integer, byref count as Integer, mem as memoryblock) as boolean	38
* 6.2.19 GetFieldDefaultedByte(Tag as Integer, byref value as Integer) as boolean	39
* 6.2.20 GetFieldDefaultedDouble(Tag as Integer, byref value as Double) as boolean	40
* 6.2.21 GetFieldDefaultedInteger(Tag as Integer, byref value as Integer) as boolean	40
* 6.2.22 GetFieldDefaultedShort(Tag as Integer, byref value as Integer) as boolean	40
* 6.2.23 GetFieldDefaultedSingle(Tag as Integer, byref value as Single) as boolean	41
* 6.2.24 GetFieldDefaultedString(Tag as Integer, byref value as String) as boolean	41
* 6.2.25 GetFieldDouble(Tag as Integer, byref value as Double) as boolean	42
* 6.2.26 GetFieldInteger(Tag as Integer, byref value as Integer) as boolean	42
* 6.2.27 GetFieldMemory(Tag as Integer, byref itemCount as Integer) as memoryblock	42
* 6.2.28 GetFieldShort(Tag as Integer, byref value as Integer) as boolean	42
* 6.2.29 GetFieldSingle(Tag as Integer, byref value as Single) as boolean	43
* 6.2.30 GetFieldString(Tag as Integer, byref value as string) as boolean	43
* 6.2.31 GetXMP as string	44
* 6.2.32 ImageCount as Integer	44
* 6.2.33 ImageIndex as Integer	45
* 6.2.34 IsLastImage as boolean	45
* 6.2.35 MirrorVertical(output as TiffPictureMBS) as boolean	45
* 6.2.36 NextImage as boolean	45
* 6.2.37 NextImage(HeaderOnly as boolean) as boolean	45
* 6.2.38 Open(file as folderitem) as boolean	46
* 6.2.39 Open(file as folderitem, Mode as string) as boolean	46
* 6.2.40 OpenString(data as string) as boolean	47
* 6.2.41 OpenString(data as string, Mode as string) as boolean	47
* 6.2.42 RawStripSize(strip as UInt32) as UInt64	48
* 6.2.43 ReadBW as boolean	48
* 6.2.44 ReadBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean	49
* 6.2.45 ReadEncodedStrip(strip as UInt32, byref data as Memoryblock) as UInt32	49
* 6.2.46 ReadEncodedTile(tile as UInt32, byref data as Memoryblock) as Integer	50
* 6.2.47 ReadPreviewBW as boolean	50
* 6.2.48 ReadPreviewBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean	51
* 6.2.49 ReadPreviewRGB(ReduceFactor as Integer) as boolean	51
* 6.2.50 ReadRawStrip(strip as UInt32, byref data as Memoryblock) as UInt32	52
* 6.2.51 ReadRawTile(tile as UInt32, byref data as Memoryblock) as Integer	52
* 6.2.52 ReadRGB as boolean	52

* 6.2.53 ReadRGB(byref ErrorMessage as string, Dest as MemoryBlock = nil) as memoryblock	53
* 6.2.54 ReadRGBMemoryBegin(byref ErrorMessage as string) as boolean	53
* 6.2.55 ReadRGBMemoryEnd	54
* 6.2.56 ReadRGBMemoryStep(x as Integer, y as Integer, width as Integer, height as Integer, Dest as MemoryBlock = nil) as memoryblock	54
* 6.2.57 ReadWithLUT(ColorLookupTable() as color) as boolean	55
* 6.2.58 ReadWithLUT(ColorLookupTable() as color, left as Integer, top as Integer, width as Integer, height as Integer) as boolean	55
* 6.2.59 RewriteDirectory as boolean	56
* 6.2.60 SaveImage as boolean	56
* 6.2.61 Scanline(mem as Ptr, index as Integer, sample as Integer = 0) as boolean	56
* 6.2.62 SetColorMap(red as memoryblock, green as memoryblock, blue as memoryblock) as boolean	57
* 6.2.63 SetColorProfile(ProfileData as String) as boolean	57
* 6.2.64 SetData(Tag as Integer, data as string) as boolean	57
* 6.2.65 SetFieldByte(Tag as Integer, value as Integer) as boolean	57
* 6.2.66 SetFieldDouble(Tag as Integer, value as Double) as boolean	57
* 6.2.67 SetFieldInteger(Tag as Integer, value as Integer) as boolean	58
* 6.2.68 SetFieldMemory(Tag as Integer, ItemCount as Integer, data as memoryblock) as boolean	58
* 6.2.69 SetFieldShort(Tag as Integer, value as Integer) as boolean	59
* 6.2.70 SetFieldSingle(Tag as Integer, value as Single) as boolean	59
* 6.2.71 SetFieldString(Tag as Integer, value as string) as boolean	59
* 6.2.72 SetImageIndex(index as Integer) as boolean	61
* 6.2.73 SetImageIndex(index as Integer, HeaderOnly as boolean) as boolean	61
* 6.2.74 SetXMP(ProfileData as String) as boolean	61
* 6.2.75 VStripSize(nrows as UInt32) as UInt64	62
* 6.2.76 VTileSize(nrows as UInt32) as UInt64	62
* 6.2.77 WriteBW as boolean	62
* 6.2.78 WriteEncodedStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer	63
* 6.2.79 WriteEncodedTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer	64
* 6.2.80 WriteGray as boolean	64
* 6.2.81 WriteRawStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer	65
* 6.2.82 WriteRawTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer	66
* 6.2.83 WriteRGB as boolean	66
* 6.2.85 BitsPerSample as Integer	67
* 6.2.86 BytesPerRow as Int64	68
* 6.2.87 Compression as Integer	68
* 6.2.88 Copyright as String	68

	9
* 6.2.89 DateTime as String	69
* 6.2.90 DocumentName as String	69
* 6.2.91 ExtraSamples as MemoryBlock	69
* 6.2.92 FillOrder as Integer	70
* 6.2.93 height as Integer	70
* 6.2.94 HorizontalPosition as Single	70
* 6.2.95 HorizontalResolution as Single	70
* 6.2.96 HostComputer as String	71
* 6.2.97 ImageDescription as String	71
* 6.2.98 InputBuffer as String	71
* 6.2.99 IsTiled as Boolean	71
* 6.2.100 JPEGQuality as Integer	71
* 6.2.101 Make as String	73
* 6.2.102 mask as picture	73
* 6.2.103 Model as String	73
* 6.2.104 NumberOfStrips as UInt32	76
* 6.2.105 NumberOfTiles as UInt32	76
* 6.2.106 Orientation as Integer	76
* 6.2.107 OutputBuffer as String	78
* 6.2.108 PageName as String	78
* 6.2.109 Photometric as Integer	78
* 6.2.110 pict as picture	80
* 6.2.111 PlanarConfig as Integer	80
* 6.2.112 RasterScanlineSize as UInt64	80
* 6.2.113 ResolutionUnit as Integer	81
* 6.2.114 RowsPerStrip as Integer	81
* 6.2.115 SampleFormat as Integer	81
* 6.2.116 SamplesPerPixel as Integer	82
* 6.2.117 Software as String	82
* 6.2.118 StripSize as UInt64	82
* 6.2.119 TileRowSize as UInt64	82
* 6.2.120 TileSize as UInt64	82
* 6.2.121 Version as Integer	83
* 6.2.122 VersionString as String	83
* 6.2.123 VerticalPosition as Single	83
* 6.2.124 VerticalResolution as Single	84
* 6.2.125 width as Integer	84
* 6.2.126 YieldTicks as Integer	84
* 6.2.127 Scanline(index as Integer, sample as Integer = 0) as memoryblock	84
* 6.2.128 Scanlines(index as Integer, count as Integer, sample as Integer = 0, lineStepScanlines as Integer = 1, lineStepReturn as Integer = 1) as memoryblock	85
* 6.2.130 Error(libModule as string, message as string)	85

* 6.2.131 Progress(line as Integer, total as Integer)	86
* 6.2.132 Warning(libModule as string, message as string)	86
* 6.2.134 kCompressionAdobeDeflate = 8	86
* 6.2.135 kCompressionCCITTFAX3 = 3	86
* 6.2.136 kCompressionCCITTFAX4 = 4	86
* 6.2.137 kCompressionCCITTRLE = 2	86
* 6.2.138 kCompressionCCITTRLEW = 32771	87
* 6.2.139 kCompressionCCITT_T4 = 3	87
* 6.2.140 kCompressionCCITT_T6 = 4	87
* 6.2.141 kCompressionDCS = 32947	87
* 6.2.142 kCompressionDeflate = 32946	87
* 6.2.143 kCompressionIT8BL = 32898	87
* 6.2.144 kCompressionIT8CTPAD = 32895	87
* 6.2.145 kCompressionIT8LW = 32896	88
* 6.2.146 kCompressionIT8MP = 32897	88
* 6.2.147 kCompressionJBIG = 34661	88
* 6.2.148 kCompressionJP2000 = 34712	88
* 6.2.149 kCompressionJPEG = 7	88
* 6.2.150 kCompressionLZMA = 34925	89
* 6.2.151 kCompressionLZW = 5	89
* 6.2.152 kCompressionNeXT = 32766	89
* 6.2.153 kCompressionNone = 1	90
* 6.2.154 kCompressionOJPEG = 6	90
* 6.2.155 kCompressionPackBits = 32773	90
* 6.2.156 kCompressionPixarFilm = 32908	90
* 6.2.157 kCompressionPixarLog = 32909	90
* 6.2.158 kCompressionSGILOG = 34676	90
* 6.2.159 kCompressionSGILOG24 = 34677	90
* 6.2.160 kCompressionThunderScan = 32809	91
* 6.2.161 kFillOrderLSB2MSB = 2	91
* 6.2.162 kFillOrderMSB2LSB = 1	91
* 6.2.163 kOrientationBottomLeft = 4	91
* 6.2.164 kOrientationBottomRight = 3	91
* 6.2.165 kOrientationLeftBottom = 8	91
* 6.2.166 kOrientationLeftTop = 5	91
* 6.2.167 kOrientationRightBottom = 7	92
* 6.2.168 kOrientationRightTop = 6	92
* 6.2.169 kOrientationTopLeft = 1	92
* 6.2.170 kOrientationTopRight = 2	92
* 6.2.171 kPhotometricCIELab = 8	92
* 6.2.172 kPhotometricICCLab = 9	92
* 6.2.173 kPhotometricITULab = 10	92

	11
* 6.2.174 kPhotometricLogL = 32844	93
* 6.2.175 kPhotometricLogLUV = 32845	93
* 6.2.176 kPhotometricMask = 4	93
* 6.2.177 kPhotometricMinIsBlack = 1	93
* 6.2.178 kPhotometricMinIsWhite = 0	93
* 6.2.179 kPhotometricPalette = 3	93
* 6.2.180 kPhotometricRGB = 2	93
* 6.2.181 kPhotometricSeparated = 5	94
* 6.2.182 kPhotometricYCBCR = 6	94
* 6.2.183 kPlanarConfigContig = 1	94
* 6.2.184 kPlanarConfigSeparate = 2	94
* 6.2.185 kPredictorFloatingPoint = 3	94
* 6.2.186 kPredictorHorizontal = 2	94
* 6.2.187 kPredictorNone = 1	94
* 6.2.188 kResUnitCentimeter = 3	95
* 6.2.189 kResUnitInch = 2	95
* 6.2.190 kResUnitNone = 1	95

Chapter 2

List of all classes

- Folderitem 17
- TiffPictureMBS 31

Chapter 3

List of all global methods

- 6.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer 26
- 6.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer 23
- 6.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer 25
- 6.1.8 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer 31
- 6.1.9 CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer 31
- 6.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer 26
- 6.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer 28
- 5.1.1 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer 19

- 5.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer 20
- 6.1.2 TIFFStringToPictureMBS(data as string) as picture 25
- 6.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS 25

Chapter 4

Files

4.1 class Folderitem

4.1.1 class Folderitem

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of Realbasic's base classes.

Notes: Handles access to files.

4.1.2 Methods

4.1.3 OpenAsTiffMBS(HeaderOnly as boolean=false) as TiffPictureMBS

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a TIFF file.

Example:

```
dim f as FolderItem
dim t as TiffPictureMBS

f=SpecialFolder.Desktop.Child("008.tiff")
t=f.OpenAsTiffMBS(true)

if t<>Nil then
msgbox str(t.width)+" x "+str(t.height)
else
MsgBox "Problem?"
end if
```

Notes:

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 270 KB big! (REALbasic's OpenAsPicture depends on QuickTime). The plugin supports even more stuff like zlib compressed picture data or JPEGs embedded into TIFFs.

If the function returns nil, you can use a TiffPictureMBS subclass and use the methods there so you get error messages in the error event.

Setting HeaderOnly to true will ignore the actual picture data and load only the header data.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

Chapter 5

Pictures Import and Export

5.1 Globals

5.1.1 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer

Plugin Version: 6.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Splits a one bit CMYK file into different files.

Notes:

Source file has 1 bit for each channel.

Error code is returned which is 0 for no error.

CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

CallbackTarget can be nil or must be an object with a method with the following declaration: "Progress(RowIndex as Integer, RowCount as Integer)"

Errorcodes:

See also:

- 5.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer 20

- 1 not used
- 2 Failed to open f
- 3 Failed to open fc
- 4 Failed to open fm
- 5 Failed to open fy
- 6 Failed to open fk
- 7 Width<1
- 8 Height<1
- 9 Allocating read buffer failed
- 10 Allocating write buffer failed for c
- 11 Allocating write buffer failed for m
- 12 Allocating write buffer failed for y
- 13 Allocating write buffer failed for k
- 14 Read failed
- 15 Write failed for c
- 16 Write failed for m
- 17 Write failed for y
- 18 Write failed for k

5.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer

Plugin Version: 6.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Splits a one bit CMYK file into different files.

Notes:

Source file has 1 bit for each channel.

Error code is returned which is 0 for no error.

CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

CallbackTarget can be nil or must be an object with a method with the following declaration: "Progress(RowIndex as Integer, RowCount as Integer)"

ReadLines and WriteLines define how many rows to read in one I/O operation.

Errorcodes:

- 1 not used
- 2 Failed to open f
- 3 Failed to open fc
- 4 Failed to open fm
- 5 Failed to open fy
- 6 Failed to open fk
- 7 Width<1
- 8 Height<1
- 9 Allocating read buffer failed
- 10 Allocating write buffer failed for c
- 11 Allocating write buffer failed for m
- 12 Allocating write buffer failed for y
- 13 Allocating write buffer failed for k
- 14 Read failed
- 15 Write failed for c
- 16 Write failed for m
- 17 Write failed for y
- 18 Write failed for k

See also:

- 5.1.1 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer

Chapter 6

TIFF

6.1 Globals

6.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer

Plugin Version: 6.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 1bit raw image files to one 8bit RGB tiff.

Example:

```
dim t(4) as FolderItem
dim dC(4), dM(4), dY(4), dK(4) as Double
dim nC(4), nM(4), nY(4), nK(4) as Integer
dim i as Integer
dim p as Picture
```

```
//Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
//Magenta
dK(1)=0.00
dC(1)=0.0
dM(1)=1.0
dY(1)=0.0
//Yellow
dK(2)=0.00
```

```

dC(2)=0.0
dM(2)=0.0
dY(2)=1.0
//Black
dK(3)=1.00
dC(3)=0.0
dM(3)=0.0
dY(3)=0.0
//Pantone, Sonderfarbe, S0
dK(4)=0.00
dC(4)=0.60
dM(4)=0.35
dY(4)=0.15

//Bilder
t(0)=GetFolderItem("test.Cyan.bit")
t(1)=GetFolderItem("test.Magenta.bit")
t(2)=GetFolderItem("test.Yellow.bit")
t(3)=GetFolderItem("test.Black.bit")
t(4)=GetFolderItem("test.S0.bit")

for i=0 to 4
nC(i)=dC(i)*1000.0
nM(i)=dM(i)*1000.0
nY(i)=dY(i)*1000.0
nK(i)=dK(i)*1000.0
next

// Scale 1/n, 1/3, 1/2, 1, 2, 3, n

Title=str(CombineBitCMYKtoRGBMBS(nC,nM,nY,nK, t, 1, 545,567,0,0,545,567,p,0))
Backdrop=p
Width=p.Width
Height=p.Height

```

Notes:

All arrays have the same size specifying for each 1bit grayscale source image the colors to be used in the final image.

Result image is written to the output picture which is created. Error code is returned which is 0 for no error. CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

6.1.2 TIFFStringToPictureMBS(data as string) as picture

Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff string and returns the RGB image for this tiff file.

Notes:

Returns nil on any error.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

6.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff string and returns a TiffPictureMBS object.

Notes:

if you want to read the picture after this line you need to call ReadBW, ReadRGB or use the Scanline methods.

Returns nil on any error.

6.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 1bit tiff image files to one CMYK tiff.

Notes:

All arrays have the same size specifying for each 1bit grayscale source image the colors to be used in the final image.

Result image is written to the output picture which is created. Error code is returned which is 0 for no error. Compression can be set before data is written to current tiff which is for output. The tiff object for output must be perfectly setup before using this function.

6.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 1bit raw image files to one CMYK tiff.

Notes:

All arrays have the same size specifying for each 1bit grayscale esource image the colors to be used in the final image.

Result image is written to the output picture which is created. Error code is returned which is 0 for no error. CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

6.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines Grayscale tiff images to one CMYK tiff.

Example:

```
const PLANARCONFIG_CONTIG=1
const PHOTOMETRIC_RGB=2
const FILLORDER_MSB2LSB=1
const PHOTOMETRIC_SEPARATED=5

dim u,v,ot,t(4) as TiffPictureMBS
dim f as FolderItem
dim pnach as Picture
dim dC(4), dM(4), dY(4), dK(4) as Double
dim nC(4), nM(4), nY(4), nK(4) as Integer
dim i as Integer

//Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
//Magenta
dK(1)=0.00
dC(1)=0.0
dM(1)=1.0
```

```
dY(1)=0.0
//Yellow
dK(2)=0.00
dC(2)=0.0
dM(2)=0.0
dY(2)=1.0
//Black
dK(3)=1.00
dC(3)=0.0
dM(3)=0.0
dY(3)=0.0
//Pantone, S0
dK(4)=0.00
dC(4)=0.60
dM(4)=0.35
dY(4)=0.15

//Bilder
f=GetFolderItem("test.Cyan.tif")
t(0)=f.OpenAsTiffMBS

f=GetFolderItem("test.Magenta.tif")
t(1)=f.OpenAsTiffMBS

f=GetFolderItem("test.Yellow.tif")
t(2)=f.OpenAsTiffMBS

f=GetFolderItem("test.Black.tif")
t(3)=f.OpenAsTiffMBS

f=GetFolderItem("test.S0.tif")
t(4)=f.OpenAsTiffMBS

for i=0 to 4
nC(i)=dC(i)*1000.0
nM(i)=dM(i)*1000.0
nY(i)=dY(i)*1000.0
nK(i)=dK(i)*1000.0
next

f=GetFolderItem("resultCMYK.tif")
ot=new TiffPictureMBS
if ot.Create(f) then
v=t(0)
u=ot
u.Width=v.Width
u.Height=v.Height
u.RowsPerStrip=v.Height
```

```

u.BitsPerSample=8
u.SamplesPerPixel=4
u.ResolutionUnit=v.ResolutionUnit
u.HorizontalPosition=v.HorizontalPosition
u.HorizontalResolution=v.HorizontalResolution
u.VerticalPosition=v.VerticalPosition
u.VerticalResolution=v.VerticalResolution
u.Orientation=v.Orientation
u.PlanarConfig=PLANARCONFIG_CONTIG
u.Photometric=PHOTOMETRIC_SEPARATED
u.FillOrder=FILLORDER_MSB2LSB
Title=str(CombineTiffCMYKtoCMYKMBS(ot, nC,nM,nY,nK,t))
ot.Close
end if

//Neues Bild anzeigen
pnach=f.OpenAsPicture
if pnach<>Nil then
Window1.Width=pNach.Width
Window1.Height=pNach.Height
Window1.Backdrop=pNach
end if

```

Notes:

All arrays have the same size specifying for each 8bit grayscale source image the colors to be used in the final image.

Result image is written to the current tiffpicture. Error code is returned which is 0 for no error.

You need to set yourself all needed tiffpicture parameters for the output image and you must create it before.

The plugin sets width and height for the output tiff.

6.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines Grayscale tiff images to one RGB tiff.

Example:

```

const PLANARCONFIG_CONTIG=1
const PHOTOMETRIC_RGB=2
const FILLORDER_MSB2LSB=1

dim u,v,ot,t(4) as TiffPictureMBS
dim f as FolderItem

```

```
dim pnach as Picture
dim dC(4), dM(4), dY(4), dK(4) as Double
dim nC(4), nM(4), nY(4), nK(4) as Integer
dim i as Integer
```

```
//Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
//Magenta
dK(1)=0.00
dC(1)=0.0
dM(1)=1.0
dY(1)=0.0
//Yellow
dK(2)=0.00
dC(2)=0.0
dM(2)=0.0
dY(2)=1.0
//Black
dK(3)=1.00
dC(3)=0.0
dM(3)=0.0
dY(3)=0.0
//Pantone, S0
dK(4)=0.00
dC(4)=0.60
dM(4)=0.35
dY(4)=0.15

//Bilder
f=GetFolderItem("test.Cyan.tif")
t(0)=f.OpenAsTiffMBS

f=GetFolderItem("test.Magenta.tif")
t(1)=f.OpenAsTiffMBS

f=GetFolderItem("test.Yellow.tif")
t(2)=f.OpenAsTiffMBS

f=GetFolderItem("test.Black.tif")
t(3)=f.OpenAsTiffMBS

f=GetFolderItem("test.S0.tif")
t(4)=f.OpenAsTiffMBS

for i=0 to 4
```

```

nC(i)=dC(i)*1000.0
nM(i)=dM(i)*1000.0
nY(i)=dY(i)*1000.0
nK(i)=dK(i)*1000.0
next

f=GetFolderItem("resultRGB.tif")
ot=new TiffPictureMBS
if ot.Create(f) then
v=t(0)
u=ot
u.Width=v.Width
u.Height=v.Height
u.RowsPerStrip=v.Height
u.BitsPerSample=8
u.SamplesPerPixel=3
u.ResolutionUnit=v.ResolutionUnit
u.HorizontalPosition=v.HorizontalPosition
u.HorizontalResolution=v.HorizontalResolution
u.VerticalPosition=v.VerticalPosition
u.VerticalResolution=v.VerticalResolution
u.Orientation=v.Orientation
u.PlanarConfig=PLANARCONFIG_CONTIG
u.Photometric=PHOTOMETRIC_RGB
u.FillOrder=FILLORDER_MSB2LSB
Title=str(CombineTiffCMYKtoRGBMBS(ot, nC,nM,nY,nK,t))
ot.Close
end if

//Neues Bild anzeigen
pnach=f.OpenAsPicture
if pnach<>Nil then
Window1.Width=pNach.Width
Window1.Height=pNach.Height
Window1.Backdrop=pNach
end if

```

Notes:

All arrays have the same size specifying for each 8bit grayscale source image the colors to be used in the final image.

Result image is written to the current tiffpicture. Error code is returned which is 0 for no error.

You need to set yourself all needed tiffpicture parameters for the output image and you must create it before.

6.1.8 **CombineTiff1BitCMYKtoTiffMBS**(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines a one bit gray tiff image to one 1 bit gray tiff.

Notes:

Basicly only scales the data.

Result image is written to the current tiffpicture. Error code is returned which is 0 for no error.

You need to set yourself all needed tiffpicture parameters for the output image and you must create it before.

The plugin sets width and height for the output tiff.

6.1.9 **CombineTiff8BitCMYKtoTiffMBS**(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 8bit tiff image files to one CMYK tiff.

Notes:

All arrays have the same size specifying for each 8bit grayscale source image the colors to be used in the final image.

Result image is written to the output picture which is created. Error code is returned which is 0 for no error.

Compression can be set before data is written to current tiff which is for output. The tiff object for output must be perfectly setup before using this function.

6.2 class TiffPictureMBS

6.2.1 class TiffPictureMBS

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a Tiff picture.

Notes: Bases on libtiff.

6.2.2 Methods

6.2.3 AddCustomTag(Tag as Integer, FieldReadCount as Integer, FieldWriteCount as Integer, FieldType as Integer, FieldBit as Integer, OkToChange as Integer, PassCount as Integer, FieldName as string) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a custom tag.
Example:

```

const TIFFTAG_ASCII = 40666
const TIFFTAG_LONGTAG = 40667
const TIFFTAG_SHORTTAG = 40668
const TIFFTAG_RATIONALTAG = 40669
const TIFFTAG_FLOATTAG = 40670
const TIFFTAG_DOUBLETAG = 40671
const TIFFTAG_BYTE = 40672

const TIFFTAG_SOFTWARE=305

const TIFF_BYTE=1
const TIFF_ASCII=2
const TIFF_SHORT=3 // integer 16 bit signed
const TIFF_LONG=4 // integer 32 bit
const TIFF_FLOAT=11
const TIFF_DOUBLE=12

const FIELD_CUSTOM = 65

dim t as new TiffPictureMBS

// open tiff

if not t.AddCustomTag(TIFFTAG_ASCII, -1, -1, TIFF_ASCII, FIELD_CUSTOM, 1, 0, "MyString")
then
MsgBox "AddCustomTag failed1."
end if

```

Notes: See tiff documentation for details.

6.2.4 AddImage as boolean

Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes existing picture and header information to file and starts a new one.

Example:

```

dim t as TiffPictureMBS
dim f as FolderItem
dim p as Picture

f=SpecialFolder.Desktop.Child("test.tif")
t=new TiffPictureMBS
if t.Create(f) then

p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.FillOval 0,0,100,100
t.Pict=p
if t.WriteRGB then
if t.AddImage then
p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(0,0,255)
p.Graphics.FillOval 0,0,100,100
t.Pict=p
if t.WriteRGB then
MsgBox "Written multi picture tiff."
end if
end if
end if
end if

```

Notes:

Returns true on success and false on any error.

Calls TIFFWriteDirectory internally.

6.2.5 close

Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the Tiff handle.

Notes:

In 5.1 and older the destructor.

In 5.2 and later only closes the tiff handle so you can still read the pictures, the output or input buffer.

6.2.6 CombinePictureWithMask as picture

Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a new picture which is created using the picture and it's mask.

Example:

```
dim t as TiffPictureMBS
' ...
canvas1.backdrop=t.CombinePictureWithMask
```

6.2.7 Create(file as folderitem) as boolean

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new empty tiff file.

Example:

```
dim p as Picture
dim f as FolderItem
dim t as TiffPictureMBS

p=NewPicture(100,100,32)

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p

if t.Create(f) then
if t.WriteRGB then
t.Close
MsgBox "Ok"
f.Launch
end if
end if
```

Notes:

Returns true on success.

This function uses paths like all Tiff functions, so be sure there are not two volumes named equal on a Mac OS Classic system.

See also:

- 6.2.8 Create(file as folderitem, endian as Integer) as boolean

6.2.8 Create(file as folderitem, endian as Integer) as boolean

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new empty tiff file.

Notes:

Returns true on success.

Endian settings:

- 0 Default (System)
- 1 BigEndian (Mac)
- 2 LittleEndian (Win)

This function uses paths like all Tiff functions, so be sure there are not two volumes named equal on a Mac OS Classic system.

See also:

- 6.2.7 Create(file as folderitem) as boolean

34

6.2.9 CreateString(Size as Integer) as boolean

Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string based tiff writer.

Example:

Function PictureToTiffStringMBS(pic as picture) **As string**
dim t as TiffPictureMBS

```
t=new TiffPictureMBS
if t.CreateString(& h100000) then
t.Pict=pic
if t.WriteRGB then
t.Close
Return t.OutputBuffer
end if
end if
End Function
```

Notes:

Same as the Create() function, but memory based. You can now use functions like Scanline(), WriteSW() or WriteRGB() to put the picture data.

Returns true on success.

The Warning and Error events may show you reasons why it does not work.

The size parameter you pass in is a guess for the initial size of the memory block used. If more data is written, the memory block is resized, but it is quite slow to resize a memoryblock, so make a good guess!

You can and should use this function to write yourself a PictureToTiffString function. The plugin can not well make such a function as there are thousands of possible parameters combination you may want to use. (compared to the JPEG library where you only have the compression level parameter.)

See also:

- 6.2.10 CreateString(Size as Integer, Mode as string) as boolean 36

6.2.10 CreateString(Size as Integer, Mode as string) as boolean

Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string based tiff writer.

Notes:

Same as the other CreateString method, but you can pass a mode string to the library.

mode="wb" for big endian and mode="wl" for little endian.

See also:

- 6.2.9 CreateString(Size as Integer) as boolean 35

6.2.11 Flush as boolean

Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush causes any pending writes for the specified file (including writes for the current directory) to be done.

Notes: In normal operation this call is never needed - the library automatically does any flushing required.

6.2.12 FlushData as boolean

Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** FlushData flushes any pending image data for the specified file to be written out; directory-related data are not flushed.

Notes: In normal operation this call is never needed | the library automatically does any flushing required.

6.2.13 GetColorMap(byref red as memoryblock, byref green as memoryblock, byref blue as memoryblock) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the color map for a paletten image.

Notes:

The memoryblock must be $2^{\text{bitspersample}} * 2$ bytes big.
Returns true on success and false on failure.

6.2.14 GetColorProfile as string

Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the color profile data stored in the tiff file.

Example:

```
dim f as FolderItem
dim t as TiffPictureMBS
dim s as string
dim p as LCMS2ProfileMBS

f=SpecialFolder.Desktop.Child("horsehead_steinberg_big.tif")

t=f.OpenAsTiffMBS

s=t.GetColorProfile

p = LCMS2ProfileMBS.OpenProfileFromString(s)

MsgBox p.Name
```

Notes: Returns "" on any error.

6.2.15 GetData(Tag as Integer) as string

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the string stored for this tag.

6.2.16 GetField(Tag as Integer, mem as memoryblock) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

The memoryblock you pass in must be big enough to hold whatever data the library stores there.

6.2.17 GetFieldByte(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.18 GetFieldCount(Tag as Integer, byref count as Integer, mem as memory-block) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Example:

```
'TIFF Tag ImageID
,
```

```
'IFD Image
'Code 32781 (hex 0x800D)
'Name ImageID
'Type ASCII
'Count N
'Default None
'Description
,
```

```
'OPI-related.
,
```

'ImageID is the full pathname of the original, high-resolution image, or any other identifying string that uniquely identifies the original image.

'The high-resolution image is not required to be in TIFF format. It can be in any format that an OPI Consumer wishes to support.

```

Dim tiffImport As TiffPictureMBS
Dim xx as string

tiffImport = New TiffPictureMBS
Call tiffImport.Open(SpecialFolder.Desktop.Child("test.tif"))

// the memoryblock is a storage for the data. In this case a pointer to the CString
dim m as MemoryBlock=NewMemoryBlock(4)
dim count as Integer

if tiffImport.GetFieldCount(32781, count, m) then
MsgBox str(count)
MsgBox m.Ptr(0).CString(0)
end if

tiffImport.close

```

Notes:

This is the special version using memoryblock so you can use it for reading values with a count value.

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.19 GetFieldDefaultedByte(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.20 GetFieldDefaultedDouble(Tag as Integer, byref value as Double) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.21 GetFieldDefaultedInteger(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.22 GetFieldDefaultedShort(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.23 GetFieldDefaultedSingle(Tag as Integer, byref value as Single) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.24 GetFieldDefaultedString(Tag as Integer, byref value as String) as boolean

Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Example:

```
dim t as TiffPictureMBS
```

```
dim f as FolderItem
```

```
dim s as string
```

```
f=SpecialFolder.Desktop.Child("ChristianSchmitz.tif")
```

```
t=f.OpenAsTiffMBS
```

```
const TIFFTAG_SOFTWARE=305
```

```
if t.GetFieldDefaultedString(TIFFTAG_SOFTWARE, s) then
```

```
MsgBox "TIFFTAG_SOFTWARE"+EndOfLine+s
```

```
end if
```

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

The string is returned with ascii encoding. You may need to define a different encoding if this is not correct.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

6.2.25 GetFieldDouble(Tag as Integer, byref value as Double) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.26 GetFieldInteger(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.27 GetFieldMemory(Tag as Integer, byref ItemCount as Integer) as memoryblock

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

This is the special version using memoryblock so you can use it for reading values with a count value.

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.28 GetFieldShort(Tag as Integer, byref value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.29 GetFieldSingle(Tag as Integer, byref value as Single) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.30 GetFieldString(Tag as Integer, byref value as string) as boolean

Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

Example:

```

dim t as TiffPictureMBS
dim f as FolderItem
dim s as string

f=SpecialFolder.Desktop.Child("test.tif")
t=f.OpenAsTiffMBS

const TIFFTAG_SOFTWARE=305

if t.GetFieldString(TIFFTAG_SOFTWARE, s) then
  MsgBox "TIFFTAG_SOFTWARE"+EndOfLine+s
end if

const TIFFTAG_HOSTCOMPUTER=316

if t.GetFieldString(TIFFTAG_HOSTCOMPUTER, s) then
  MsgBox "TIFFTAG_SOFTWARE"+EndOfLine+s
end if

const TIFFTAG_IMAGEDESCRIPTION=270

if t.GetFieldString(TIFFTAG_IMAGEDESCRIPTION, s) then
  MsgBox "TIFFTAG_IMAGEDESCRIPTION"+EndOfLine+s
end if

const TIFFTAG_MAKE=271

if t.GetFieldString(TIFFTAG_MAKE, s) then
  MsgBox "TIFFTAG_MAKE"+EndOfLine+s
end if

```

```

const TIFFTAG_ARTIST=315

if t.GetFieldString(TIFFTAG_ARTIST, s) then
MsgBox "TIFFTAG_ARTIST"+EndOfLine+s
end if

```

Notes:

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

The string is returned with ascii encoding. You may need to define a different encoding if this is not correct.

6.2.31 GetXMP as string

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the xmp metadata package stored in the tiff file.

Example:

```

dim f as FolderItem
dim t as TiffPictureMBS
dim s as string

f=SpecialFolder.Desktop.Child("test.tif")

t=f.OpenAsTiffMBS

s=t.GetXMP

MsgBox left(s,500)

```

Notes: Returns "" on any error.

6.2.32 ImageCount as Integer

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of images in the TIFF file.

Notes: Returns 0 on any error.

6.2.33 ImageIndex as Integer

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current image index.

Notes: 0 based.

6.2.34 IsLastImage as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the current picture is the last picture.

Notes: Useful if you walk through all pictures using NextImage.

6.2.35 MirrorVertical(output as TiffPictureMBS) as boolean

Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the current picture to another tiff object.

Notes:

You may be able to pass the current tiff file as the output one if you have it open for read and write.

Returns true on success and false on failure.

Works for any color depth or color mode.

6.2.36 NextImage as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the next image in the TIFF file.

Notes: Returns true on success and false on any error.

See also:

- 6.2.37 NextImage(HeaderOnly as boolean) as boolean

45

6.2.37 NextImage(HeaderOnly as boolean) as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the next image.

Notes: If HeaderOnly is false the current picture is read into the pict& mask properties.

See also:

- 6.2.36 NextImage as boolean

45

6.2.38 Open(file as folderitem) as boolean

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff file for readonly access.

Notes:

You need to use the ReadRGB method or the Scanline property to get data from this file.

Returns true on success.

See also:

- 6.2.39 Open(file as folderitem, Mode as string) as boolean

46

6.2.39 Open(file as folderitem, Mode as string) as boolean

Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff file for readonly access.

Example:

```
dim file as folderitem = SpecialFolder.desktop.child("test.tif")
dim st as new MyTiff
```

```
// open for appending
if not st.Open(file,"r+") then
MsgBox "Open Tiff failed!"
else
// change one setting
st.Copyright = "Hello World"
```

```
// and save
call st.SaveImage
st.Close
end if
```

Notes:

Same as the other Open method, but you can pass a mode string to the library.

The open mode parameter can include the following flags in addition to the "r" (Read), "w" (Write), and "a" (Append) flags. Note however that option flags must follow the read-write-append specification.

See also:

- 6.2.38 Open(file as folderitem) as boolean

46

6.2.40 `OpenString(data as string) as boolean`

Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff image located in a binary string.

Example:

```
Function TiffStringToPicture(data as string) As picture
dim t as MyTiffPictureMBS

t=new MyTiffPictureMBS

if t.OpenString(data) then
if t.ReadRGB then
return t.Pict
// you could add the mask here.
end if
end if

Return nil // failed
End Function
```

Notes:

Same as the `Open()` function, but memory based. You can now use functions like `Scanline()`, `ReadSW()` or `ReadRGB()` to get the picture data.

Returns true on success.

The Warning and Error events may show you reasons why it does not work.

The string you pass is saved in the data property of the class for later use.

You can and should use this function to write yourself a `TiffStringToPicture` function.

See also:

- 6.2.41 `OpenString(data as string, Mode as string) as boolean`

47

6.2.41 `OpenString(data as string, Mode as string) as boolean`

Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff image located in a binary string.

Notes: Same as the other `OpenString` method, but you can pass a mode string to the library.

See also:

- 6.2.40 `OpenString(data as string) as boolean`

47

6.2.42 RawStripSize(strip as UInt32) as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of bytes in a raw strip (i.e. not decoded).

6.2.43 ReadBW as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode.

Example:

```
dim f as FolderItem
dim p as Picture
dim t as TiffPictureMBS

f=SpecialFolder.Desktop.Child("Multipage fax.tif")
t=f.OpenAsTiffMBS(true)

if t.ReadBW then
title=str(t.ImageCount)

p=t.pict
Title=str(p.Depth)
Canvas1.Backdrop=p
end if
```

Notes:

Returns true on success and false on any error.

Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.44 ReadBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean 49

6.2.44 ReadBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode.

Example:

```
dim f as FolderItem
dim p as Picture
dim t as TiffPictureMBS

f=SpecialFolder.Desktop.Child("Multipage fax.tif")
t=f.OpenAsTiffMBS(true)

if t.ReadBW(0,0,t.width/2,t.height/2) then
title=str(t.ImageCount)

p=t.pict
Title=str(p.Depth)
Canvas1.Backdrop=p
end if
```

Notes:

Returns true on success and false on any error.

Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.43 ReadBW as boolean

6.2.45 ReadEncodedStrip(strip as UInt32, byref data as Memoryblock) as UInt32

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read and decode a strip of data from an open TIFF file.

Notes:

Read the specified strip of data and place up to size bytes of decompressed information in the (user supplied) data buffer.

The value of strip is a "raw strip number". That is, the caller must take into account whether or not the data are organized in separate planes (`PlanarConfiguration=2`). To read a full strip of data the data buffer should typically be at least as large as the number returned by `StripSize`.

The library attempts to hide bit- and byte-ordering differences between the image and the native machine by converting data to the native machine order. Bit reversal is done if the `FillOrder` tag is opposite to the native machine bit order. 16- and 32-bit samples are automatically byte-swapped if the file was written with a byte order opposite to the native machine byte order,

Returns the actual number of bytes of data that were placed in `buf` is returned; `ReadEncodedStrip` returns -1 if an error was encountered.

6.2.46 `ReadEncodedTile(tile as UInt32, byref data as Memoryblock) as Integer`

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read and decode a tile of data from an open TIFF file.

Notes:

Read the specified tile of data and place up to size bytes of decompressed information in the (user supplied) data buffer.

The value of `tile` is a "raw tile number". That is, the caller must take into account whether or not the data are organized in separate planes (`PlanarConfiguration=2`). `ComputeTile` automatically does this when converting an `(x,y,z,sample)` coordinate quadruple to a tile number. To read a full tile of data the data buffer should be at least as large as the value returned by `TileSize`.

The library attempts to hide bit- and byte-ordering differences between the image and the native machine by converting data to the native machine order. Bit reversal is done if the `FillOrder` tag is opposite to the native machine bit order. 16- and 32-bit samples are automatically byte-swapped if the file was written with a byte order opposite to the native machine byte order,

Returns the actual number of bytes of data that were placed in `buf` is returned; `ReadEncodedTile` returns 1 if an error was encountered.

6.2.47 `ReadPreviewBW as boolean`

Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode as a preview.

Notes:

This method is faster than `ReadBW`, because it reads only every 8th line and every 8th pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success and false on any error.

Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.48 ReadPreviewBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean
51

6.2.48 ReadPreviewBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode as a preview.

Notes:

This method is faster than ReadBW, because it reads only every 8th line and every 8th pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success and false on any error.

Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.47 ReadPreviewBW as boolean

6.2.49 ReadPreviewRGB(ReduceFactor as Integer) as boolean

Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a CMYK or RGB picture and stores it in the pict and name properties.

Notes:

This method is faster than ReadRGB, because it reads only every ReduceFactorth line and every ReduceFactorth pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success.

ReadRGB does converting on the picture data if needed so you can read CMYK, RGB, BW and other image data using this function.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

6.2.50 ReadRawStrip(strip as UInt32, byref data as Memoryblock) as UInt32

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the undecoded contents of a strip of data from an open TIFF file.

Notes:

Read the contents of the specified strip into the (user supplied) data buffer. Note that the value of strip is a "raw strip number". That is, the caller must take into account whether or not the data is organized in separate planes (PlanarConfiguration=2). To read a full strip of data the data buffer should typically be at least as large as the number returned by StripSize.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedStrip returns -1 if an error was encountered.

6.2.51 ReadRawTile(tile as UInt32, byref data as Memoryblock) as Integer

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return an undecoded tile of data from an open TIFF file.

Notes:

Read the contents of the specified tile into the (user supplied) data buffer. Note that the value of tile is a "raw tile number". That is, the caller must take into account whether or not the data is organized in separate planes (PlanarConfiguration=2). ComputeTile automatically does this when converting an (x,y,z,sample) coordinate quadruple to a tile number. To read a full tile of data the data buffer should typically be at least as large as the value returned by TileSize.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedTile returns 1 if an error was encountered.

6.2.52 ReadRGB as boolean

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a CMYK or RGB picture and stores it in the pict and name properties.

Notes:

Returns true on success.

ReadRGB does converting on the picture data if needed so you can read CMYK, RGB, BW and other image data using this function.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

See also:

- 6.2.53 ReadRGB(byref ErrorMessage as string, Dest as MemoryBlock = nil) as memoryblock 53

6.2.53 ReadRGB(byref ErrorMessage as string, Dest as MemoryBlock = nil) as memoryblock

Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the image into a memoryblock as RGB.

Notes:

The Scanline() array gives you the raw uncompressed data. But this method decodes the data into a RGBA image.

The Memoryblock has the size of 4*width*height. Each pixel has one byte for red, one byte for green, one byte for blue and one byte for alpha. If no alpha is in the file, all pixels have the same alpha of 255.

If the decompression fails the function returns nil. (e.g. out of memory).

If the decoding fails, you also get an error message.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

If dest is not nil and big enough, the plugin will use it and return it on success. This can avoid additional memory allocations which can cost CPU time (especially to clear the bytes).

See also:

- 6.2.52 ReadRGB as boolean 52

6.2.54 ReadRGBMemoryBegin(byref ErrorMessage as string) as boolean

Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts a RGBA reader for the given TIFF picture.

Notes:

Like ReadRGB, but with ReadRGBMemoryBegin, ReadRGBMemoryEnd and ReadRGBMemoryStep you can read the RGBA data in portions.

The Memoryblock returned by ReadRGBMemoryStep has the size of 4*width*height. Each pixel has one byte for red, one byte for green, one byte for blue and one byte for alpha. If no alpha is in the file, all pixels have the same alpha of 255.

If the decompression fails the function returns false. (e.g. out of memory).
If the decoding fails, you also get an error message.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

6.2.55 ReadRGBMemoryEnd

Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Cleans up the internal data structures created by ReadRGBMemoryBegin.

6.2.56 ReadRGBMemoryStep(x as Integer, y as Integer, width as Integer, height as Integer, Dest as MemoryBlock = nil) as memoryblock

Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the image into a memoryblock as RGBA.

Example:

```
dim t as new TiffPictureMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim e as string

if t.Open(f) then
if t.ReadRGBMemoryBegin(e) then

dim w as Integer = t.Width
dim h as Integer = t.Height

dim p as new PictureMBS(w, h, PictureMBS.ImageFormatRGB)

for y as Integer = 0 to h-1 step 100

dim m as MemoryBlock = t.ReadRGBMemoryStep(0, y, w, 100)

for i as Integer = 0 to 99
p.RowInFormat(i+y, PictureMBS.ImageFormatRGBA)=m
next

next
```

```
t.ReadRGBMemoryEnd
Backdrop = p.copypicture(0,0,1000,1000) // display a portion
end if

end if
```

Notes:

As you see in the example, you can use this method to easily read huge TIFF files into a PictureMBS object.

If the decompression fails the function returns nil. (e.g. out of memory). Please make sure that the range in x and y, width and height is right.

If dest is not nil and big enough, the plugin will use it and return it on success. This can avoid additional memory allocations which can cost CPU time (especially to clear the bytes).

6.2.57 ReadWithLUT(ColorLookupTable() as color) as boolean

Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture with a Color Lookup Table.

Notes:

Returns true on success and false on any error.

Works with 8, 16 and 32 bits per sample. And with 1 or 3 samples per pixels (Gray or RGB). The lookup table has 256 entries for 8 bit and 65536 entries for 16/32 bit.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.58 ReadWithLUT(ColorLookupTable() as color, left as Integer, top as Integer, width as Integer, height as Integer) as boolean 55

6.2.58 ReadWithLUT(ColorLookupTable() as color, left as Integer, top as Integer, width as Integer, height as Integer) as boolean

Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture with a Color Lookup Table.

Notes:

Returns true on success and false on any error.

Works with 8, 16 and 32 bits per sample. And with 1 or 3 samples per pixels (Gray or RGB). The lookup table has 256 entries for 8 bit and 65536 entries for 16/32 bit.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 6.2.57 ReadWithLUT(ColorLookupTable() as color) as boolean

55

6.2.59 RewriteDirectory as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes existing picture and header information to file replacing the old data.

Notes:

Returns true on success and false on any error.

As the data is added to the file and just the reference to the old data is deleted, the filesize will grow.

Calls TIFFRewriteDirectory internally. Same as SaveImage.

6.2.60 SaveImage as boolean

Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes existing picture and header information to file replacing the old data.

Notes:

Returns true on success and false on any error.

As the data is added to the file and just the reference to the old data is deleted, the filesize will grow.

Calls TIFFRewriteDirectory internally. Same as RewriteDirectory.

6.2.61 Scanline(mem as Ptr, index as Integer, sample as Integer = 0) as boolean

Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads an image scanline in a memoryblock.

Notes:

Returns false on any error.

The Memoryblock must be big enough. The BytesPerRow functions returns the number of bytes needed.

The first scanline has the index of 0.

This is the fastest way to read scanlines. You provide the memoryblock and you can reuse it for all calls to this method for one tiff.

See also:

- 6.2.127 Scanline(index as Integer, sample as Integer = 0) as memoryblock

84

6.2.62 SetColorMap(red as memoryblock, green as memoryblock, blue as memoryblock) as boolean

Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color map for a paletten image.

Notes:

The memoryblock must be $2^{\text{bitspersample}} * 2$ bytes big.
Returns true on success and false on failure.

6.2.63 SetColorProfile(ProfileData as String) as boolean

Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color profile for this tiff file.

Notes: Returns true on success and false on failure.

6.2.64 SetData(Tag as Integer, data as string) as boolean

Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes the string for this tag.

6.2.65 SetFieldByte(Tag as Integer, value as Integer) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.66 SetFieldDouble(Tag as Integer, value as Double) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.67 SetFieldInteger(Tag as Integer, value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Example:

```
dim t as TiffPictureMBS
dim f as FolderItem

const TIFFTAG_IMAGELENGTH=257 // integer
const TIFFTAG_IMAGEWIDTH=256 // integer

f=GetTemporaryFolderItem
t=new TiffPictureMBS

if t.Create(f) then

if t.SetFieldInteger(TIFFTAG_IMAGELENGTH,100) then
if t.Height=100 then
MsgBox "ok"
end if
end if

end if
```

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.68 SetFieldMemory(Tag as Integer, ItemCount as Integer, data as memoryblock) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Notes:

This is the special version of the setter which passes a memoryblock and a count value so you can set an array using this method.

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.69 SetFieldShort(Tag as Integer, value as Integer) as boolean

Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.70 SetFieldSingle(Tag as Integer, value as Single) as boolean

Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the tiff data field with the given tag to the given value.

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

6.2.71 SetFieldString(Tag as Integer, value as string) as boolean

Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets one of the fields to the value of the string.

Example:

```
dim m,p as Picture
dim f as FolderItem
dim t as TiffPictureMBS
dim g as Graphics
dim s as string
```

```
// make pictures
p=NewPicture(100,100,32)
m=NewPicture(100,100,32)
```

```
p.Graphics.ForeColor=Rgb(0,255,0) // fill green
p.Graphics.Fillrect 0,0,100,100
```

```
p.Graphics.ForeColor=Rgb(255,0,0) // fill red
p.Graphics.FillOval 0,0,100,100
```

```
m.Graphics.ForeColor=Rgb(0,0,0) // fill black (invisible so green not seen)
m.Graphics.Fillrect 0,0,100,100
```

```
m.Graphics.ForeColor=Rgb(255,255,255) // fill white (Visible)
m.Graphics.FillOval 0,0,100,100

// save
f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p
t.Mask=m

if t.Create(f) then
if t.WriteRGB then

const TIFFTAG_SOFTWARE=305

s="Example Software"
call t.SetFieldString TIFFTAG_SOFTWARE,s

const TIFFTAG_HOSTCOMPUTER=316

s="Example HostComputer"
call t.SetFieldString TIFFTAG_HOSTCOMPUTER,s

const TIFFTAG_IMAGEDESCRIPTION=270

s="Example ImageDescription"
call t.SetFieldString TIFFTAG_IMAGEDESCRIPTION,s

const TIFFTAG_MAKE=271

s="Example Make"
call t.SetFieldString TIFFTAG_MAKE,s

const TIFFTAG_ARTIST=315

s="Example Artist"
call t.SetFieldString TIFFTAG_ARTIST,s

t.Close
MsgBox "Ok"
f.Launch
end if
end if
```

Notes:

Please look for Tag values in the tiff specification.

Returns true on success.

Please make sure to use the correct setter depending on data type associated with the tag.

You have to pass in the string with the correct encoding.

6.2.72 SetImageIndex(index as Integer) as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current image index and reads the new image.

Example:

```
dim t as TiffPictureMBS // your tiff picture
```

```
if t.SetImageIndex(1) then
Canvas1.Backdrop=t.pict
end if
```

Notes:

Reads automatically a RGB picture for you, so the pict property is filled on success.

Returns true on success.

Index is zero based.

See also:

- 6.2.73 SetImageIndex(index as Integer, HeaderOnly as boolean) as boolean 61

6.2.73 SetImageIndex(index as Integer, HeaderOnly as boolean) as boolean

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current image index.

Notes:

If HeaderOnly is false the current picture is read into the pict& mask properties.

Returns true on success.

See also:

- 6.2.72 SetImageIndex(index as Integer) as boolean 61

6.2.74 SetXMP(ProfileData as String) as boolean

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the xmp metadata package for this tiff file.

Notes: Returns true on success and false on failure.

6.2.75 VStripSize(nrows as UInt32) as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of bytes in a strip with nrows rows of data.

6.2.76 VTileSize(nrows as UInt32) as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of bytes in a row-aligned tile with nrows of data.

6.2.77 WriteBW as boolean

Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a black & white image.

Example:

```

dim p as Picture
dim f as FolderItem
dim t as TiffPictureMBS

p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(0,0,0)
p.Graphics.FillOval 0,0,100,100

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS

if t.Create(f) then
t.Pict=p
if t.WriteBW then
MsgBox "ok"
end if
end if

Backdrop=p

```

Notes:

Uses the pictures in the pict property to write a picture.
Currently masks are not supported.

The following settings are made before the image data is written:

```
PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_MINISBLACK
BitsPerSample = 1
SamplesPerPixel = 1
FillOrder = FILLORDER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE
```

You may change settings before or later. For example if you set Compression before it should be used for writing image data to the file.

Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.

6.2.78 WriteEncodedStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compress and write a strip of data to an open TIFF file.

Notes:

Compress size bytes of raw data from buf and write the result to the specified strip; replacing any previously written data. Note that the value of strip is a raw strip number.” That is, the caller must take into account whether or not the data are organized in separate planes (PlanarConfiguration=2).

The library writes encoded data using the native machine byte order. Correctly implemented TIFF readers are expected to do any necessary byte-swapping to correctly process image data with BitsPerSample greater than 8.

The strip number must be valid according to the current settings of the ImageLength and RowsPerStrip tags. An image may be dynamically grown by increasing the value of ImageLength prior to each call to WriteEncodedStrip.

Returns 1 is returned if an error was encountered. Otherwise, the value of size is returned.

If size is zero, we use the size of memoryblock.

6.2.79 WriteEncodedTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compress and write a tile of data to an open TIFF file.

Notes:

Compress size bytes of raw data from buf and append the result to the end of the specified tile. Note that the value of tile is a "raw tile number". That is, the caller must take into account whether or not the data are organized in separate places (PlanarConfiguration=2). ComputeTile automatically does this when converting an (x,y,z,sample) coordinate quadruple to a tile number.

The library writes encoded data using the native machine byte order. Correctly implemented TIFF readers are expected to do any necessary byte-swapping to correctly process image data with BitsPerSample greater than 8.

Returns 1 is returned if an error was encountered. Otherwise, the value of size is returned.

If size is zero, we use the size of memoryblock.

6.2.80 WriteGray as boolean

Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a grayscale image with 256 colors.

Example:

```
dim t as TiffPictureMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
if t.Create(f) then
t.Pict=LogoMBS(500)
call t.WriteGray
t.Close
end if
```

Notes:

Uses the pictures in the pict property to write a picture. Currently masks are not supported.

The following settings are made before the image data is written:

```
PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_MINISBLACK
BitsPerSample = 8
SamplesPerPixel = 1
FillOrder = FILLORDER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE
```

You may change settings before or later. For example if you set Compression before it should be used for writing image data to the file.

Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.

Version 13.1 of our plugins writes a 16 bit Gray image if you set BitsPerSample to 16 before calling this method.

6.2.81 WriteRawStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a strip of raw data to an open TIFF file.

Notes:

Append size bytes of raw data to the specified strip.

The strip number must be valid according to the current settings of the ImageLength and RowsPerStrip tags. An image may be dynamically grown by increasing the value of ImageLength prior to each call to WriteRawStrip.

Returns -1 is returned if an error occurred. Otherwise, the value of size is returned.

If size is zero, we use the size of memoryblock.

6.2.82 WriteRawTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a tile of raw data to an open TIFF file

Notes:

Append size bytes of raw data to the specified tile.

Returns 1 is returned if an error occurred. Otherwise, the value of size is returned.

If size is zero, we use the size of memoryblock.

6.2.83 WriteRGB as boolean

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a RGB image.

Example:

```
dim m,p as Picture
dim f as FolderItem
dim t as TiffPictureMBS
dim g as Graphics

p=NewPicture(100,100,32)
m=NewPicture(100,100,32)

p.Graphics.ForeColor=Rgb(0,255,0) // fill green
p.Graphics.Fillrect 0,0,100,100

p.Graphics.ForeColor=Rgb(255,0,0) // fill red
p.Graphics.FillOval 0,0,100,100

m.Graphics.ForeColor=Rgb(0,0,0) // fill black (invisible so green not seen)
m.Graphics.Fillrect 0,0,100,100

m.Graphics.ForeColor=Rgb(255,255,255) // fill white (Visible)
m.Graphics.FillOval 0,0,100,100

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p
t.Mask=m

if t.Create(f) then
if t.WriteRGB then
t.Close
```

```

MsgBox "Ok"
f.Launch
end if
end if

```

Notes:

Uses the pictures in the mask and pict properties to write a picture. If mask is set, the picture is saved with an alpha channel.

The following settings are made before the image data is written:

```

PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_RGB
BitsPerSample = 8
SamplesPerPixel = 3
FillOrder = FILLORDER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE

```

You may change settings before or later. For example if you set Compression before it should be used for writing image data to the file.

Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.

6.2.84 Properties**6.2.85 BitsPerSample as Integer**

Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The count of bits for each pixel component.

Notes:

Should normally be 8 for RGB images.
(Read and Write property)

6.2.86 BytesPerRow as Int64

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of bytes needed for each row in a scan line.

Notes:

0 on any error.
(Read only property)

6.2.87 Compression as Integer

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The compression used.

Notes:

some constants:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.88 Copyright as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The copyright notice of this image.

Example:

```
dim file as folderitem = SpecialFolder.desktop.child("test.tif")
dim st as new MyTiff

// open for appending
if not st.Open(file,"r+") then
MsgBox "Open Tiff failed!"
else
// change one setting
st.Copyright = "Hello World"

// and save
call st.SaveImage
st.Close
end if
```

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.89 DateTime as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Date and time of the TIFF file.

Notes:

Check some TIFF files for the format used.

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.90 DocumentName as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the document.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.91 ExtraSamples as MemoryBlock

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The settings for the extra samples.

Notes:

A memoryblock filled with an array of shorts (16bit integers).

constants:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.92 FillOrder as Integer

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fill order of the bits in a byte.

Notes:

constants:

(MSB = Most significant bit, LSB = Least significant bit)

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.93 height as Integer

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture.

Notes: (Read and Write property)

6.2.94 HorizontalPosition as Single

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x Offset of this image in the drawing area.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.95 HorizontalResolution as Single

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal resolution used.

Notes:

Value depends on ResolutionUnit value.

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.96 HostComputer as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the machine where the tiff file was created.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.97 ImageDescription as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Information about the image.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.98 InputBuffer as String

Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string passed for OpenString.

Notes:

Used for the read requests from the Tiff library.
(Read only property)

6.2.99 IsTiled as Boolean

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a non-zero value if the image data has a tiled organization.

Notes:

Zero is returned if the image data is organized in strips.
(Read only property)

6.2.100 JPEGQuality as Integer

Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The JPEG quality.

Example:

```

dim logo as Picture = LogoMBS(500)
dim pic as new PictureMBS(logo)

// save tiff with jpeg compression
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim t as TiffPictureMBS

if pic <> nil then
t = new TiffPictureMBS

if t.Create(F) then

t.Height = pic.Height
t.Width = pic.Width

t.RowsPerStrip = 1
t.PlanarConfig = t.kPlanarConfigContig
t.Photometric = t.kPhotometricRGB
t.BitsPerSample = 8
t.SamplesPerPixel = 3
t.FillOrder = t.kFillOrderMSB2LSB
t.Orientation = t.kOrientationTopLeft
t.ResolutionUnit = t.kResUnitInch
t.VerticalResolution = 72.0
t.HorizontalResolution = 72.0
t.Compression = t.kCompressionJPEG
t.RowsPerStrip = 32
t.JPEGQuality = 75

// copy lines
for i as Integer = 0 to t.Height - 1
t.Scanline(i) = pic.RowInFormat(i, PictureMBS.ImageFormatRGB)
next

t.Close
end if
end if

```

Notes:

Default is 75.
(Read and Write property)

6.2.101 Make as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scanner manufacturer name.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.102 mask as picture

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mask of the picture.

Notes:

May be nil.
(Read and Write property)

6.2.103 Model as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scanner model name/number.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

- l When creating a new file force information be written with Little-Endian byte order (but see below). By default the library will create new files using the native CPU byte order.
- b When creating a new file force information be written with Big-Endian byte order (but see below). By default the library will create new files using the native CPU byte order.
- L Force image data that is read or written to be treated with bits filled from Least Significant Bit (LSB) to Most Significant Bit (MSB). Note that this is the opposite to the way the library has worked from its inception.
- B Force image data that is read or written to be treated with bits filled from Most Significant Bit (MSB) to Least Significant Bit (LSB); this is the default.
- H Force image data that is read or written to be treated with bits filled in the same order as the native CPU.
- M Enable the use of memory-mapped files for images opened read-only. If the underlying system does not support memory-mapped files or if the specific image being opened cannot be memory-mapped then the library will fallback to using the normal system interface for reading information. By default the library will attempt to use memory-mapped files.
- m Disable the use of memory-mapped files.
- C Enable the use of "strip chopping" when reading images that are comprised of a single strip or tile of uncompressed data. Strip chopping is a mechanism by which the library will automatically convert the single-strip image to multiple strips, each of which has about 8 Kilobytes of data. This facility can be useful in reducing the amount of memory used to read an image because the library normally reads each strip in its entirety. Strip chopping does however alter the apparent contents of the image because when an image is divided into multiple strips it looks as though the underlying file contains multiple separate strips. Finally, note that default handling of strip chopping is a compile-time configuration parameter. The default behaviour, for backwards compatibility, is to enable strip chopping.
- c Disable the use of strip chopping when reading images.

COMPRESSION_NONE	1	dump mode
COMPRESSION_CCITTRLE	2	CCITT modified Huffman RLE
COMPRESSION_CCITTFAX3	3	CCITT Group 3 fax encoding
COMPRESSION_CCITT_T4	3	CCITT T.4 (TIFF 6 name)
COMPRESSION_CCITTFAX4	4	CCITT Group 4 fax encoding
COMPRESSION_CCITT_T6	4	CCITT T.6 (TIFF 6 name)
COMPRESSION_LZW	5	Lempel-Ziv & Welch
COMPRESSION_OJPEG	6	!6.0 JPEG
COMPRESSION_JPEG	7	% JPEG DCT compression
COMPRESSION_NEXT	32766	NeXT 2-bit RLE
COMPRESSION_CCITTRLEW	32771	# 1 w/ word alignment
COMPRESSION_PACKBITS	32773	Macintosh RLE
COMPRESSION_THUNDERSCAN	32809	ThunderScan RLE
COMPRESSION_IT8CTPAD	32895	IT8 CT w/padding
COMPRESSION_IT8LW	32896	IT8 Linework RLE
COMPRESSION_IT8MP	32897	IT8 Monochrome picture
COMPRESSION_IT8BL	32898	IT8 Binary line art
COMPRESSION_PIXARFILM	32908	Pixar companded 10bit LZW
COMPRESSION_PIXARLOG	32909	Pixar companded 11bit ZIP
COMPRESSION_DEFLATE	32946	Deflate compression
COMPRESSION_ADOBE_DEFLATE	8	Deflate compression, as recognized by Adobe
COMPRESSION_DCS	32947	Kodak DCS encoding
COMPRESSION_JBIG	34661	ISO JBIG
COMPRESSION_SGILOG	34676	SGI Log Luminance RLE
COMPRESSION_SGILOG24	34677	SGI Log 24-bit packed

EXTRASAMPLE_UNSPECIFIED	0	unspecified data
EXTRASAMPLE_ASSOCALPHA	1	associated alpha data (pre multiplied)
EXTRASAMPLE_UNASSALPHA	2	unassociated alpha data (mask in RB)

FILLORDER_MSB2LSB	1 (default)
FILLORDER_LSB2MSB	2

6.2.104 NumberOfStrips as UInt32

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of strips in the image.

Notes: (Read only property)

6.2.105 NumberOfTiles as UInt32

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of tiles in the image.

Notes: (Read only property)

6.2.106 Orientation as Integer

Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The orientation of this image.

Example:

```
// creates a tif file with a horizontal flipped image
// red rectangle is on the left in the image data, but with orientation tag it should be displayed on the right
// side.
// Mac OS X Preview.app shows it correctly.
```

```
dim p as Picture
dim t as TiffPictureMBS
dim f as FolderItem
```

```
const ORIENTATION_TOPLEFT = 1 /* row 0 top, col 0 lhs */
const ORIENTATION_TOPRIGHT = 2 /* row 0 top, col 0 rhs */
const ORIENTATION_BOTRIGHT = 3 /* row 0 bottom, col 0 rhs */
const ORIENTATION_BOTLEFT = 4 /* row 0 bottom, col 0 lhs */
const ORIENTATION_LEFTTOP = 5 /* row 0 lhs, col 0 top */
const ORIENTATION_RIGHTTOP = 6 /* row 0 rhs, col 0 top */
const ORIENTATION_RIGHTBOT = 7 /* row 0 rhs, col 0 bottom */
const ORIENTATION_LEFTBOT = 8 /* row 0 lhs, col 0 bottom */
```

```
p=NewPicture(150,100,32)
```

```
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.FillRect 0,0,10,10
```

```
t=new TiffPictureMBS
f=SpecialFolder.Desktop.Child("test.tif")
```

```

if t.Create(f) then
t.Pict=p

t.Orientation=ORIENTATION_TOPRIGHT
if t.WriteRGB then
end if
t.Orientation=ORIENTATION_TOPRIGHT

t.Close
end if

```

Notes:

Orientation:

The orientation of the image with respect to the rows and columns.

Tag = 274 (112.H)

Type = SHORT

N = 1

1 = The 0th row represents the visual top of the image, and the 0th column represents the visual left-hand side.

2 = The 0th row represents the visual top of the image, and the 0th column represents the visual right-hand side.

3 = The 0th row represents the visual bottom of the image, and the 0th column represents the visual right-hand side.

4 = The 0th row represents the visual bottom of the image, and the 0th column represents the visual left-hand side.

5 = The 0th row represents the visual left-hand side of the image, and the 0th column represents the visual top.

6 = The 0th row represents the visual right-hand side of the image, and the 0th column represents the visual top.

7 = The 0th row represents the visual right-hand side of the image, and the 0th column represents the visual bottom.

8 = The 0th row represents the visual left-hand side of the image, and the 0th column represents the visual bottom.

Default is 1.

Support for orientations other than 1 is not a Baseline TIFF requirement.

(This text was sent in by David Austin)

(Read and Write property)

6.2.107 OutputBuffer as String

Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current output data from the CreateString function.

Notes:

Between CreateString and Close the plugin will record all the output data and you can get a copy using this property.

(Read only property)

6.2.108 PageName as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the current page.

Notes:

The data for this property is stored in the Tiff file.

(Read and Write property)

6.2.109 Photometric as Integer

Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A property of the TIFF image.

Example:

```
// read and write a BW fax tiff with compression
```

```
dim d as new OpenFileDialog()
dim f as FolderItem = GetFolderItem("myfax.tiff")
if f = nil then
return
end if
```

```
dim tiff as new TiffPictureMBS()
if not tiff.Open(f) then
MsgBox("Error while opening.")
return
end if
```

```
if not tiff.ReadBW() then
MsgBox("Error reading.")
end if
```

```
dim tiff2 as TiffPictureMBS = new TiffPictureMBS()
```

```

dim f2 as FolderItem = SpecialFolder.Desktop.Child("Copy.tiff")
if not tiff2.Create(f2) then
MsgBox("Error creating file.")
end if

const COMPRESSION_CCITTFAX3=3
const WhiteIsZero=0
const BlackIsZero=1

tiff2.Pict = tiff.pict
tiff2.Photometric=WhiteIsZero
tiff2.Compression=COMPRESSION_CCITTFAX3
if not tiff2.WriteBW() then
MsgBox("Error writing.") // Error
end if

tiff2.Close()

```

Notes:

PhotometricInterpretation:
The color space of the image data.
Tag = 262 (106.H)
Type = SHORT
N = 1

0 = WhiteIsZero. For bilevel and grayscale images: 0 is imaged as white. $2^{**}\text{BitsPerSample}-1$ is imaged as black. This is the normal value for Compression=2.

1 = BlackIsZero. For bilevel and grayscale images: 0 is imaged as black. $2^{**}\text{BitsPerSample}-1$ is imaged as white. If this value is specified for Compression=2, the image should display and print reversed.

2 = RGB. In the RGB model, a color is described as a combination of the three primary colors of light (red, green, and blue) in particular concentrations. For each of the three components, 0 represents minimum intensity, and $2^{**}\text{BitsPerSample} - 1$ represents maximum intensity. Thus an RGB value of (0,0,0) represents black, and (255,255,255) represents white, assuming 8-bit components. For PlanarConfiguration = 1, the components are stored in the indicated order: first Red, then Green, then Blue. For PlanarConfiguration = 2, the StripOffsets for the component planes are stored in the indicated order: first the Red component plane StripOffsets, then the Green plane StripOffsets, then the Blue plane StripOffsets.

3= Palette color. In this model, a color is described with a single component. The value of the component is used as an index into the red, green and blue curves in the ColorMap field to retrieve an RGB triplet that defines the color. When PhotometricInterpretation=3 is used, ColorMap must be present and SamplesPerPixel must be 1.

4 = Transparency Mask. This means that the image is used to define an irregularly shaped region of another image in the same TIFF file. SamplesPerPixel and BitsPerSample must be 1. PackBits compression is recommended. The 1-bits define the interior of the region; the 0-bits define the exterior of the region. A reader application can use the mask to determine which parts of the image to display. Main image pixels that correspond to 1-bits in the transparency mask are imaged to the screen or printer, but main image pixels that correspond to 0-bits in the mask are not displayed or printed. The image mask is typically at a higher resolution than the main image, if the main image is grayscale or color so that the edges can be sharp.

There is no default for PhotometricInterpretation, and it is required. Do not rely on applications defaulting to what you want.

(This text was sent in by David Austin)

For more details see:

<http://partners.adobe.com/asn/developer/pdfs/tn/TIFF6.pdf>

(Read and Write property)

6.2.110 pict as picture

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture data of the picture.

Notes: (Read and Write property)

6.2.111 PlanarConfig as Integer

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The storage organization used.

Notes:

Value is 1 for a single image plane and 2 for separated planes.

The data for this property is stored in the Tiff file.

(Read and Write property)

6.2.112 RasterScanlineSize as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the raster scanline size.

Notes:

Returns the size in bytes of a complete decoded and packed raster scanline.

Note that this value may be different from the value returned by ScanlineSize if data is stored as separate planes.

(Read only property)

6.2.113 ResolutionUnit as Integer

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which unit is used for the Resolution values.

Notes:

constants:

RESUNIT_NONE	1	no meaningful units
RESUNIT_INCH	2	english
RESUNIT_CENTIMETER	3	metric

The data for this property is stored in the Tiff file.

(Read and Write property)

6.2.114 RowsPerStrip as Integer

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A property of the TIFF image.

Notes:

Should be same as the height for our uses. (with one strip)

(Read and Write property)

6.2.115 SampleFormat as Integer

Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data sample format.

Notes:

Value is 1 for unsigned integer, 2 for signed integer, 3 for IEEE floating point, 4 for untyped data (e.g. JPEG compressed), 5 for complex signed int and 6 for complex IEEE floating point.

(Read and Write property)

6.2.116 SamplesPerPixel as Integer

Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The count of components used for each pixel.

Notes:

SamplesPerPixel= 1=Grayscale, 3=RGB, 4=CMYK, ...

Photometric= 0 or 1=Grayscale depending on white point, 2=RGB, 5=CMYK, ...

For other formats see:

<http://partners.adobe.com/asn/developer/pdfs/tn/TIFF6.pdf>

(Read and Write property)

6.2.117 Software as String

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The software name used to make this image.

Notes:

The data for this property is stored in the Tiff file.

(Read and Write property)

6.2.118 StripSize as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the equivalent size for a strip of data as it would be returned in a call to ReadEncodedStrip or as it would be expected in a call to WriteEncodedStrip.

Notes: (Read only property)

6.2.119 TileRowSize as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of bytes of a row of data in a tile.

Notes: (Read only property)

6.2.120 TileSize as UInt64

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the equivalent size for a tile of data as it would be returned in a call to ReadTile or as it would be expected in a call to WriteTile.

Notes: (Read only property)

6.2.121 Version as Integer

Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the Tiff library used.

Notes:

Updated to 3.7.1 in plugin version 5.0.
(Read only property)

6.2.122 VersionString as String

Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the Tiff library used.

Example:

```
dim z as new TiffPictureMBS
```

```
MsgBox z.VersionString
```

```
// shows for example:  
// LIBTIFF, Version 3.9.4  
// Copyright (c) 1988-1996 Sam Leffler  
// Copyright (c) 1991-1996 Silicon Graphics, Inc.
```

Notes: (Read only property)

6.2.123 VerticalPosition as Single

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The y Offset of this image in the drawing area.

Notes:

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.124 VerticalResolution as Single

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical resolution used.

Notes:

Value depends on ResolutionUnit value.

The data for this property is stored in the Tiff file.
(Read and Write property)

6.2.125 width as Integer

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the picture.

Notes: (Read and Write property)

6.2.126 YieldTicks as Integer

Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much time is given back to REALbasic for other ticks.

Example:

```
dim t as new TiffPictureMBS
t.YieldTicks=6 // only use 1/10th of a second
```

Notes:

If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.

If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.

(Read and Write property)

6.2.127 Scanline(index as Integer, sample as Integer = 0) as memoryblock

Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An image scanline.

Notes:

Returns nil on any error.

If you set the value, make sure the Memoryblock is big enough. The BytesPerRow functions returns the

number of bytes needed.

The data for this property is stored in the Tiff file.

The first scanline has the index of 0.

(Read and Write computed property)

See also:

- 6.2.61 Scanline(mem as Ptr, index as Integer, sample as Integer = 0) as boolean

56

6.2.128 Scanlines(index as Integer, count as Integer, sample as Integer = 0, lineStepScanlines as Integer = 1, lineStepReturn as Integer = 1) as memoryblock

Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Serveral image scanlines.

Notes:

Returns nil on any error.

If you set the value, make sure the Memoryblock is big enough. The BytesPerRow functions returns the number of bytes needed.

The data for this property is stored in the Tiff file.

The first scanline has the index of 0. Count is the number of scanlines you want to read/write.

If lineStepScanlines is >1, we skip scan lines so we read less data.

If lineStepReturn is >1, we return only every nth row.

If rows can be read with skipping, you should try lineStepScanlines = 2 or more for skipping lines.

If that doesn't work due to tiled data, you can use lineStepReturn = 2 or more.

This skipping is to quicker get preview pictures.

(Read and Write computed property)

6.2.129 Events

6.2.130 Error(libModule as string, message as string)

Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An event called whenever an error is to be reported.

6.2.131 Progress(line as Integer, total as Integer)

Plugin Version: 6.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reports changes in progress.

Notes: Used in CombineBitCMYKtoCMYK, CombineTiffCMYKtoRGB and CombineTiffCMYKtoCMYK methods.

6.2.132 Warning(libModule as string, message as string)

Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An event called whenever a warning is to be reported.

6.2.133 Constants**6.2.134 kCompressionAdobeDeflate = 8**

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: Deflate compression, as recognized by Adobe

6.2.135 kCompressionCCITTFAX3 = 3

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: CCITT Group 3 fax encoding

6.2.136 kCompressionCCITTFAX4 = 4

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: CCITT Group 4 fax encoding

6.2.137 kCompressionCCITTRLE = 2

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: CCITT modified Huffman RLE

6.2.138 kCompressionCCITTRLEW = 32771

Plugin Version: 13.0. **Function:** One of the compression constants.

6.2.139 kCompressionCCITT_T4 = 3

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: CCITT T.4 (TIFF 6 name)

6.2.140 kCompressionCCITT_T6 = 4

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: CCITT T.6 (TIFF 6 name)

6.2.141 kCompressionDCS = 32947

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: Kodak DCS encoding

6.2.142 kCompressionDeflate = 32946

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: Deflate compression

6.2.143 kCompressionIT8BL = 32898

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: IT8 Binary line art

6.2.144 kCompressionIT8CTPAD = 32895

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: IT8 CT w/padding

6.2.145 kCompressionIT8LW = 32896

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: IT8 Linework RLE

6.2.146 kCompressionIT8MP = 32897

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: IT8 Monochrome picture

6.2.147 kCompressionJBIG = 34661

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: ISO JBIG

6.2.148 kCompressionJP2000 = 34712

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: Leadtools JPEG2000

6.2.149 kCompressionJPEG = 7

Plugin Version: 13.0. **Function:** One of the compression constants.
Example:

```
dim logo as Picture = LogoMBS(500)
dim pic as new PictureMBS(logo)

// save tiff with jpeg compression
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim t as TiffPictureMBS

if pic <> nil then
t = new TiffPictureMBS

if t.Create(F) then

t.Height = pic.Height
t.Width = pic.Width
```

```

t.RowsPerStrip = 1
t.PlanarConfig = t.kPlanarConfigContig
t.Photometric = t.kPhotometricRGB
t.BitsPerSample = 8
t.SamplesPerPixel = 3
t.FillOrder = t.kFillOrderMSB2LSB
t.Orientation = t.kOrientationTopLeft
t.ResolutionUnit = t.kResUnitInch
t.VerticalResolution = 72.0
t.HorizontalResolution = 72.0
t.Compression = t.kCompressionJPEG
t.RowsPerStrip = 32
t.JPEGQuality = 75

// copy lines
for i as Integer = 0 to t.Height - 1
t.Scanline(i) = pic.RowInFormat(i, PictureMBS.ImageFormatRGB)
next

t.Close
end if
end if

```

Notes: JPEG DCT compression

6.2.150 kCompressionLZMA = 34925

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: LZMA2

6.2.151 kCompressionLZW = 5

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: Lempel-Ziv & Welch

6.2.152 kCompressionNeXT = 32766

Plugin Version: 13.0. **Function:** One of the compression constants.

Notes: NeXT 2-bit RLE

6.2.153 kCompressionNone = 1

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: No compression.

6.2.154 kCompressionOJPEG = 6

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: !6.0 JPEG

6.2.155 kCompressionPackBits = 32773

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: Macintosh RLE

6.2.156 kCompressionPixarFilm = 32908

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: Pixar companded 10bit LZW

6.2.157 kCompressionPixarLog = 32909

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: Pixar companded 11bit ZIP

6.2.158 kCompressionSGILOG = 34676

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: SGI Log Luminance RLE

6.2.159 kCompressionSGILOG24 = 34677

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: SGI Log 24-bit packed

6.2.160 kCompressionThunderScan = 32809

Plugin Version: 13.0. **Function:** One of the compression constants.
Notes: ThunderScan RLE

6.2.161 kFillOrderLSB2MSB = 2

Plugin Version: 13.0. **Function:** One of the fill order constants.
Notes: Least significant ->most

6.2.162 kFillOrderMSB2LSB = 1

Plugin Version: 13.0. **Function:** One of the fill order constants.
Notes: Most significant ->least

6.2.163 kOrientationBottomLeft = 4

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 bottom, col 0 lhs

6.2.164 kOrientationBottomRight = 3

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 bottom, col 0 rhs

6.2.165 kOrientationLeftBottom = 8

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 lhs, col 0 bottom

6.2.166 kOrientationLeftTop = 5

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 lhs, col 0 top

6.2.167 kOrientationRightBottom = 7

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 rhs, col 0 bottom

6.2.168 kOrientationRightTop = 6

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 rhs, col 0 top

6.2.169 kOrientationTopLeft = 1

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 top, col 0 lhs

6.2.170 kOrientationTopRight = 2

Plugin Version: 13.0. **Function:** One of the orientation constants.
Notes: row 0 top, col 0 rhs

6.2.171 kPhotometricCIELab = 8

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: !1976 CIE L*a*b*

6.2.172 kPhotometricICCLab = 9

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: ICC L*a*b* [Adobe TIFF Technote 4]

6.2.173 kPhotometricITULab = 10

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: ITU L*a*b*

6.2.174 kPhotometricLogL = 32844

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: CIE Log2(L)

6.2.175 kPhotometricLogLUV = 32845

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: CIE Log2(L) (u',v')

6.2.176 kPhotometricMask = 4

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: \$ holdout mask

6.2.177 kPhotometricMinIsBlack = 1

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: Min value is black.

6.2.178 kPhotometricMinIsWhite = 0

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: Min value is white.

6.2.179 kPhotometricPalette = 3

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: color map indexed

6.2.180 kPhotometricRGB = 2

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: RGB color model

6.2.181 kPhotometricSeparated = 5

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: !color separations

6.2.182 kPhotometricYCBCR = 6

Plugin Version: 13.0. **Function:** One of the Photometric Constants.
Notes: !CCIR 601

6.2.183 kPlanarConfigContig = 1

Plugin Version: 13.0. **Function:** One of the planar config constants.
Notes: Single image plane.

6.2.184 kPlanarConfigSeparate = 2

Plugin Version: 13.0. **Function:** One of the planar config constants.
Notes: Separate planes of data.

6.2.185 kPredictorFloatingPoint = 3

Plugin Version: 15.1. **Function:** One of the possible predictor settings.
Notes: Floating point predictor

6.2.186 kPredictorHorizontal = 2

Plugin Version: 15.1. **Function:** One of the possible predictor settings.
Notes: Horizontal differencing

6.2.187 kPredictorNone = 1

Plugin Version: 15.1. **Function:** One of the possible predictor settings.
Notes: no prediction scheme used

6.2.188 kResUnitCentimeter = 3

Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.
Notes: Metric

6.2.189 kResUnitInch = 2

Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.
Notes: English

6.2.190 kResUnitNone = 1

Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.
Notes: no meaningful units

Chapter 7

List of Questions in the FAQ

- 8.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss? 107
- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.3 How to catch delete key? 109
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.5 How to delete a folder? 111
- 8.0.6 How to detect if CPU is 64bit processor? 112
- 8.0.7 How to refresh a htmlviewer on Windows? 112
- 8.0.8 Is there an example for vector graphics in REALbasic? 113
- 8.0.9 Picture functions do not preserve resolution values? 113
- 8.0.10 A toolbox call needs a rect - how do I give it one? 114
- 8.0.11 API client not supported? 114
- 8.0.12 Can I access Access Database with Java classes? 115
- 8.0.13 Can I create PDF from Real Studio Report using DynaPDF? 116
- 8.0.14 Can I use AppleScripts in a web application? 116
- 8.0.15 Can I use graphics class with DynaPDF? 117
- 8.0.16 Can I use OGG with REALbasic? 117
- 8.0.17 Can I use sockets on a web application? 117
- 8.0.18 Can I use your ChartDirector plugin on a web application? 117
- 8.0.19 Can I use your DynaPDF plugin on a web application? 119

- 8.0.20 Can I use your plugin controls on a web application? 119
- 8.0.21 Can you get an unique machine ID? 119
- 8.0.22 ChartDirector: Alignment Specification 120
- 8.0.23 ChartDirector: Color Specification 120
- 8.0.24 ChartDirector: Font Specification 124
- 8.0.25 ChartDirector: Mark Up Language 127
- 8.0.26 ChartDirector: Parameter Substitution and Formatting 131
- 8.0.27 ChartDirector: Shape Specification 136
- 8.0.28 Copy styled text? 137
- 8.0.29 Do you have code to validate a credit card number? 137
- 8.0.30 Do you have plugins for X-Rite EyeOne, eXact or i1Pro? 138
- 8.0.31 Does SQL Plugin handle stored procedures with multiple result sets? 138
- 8.0.32 Does the plugin home home? 139
- 8.0.33 folderitem.absolutepath is limited to 255 chars. How can I get longer ones? 139
- 8.0.34 Future of editablenmovie class? 140
- 8.0.35 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? 140
- 8.0.36 How about Plugin support for older OS X? 141
- 8.0.37 How can I detect whether an Intel CPU is a 64bit CPU? 142
- 8.0.38 How can I disable the close box of a window on Windows? 143
- 8.0.39 How can I get all the environment variables from Windows? 143
- 8.0.40 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? 144
- 8.0.41 How can I get text from a PDF? 144
- 8.0.42 How can I get text from a Word Document? 144
- 8.0.43 How can I get the item string for a given file creator? 145
- 8.0.44 How can I launch an app using it's creator code? 146
- 8.0.45 How can I learn what shared libraries are required by a plugin on Linux? 146
- 8.0.46 How can I validate an email address? 147
- 8.0.47 How do I check if the QuickTime component for the JPEG exporting is available? 148

	99
• 8.0.48 How do I check if the QuickTime component for the JPEG importing is available?	149
• 8.0.49 How do I check if the QuickTime component for the Sequence grabber is available?	150
• 8.0.50 How do I decode correctly an email subject?	150
• 8.0.51 How do I enable/disable a single tab in a tabpanel?	151
• 8.0.52 How do I find the root volume for a file?	152
• 8.0.53 How do I get the current languages list?	152
• 8.0.54 How do I get the Mac OS Version?	153
• 8.0.55 How do I get the printer name?	154
• 8.0.56 How do I make a metal window if RB does not allow me this?	154
• 8.0.57 How do I make a smooth color transition?	155
• 8.0.58 How do I read the applications in the dock app?	156
• 8.0.59 How do I truncate a file?	157
• 8.0.60 How do update a Finder's windows after changing some files?	157
• 8.0.61 How to access a USB device directly?	157
• 8.0.62 How to add icon to file on Mac?	158
• 8.0.63 How to ask the Mac for the Name of the Machine?	158
• 8.0.64 How to automatically enable retina in my apps?	159
• 8.0.65 How to avoid leaks with Cocoa functions?	159
• 8.0.66 How to avoid trouble connecting to oracle database with SQL Plugin?	160
• 8.0.67 How to avoid _NSAutoreleaseNoPool console messages in threads?	160
• 8.0.68 How to bring app to front?	161
• 8.0.69 How to bring my application to front?	161
• 8.0.70 How to catch Control-C on Mac or Linux in a console app?	161
• 8.0.71 How to change name of application menu?	162
• 8.0.72 How to change the name in the menubar of my app on Mac OS X?	162
• 8.0.73 How to check if a folder/directory has subfolders?	163
• 8.0.74 How to check if Macbook runs on battery or AC power?	164
• 8.0.75 How to check if Microsoft Outlook is installed?	164
• 8.0.76 How to check on Mac OS which country or language is currently selected?	165

- 8.0.77 How to code sign my app with plugins? 166
- 8.0.78 How to collapse a window? 166
- 8.0.79 How to compare two pictures? 167
- 8.0.80 How to compile PHP library? 168
- 8.0.81 How to convert a `BrowserType` to a `String` with `WebSession.Browser`? 170
- 8.0.82 How to convert a `EngineType` to a `String` with `WebSession.Engine`? 170
- 8.0.83 How to convert a `PlatformType` to a `String` with `WebSession.Platform`? 171
- 8.0.84 How to convert a text to iso-8859-1 using the `TextEncoder`? 172
- 8.0.85 How to convert `ChartTime` back to Xojo date? 172
- 8.0.86 How to convert line endings in text files? 173
- 8.0.87 How to convert picture to string and back? 173
- 8.0.88 How to copy an array? 174
- 8.0.89 How to copy an dictionary? 175
- 8.0.90 How to copy parts of a movie to another one? 175
- 8.0.91 How to create a birthday like calendar event? 176
- 8.0.92 How to create a GUID? 177
- 8.0.93 How to create a Mac picture clip file? 177
- 8.0.94 How to create a PDF file in REALbasic? 178
- 8.0.95 How to create `EmailAttachment` for PDF Data in memory? 178
- 8.0.96 How to create PDF for image files? 179
- 8.0.97 How to CURL Options translate to Plugin Calls? 180
- 8.0.98 How to delete file with ftp and curl plugin? 181
- 8.0.99 How to detect display resolution changed? 181
- 8.0.100 How to detect retina? 181
- 8.0.101 How to disable force quit? 181
- 8.0.102 How to disable the error dialogs from Internet Explorer on javascript errors? 182
- 8.0.103 How to display a PDF file in REALbasic? 182
- 8.0.104 How to do a lottery in RB? 182
- 8.0.105 How to do an asycron DNS lookup? 183

	101
• 8.0.106 How to draw a dashed pattern line?	184
• 8.0.107 How to draw a nice antialiased line?	185
• 8.0.108 How to draw with CGContextMBS using my own handle?	186
• 8.0.109 How to dump java class interface?	186
• 8.0.110 How to duplicate a picture with mask or alpha channel?	187
• 8.0.111 How to enable assistive devices?	188
• 8.0.112 How to encrypt a file with Blowfish?	188
• 8.0.113 How to extract text from HTML?	189
• 8.0.114 How to find empty folders in a folder?	189
• 8.0.115 How to find iTunes on a Mac OS X machine fast?	190
• 8.0.116 How to find network interface for a socket by it's name?	190
• 8.0.117 How to find version of Microsoft Word?	191
• 8.0.118 How to fix CURL error 60/53 on connecting to server?	192
• 8.0.119 How to format double with n digits?	192
• 8.0.120 How to get a time converted to user time zone in a web app?	193
• 8.0.121 How to get an handle to the frontmost window on Windows?	193
• 8.0.122 How to get CFAbsoluteTime from date?	194
• 8.0.123 How to get client IP address on web app?	194
• 8.0.124 How to get fonts to load in charts on Linux?	195
• 8.0.125 How to get fonts to load in DynaPDF on Linux?	195
• 8.0.126 How to get GMT time and back?	196
• 8.0.127 How to get good crash reports?	196
• 8.0.128 How to get list of all threads?	196
• 8.0.129 How to get parameters from webpage URL in Real Studio Web Edition?	197
• 8.0.130 How to get Real Studio apps running Linux?	197
• 8.0.131 How to get the color for disabled textcolor?	198
• 8.0.132 How to get the current free stack space?	198
• 8.0.133 How to get the current timezone?	199
• 8.0.134 How to get the current window title?	200

- 8.0.135 How to get the cursor blink interval time? 201
- 8.0.136 How to get the list of the current selected files in the Finder? 202
- 8.0.137 How to get the Mac OS system version? 203
- 8.0.138 How to get the Mac OS Version using System.Gestalt? 203
- 8.0.139 How to get the screensize excluding the task bar? 204
- 8.0.140 How to get the size of the frontmost window on Windows? 204
- 8.0.141 How to get the source code of a HTMLViewer? 205
- 8.0.142 How to handle really huge images with GraphicsMagick or ImageMagick? 205
- 8.0.143 How to handle tab key for editable cells in listbox? 205
- 8.0.144 How to hard link MapKit framework? 207
- 8.0.145 How to have a PDF downloaded to the user in a web application? 207
- 8.0.146 How to hide all applications except mine? 208
- 8.0.147 How to hide script errors in HTMLViewer on Windows? 208
- 8.0.148 How to hide the grid/background/border in ChartDirector? 209
- 8.0.149 How to hide the mouse cursor on Mac? 209
- 8.0.150 How to insert image to NSTextView or TextArea? 209
- 8.0.151 How to jump to an anchor in a htmlviewer? 210
- 8.0.152 How to keep a movieplayer unclickable? 210
- 8.0.153 How to keep my web app from using 100% CPU time? 210
- 8.0.154 How to kill a process by name? 211
- 8.0.155 How to know how many CPUs are present? 211
- 8.0.156 How to know if a movie is finished? 212
- 8.0.157 How to know if QuickTime is installed on any target and can play MPEG 4 movies? 212
- 8.0.158 How to know if QuickTime is installed on any target? 213
- 8.0.159 How to know the calling function? 213
- 8.0.160 How to launch an app using it's creator code? 214
- 8.0.161 How to launch disc utility? 214
- 8.0.162 How to make a lot of changes to a REAL SQL Database faster? 215
- 8.0.163 How to make a NSImage object for my retina enabled app? 215

	103
• 8.0.164 How to make a window borderless on Windows?	215
• 8.0.165 How to make an alias using AppleEvents?	216
• 8.0.166 How to make an application smaller?	217
• 8.0.167 How to make AppleScripts much faster?	217
• 8.0.168 How to make double clicks on a canvas?	217
• 8.0.169 How to make my Mac not sleeping?	219
• 8.0.170 How to make my own registration code scheme?	220
• 8.0.171 How to make small controls on Mac OS X?	220
• 8.0.172 How to mark my Mac app as background only?	221
• 8.0.173 How to move a file or folder to trash?	222
• 8.0.174 How to move an application to the front using the creator code?	223
• 8.0.175 How to move file with ftp and curl plugin?	223
• 8.0.176 How to normalize string on Mac?	223
• 8.0.177 How to obscure the mouse cursor on Mac?	224
• 8.0.178 How to open icon file on Mac?	224
• 8.0.179 How to open PDF in acrobat reader?	225
• 8.0.180 How to open printer preferences on Mac?	225
• 8.0.181 How to open special characters panel on Mac?	226
• 8.0.182 How to optimize picture loading in Web Edition?	226
• 8.0.183 How to parse XML?	227
• 8.0.184 How to play audio in a web app?	227
• 8.0.185 How to pretty print xml?	228
• 8.0.186 How to print to PDF?	229
• 8.0.187 How to query Spotlight's Last Open Date for a file?	229
• 8.0.188 How to quit windows?	230
• 8.0.189 How to read a CSV file correctly?	230
• 8.0.190 How to read the command line on windows?	231
• 8.0.191 How to render PDF pages with PDF Kit?	232
• 8.0.192 How to restart a Mac?	232

- 8.0.193 How to resume ftp upload with curl plugin? 233
- 8.0.194 How to rotate a PDF page with CoreGraphics? 233
- 8.0.195 How to rotate image with CoreImage? 234
- 8.0.196 How to run a 32 bit application on a 64 bit Linux? 235
- 8.0.197 How to save a quicktime movie as a reference movie? 235
- 8.0.198 How to save HTMLViewer to PDF with landscape orientation? 235
- 8.0.199 How to save RTFD? 236
- 8.0.200 How to scale a picture proportionally with mask? 236
- 8.0.201 How to scale a picture proportionally? 237
- 8.0.202 How to scale/resize a picture? 238
- 8.0.203 How to search with regex and use unicode codepoints? 239
- 8.0.204 How to see if a file is invisible for Mac OS X? 239
- 8.0.205 How to set cache size for SQLite or REALSQLDatabase? 240
- 8.0.206 How to set the modified dot in the window? 241
- 8.0.207 How to show a PDF file to the user in a Web Application? 241
- 8.0.208 How to show Keyboard Viewer programmatically? 241
- 8.0.209 How to show the mouse cursor on Mac? 242
- 8.0.210 How to shutdown a Mac? 243
- 8.0.211 How to sleep a Mac? 243
- 8.0.212 How to speed up rasterizer for displaying PDFs with DynaPDF? 244
- 8.0.213 How to use PDFLib in my RB application? 244
- 8.0.214 How to use quotes in a string? 244
- 8.0.215 How to use Sybase in Web App? 244
- 8.0.216 How to use the Application Support folder? 245
- 8.0.217 How to use the IOPMCopyScheduledPowerEvents function in Realbasic? 245
- 8.0.218 How to validate a GUID? 248
- 8.0.219 How to walk a folder hierarchie non recursively? 248
- 8.0.220 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS 249
- 8.0.221 I registered the MBS Plugins in my application, but later the registration dialog is shown. 250

	105
• 8.0.222 I want to accept Drag & Drop from iTunes	250
• 8.0.223 I'm drawing into a listbox but don't see something.	252
• 8.0.224 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.	252
• 8.0.225 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?	253
• 8.0.226 Is the fn key on a powerbook keyboard down?	253
• 8.0.227 Is there a case sensitive Dictionary?	253
• 8.0.228 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?	254
• 8.0.229 Is there an easy way I can launch the Displays preferences panel?	254
• 8.0.230 Is there an easy way I can launch the Quicktime preferences panel?	255
• 8.0.231 List of Windows Error codes?	255
• 8.0.232 Midi latency on Windows problem?	255
• 8.0.233 My Xojo Web App does not launch. Why?	256
• 8.0.234 Pictures are not shown in my application. Why?	257
• 8.0.235 Realbasic doesn't work with your plugins on Windows 98.	257
• 8.0.236 REALbasic or my RB application itself crashes on launch on Mac OS Classic. Why?	257
• 8.0.237 SQLiteDatabase not initialized error?	257
• 8.0.238 Textconverter returns only the first x characters. Why?	257
• 8.0.239 The type translation between CoreFoundation/Foundation and Realbasic data types.	258
• 8.0.240 Uploaded my web app with FTP, but it does not run on the server!	260
• 8.0.241 What classes to use for hotkeys?	260
• 8.0.242 What do I need for Linux to get picture functions working?	261
• 8.0.243 What does the NAN code mean?	261
• 8.0.244 What font is used as a 'small font' in typical Mac OS X apps?	262
• 8.0.245 What is last plugin version to run on Mac OS X 10.4?	262
• 8.0.246 What is last plugin version to run on PPC?	263
• 8.0.247 What is the difference between Timer and WebTimer?	263
• 8.0.248 What is the list of Excel functions?	263
• 8.0.249 What is the replacement for PluginMBS?	264

- 8.0.250 What to do on Realbasic reporting a conflict? 264
- 8.0.251 What to do with a NSImageCacheException? 265
- 8.0.252 What to do with MySQL Error 2014? 265
- 8.0.253 What ways do I have to ping? 265
- 8.0.254 Where is CGGetActiveDisplayListMBS? 266
- 8.0.255 Where is CGGetDisplaysWithPointMBS? 266
- 8.0.256 Where is CGGetDisplaysWithRectMBS? 266
- 8.0.257 Where is CGGetOnlineDisplayListMBS? 266
- 8.0.258 Where is GetObjectClassNameMBS? 266
- 8.0.259 Where is NetworkAvailableMBS? 267
- 8.0.260 Where is StringHeight function in DynaPDF? 267
- 8.0.261 Where is XLSDocumentMBS class? 267
- 8.0.262 Where to get information about file formats? 268
- 8.0.263 Where to register creator code for my application? 268
- 8.0.264 Which Mac OS X frameworks are 64bit only? 268
- 8.0.265 Which plugins are 64bit only? 269
- 8.0.266 Why application doesn't launch because of a missing ddraw.dll!? 269
- 8.0.267 Why application doesn't launch because of a missing shlwapi.dll!? 269
- 8.0.268 Why do I hear a beep on keydown? 269
- 8.0.269 Why does folderitem.item return nil? 269
- 8.0.270 Why doesn't showurl work? 270
- 8.0.271 Why have I no values in my chart? 270
- 8.0.272 Will application size increase with using plugins? 270
- 8.0.273 XLS: Custom format string guidelines 270

Chapter 8

The FAQ

8.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):

Example:

```
Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.
```

```
// Examples:
// timeInSecs = 90, padHours = true; returns "00:01:30"
// timeInSecs = 1, padHours = false, padMinutes = true; returns "00:01"
// timeInSecs = 3601, padMinutes = false; returns "01:00:01"
```

```
dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string
```

```
hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60
```

```
if hours = 0 then
if padHours then
hoursString = "00:"
else
hoursString = ""
end if
else
```

```

hoursString = Format(hours, "# # \:")
end if
if minutes = 0 then
if hours <>0 or padMinutes then
minutesString = "00:"
else
minutesString = ""
end if
else
minutesString = Format(minutes, "00\:")
end if

return hoursString + minutesString + Format(seconds, "00")
End Function

```

Notes: (from the rb mailinglist)

8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use functions from NSColor to get proper highlight color in RGB:

Example:

```

Function ProperHighlightColor(active as Boolean) As Color
# if TargetCocoa
Dim theColor As NSColorMBS
If active Then
theColor = NSColorMBS.alternateSelectedControlColor
Else
theColor = NSColorMBS.secondarySelectedControlColor
End If

```

```

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibratedRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
# else

```

```
return HighlightColor
# endif
End Function
```

Notes: As you see we convert color to Calibrated RGB for best results.
See also:

- 8.0.3 How to catch delete key? 109
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.5 How to delete a folder? 111
- 8.0.6 How to detect if CPU if 64bit processor? 112
- 8.0.7 How to refresh a htmlviewer on Windows? 112

8.0.3 How to catch delete key?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following is the code in keydown event catches delete or backspace keys.

Example:

```
Function KeyDown(Key As String) As Boolean
if asc(key) = 8 or asc(key) = 127 then
MsgBox "Delete"
Return true
end if
End Function
```

See also:

- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.5 How to delete a folder? 111
- 8.0.6 How to detect if CPU if 64bit processor? 112
- 8.0.7 How to refresh a htmlviewer on Windows? 112

8.0.4 How to convert cmyk to rgb?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

The following is the code to convert cmyk values to an RGB color datatype.

It's just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :)

Example:

```
Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color
// converts c,m,y,k values (0-100) to color data type RGB
// place this in a method. Supply C,M,Y,K values-
// it returns color datatype

dim color_RGB as color
dim r, g, b as Integer

r=255-round(2.55*(c+k))
if r<0 then
r=0
end if
g=255-round(2.55*(m+k))
if g<0 then
g=0
end if
b=255-round(2.55*(y+k))
if b<0 then
b=0
end if

color_RGB=RGB(r,g,b)

return color_RGB

End Function
```

Notes: (from the rb mailinglist)

See also:

- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.3 How to catch delete key? 109
- 8.0.5 How to delete a folder? 111
- 8.0.6 How to detect if CPU is 64bit processor? 112
- 8.0.7 How to refresh a htmlviewer on Windows? 112

8.0.5 How to delete a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following is the code deletes a folder recursively.

Example:

```
Sub deletefolder(f as folderitem)
dim files(-1) as FolderItem
```

```
if f=nil then Return
```

```
// delete single file
if f.Directory=false then
f.Delete
Return
end if
```

```
// get a list of all items in that folder
dim i,c as Integer
c=F.Count
for i=1 to c
files.Append f.TrueItem(i)
next
```

```
// delete each item
for each fo as FolderItem in files
if fo=nil then
' ignore
elseif fo.Directory then
deletefolder fo
else ' file
fo.Delete
end if
next
```

```
f.Delete
End Sub
```

See also:

- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.3 How to catch delete key? 109
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.6 How to detect if CPU is 64bit processor? 112
- 8.0.7 How to refresh a htmlviewer on Windows? 112

8.0.6 How to detect if CPU is 64bit processor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Via CPUID you can ask CPU:

Example:

```
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
MsgBox "64-bit CPU"
else
MsgBox "32-bit CPU"
end if
```

Notes: Should work on all intel compatible CPUs.

See also:

- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.3 How to catch delete key? 109
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.5 How to delete a folder? 111
- 8.0.7 How to refresh a htmlviewer on Windows? 112

8.0.7 How to refresh a htmlviewer on Windows?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can ask the browser to reload the website with this code line:

Example:

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

- 8.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 108
- 8.0.3 How to catch delete key? 109
- 8.0.4 How to convert cmyk to rgb? 109
- 8.0.5 How to delete a folder? 111
- 8.0.6 How to detect if CPU is 64bit processor? 112

8.0.8 Is there an example for vector graphics in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this example inside the paint event of a window:

Example:

```

dim v as Group2D
dim r as RectShape
dim s as StringShape

const pi=3.14

s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0

r=new RectShape

r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50

v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150

g.DrawObject v

```

8.0.9 Picture functions do not preserve resolution values?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, the picture functions return pictures with no/default resolution values.

Example:

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

```
l.HorizontalResolution = 300
```

```
l.VerticalResolution = 300
```

```
dim r as Picture = l.Rotate90MBS
```

```
MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

```
r.HorizontalResolution = l.HorizontalResolution
```

```
r.VerticalResolution = l.VerticalResolution
```

```
MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

Notes:

So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can't really set this easily from plugin code.

8.0.10 A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Fill a memoryblock like this:

Example:

```
Dim MB As Memoryblock
```

```
MB = NewMemoryBlock(8)
```

```
MB.Short(0) = window1.Top
```

```
MB.Short(2) = window1.Left
```

```
MB.Short(4) = window1.Height+window1.Top // bottom
```

```
MB.Short(6) = window1.Width+window1.Left // right
```

8.0.11 API client not supported?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you get this exception message on `SQLConnectionMBS.Connect`, we may have a problem.

Notes:

First case is that the given thing is not supported (e.g. MS SQL directly on Mac).

Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

8.0.12 Can I access Access Database with Java classes?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** You can use ucanaccess to access databases created with Microsoft

Example:

```

dim options(-1) as string

// load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count
dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <> Nil and f.Exists Then
libjs.append f.NativePath+";"
End If
Next

// now init virtual machine
dim library as string = Join(libjs, "")
dim vm as new JavaVMMBS(library)

if vm.Handle = 0 then
MsgBox "Failed to initialize virtual machine"
else
// now make a new database connection with ucanaccess
dim d as new JavaDatabaseMBS(vm,"net.ucanaccess.jdbc.UcanaccessDriver")
Dim DbFile as FolderItem = appFolder.Parent.Child("Database11.accdb")
dim j as JavaConnectionMBS = d.getConnection("jdbc:ucanaccess://" + DbFile.NativePath)

// select and show values
dim r as JavaResultSetMBS = j.MySelectSQL("Select * From test")
while r.NextRecord
MsgBox r.getString("FirstName") + " " + r.getString("LastName")
wend

end if

Exception e as JavaExceptionMBS

```

```
MsgBox e.message+" errorCode: "+str(e.ErrorNumber)
```

Notes:

see website:

<http://ucanaccess.sourceforge.net/site.html>

8.0.13 Can I create PDF from Real Studio Report using DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can't provide a graphics subclass from plugin.

Notes:

The is a feature request to allow graphics subclasses:

Feedback case 11391: feedback://showreport?report_id=11391

8.0.14 Can I use AppleScripts in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, but they run on the server, not on the client.

Example:

```
dim a as new AppleScriptMBS
```

```
// query my application name
```

```
a.Compile "tell application ""System Events"" to return name of current application"
```

```
// run
```

```
a.Execute
```

```
// show result
```

```
label1.text = a.Result
```

```
// shows something like "My Application.fcgi.debug"
```

Notes: This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.

8.0.15 Can I use graphics class with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can't provide a graphics subclass from plugin.

Notes:

The is a feature request to allow graphics subclasses:
Feedback case 11391: [feedback://showreport?report_id=11391](https://feedback.adobe.com/showreport?report_id=11391)

8.0.16 Can I use OGG with REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** There is a QuickTime plugin for OGG which works with REALbasic.

Notes: That should be a solution for playback and recording on Mac and Windows.

8.0.17 Can I use sockets on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, but they run on the server, not on the client.

Notes:

You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCP-Socket, EasyUDPSocket, AutoDiscovery, our Bonjour classes or our CURL* classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using SMTPSocket may be a good idea for sending emails from the server like notifications.

8.0.18 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our ChartDirector plugin works just fine on the Real Studio Web Edition.

Example:

```
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are choosen random to check font!
dim labels(-1) as string=array("Germany", "Italy", "France", "Spain", "UK", "Poland", "Russia")

// The colors to use for the sectors
```

```

dim colors(-1) as Integer

colors.Append & h66aaee
colors.Append & heebb22
colors.Append & hbbbbbb
colors.Append & h8844ff

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype/msttcorefonts"
end if

// Create a PieChart object of size 360 x 300 pixels
dim c as new CDPieChartMBS(700, 600)

c.setBackground(c.linearGradientColor(0, 0, 0, c.getHeight(), & h0000cc, & h000044))
c.setRoundedFrame(& hffffff, 16)
dim tt as CDTextBoxMBS = c.addTitle("ChartDirector Demonstration", "timesbi.ttf", 18)
tt.setMargin(0, 0, 16, 0)
tt.setFontColor(& hFFFFFFF)

// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)

// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)

dim t as CDTextBoxMBS = c.setLabelStyle("arialbd.ttf", 10, & h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.soft-
Lighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)

// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, & hbbffffff, 0)

// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle "arialbd.ttf",18

dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster

ImageView1.Picture=wp

```

Notes:

Be aware that our plugin produces pictures for you, which you assign to ImageViews. Transferring those pictures takes time, so you can optimize that with using WebPicture class. There you can decide between different compressions to improve speed (use JPEG instead of PNG).

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with `"/usr/share/fonts/truetype/msttcorefonts"` as the path. No backslash on the end of a path, please.

8.0.19 Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our DynaPDF plugin works just fine on the Real Studio Web Edition.

Notes:

PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Real Studio Web Edition.
<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

8.0.20 Can I use your plugin controls on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** No.

8.0.21 Can you get an unique machine ID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** There is nothing like an unique machine ID.

Notes:

1:

You can use the MAC IDs of the network interfaces.

This can be changed by the user with software tools.

And the list of network interfaces changes if user reorder the interfaces.

2:

You can use the system folder creation date/time.

This may stay equal after cloning machines or after migration to new PC.

3:

You can use the Mac Serialnumber.
Mac only and it can happen that a Mac does not have a serial number.

4:

You can use the x86 CPU ID.
This is x86 CPU only and does not avoid running on the same CPU in different PCs.

8.0.22 ChartDirector: Alignment Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Alignment Specification

Notes:

In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using `TextBox.setAlignment`.

The ChartDirector API defines several constants for the alignment options.

ConstantValueDescription

8.0.23 ChartDirector: Color Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Color Specification

Notes:

Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports colors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports "dynamic" colors. A dynamic color is a color that changes depending on the position of the pixels. The "dynamic" colors that ChartDirector supports include "pattern colors", "metal colors", "gradient colors", "zone colors" and "dash line colors".

ChartDirector supports specifying colors indirectly using "palette colors". When a "palette color" is used, the color is specified as an index to a palette. The actual color is looked up from the palette. ARGB Color ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AAR-

BottomLeft	1	The leftmost point on the bottom line.
BottomCenter	2	The center point on the bottom line.
BottomRight	3	The rightmost point on the bottom line.
Left	4	The leftmost point on the middle horizontal line.
Center	5	The center point on the middle horizontal line.
Right	6	The rightmost point on the middle horizontal line.
TopLeft	7	The leftmost point on the top line.
TopCenter	8	The center point on the top line.
TopRight	9	The rightmost point on the top line.
Bottom	2	The center point on the bottom line. Same as BottomCenter.
Top	8	The center point on the top line. Same as TopCenter.
TopLeft2	10	An alternative top-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopLeft2 refers to refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2	11	An alternative top-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopRight2 refers to refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2	12	An alternative bottom-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomLeft2 refers to refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2	13	An alternative bottom-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomRight2 refers to refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

RRGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is "0x". For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.

For the alpha transparency component, a zero value means the color is not transparent at all. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.

Note that `ChartDirector`'s ARGB color is web and HTML compatible. For example, red is `FF0000`, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in `ChartDirector`.

If alpha transparency is `FF` (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in `ChartDirector`, only one totally transparent color is used - `FF000000`. All other colors of the form `FFnnnnnn` are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color `FF000000` is often used in `ChartDirector` to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, `ChartDirector` defines a constant called `Transparent`, which is equivalent to `FF000000.Pattern Color`

A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using `BaseChart.patternColor`, `BaseChart.patternColor2`, `DrawArea.patternColor` and `DrawArea.patternColor2`. The `patternColor` method creates pattern colors using an array of colors as a bitmap. The `patternColor2` method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any `ChartDirector` API that expects a color as its input.`Metal Color`

A metal color is a color of which the brightness varies smoothly across the chart surface as to make the surface look shiny and metallic. `ChartDirector` supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using `CDBaseChartMBS.metalColor`, `CDBaseChartMBS.goldColor` and `CDBaseChartMBS.silverColor`. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any `ChartDirector` API that expects a color as its input.`Gradient Color`

A gradient color is a color that changes progressively across a direction.

Gradient colors are created using `BaseChart.gradientColor`, `BaseChart.gradientColor2`, `DrawArea.gradientColor` and `DrawArea.gradientColor2`. The `gradientColor` method creates a 2-point gradient color that changes from color A to color B. The `gradientColor2` method creates a multi-point gradient colors that changes from color A to B to C

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any `ChartDirector` API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to `DrawArea.gradientColor2` for details.

Dash Line Colors
A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using `BaseChart.dashLineColor` and `DrawArea.dashLineColor`. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any `ChartDirector` API that expects a color as its input.

Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using `Layer.xZoneColor`, `Layer.yZoneColor`, `XYChart.xZoneColor` or `XYChart.yZoneColor`.

Palette Colors
Palette colors are colors of the format `FFFFnnnn`, where the least significant 16 bits (`nnnn`) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by looking up the palette using the index. For example, the color `FFFF0001` is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, `ChartDirector` will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, `ChartDirector` will use the 9th color for the first line, the 10th color for the second line, and so on.

The `ChartDirector` API defines several constants to facilitate using palette colors.

ConstantValueDescription

When a chart is created, it has a default palette. You may modify the palette using `BaseChart.setColor`, `BaseChart.setColors`, or `BaseChart.setColors2`.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. `ChartDirector` comes with several built-in palettes represented by the following predefined constants.

Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

ConstantDescription

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

8.0.24 ChartDirector: Font Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Font Specification

Notes:

Font Name

In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information

In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a "|" character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager

is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location

ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the "[windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the "[windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at

http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355

is highly recommended. Please refer to

<http://www.microsoft.com/typography/faq/faq8.htm>

on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories.

Artificial Boldening and Italicizing
Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".

Font List
Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.

Indirect Font Names
ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

KeywordsDescription

"normal"	This default normal font, which is the first font in the font table. This is initially mapped to "arial.ttf" (Arial).
"bold"	The default bold font, which is the second font in the font table. This is initially mapped to "arialbd.ttf" (Arial Bold).
"italic"	The default italic font, which is the third font in the font table. This is initially mapped to "ariali.ttf" (Arial Italic).
"boldItalic"	The default bold-italic font, which is the fourth font in the font table. This is initially mapped to "arialbi.ttf" (Arial Bold Italic).
"fontN"	The (N + 1)th font in the font table (the first font is "font0").

The font table can be modified using BaseChart.setFontTable or DrawArea.setFontTable.

The advantage of using indirect font names is that you can change the fonts in your charts in one place.

Font Index

Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.

Font Size

The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. `TextBox.setFontSize`) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.

Font Color

This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)

Font Angle

This is the angle in degrees by which the font should be rotated anti-clockwise.

Vertical Layout

By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use `BaseChart.addText` to add text that are laid out vertically. Vertical layout is common for oriental languages such as Chinese, Japanese and Korean.

8.0.25 ChartDirector: Mark Up Language

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Mark Up Language

Notes:

ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text.

Font Styles

You can change the style of the text by using CDML tags. For example, the line:

```
<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
```

will result in the following text rendered:

In general, all tags in CDML are enclosed by `<*` and `*>`. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include `<*` in text without being interpreted as CDML tags, use `<<*` as the escape sequence.

The following table describes the supported font style attributes in CDML. See Font Specification for details on various font attributes.

AttributeDescription

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.

Set the following text to be in superscript style. This attribute does not need to have a value. (You may use "super" as the attribute instead of "super=1".)

xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be

used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style section. You may use `<*/font*>` to terminate a style section, which will restore the font styles to the state before the style section.

Blocks and Lines
In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters (`"\n"`) or with `<*br*>`. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

```
<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO
```

will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using `<*block*>` as the start tag and `<*/*>` as the end tag.

When a block ends, font styles will be restored to the state before entering the block.

Embedding Images
CDML supports embedding images in text using the following syntax:

```
<*img=my_image_file.png*>
```

where `my_image_file.png` is the path name of the image file.

For example, the line:

```
<*size=20*>A <*img=sun.png*>day
```

will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either `png`, `jpg`, `jpeg`, `gif`, `wbmp` or `wmp` (case insensitive).

Please refer to `BaseChart.setSearchPath` or `DrawArea.setSearchPath` on the directory that ChartDirector will search for the file.

The `<*img*>` tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and

height.Blocks Attributes

CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the `<*block*>tag` to control the alignment and orientation of the sub-blocks. The `<*img=my_image_file.png*>` is treated as a block for layout purposes.

For example, the line:

```
<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
```

will result in the following text rendered:

The the above starts `<*block,valign=absmiddle*>` which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside `<*block*>tag`:

AttributeDescription

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

8.0.26 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Parameter Substitution and Formatting

Notes:

ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.

Format Strings

In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

```
" { label } ( { percent } % )"
```

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)" .

You may change the sector label format by changing the format string. For example, you may change it to:

```
" { label } : US$ { value | 2 } K ( { percent } % )"
```

The sector label will then become something like "ABC: US\$ 123.00 (34.56%)" .

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

```
"USD { value } (Euro { = { value } *0.9 } )"
```

In the above, " { value } " will be substituted with the actual value of the sector. The expression " { = { value } *0.9 } " will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "% " (modulo) and "^" (exponentiation). Operators "*", "/", "% ", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using <code>BaseChart.addExtraField</code> or <code>BaseChart.addExtraField2</code> .

additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers

The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers

The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis

The following table describes the parameters available for pie charts.

Number Formatting

For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2,. } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

```
{ [ param ] | [ a ] [ b ] [ c ] [ d ] }
```

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting

For parameters that are dates/times, the formatting options can be specified using the following syntax:

```
{ [ param ] | [ datetime_format_string ] }
```

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' ' . (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format { value | mmm '<*color=dd0000*>'yyyy } will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*> is a CDML tag to specify red text color). Note that the <*color=dd0000*> tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.

Escaping URL/HTML/CDML characters

Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '&' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "% XX" (eg. "?" will become "% 3F"). After that, it will modify HTML special characters to the HTML escape format "& amps;# nn;" (eg. ">" will become "& amps;# 62;".). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } " and " { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

8.0.27 ChartDirector: Shape Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Shape Specification

Notes:

Several ChartDirector API accept shape specification as arguments. For example, BarLayer.setBarShape and BarLayer.setBarShape2 can be used to specify shapes of bars in bar charts, while DataSet.setDataSymbol, DataSet.setDataSymbol4, PolarLayer.setDataSymbol and PolarLayer.setDataSymbol4 can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see DataSet.setDataSymbol2, DataSet.setDataSymbol3, PolarLayer.setDataSymbol2 and PolarLayer.setDataSymbol3.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a ChartDirector method for parameterized shapes. For example, a circle is represented by an explicit constant CircleShape (=7). On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the PolygonShape method, passing in the number of sides as argument.

The following table illustrates the various ChartDirector shapes:

Custom Shapes

In ChartDirector, custom shapes are specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

ChartDirector will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various ChartDirector API.

As an example, the shape of the standard diamond shape in ChartDirector is represented as an array with 8 numbers:

```
0, 0, 500, 500, 0, 1000, -500, 500
```

8.0.28 Copy styled text?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** How to quickly copy styled text from one textarea to another?

Example:

```
# if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
# elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
# else
TextArea1.StyledText = TextArea2.StyledText
# endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

8.0.29 Do you have code to validate a credit card number?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can check the checksum to tell if a credit card number is not valid.

Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
```

```

nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue < 10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End If

```

Notes:

Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

8.0.30 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all, Console & Web: No. **Answer:** Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.

Notes:

Please first go to X-Rite and get a SDK license. Then we can talk about the plugin.

8.0.31 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, the plugin can work with multiple recordsets.

Notes:

You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all

records in the first result set. Then you simply start again with FetchNext to get the second record set. Even the RecordSet functions should work, just use them twice to get all records from both record sets.

8.0.32 Does the plugin home home?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Yes, we like to know who is using the plugin, so the plugin may contact our server.

Example:

none.

Notes:

Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall. Blocking the transfer will not disable the plugin or change the features.
Or contact us for a plugin version which explicitly does not contain this feature.

8.0.33 folderitem.absolutePath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Paths on a Mac are not unique, so use them only to display them to the user.

Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + ":" + s
nf = nf.parent
wend
Return s
```

End Function

8.0.34 Future of editablemovie class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In short, it will go away, so switch to plugin functions soon.

Notes:

The editableMovie class has been deprecated.

Deprecated means that Real Software will remove it someday, but as of today (and probably a few more years) the class will be available and running. Just not forever. The reason is that Apple deprecated the old QuickTime APIs and they are not available for 64 bit.

For 64 bit, you can move to our QTKit plugin.

We expect the old QuickTime classes in Real Studio and our plugins will continue to work in 32 bit applications. Even if editableMovie class is removed next year from Real Studio, our plugin still provides movie class extensions to do similar functions.

8.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This code implements animations for a tabpanel change:

Example:

// in a tabpanel.change event:

```

dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
// watch the value of the clicked tab versus the last tab

```

```

if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value

```

Notes: See CGS* classes for more details.

8.0.36 How about Plugin support for older OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We support in general Mac OS X 10.5 and newer.

Notes:

All the 64-bit plugins on Mac require OS X 10.7.
Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6.
Also for SQL Plugin the built in SQLite library requires 10.6.

8.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all, Console & Web: No. **Answer:** Look on the CPU family returned by sysctl:

Example:

Function is64bit() As Boolean

```
# if TargetLittleEndian
```

```
dim m as MemoryBlock = NewMemoryBlock(8)
```

```
dim family as Integer
```

```
dim s as string
```

```
m=SystemControlNameToMIBMBS("hw.cpufamily")
```

```
m=SystemControlMBS(m)
```

```
if m<>nil then
```

```
m.LittleEndian=True
```

```
family=m.Long(0)
```

```
const CPUFAMILY_INTEL_6_14 = & h73d67300 /* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
```

```
const CPUFAMILY_INTEL_6_15 = & h426f69ef /* "Intel Core 2 Duo" */
```

```
const CPUFAMILY_INTEL_6_23 = & h78ea4fbc /* Penryn */
```

```
const CPUFAMILY_INTEL_6_26 = & h6b5a4cd2 /* Nehalem */
```

```
Select case family
```

```
case CPUFAMILY_INTEL_6_14
```

```
Return false
```

```
case CPUFAMILY_INTEL_6_15
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_23
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_26
```

```
Return true
```

```
// newer CPUs may be missing here
```

```
end Select
```

```
end if
```

```
# endif
```

```
Return false
```

```
Exception
```

```
Return false
```

```
End Function
```

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

8.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** The following code will remove the close item from the system menu of the window.

Example:

```
# if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, & HF060, & H0
# endif
```

Notes: The window may not be updated directly.

8.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```
# if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
loop until m.byte(n)=0
# endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

8.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to get a media reservation.

Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes:

Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation. See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

8.0.41 How can I get text from a PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Crossplatform you can use DynaPDF Pro.

Notes:

On Mac OS X you can also use PDFKit for the same job.

While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

8.0.42 How can I get text from a Word Document?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** to get the text string from a doc file, use the NSAttributedStringMBS class.

Notes:

The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the NSAttributedStringMBS.initWithDocFormat(data as string) as boolean method.

8.0.43 How can I get the item string for a given file creator?

Plugin Version: all, Console & Web: No. **Answer:** Try this function:

Example:

```

Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer

Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")

listBox1.deleteAllRows

m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <> 0 then
listBox1.addRow "<Not found.>"
return
end if

do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if

end if
loop

End Sub

```

Notes: Change "Translation" to "CarbonLib" for Mac OS X.

8.0.44 How can I launch an app using it's creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Send an AppleEvent "odoc" with the creator code to the Finder ("MACS"):

Example:

```
Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent("aevt","odoc","MACS")
A.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf",nil,C)
return A.Send
End Function
```

8.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Please use the ldd command in the terminal.

Notes:

You build an app on any platform, but for Linux.

For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
```

```

libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$

```

As you see all library have been found and their load address is printed behind the name. If a library is missing, you usually see the address missing there or being zero.

8.0.46 How can I validate an email address?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

Example:

```

Dim re As RegEx
re = New RegEx

```

```
Dim rm As RegExMatch
```

```
re.SearchPattern = "[a-z0-9!#$%&'*/=?^_`{|}+](?:\.[a-z0-9!#$%&'*/=?^_`{|}+)*@(?:[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>

8.0.47 How do I check if the QuickTime component for the JPEG exporting is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the PictureToString functions will work, you may try this function:

Example:

```
Function IsQTJPEGExporerAvailable() As boolean
```

```
dim q as QTComponentInformationMBS
```

```
// search for QuickTime JPEG exporter codec
```

```
q=new QTComponentInformationMBS
```

```
while q.NextComponent
```

```
if q.Type="imco" and q.SubType="jpeg" then
```

```
Return true
```

```
end if
```

```
wend
```

```
Return false // not found
```

```
End Function
```

Notes:

It should work like this for other types like:

```

"tiff" ->TIFF
"PNTG" ->Mac Paint
"gif " ->GIF
"WRLE" ->Windows BMP
"tga " ->Targa
"png " ->PNG
etc.

```

8.0.48 How do I check if the QuickTime component for the JPEG importing is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the StringToPicture functions will work, you may try this function:

Example:

```

Function IsQTJPEGImporterAvailable() As boolean
dim q as QTComponentInformationMBS

```

```

// search for QuickTime JPEG importer codec
q=new QTComponentInformationMBS

```

```

while q.NextComponent
if q.Type="imdc" and q.SubType="jpeg" then
Return true
end if
wend

```

```

Return false // not found
End Function

```

Notes:

It should work like this for other types like:

```

"tiff" ->TIFF
"PNTG" ->Mac Paint
"gif " ->GIF
"WRLE" ->Windows BMP
"tga " ->Targa
"png " ->PNG
etc.

```

8.0.49 How do I check if the QuickTime component for the Sequence grabber is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the QTGrabberClass will work, you can use this code:

Example:

```
Function IsQTGrabberAvailable() As boolean
dim q as QTComponentInformationMBS

q=new QTComponentInformationMBS

while q.NextComponent
if q.Type="barg" then
Return true
end if
wend

Return false // not found
End Function
```

Notes: Don't forget that you need to check for each other component you use like the compression functions.

8.0.50 How do I decode correctly an email subject?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following code can be used to decode an email subject including several encodings including Base 64.

Example:

```
dim src as string // input

dim theRegex as Regex
dim theRegexMatch as RegexMatch
dim result, infoCharset, encodedPart as string
dim theStart as Integer

if instr(src, "?") >0 then
theRegex = new Regex
theRegex.Options.Greedy = false
theRegex.searchPattern = "(.*)=?(.+)\?(Q | B)\?(.+)\?="
theRegexMatch = theRegex.search(src)
while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
```

```

infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result

```

Notes: May not look nice depending on the controls used.

8.0.51 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the `TabpanelEnabledMBS` method.

Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes:

Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as library. For Cocoa, please use enabled property of `NSTabViewItemMBS` class.

8.0.52 How do I find the root volume for a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this function:

Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <> nil then
root = f // f might be the volume
do
dum = root.parent
if dum <> nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

8.0.53 How do I get the current languages list?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFObjectMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages", ".GlobalPreferences")

if o <> Nil then
a=CFArrayMBS(o)

dim i,c as Integer

c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
```

```
next
end if
```

```
MsgBox Join(sa,EndOfLine)
```

Notes:

On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.

This code has been tested on Mac OS X 10.5 only.

8.0.54 How do I get the Mac OS Version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = & h750 then //If OS is 7.5
//do stuff
elseif i = & h761 then //If OS is 7.6.1
//do stuff
end if
```

end if

Notes: The MBS Plugin has a function `SystemInformationMBS.OSVersionString` for this.

8.0.55 How do I get the printer name?

Plugin Version: all, Console & Web: No. **Answer:** For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.

Example:

```
dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if
```

Notes:

A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code 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.

8.0.56 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The following declare turns any window on Mac OS X 10.2 or newer into a metal one.

Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)
```

```
ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

8.0.57 How do I make a smooth color transition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

I'd like to show in a report some bars, which start with color A and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have 255 different colors. If the bars are longer than 255 pixels, would this look nice?

Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1

c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub
```

Notes: Try the code above in a window paint event handler.

8.0.58 How do I read the applications in the dock app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use CFPreferencesMBS class like in this example:

Example:

```
// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser,
pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
```

```

end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if

```

Notes: You can use the `CFPreferencesMBS.SetValue` to change a value and `CFPreferencesMBS.Synchronize` to write the values to disc. You may need to restart the `Dock.app` if you modified things.

8.0.59 How do I truncate a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In a `binarystream` you can set the `length` property to truncate.

8.0.60 How do update a Finder's windows after changing some files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```

dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr", "fupd", "MACS")
ae.folderitemparam("—")=f
if not ae.send then
//something went wrong
end if

```

Notes: The `folderitem.finderupdate` from the MBS Plugin does something like this.

8.0.61 How to access a USB device directly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** First, it depends on the device.

Notes:

Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the QTGrabberClassMBS
- Mass storage devices using the folderitem class.
- Serial devices using the System.SerialPort function.
- HID USB devices can be used with MacHIDMBS, WinHIDMBS or LinuxHIDInterface class.
- Any USB device may be used with MacUSBMBS or WinUSBMBS classes.

In general it is always the best to take the most high level access to have others do the work for the details.

8.0.62 How to add icon to file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use Folderitem.AddCustomIcon or NSWorkspaceMBS.setIcon functions.

Notes: Please close any open stream for the file you want to add an icon.

8.0.63 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Using Apple Events you can use this code:

Example:

Function Computername() *As string*

```
dim theEvent as AppleEvent
dim err as boolean
```

```
theEvent = newAppleEvent("mchn", "getd", "MACS")
```

```
err = theEvent.send
```

```
return theevent.ReplyString
```

End Function

Notes:

Code above is for Mac OS 9!

Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

8.0.64 How to automatically enable retina in my apps?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can run a build script on each build with this code:

Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable""
YES")
```

Notes: This will set the NSHighResolutionCapable flag to YES.

8.0.65 How to avoid leaks with Cocoa functions?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try this code on Mac OS X:

Example:

```
// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

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

Notes:

With REALbasic 2009r4 the code above should not be needed as REALbasic runtime does automatically handle the NSAutoreleasePools for you. For older REALbasic versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use REALbasic 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc_msgSend call.

8.0.66 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** For oracle the most important thing is to point the plugin to the libraries from oracle.

Notes:

In environment variables, the paths like ORACLE_HOME must be defined.

On Mac OS X you also need to define DYLD_LIBRARY_PATH to point to the dylib files from oracle.

For that you need to modify /etc/launchd.conf for Mac OS X 10.8 and newer.

In older versions those variables in .MacOSX/environment.plist file in user's home.

Another way for the case you bundle things inside your app is to use the LSEnvironment key in info.plist. In info.plist it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

8.0.67 How to avoid __NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to use your own NSAutoreleasePool on a thread like this:

Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
end sub
```

Notes:

For more details read here:

http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

8.0.68 How to bring app to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac you can use this code:

Example:

```
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

8.0.69 How to bring my application to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This makes SimpleText (Code txt) to the frontmost application:

Example:

```
Dim A As AppleEvent
A = NewAppleEvent("misc", "actv", "")
If Not A.Send then
Beep
end if
```

Notes: (Code is Mac only)

8.0.70 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use SignalHandlerMBS class for this.

Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is caught, a flag is set and you can ask later in your normal application flow for the result.

8.0.71 How to change name of application menu?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Use this code to change the application menu name on Mac OS X:

Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

8.0.72 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

```
<key>CFBundleExecutable</key>
<string>Executable file name here</string>
```

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

```
<key>CFBundleName</key>
<string>Name for menu here</string>
```

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at <http://www.bitjuggler.com/products/appbundler/> .

8.0.73 How to check if a folder/directory has subfolders?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this to check all items in a folder:

Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count
```

```
for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)
```

```
if item<>Nil and item.Directory then
Return true
end if
next
```

```
End Function
```

Notes:

We use trueitem() here to avoid resolving alias/link files. Also we check for nil as we may not have permission to see all items. And if one is a directory, we return without checking the rest.

8.0.74 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Please use our IOPowerSourcesMBS class like this:

Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

8.0.75 How to check if Microsoft Outlook is installed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:

Example:

```
Function OutlookInstalled() As Boolean
# if TargetWin32 then

try
```

```

dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

Return true

catch r as RegistryAccessErrorException
// not installed
Return false

end try

# else

// Windows only, so false on other platforms
Return false

# endif

End Function

```

8.0.76 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The code below returns a country value.

Example:

```

dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

```

Notes:

Returns values like:

For more values, check "Script.h" in the frameworks.

8.0.77 How to code sign my app with plugins?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.

Notes:

Please use the -f command line parameter with codesign utility to overwrite our MBS signature. We sign our plugins for Mac and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of app>
```

```
codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app/Contents/Frameworks/*.dylib"
codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app/Contents/Frameworks/*.framework"
codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app"
```

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder. If you have helper apps you need to sign them first. You can use a build step to automatically sign your app on build.

8.0.78 How to collapse a window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use this function (Mac only):

Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock
```

```
Declare Function CollapseWindow Lib "Carbon" (window as Integer, collapse as Integer) as Integer
```

```
IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF
```

```
err = CollapseWindow(w.MacWindowPtr, state)
```

```
End Sub
```

Notes:

Also the MBS Plugin has a `window.collapsedmbs` property you can set.
For Windows the MBS Plugin has a `window.isiconicmbs` property.

8.0.79 How to compare two pictures?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
```

```
dim r,u as RGBSurface
```

```
dim x,y,n,m,h,w as Integer
```

```
dim w1,w2,h1,h2,d1,d2 as Integer
```

```
dim c1,c2 as color
```

```
h1=p.Height
```

```
h2=q.Height
```

```
w1=p.Width
```

```
w2=q.Width
```

```
d1=p.Depth
```

```
d2=q.Depth
```

```
if d1<>d2 then
```

```
Return 1
```

```
elseif w1<>w2 then
```

```
return 2
```

```
elseif h1<>h2 then
```

```
Return 3
```

```
else
```

```
r=p.RGBSurface
```

```
u=q.RGBSurface
```

```
if r=nil or u=nil then
```

```
Return -1
```

```
else
```

```
h=h1-1
```

```
w=w1-1
```

```
m=min(w,h)
```

```

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function

```

Notes: Remember that this only works on bitmap pictures, so the `picture.BitmapMBS` function may be useful.

8.0.80 How to compile PHP library?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You have to download the source code and compile a static version of the library.

Notes:

This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.

- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure --enable-embed --with-curl --enable-ftp --enable-zip --enable-sockets --enable-static --enable-soap --with-zlib --with-bz2 --enable-exif --enable-bcmath --enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole _yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;".
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".
- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.

8.0.81 How to convert a `BrowserType` to a `String` with `WebSession.Browser`?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this:

Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return "Andriod"
case WebSession.BrowserType.Blackberry
Return "Blackberry"
case WebSession.BrowserType.Chrome
Return "Chrome"
case WebSession.BrowserType.ChromeOS
Return "ChromeOS"
case WebSession.BrowserType.Firefox
Return "Firefox"
case WebSession.BrowserType.InternetExplorer
Return "InternetExplorer"
case WebSession.BrowserType.Opera
Return "Opera"
case WebSession.BrowserType.Safari
Return "Safari"
case WebSession.BrowserType.SafariMobile
Return "SafariMobile"
case WebSession.BrowserType.Unknown
Return "Unknown"
else
Return "Unkown: " +str(integer(s))
end Select

End Function
```

8.0.82 How to convert a `EngineType` to a `String` with `WebSession.Engine`?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this:

Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
```

```

Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: " +str(integer(s))
end Select

End Function

```

8.0.83 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this:

Example:

```

Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: " +str(integer(s))
end Select

End Function

```

8.0.84 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

This code can help you although it's not perfect.

You need to set lc to the current color you use.

Example:

```
dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(& h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bjrn, this text should be converted")
Mac2PC.clear
```

Notes: You have to call Mac2PC.clear after every conversion to reset the encoding engine.

8.0.85 How to convert ChartTime back to Xojo date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have this example code:

Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if
```

```
dim d as new date
d.TotalSeconds = diff + ChartTime
```

```
Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

8.0.86 How to convert line endings in text files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can simply read file with `TextInputStream` and write with new line endings using `TextOutputStream` class.

Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)
```

```
ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: `TextInputStream` will read any input line endings and with `delimiter` property in `TextOutputStream` you can easily define your new delimiter.

8.0.87 How to convert picture to string and back?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use this plugin functions:

Notes:

JPEG:

```
JPEGStringToPictureMBS(buf as string) as picture
JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean) as picture
PictureToJPEGStringMBS(pic as picture,quality as Integer) as string
```

PNG:

```
PictureToPNGStringMBS(pic as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PNGStringToPictureMBS(data as string, gamma as single) as picture
PNGStringToPNGPictureMBS(data as string, gamma as single) as PNGpictureMBS
```

Tiff:

```
TIFFStringToPictureMBS(data as string) as picture
TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS
```

BMP:

```
BMPStringtoPictureMBS(data as string) as picture
Picture.BMPDataMBS(ResolutionValueDPI as Integer=72) as string
```

GIF:

```
GifStringToGifMBS(data as string) as GIFMBS
GifStringToPictureMBS(data as string) as Picture
```

8.0.88 How to copy an array?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use a function like this to copy an array:

Example:

```
Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function
```

Notes:

If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

8.0.89 How to copy an dictionary?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use a function like this to copy a dictionary:

Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function
```

Notes:

If needed make several copies of this method with different data types, not just double.
For a deep copy of an dictionary of objects, you need to change code to also make a copy of those objects.

8.0.90 How to copy parts of a movie to another one?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```
dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))
```

Notes: If result is not 0, the method fails.

8.0.91 How to create a birthday like calendar event?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every
year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars

// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if
```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

8.0.92 How to create a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the UUIDMBS class for this.

8.0.93 How to create a Mac picture clip file?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** You can use code like this one.

Example:

```

dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99

dim r As ResourceFork 'ResourceFork is needed for a clip file

// Please define a file type Any
r=f.CreateResourceFork("Any")

// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")

dim m as new MemoryBlock(8)

m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height

```

```
r.AddResource(m,"RECT",256,"")
```

'Values taken from a sample file and irrelevant to the problem

```
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAABAAAAAAAAAAABUQ0IQAAAAA")
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

8.0.94 How to create a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Check our DynaPDF plugin and the examples.

Notes:

An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X. For Windows, we can only suggest our DynaPDF plugin.

8.0.95 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use code like the one below:

Example:

```
Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
dim a as new EmailAttachment
```

```
a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMETYPE = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename
```

Return a

End Function

Notes:

Compared to sample code from Xojo documentation, we set the mime type correct for PDF. The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients. "prvw" is the creator code for Apple's preview app.

8.0.96 How to create PDF for image files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use DynaPDF like this:

Example:

```
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight
as Integer) As Boolean
// have files?
If pdfFile = Nil Then Return False
If jpgFiles = Nil Then Return False

If jpgFiles.Ubound <0 Then Return False

// new DynaPDF
Dim pdf As New MyDynapdfMBS

// page width/height in MilliMeter
Dim pdfWidth as Integer = PageWidth * 72 / 25.4
Dim pdfHeight as Integer = PageHeight * 72 / 25.4

// put your license here
Call pdf.SetLicenseKey "Starter"

// create pdf
Call pdf.CreateNewPDF pdfFile

// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
```

Next

```
// close
Call pdf.CloseFile
```

```
Return True
End Function
```

Notes:

This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

8.0.97 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Below a few tips on how to translate command line CURL calls to plugin calls.

Notes:

```
curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456
-data-binary @DocumentRegister.docx -H "Content-Type: application/msword"
```

- The option -v means verbose. You can use OptionVerbose and listen for messages in the DebugMessage event.
- The option -X PUT means we want to do a HTTP PUT Request. So set OptionPut to true. Also you will want to set OptionUpload to true as you upload data.
- We have the URL which you put into OptionURL property.
- The -data-binary option tells CURL to pass the given data. With the @ before the data, it is interpreted as a file name, so the data is read from the given file. You'll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)
- The last option -H specifies an additional header for the upload. Pas this additional header with the SetOptionHTTPHeader method.

```
curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfd4328001c59 -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)

8.0.98 How to delete file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object
```

```
// delete file
```

```
dim ws() As String
```

```
ws.Append "DELE Temp.txt"
```

```
d.SetOptionPostQuote(ws)
```

Notes:

Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.

The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use DELE and the file path.

8.0.99 How to detect display resolution changed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac OS X simply listen for display changed notifications.

Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

8.0.100 How to detect retina?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use Window.BackingScaleFactorMBS to query the factor.

Example:

```
msgbox str(window1.BackingScaleFactorMBS)
```

8.0.101 How to disable force quit?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Please visit this website and get the control panel for Mac OS 9 there:

<http://www3.sk.sympatico.ca/tinyjohn/DFQ.html>

For Mac OS X use the MBS Plugin with the SetSystemUIModeMBS method.

Notes: Please use presentationOptions in NSApplicationMBS for Cocoa applications.

8.0.102 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** You can use this code in the htmlviewer open event:

Example:

```
if targetwin32 then
htmlviewer1..ole.Content.value("Silent") = True
end if
```

Notes: This disables the error dialogs from Internet Explorer.

8.0.103 How to display a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.

Notes:

An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it.

On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

8.0.104 How to do a lottery in RB?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this function:

Example:

```
Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)
```


You can use `DNSLookupThreadMBS` class for doing them asynchron.

8.0.106 How to draw a dashed pattern line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

Example:

// call like this: DrawDashedPatternLine g,0,0,width,height,10

```
Sub DrawDashedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen

b=true
x=x1
while (x<x2) and (y<y2)
ox=x
oy=y

x=x+dx
y=y+dy

if b then
g.DrawLine ox,oy,x,y
end if

b=not b
wend

End Sub
```

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Realbasic code, so it even works on Windows.

8.0.107 How to draw a nice antialiased line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

This code can help you although it's not perfect.

You need to set lc to the current color you use.

Example:

```
Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as
color)
dim intX, intY, count, n, xDiff, yDiff as Integer
dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
dim c as color

const st=1.0

xDiff=xe-xs
yDiff=ye-ys
count=max(abs(xDiff), abs(yDiff))
xStep=xDiff/count
yStep=yDiff/count
xx=xs
yy=ys
for n=1 to count
intX=xx
intY=yy
floatX=xx-intX
floatY=yy-intY

v=(1-floatX)*(1-floatY)*st
v1=1-v
c=face.pixel(intX, intY)
face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*(1-floatY)*st
v1=1-v
c=face.pixel(intX+1, intY)
face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=(1-floatX)*floatY*st
v1=1-v
c=face.pixel(intX, intY+1)
face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*floatY*st
v1=1-v
c=face.pixel(intX+1, intY+1)
face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
```

```
xx=xx+xStep
yy=yy+yStep
next
```

End Sub

Notes: PS: st should be 1 and face should be a RGBSurface or a Graphics object.

8.0.108 How to draw with CGContextMBS using my own handle?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can try this code:

Example:

```
Soft Declare Function QDBeginCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer)
as Integer
dim contextRef as Integer
call QDBeginCGContext(g.handle(graphics.HandleTypeCGrafPtr), contextRef)
dim c as new CGContextMBS(contextRef)
```

```
c.BeginPath
c.SetLineWidth(3)
c.SetRGBFillColor(1,0,0,0.5)
c.FillRect(CGMakeRectMBS(0,0,100,100))
c.DrawPath(c.kCGPathFillStroke)
c.Flush // and so on
```

```
Soft Declare Function QDEndCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer)
as Integer
dim h as Integer = c.Handle
call QDEndCGContext(g.handle(graphics.HandleTypeCGrafPtr), h)
c.Handle=0
```

Notes: Basicly you can provide your own handle to CGContextMBS. But if you do not set it back to 0 the CGContextMBS destructor will release the handle which can result into a crash. (if the reference count is wrong)

8.0.109 How to dump java class interface?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In terminal you can use "javap -s <classname>" to display the class with the method names and parameters.

Notes: For example show ResultSet class: javap -s java.sql.ResultSet

8.0.110 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this function:

Example:

```
Function Duplicate(extends p as Picture) As Picture
# if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
# endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes:

Simply copy it to a module and call it like this: `q = p.duplicate`.

The code above works with old Real Studio versions because of the `#` if even if your RS version does not support alpha channel pictures. This way it's future proof.

8.0.111 How to enable assistive devices?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use AppleScript code like below:

Notes:

```
tell application "System Events"
activate
```

```
set UI elements enabled to true
```

```
return UI elements enabled
end tell
```

You can run this with AppleScriptMBS class.

8.0.112 How to encrypt a file with Blowfish?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this:

Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")
```

```
// read input
dim bi as BinaryStream = BinaryStream.Open(fi)
dim si as string = bi.Read(bi.Length)
bi.Close
```

```
// encrypt
dim so as string = BlowfishMBS.Encrypt("MyKey",si)
```

```
// write output
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write so
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

8.0.113 How to extract text from HTML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:

Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)
```

MsgBox text // shows: Gre

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 .

8.0.114 How to find empty folders in a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this code:

Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

8.0.115 How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try Launch Services.

Example:

```
dim f as FolderItem
```

```
f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")
```

```
MsgBox f.AbsolutePath
```

8.0.116 How to find network interface for a socket by it's name?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use our plugin to build a lookup table.

Example:

```
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim
```

```
if name.len = 0 then Return nil
```

```
// search by IP/MAC
```

```
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next
```

```
// use MBS Plugin to build a mapping
```

```
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary
```

```
for each n as NetworkInterfaceMBS in interfaces
```

```
dim IPv4s() as string = n.IPv4s
```

```
dim IPv6s() as string = n.IPv6s
```

```
for each IPv4 as string in IPv4s
```

```
map.Value(IPv4) = n.Name
```

```
next
```

```
for each IPv6 as string in IPv6s
```

```
map.Value(IPv6) = n.Name
```

```

next
if n.MAC<>>" then
map.Value(n.MAC) = n.Name
end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function

```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

8.0.117 How to find version of Microsoft Word?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this:

Example:

```

// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.microsoft.Word", "")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion", "")

```

Notes: Older versions of Word can be found with creator code "MSWD".

8.0.118 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You probably connect with SSL and you have no valid certificate.

Example:

```
dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.UnixpathMBS
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
```

Notes:

You can either use the code above to disable the SSL verification and have no security. Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:

<http://curl.haxx.se/ca/>

8.0.119 How to format double with n digits?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the FormatMBS function for this.

Example:

```
dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("% f", d)
listbox1.AddRow FormatMBS("% e", d)
listbox1.AddRow FormatMBS("% g", d)

listbox1.AddRow FormatMBS("% 5.5f", d)
listbox1.AddRow FormatMBS("% 5.5e", d)
listbox1.AddRow FormatMBS("% 5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("% f", d)
listbox1.AddRow FormatMBS("% e", d)
```

```
listbox1.AddRow FormatMBS("% g", d)

listbox1.AddRow FormatMBS("% 5.5f", d)
listbox1.AddRow FormatMBS("% 5.5e", d)
listbox1.AddRow FormatMBS("% 5.5g", d)
```

Notes:

see FormatMBS for details.

In general % f is normal style, % e is scientific and % g is whichever gives best result for given space.

8.0.120 How to get a time converted to user time zone in a web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the WebSession.GMTOffset property.

Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

8.0.121 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This function returns a handle for the frontmost window:

Example:

```
Function GetForegroundWindowHandle() as Integer
# if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
# endif
End Function
```

8.0.122 How to get CFAbsoluteTime from date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Use code like this:

Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianCalendarMBS
g.Day = d.Day
g.Month = d.Month
g.Year = d.Year
g.Minute = d.Minute
g.Hour = d.Hour
g.Second = d.Second
```

```
dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value
```

```
MsgBox str(x)
```

Notes:

As you see we need a timezone and put the date values in a gregorian date record. Now we can query absolute time for the given timezone.

8.0.123 How to get client IP address on web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the `WebSession.RemoteAddress` property.

Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

8.0.124 How to get fonts to load in charts on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.

Example:

```
if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype"
else
// on Mac and Windows we use system fonts.
end if
```

Notes:

On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

8.0.125 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.

Example:

```
dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
// on Mac and Windows we use system fonts.
end if
```

Notes:

On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

8.0.126 How to get GMT time and back?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the date class and the GMTOffset property.

Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+ " " +str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+ " (" +str(d.GMTOffset)+") " +str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+ " (" +str(e.GMTOffset)+") " +str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+ " (" +str(f.GMTOffset)+") " +str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

8.0.127 How to get good crash reports?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Check this website from the webkit website:

Notes: <http://webkit.org/quality/crashlogs.html>

8.0.128 How to get list of all threads?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the runtime module like in this function:

Example:

```

Function Threads() As Thread()
# pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function

```

Notes:

This returns an array of all thread objects currently in memory.
The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

8.0.129 How to get parameters from webpage URL in Real Studio Web Edition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the Webpage.ParametersReceived event.

Example:

```

Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->" +Variables.Value(key)
next
End Sub

```

Notes: The text encodings of this strings is not defined in Real Studio 2010r5. Please use DefineEncoding.

8.0.130 How to get Real Studio apps running Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You need to install some require packages.

Notes:

You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

8.0.131 How to get the color for disabled textcolor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Ask the appearance manager:

Example:

```
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as
Boolean, outColor as Ptr) as Integer
```

```
dim i as Integer
dim col as MemoryBlock
```

```
col = newMemoryBlock(6)
```

```
i = GetThemeTextColor(inColor, inDepth, inColorDev, col)
```

```
return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
End Function
```

Notes:

The color for this is:

```
const kThemeTextColorDialogInactive = 2.
```

```
c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

8.0.132 How to get the current free stack space?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can something like the code below:

Example:

```
Sub ShowStackSize()
dim threadid as Integer
```

```

dim size as Integer

declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
declare function 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 you like for that.

8.0.133 How to get the current timezone?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:**

You can use the TimeZoneMBS class or the CTimeZoneMBS class.

Or code like below:

Example:

```

Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

# if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info

```

```

if false then
// bad, because it does not work on Intel Macs:
`offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), & hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
offset = offset \60
return offset

# endif

# if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// - Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

# endif

End Function

```

8.0.134 How to get the current window title?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The code below returns the current window title for the frontmost window on Mac OS X if Accessibility services are

Example:

```

Function CurrentWindowTitle() As string
dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS

SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function

```

8.0.135 How to get the cursor blink interval time?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** On Mac OS you can use GetCaretTime from the toolbox.

Example:

```
declare function GetCaretTime lib "Carbon" () as Integer
```

```
MsgBox str(GetCaretTime())+" ticks"
```

Notes: 60 ticks make one second.

8.0.136 How to get the list of the current selected files in the Finder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Use the AppleScript like this one:

```
tell application "finder"
return selection
end tell
```

Which translates into this AppleEvent:

```
Process("Finder").SendAE "core,getd,'—':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"
```

and as Realbasic code it looks like this:

Example:

```
dim ae as appleevent
dim o1 as appleeventObjectSpecifier
dim f as folderItem
dim alist as appleeventdescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItem(i)

dateiname=f.name
// editfield1 with property "multiline=true"!
```

```
editfield1.text=editfield1.text + dateiname + chr(13)
next
end if
```

8.0.137 How to get the Mac OS system version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The following code queries the value and displays the version number:

Example:

```
dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+". "+str(Second)+". "+str(third)
else
msgbox "Mac OS "+str(First)+". "+str(Second)+". "+str(third)
end if
```

8.0.138 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)
For i =Len(s)-1 DownTo 1
```

```
s=Left(s,i)+"."+Mid(s,i+1)
Next
MsgBox "Systemversion: Mac OS " + s
end if
```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

8.0.139 How to get the screensize excluding the task bar?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Notes: Use the Screen class with the available* properties.

8.0.140 How to get the size of the frontmost window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Notes:

Make yourself a class for the WindowRect with four properties:

```
Bottom as Integer
Left as Integer
Right as Integer
Top as Integer
```

Add the following method to your class:

```
Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
# if targetwin32 then
Declare Function GetWindowRect Lib "user32.dll" (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)
# endif
End Sub
```

Good to use for the MDI Master Window!

8.0.141 How to get the source code of a HTMLViewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
// for Windows:
```

```
msgbox HTMLViewer1.IEHTMLTextMBS
```

```
// for Mac OS X:
```

```
msgbox HTMLViewer1.mainFrameMBS.dataSource.data
```

8.0.142 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sometimes it may be better to use an extra application to process images.

Notes:

A typical 32 bit app made with Xojo (Real Studio) can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

8.0.143 How to handle tab key for editable cells in listbox?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this function:

Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event
```

```
Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function
```

Notes:

You call it from CellKeyDown event like this:

```
EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler
```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

8.0.144 How to hard link MapKit framework?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:

Example:

```
Sub ReferenceMapKit()
// just put this in window or app class

# if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
# endif

End Sub
```

Notes:

No need to call the method.

Just having it in a window or app, will cause the compiler to hard link the framework.

8.0.145 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.

Example:

```
dim CurrentFile as WebFile // a property of the WebPage
```

```
// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Real Studio Web Edition.

8.0.146 How to hide all applications except mine?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The code below will on Mac OS hide all applications except your one:

Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

8.0.147 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Set Internet Explorer to silent mode with code like this:

Example:

```
htmlviewer1..ole.Content.value("Silent") = True
```

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

8.0.148 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you want to hide something in a chart, simply assign the kTransparent constant as color.

8.0.149 How to hide the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare:

Example:

```
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")
```

```
HideCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

8.0.150 How to insert image to NSTextView or TextArea?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With NSTextViewMBS you can use this code to insert file:

Example:

```
// insert a file to textview
```

```
Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
```

```
// read to file
```

```
dim b as BinaryStream = BinaryStream.Open(f)
```

```
dim s as string = b.Read(b.Length)
```

```
// build wrapper
```

```
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
```

```
fileWrapper.preferredFilename = f.name
```

```
// make attachment
```

```
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
```

```
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(fileAttachment)
```

```
// add to a NSTextViewMBS
```

```
textview.insertText attributedString
```

```
End Sub
```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

8.0.151 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You can use javascript to change the current window's location.

Example:

```
// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""# 16""
elseif TargetMacOS then
call HTMLViewer1.EvaluateJavaScriptMBS "window.location = ""# 16""
else
// not supported
end if
```

8.0.152 How to keep a movieplayer unclickable?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.

Example:

```
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function
```

8.0.153 How to keep my web app from using 100% CPU time?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Linux and Mac OS X you can use renice command in the terminal. On Windows use the task manager to reduce priority.

Notes:

If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

```
nohup /webapps/MyApp/MyApp &
```

you can simply have a second line saying this:

```
renice 20 $ !
```

which tells the system to lower priority to lowest value for the latest background process.

8.0.154 How to kill a process by name?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can kill a process (or application) by name if you loop over all the processes and kill the one you need.

Example:

```
dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess
```

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

8.0.155 How to know how many CPUs are present?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this function:

Example:

```
Function GetCPUCount() as Integer
Declare Function MPProcessors Lib "Carbon" () as Integer

Return MPProcessors()
End Function
```

Notes: Your app will then need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

8.0.156 How to know if a movie is finished?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** This code can help you although it's not perfect:

Example:

```
Declare Function IsMovieDone Lib "QuickTime" (theMovie as Integer) as Integer
```

```
if IsMovieDone(moviePlayer1.movie.handle) <>0 then
//movie is finished
end if
```

Notes: But be carefull! It crashes sometimes for an unknown reason!?

8.0.157 How to know if QuickTime is installed on any target and can play MPEG 4 movies?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```
dim q as QTComponentInformationMBS

q=new QTComponentInformationMBS

// "eat " = Movie importers
while q.NextComponentOfType("eat ")
if q.SubType="MP4 " then
MsgBox "found: "+q.Name+ " codec"
end if
wend
```

Notes: If you find a MP4 movie importing codec you can be sure that a MP4 movie can be opened.

8.0.158 How to know if QuickTime is installed on any target?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Try this function:

Example:

```
Dim theEffect as QTEffect

theEffect=GetQTCrossFadeEffect

if theEffect = nil then
msgBox "QuickTime is not installed."
else
msgBox "Quicktime is installed."
end if
```

Notes: The problem with this code is that it checks only if the QuickTime part of the cross fade effect is available. Use the QTComponentInformationMBS to check for the features you really need.

8.0.159 How to know the calling function?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac you can use a helper function like this this code:

Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function

# Pragma BreakOnExceptions false

try

// raise a dummy exception
dim r as new NilObjectException
raise r

catch x as NilObjectException

// get stack
dim stack() as string = x.Stack

// pick function name and return
dim name as string = stack(2)
Return name

end try
```

End Function

Notes: You need to include function names in your application.

8.0.160 How to launch an app using it's creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):

Example:

```
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occured"
else

end if
```

8.0.161 How to launch disc utility?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use this code:

Example:

```
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.apple.DiskUtility", "")

if f<>Nil then
f.Launch
end if
```

Notes: This works even if people renamed the disc utility or moved it to another folder.

8.0.162 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You may try to embed your changes to the database between two transaction calls.

Example:

```
dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"
```

Notes: This can increase speed by some factors.

8.0.163 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use code like this:

Example:

```
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function
```

Notes:

The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points. You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

8.0.164 How to make a window borderless on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this declares:

Example:

```

// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).

Const SWP_NOMOVE = & H2
Const SWP_FRAMECHANGED = & H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = & H80880000

Dim styleFlags as Integer

# If TargetWin32 Then

Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer

styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )

# EndIf

```

8.0.165 How to make an alias using AppleEvents?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```

Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
dim ev as AppleEvent
dim myResult as boolean
dim properties as AppleEventRecord

ev = NewAppleEvent("core", "crel", "MACS")
ev.MacTypeParam("kocl") = "alis"
ev.FolderItemParam("to ") = target
ev.FolderItemParam("insh") = folder

properties=new AppleEventRecord
properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

```

```
myResult = ev.send
// true on success, false on error
End Sub
```

Notes:

Call it like this:

```
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"
```

Seems to not work on Mac OS X 10.6

8.0.166 How to make an application smaller?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

If you use an older copy of REALbasic, you should try to compile for 68k only instead of PPC. It's a little bit slower, but code is much smaller.

On any Mac OS target you can save your images as JPEG and drop the into your application. REALbasic will include them as JPEGs into the Mac applications (convert to BMP for Windows). This will make the resources of your application smaller, but requires that the user has QuickTime 2.5 or newer installed.

8.0.167 How to make AppleScripts much faster?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** use "ignoring application responses" like in this example:

Notes:

```
on run { fn, fpx, fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx, fpy
end ignoring
end run
```

8.0.168 How to make double clicks on a canvas?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

```

dim doubleClickTime, currentClickTicks as Integer

# if targetMacOS then
Declare Function GetDbfTime Lib "Carbon" () as Integer
doubleClickTime = GetDbfTime()
# endif

# if targetWin32 then
Declare Function GetDoubleClickTime Lib "User32.DLL" () as Integer
doubleClickTime = GetDoubleClickTime()/60 // convert to ticks from milliseconds
# endif

currentClickTicks = ticks
//if the two clicks happened close enough together in time
if (currentClickTicks - lastClickTicks) <= doubleClickTime then
//if the two clicks occurred close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
DoubleClick //a double click has occurred so call the event
end if
end if
lastClickTicks = currentClickTicks
lastClickX = X
lastClickY = Y

```

10. Now to test out your new DoubleClickCanvas, drag the class from the Project window to a window in your project to create an instance of it.

11. Double-click on the canvas you just added to your window to open the Code Editor. Notice that the canvas has a DoubleClick event handler. In this event handler, add the following code:

```
BEEP
```

8.0.169 How to make my Mac not sleeping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Just inform the Mac OS about some system activity with code like this:

Example:

```
Sub UpdateSystemActivity()
```

```

# if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

```

```

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)

// you may react on an error if e is not 0 after the call.

# endif
End Sub

```

Notes:

You may use another constant if you prefer some different behavior. Call it maybe every second.

8.0.170 How to make my own registration code scheme?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** There are excellent articles about how to make a registratin code scheme, but you can also simply use our RegistrationEngineMBS class.

Notes: If you need a license text, why not use the one from Real Studio as a starting point?

8.0.171 How to make small controls on Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try this code on Mac OS X:

Example:

```

'/*
'* Use the control's default drawing variant. This does not apply to
'* Scroll Bars, for which Normal is Large.
'*/
const kControlSizeNormal = 0

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
'* controls.

```

```

*/
const kControlSizeSmall = 1

/*
*/
/* Use the control's small drawing variant. Currently supported by
*/ the Indeterminate Progress Bar, Progress Bar and Round Button
*/ controls.
*/
const kControlSizeLarge = 2

/*
*/
/* Control drawing variant determined by the control's bounds. This
*/ ControlSize is only available with Scroll Bars to support their
*/ legacy behavior of drawing differently within different bounds.
*/
const kControlSizeAuto = & hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OS-
Type, size as Integer, data as ptr) as short

dim m as MemoryBlock

m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall

Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))

```

8.0.172 How to mark my Mac app as background only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")

```

Notes: This will set the NSUIElement flag to YES.

8.0.173 How to move a file or folder to trash?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like below:
Example:

```
Function MoveToTrash(f as FolderItem) As Boolean
# if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFile-
OperationDefaultOptions)

if e = 0 then
Return true // Ok
end if

# elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent
+ w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
# else
// Target not supported
break
Return false
# endif
End Function
```

Notes:

If you want to move a file to trash, you could use `f.movefileto f.trashfolder`, but that will overwrite existing files in the trash. You can use our `MacFileOperationMBS` class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use `WindowsFileCopyMBS` class.
Requires Mac OS X 10.5.

8.0.174 How to move an application to the front using the creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This makes SimpleText (Code ttxt) to the frontmost application:

Example:

```
dim a as appleevent

a=newappleEvent("misc","actv","ttxt")

if a.send then
end if
```

Notes: (Code is Mac only)

8.0.175 How to move file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

Notes:

Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.

The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTD with the new file name. To delete use DELE and the file path.

8.0.176 How to normalize string on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like below:

Example:

```

Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)

Return m.str
End Function

```

Notes: This uses Apple's CFString functions to normalize unicode variants.

8.0.177 How to obscure the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare:

Example:

```
Declare Sub ObscureCursor Lib "Carbon" ()
```

```
ObscureCursor
```

Notes: The MBS Plugin has this function, but it's not supported for Windows.

8.0.178 How to open icon file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the NSImageMBS class like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")
dim n as new NSImageMBS(f)
```

```
window1.Backdrop = n.CopyPictureWithMask
```

8.0.179 How to open PDF in acrobat reader?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

Example:

```
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if
```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

8.0.180 How to open printer preferences on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use our OpenMacOSXPreferencesPaneMBS function like this:

Example:

```
dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
```

```
MsgBox "OK"  
elseif e = -43 then  
MsgBox "File not found."  
else  
MsgBox "Error: " +str(e)  
end if
```

8.0.181 How to open special characters panel on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have functions for that in Cocoa and Carbon.

Example:

```
dim a as new NSApplicationMBS  
a.orderFrontCharacterPalette
```

Notes:

For Cocoa, you can use `orderFrontCharacterPalette` method in `NSApplicationMBS` class.

Or simply for Carbon and Cocoa the `ShowCharacterPaletteMBS` method.

8.0.182 How to optimize picture loading in Web Edition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the `WebPicture` class.

Notes:

Take your picture and create a `WebPicture` object. Store this `WebPicture` in a property of the `WebPage`, `Session` or `app` (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.

Having pictures in `App` or some module reuses the same picture for all sessions which reduces memory footprint.

This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our `Map` example:

<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

8.0.183 How to parse XML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this:

Example:

```
dim s as string = "<test><test /></test>"

try
dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try
```

Notes: If you got an exception, you have a parse error.

8.0.184 How to play audio in a web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the HTML5 audio tag and control it with javascript.

Notes:

See our web apps here:

<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Real Studio 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```
audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMETYPE = "audio/m4a"
```

```
audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
```

```
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"
```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Then we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

```
dim urlO as string = app.audioFileOGG.URL
dim urlM as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+urlO+""" type=""audio/ogg""
/><source src="""+urlM+""" type=""audio/mpeg"" />Your browser does not support the audio ele-
ment.</audio>"
```

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once we got the object, we call it's play method to start playback.

```
me.ExecuteJavaScript("document.getElementById('mymusic').play();")
```

same for pause:

```
me.ExecuteJavaScript("document.getElementById('mymusic').pause();")
```

and finally for changing volume:

```
me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+"");")
```

8.0.185 How to pretty print xml?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the XML Transform method with the right XLS.

Notes:

Learn more here:

<http://docs.xojo.com/index.php/XMLDocument.Transform>

8.0.186 How to print to PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** This code below shows how to redirect printing to a PDF file on Mac OS X.

Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

Notes: And you can use normal graphics class for that.

8.0.187 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use a MDItemMBS objec to query this value:

Example:

```
Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
# If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
# EndIf
```

```

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function

```

Notes: Thanks for Josh Hoggan for this example code.

8.0.188 How to quit windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```

# if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

# endif

```

Notes:

uFlags parameters:

```

'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer

```

Also check the ExitWindowsMBS method.

8.0.189 How to read a CSV file correctly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like

this:

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")

List.AddRow ""
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend

```

Notes: Please make sure you choose the right text encoding.

8.0.190 How to read the command line on windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```

# if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

# endif

```

Notes: Newer Realbasic versions have a system.commandline property.

8.0.191 How to render PDF pages with PDF Kit?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)

if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if
```

Notes: PDFKit works only on Mac OS X.

8.0.192 How to restart a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR", "rest", "MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if
```

8.0.193 How to resume ftp upload with curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** CURL supports that and you simply need to set the right options.

Notes:

First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value. Don't forget to implement the read event and return data there as requested.

8.0.194 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** This code opens a PDF and draws the first page into a new PDF with 90 rotation.

Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90
c.RotateCTM pi*1.5
```

```

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage

c = nil

// show in PDF viewer
destfile.Launch

```

Notes: This code is Mac only as it needs CoreGraphics.

8.0.195 How to rotate image with CoreImage?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the code like the one below:

Example:

```

// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)

```

b. Write `outputImage.PNGRepresentation`

```
// as Real Studio picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask
```

```
Backdrop = pic
```

8.0.196 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Install 32 bit compatibility libraries.

Notes:

The package is called `ia32-libs` for ubuntu (and others).

Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like `libUSB` or `libHID` for USB devices.

8.0.197 How to save a quicktime movie as a reference movie?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Example code is below:

Example:

```
// save as reference movie
dim f as FolderItem
dim m as movie

f=SpecialFolder.Desktop.Child("test.mov")
m=f.OpenAsMovie

f=SpecialFolder.Desktop.Child("new movie.mov")

msgbox str(m.SaveMBS(f,false,false))
```

8.0.198 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use `NSPrint-InfoMBS` to change the options for `PrintToPDFFile` function.

Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
```

```
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes:

You may want to reset options later.
This code is only for Mac OS X.

8.0.199 How to save RTFD?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With NSTextViewMBS you can use this code to save to RTFD:

Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtf, "test.rtf")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then

else
  MsgBox e.LocalizedDescription
end if
```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

8.0.200 How to scale a picture proportionally with mask?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Pic-
ture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if

// return result
Return NewPic
End Function

```

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

8.0.201 How to scale a picture proportionally?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

```

```
// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function
```

Notes:

This does not handle mask, but you can scale the mask the same way and assign it to the new picture. (see other FAQ entry with mask)

8.0.202 How to scale/resize a picture?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.

Example:

```
dim Original,Scaled as Picture

Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)
```

Notes:

The plugin ways:

- The GWorld class which uses QuickTime. Includes nice Bicubic scaling with QuickTime 6.
- QTGraphicsImporterMBS and QTGraphicsExporterMBS can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.

- Picture.ScopingMBS does crossplatform scaling with several modes.

with pure REALbasic:

- make a new picture and draw the old one with new size inside.

8.0.203 How to search with regex and use unicode codepoints?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can specify unicode characters in search string with backslash x and digits.

Example:

```

dim r as RegExMbs
dim s as string
dim c as Integer

s="123 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

```

8.0.204 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this function:

Example:

```

Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)
If S=F.name Then
Return True
End If
Next
end if
End if
End Function

```

8.0.205 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You use the pragma cache_size command on the database.

Example:

```

// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"

```

Notes:

Default cache size is 2000 pages which is not much.

You get best performance if whole database fits in memory.

At least you should try to have a cache big enough so you can do queries in memory.

You only need to call this pragma command once after you opened the database.

8.0.206 How to set the modified dot in the window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declares:

Example:

```
window1.ModifiedMBS=true
```

8.0.207 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use a WebHTMLViewer control and load the

Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL
```

Notes:

See our Create PDF example for the Real Studio Web Edition.
<http://www.monkeybreadsoftware.de/realbasic/webapps.shtml>

8.0.208 How to show Keyboard Viewer programmatically?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use Realbasic or AppleScript to launch the KeyboardViewerServer.app.

Example:

```
dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-
Support/KeyboardViewerServer.app""
lines.append ""
```

```

lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose
name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

```

```
text=join(lines,EndOfLine.macintosh)
```

```
a.Compile text
```

```
a.Execute
```

Notes:

AppleScript code:

```

set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/Key-
boardViewerServer.app"

```

```

set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theAp-
plication))
if isRunning then tell application POSIXPath to quit
delay 0.15

```

```

ignoring application responses
tell application POSIXPath to run
end ignoring

```

8.0.209 How to show the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare:

Example:

```
Declare Sub ShowCursor Lib "Carbon" ()
```

```
ShowCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

8.0.210 How to shutdown a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","shut","MACS")
if not ae.send then
msgBox "The computer couldn't be shutdown."
end if
```

Notes:

Or toolbox call (Attention: This method will stop the computer immediatly: No document asked to be saved, all applications quitting without knowing).

```
Declare Sub ShutDownPower Lib "Carbon" ()
ShutDownPower
```

8.0.211 How to sleep a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

8.0.212 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Here a few speed tips:
Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

8.0.213 How to use PDFLib in my RB application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The PDFlib plugin was discontinued in favor of our DynaPDF plugin.
Notes: If you need help to move, please contact us.

8.0.214 How to use quotes in a string?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Just double them.

Example:

```
msgbox "This String contains ""quotes""."
```

8.0.215 How to use Sybase in Web App?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use our MBS Real Studio SQL Plugin to connect to a Sybase Database in your web application.

Notes:

If you see db.Connect giving the error message "cs.ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.

The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15.0/lib:/opt/sybase/OCS-15.0/lib3p64:/opt/sybase/OCS-15.0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
```

```
SetEnv SYBASE /opt/sybase
```

8.0.216 How to use the Application Support folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

I was saving a registration code for an app to the Preference folder. People on the list have suggested that it would be better in the ApplicationSupportFolder. How do I save the file called CWWPrefs into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

```
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

Example:

```
dim folder,file as FolderItem
```

```
folder = createApplicationSupportFolderMBS(-32763)
```

```
if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if
```

```
file=folder.Child("CWWPrefs")
```

```
MsgBox file.UnixpathMBS
```

Notes: You may not be able to write there with a normal user account!

8.0.217 How to use the IOPMCopyScheduledPowerEvents function in Realbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the following code which does this using the SoftDeclareMBS class.

Example:

```
Sub Open()
dim c as CFDateMBS
```

```

dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights
Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As cfarrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS

```

```

dim m as MemoryBlock

'/*
' * Types of power event
' * These are potential arguments to IOPMSchedulePowerEvent().
' * These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionaryes
' * returned by IOPMCopyScheduledPowerEvents().
' */
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
' */
'# define kIOPMAutoWake "wake"
,

'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.
' */
'# define kIOPMAutoPowerOn "poweron"
,

'/*!
'@define kIOPMAutoWakeOrPowerOn
'@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
'power on, whichever is necessary.
' */
,

'# define kIOPMAutoWakeOrPowerOn "wakepoweron"
'/*!
'@define kIOPMAutoSleep
'@abstract Value for scheduled sleep.
' */
,

'# define kIOPMAutoSleep "sleep"
'/*!
'@define kIOPMAutoShutdown
'@abstract Value for scheduled shutdown.
' */
,

'# define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil

```

```

m.Long(8)=type.Handle

if s.CallFunction(3,m) then
Return s.Result
end if
end if
end if

End Function

```

Notes: Requires Mac OS X and to execute root rights.

8.0.218 How to validate a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:

Example:

```

Function IsGUID(guid as string) As Boolean
dim r as new RegEx

r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 }
-( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$"

Return r.Search(guid)<>nil
End Function

```

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

8.0.219 How to walk a folder hierarchie non recursively?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this one:

Example:

```

Sub Walk(folder as FolderItem)
dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

```

```

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count
for i as Integer = 1 to c
dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then
// no permission
elseif item.Visible then // only visible

if item.Directory then
folders.Append item
else
// work with file here
end if

end if

next

wend
End Sub

```

Notes:

As you see we go with a long loop which runs until we don't have more folders to process.

We ignore items we can't access due to permission limits.

And we only work visible items.

If you like, check `folderitem.isBundleMBS` on item to handle packages and applications better on Mac OS X.

8.0.220 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.

Notes: We splitted the plugin because the Real Studio IDE on Windows crashed on compilation.

8.0.221 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** There are two main reasons.

Notes:

1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.

On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.

In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the temporary files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

8.0.222 I want to accept Drag & Drop from iTunes

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.

Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub
```

```
Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
```

```

dim d as CFDictionaryMBS
dim o as CFOBJECTMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")

// Parse XML
o=NewCFOBJECTMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBS CFStringMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then
MsgBox file.UnixpathMBS
end if
end if
end if
next
end if
end if

```

```
end if
End Sub
```

Notes: The code above inside a window on Realbasic 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

8.0.223 I'm drawing into a listbox but don't see something.

Plugin Version: all, Console & Web: No. **Answer:** If you draw this in a listbox cellbackground, you need to draw on the correct position

Example:

```
Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function
```

Notes: Try this in a listbox. The Graphics object there has a clipping and an offset which the plugin doesn't know about.

8.0.224 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.

Notes: See Window.Transition functions.

8.0.225 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Stand alone.

Notes:

REALbasic compiles all used plugins into the application binary.

Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

8.0.226 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?

Example:

' Window.Open Event of a blank project:

```
dim i as Integer
```

```
for i=0 to 127
```

```
if keyboard.asynckeydown(i) then
```

```
title=str(i) // found
```

```
return
```

```
end if
```

```
next
```

```
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

8.0.227 Is there a case sensitive Dictionary?

Plugin Version: all, Console & Web: No. **Answer:** The MBS Plugin has several classes which can work as a replacement.

Notes:

First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.

If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

IntegerToIntegerHashMapMBS class

IntegerToIntegerOrderedMapMBS class

IntegerToStringHashMapMBS class
 IntegerToStringOrderedMapMBS class
 IntegerToVariantHashMapMBS class
 IntegerToVariantOrderedMapMBS class
 StringToStringHashMapMBS class
 StringToStringOrderedMapMBS class
 StringToVariantHashMapMBS class
 StringToVariantOrderedMapMBS class

8.0.228 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the DirectorySizeMBS class for this as in the example below:

Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes:

Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

8.0.229 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the code below:

Example:

```

dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if

```

8.0.230 Is there an easy way I can launch the Quicktime preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the code below:
Example:

```

dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("QuickTime")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if

```

8.0.231 List of Windows Error codes?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have a list of windows error codes on our website.

Notes: <http://www.monkeybreadsoftware.de/xojo/winerror.shtml>

8.0.232 Midi latency on Windows problem?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The issue is system related, not a problem with RB or the plugin.

Notes:

Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

8.0.233 My Xojo Web App does not launch. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Here is a list of checks to do for linux apache installations with Xojo or Real Studio Web applications:

Notes:

Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.
- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error "Premature end of script headers" in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don't have code in app.open, session.open and other events which crashes app right at launch?
- You don't have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

8.0.234 Pictures are not shown in my application. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:**

On Mac OS Classic, please check the memory partition size which may be too low.
Else (most times on Windows) you are simple missing the part of QuickTime to load images.

8.0.235 Realbasic doesn't work with your plugins on Windows 98.

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Upgrade your Windows version or complain to Realsoftware.

8.0.236 REALbasic or my RB application itself crashes on launch on Mac OS Classic. Why?

Plugin Version: all, Console & Web: No. **Answer:**

You may check if the application has enough memory to be loaded.
RB should have on Mac OS Classic more than 20 MB of RAM.
I preferred to use 50 MB and for an application a 10 MB partition is a good way to start.

8.0.237 SQLiteDatabase not initialized error?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Before you can use SQLiteDatabaseMBS, it must be initialized.

Example:

```
dim d as new SQLiteDatabaseMBS
```

Notes:

This happens normally when you use "new SQLiteDatabaseMBS".
But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happened, yet.
So please simply add a line "dim d as new SQLiteDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

8.0.238 Textconverter returns only the first x characters. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

Some older REALbasic versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

Notes: REALbasic seems not to support Textconverters at all on Windows.

8.0.239 The type translation between CoreFoundation/Foundation and Realbasic data types.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The plugin does conversion between Cocoa/Carbon data types and native REALbasic data types. The following list help you knowing what the current plugins support:

Notes:

Cocoa NSObject to Variant:

```

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

```

- ->*MBS

Variant to Cocoa NSObject:

```

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate

```

MemoryBlock ->NSData
 String ->NSString
 NSImageMBS ->NSImage
 NSAttributedStringMBS ->NSAttributedString
 NSColorMBS ->NSColor
 NSRectMBS ->NSValue with NSRect
 NSSizeMBS ->NSValue with NSSize
 NSPointMBS ->NSValue with NSPoint
 NSRangeMBS ->NSValue with NSRange
 NSBurnMBS ->NSBurn
 NSViewMBS ->NSView
 NSFontMBS ->NSFont
 NSParagraphStyleMBS ->NSParagraphStyle
 NSAttributedStringMBS ->NSAttributedString
 WebPolicyDelegateMBS ->WebPolicyDelegate
 WebUIDelegateMBS ->WebUIDelegate
 WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
 WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
 NSIndexSetMBS ->NSIndexSet
 QTTimeMBS ->QTTime
 QTTimeRangeMBS ->QTTimeRange
 Array of Variant ->NSArray
 Array of String ->NSArray
 CFStringMBS ->NSString
 CFNumberMBS ->NSNumber
 CFDataMBS ->NSData
 CFURLMBS ->NSURL
 CFArrayMBS ->NSArray
 CFDictionaryMBS ->NSDictionary
 CFBinaryDataMBS ->NSData

Carbon 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.

8.0.240 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

8.0.241 What classes to use for hotkeys?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

8.0.242 What do I need for Linux to get picture functions working?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In order to get our plugins working on Linux systems without GUI, the plugin loads graphics libraries dynamically.

Notes:

To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so”
- libgtk-x11-2.0.so.0”
- /usr/lib/libgtk-x11-2.0.so”
- /usr/lib32/libgtk-x11-2.0.so”
- /usr/lib/libgtk-x11-2.0.so.0”
- /usr/lib32/libgtk-x11-2.0.so.0”

gdk is loaded with this paths:

- libgdk-x11-2.0.so”
- libgdk-x11-2.0.so.0”
- /usr/lib/libgdk-x11-2.0.so”
- /usr/lib32/libgdk-x11-2.0.so”
- /usr/lib/libgdk-x11-2.0.so.0”
- /usr/lib32/libgdk-x11-2.0.so.0”

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

8.0.243 What does the NAN code mean?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

8.0.244 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

REALbasic 4.5 has a constant "SmallSystem" to use for a font name.

For older versions try this code:

Example:

```
Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontName as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock
```

```
const smSystemScript = -1
```

```
Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer
```

```
theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style
```

```
err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)
```

```
if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub
```

8.0.245 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Last Version with 10.4 support is version 15.4.

Notes:

With version 15.4 you can build applications for OS X 10.4 and newer.

For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

8.0.246 What is last plugin version to run on PPC?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Last Version with PPC is 15.4.

Notes:

With version 15.4 you can build PPC applications for OS X 10.4 and newer.

For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

8.0.247 What is the difference between Timer and WebTimer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Time is server side and WebTimer client side.

Notes: Timer is the normal timer class in Real Studio. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

8.0.248 What is the list of Excel functions?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Below a list of function names known by LibXL.

Notes:

LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, Deref, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST, FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE,

GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUNDBAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARDIZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TERMINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREGISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

8.0.249 What is the replacement for PluginMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use the SoftDeclareMBS class to load libraries dynamically.

8.0.250 What to do on Realbasic reporting a conflict?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

REALbasic just wants to tell you that you dropped something in the plugins folder what is not a plugin.

Notes: Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

8.0.251 What to do with a NSImageCacheException?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You need to add exception handlers for NSExcptionMBS in order to catch this exception.

Notes:

You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So basicly you pass in the base image and for whatever size an image is needed, the NSImage class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

8.0.252 What to do with MySQL Error 2014?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can get this error on MySQL if you have a recordset open while you create another one.

8.0.253 What ways do I have to ping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You have different ways

Notes:

1. Use the shell class and the ping utility.
2. Use the MBS Network Plugin and there the SuperSocket part:
 - a) On Windows the ICMPPingMBS works to ping.
 - b) On Mac OS X it uses OpenTransport and needs root rights. You need to use sudo to run this application. This does not work on Intel Macs, because the plugin is not endian safe.

3. The DarwinPingMBS.Ping method:

Compiled for Mac OS X Macho target it works as a synchronized ping method.
The Windows version had a bug and was fixed in plugin version 8.2pr4. So it works now.

4. The DarwinPingMBS.SimplePing method:

Works on Mac OS X Macho target.

But this method can be called from a thread to make it working in background.

8.0.254 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetActiveDisplayList.

8.0.255 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithPoint.

8.0.256 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithRect.

8.0.257 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetOnlineDisplayList.

8.0.258 Where is GetObjectClassNameMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use this replacement method:

Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

8.0.259 Where is NetworkAvailableMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We removed NetworkAvailableMBS some versions ago. It was not working right and basically it's not useful. If you want to check whether you have a network, then do a DNS resolve:

Example:

```
// two independent domain names
const domain1 = "www.google.com"
const domain2 = "www.macs.w.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if
```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

8.0.260 Where is StringHeight function in DynaPDF?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Use the function GetFTextHeight or GetFTextHeightEx.

Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

8.0.261 Where is XLSDocumentMBS class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This class has been removed in favor of XLBookMBS class.

Notes: These classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

8.0.262 Where to get information about file formats?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

Please visit this web page:

<http://www.wotsit.org>

8.0.263 Where to register creator code for my application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Register at Apple:

<http://developer.apple.com/dev/cftype/information.html>

8.0.264 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins for Xojo until 64bit target is available.

Notes:

For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit

- MediaLibrary
- Social
- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

8.0.265 Which plugins are 64bit only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.

Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

8.0.266 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Some RB versions require that you install DirectX from Microsoft on your Windows.

8.0.267 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.

Notes: This bug is for several older Windows 95 editions.

8.0.268 Why do I hear a beep on keydown?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** When the user presses a key, RB goes through all keydown event handlers till on returns true.

Notes: If no keydown event handler returns true for the key, a beep is performed.

8.0.269 Why does folderitem.item return nil?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Because Realbasic fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.

Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

8.0.270 Why doesn't showurl work?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

There are three main reasons:

1. showurl is not supported by REALbasic in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

8.0.271 Why have I no values in my chart?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You have no data points visible, there may be several reasons:

Notes:

For example one of the data values may be infinite or invalid.
Or the scaling may be out of range, so you simply see nothing.

8.0.272 Will application size increase with using plugins?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** All plugins used by your application will be included in the application.

Notes:

If you use no plugins, your application will not change size.
And if you use one class from the plugins, your application size will increase by a few kilobytes.
The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

8.0.273 XLS: Custom format string guidelines

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You have to download the source code and compile a static version of the library.

Notes:

Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

,# # # .00.); [Red] (# ,# # # .00);0.00;"sales"@

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.

Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.

[Red] [<=100] ; [Blue] [>100]

If the cell value does not meet any of the criteria, then pound signs ("# ") are displayed across the width of the cell.

Dates and times

Examples

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see <code>Axis.setLabels</code> on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).
xLabel	The bottom x-axis label of the data point.
x2Label	The top x-axis label of the data point.
value	The value of the data point.
accValue	The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
totalValue	The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
percent	The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
accPercent	The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
gpercent	The percentage of the data point based on the total value of all data points in a layer.
dataSet	The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).
dataSetName	The name of the data set to which the data point belongs.
dataItem	The data point number within the data set. The first data point is 0. The nth data point is (n-1).
dataGroup	The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).
dataGroupName	The name of the data group to which the data point belongs.
layerId	The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using <code>Layer.addExtraField</code> , <code>Layer.addExtraField2</code> , <code>BaseChart.addExtraField</code> or <code>BaseChart.addExtraField2</code> .

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
zx	The symbol scale in the x dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .

Parameter	Description
slope	The slope of the trend line.
intercept	The y-intercept of the trend line.
corr	The correlation coefficient in linear regression analysis.
stderr	The standard error in linear regression analysis.

Parameter	Description
top	The value of the top edge of the box-whisker symbol.
bottom	The value of the bottom edge of the box-whisker symbol.
max	The value of the maximum mark of the box-whisker symbol.
min	The value of the minimum mark of the box-whisker symbol.
med	The value of the median mark of the box-whisker symbol.

Parameter	Description
high	The high value.
low	The low value.
open	The open value.
close	The close value.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
radius	The radial value of the data point.
value	Same as { radius } . See above.
angle	The angular value of the data point.
x	Same as { angle } . See above.
label	The angular label of the data point.
xLabel	Same as { label } . See above.
name	The name of the layer to which the data point belongs.
dataSetName	Same as { name } . See above.
i	The data point number. The first data point is 0. The nth data point is (n-1).
dataItem	Same as { i } . See above.
z	The symbol scale. Applicable for layers with symbol scales set by Polar-Layer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.
diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.
Parameter	Description
dir	The direction of the vector.
len	The length of the vector.
Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.
Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b]	The thousand separator. Should be a non-alphanumeric character (not 0-9, A-Z, a-z). Use ' '.
textasciitilde ' for no thousand separator. The default is ' '.	
textasciitilde ' , which can be modified using BaseChart.setNumberFormat.	
[c]	The decimal point character. The default is '.', which can be modified using BaseChart.setNumberFormat.
[d]	The negative sign character. Use ' '.
textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.	

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6, 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val("x7")
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format # .00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is # .# # , and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and add the percentage symbol in the cell.
, (comma)	Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (#) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is # .0,, and the cell value is 12,200,000 then the number 12.2 is displayed.
E- E+ e- e+	Scientific format. The application shall display a number to the right of the "E" symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is # 0.0E+0, then the number 12.2E+6 is displayed.
\$ -+/():space	Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (\). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.
\	Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0\!, and the value 3 is in the cell, the value 3! is displayed.
*	Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.
_ (underline)	Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format _(0.0.);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.
"text"	Display whatever text is inside the quotation marks. For example, the format 0.00 "dollars" displays 1.23 dollars when the value 1.23 is in the cell.
@	Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is "Bob "@ Smith" (including quotation marks), and the value "John" is in the cell, the value Bob John Smith is displayed.

[Black] [Green] [White] [Blue] [Magenta] [Yellow] [Cyan] [Red]

To display	As	Use this code
Months	1-12	m
Months	01-12	mm
Months	Jan-Dec	mmm
Months	January-December	mmmm
Months	J-D	mmmmm
Days	1-31	d
Days	01-31	dd
Days	Sun-Sat	ddd
Days	Sunday-Saturday	dddd
Years	00-99	yy
Years	1900-9999	yyyy
Hours	0-23	h
Hours	00-23	hh
Minutes	0-59	m
Minutes	00-59	mm
Seconds	0-59	s
Seconds	00-59	ss
Time	4 AM	h AM/PM
Time	4:36 PM	h:mm AM/PM
Time	4:36:03 P	h:mm:ss A/P
Time	4:36:03.75	h:mm:ss.00
Elapsed time	1:02	[h] :mm
Elapsed time	62:16	[mm] :ss
Elapsed time	3735.80	[ss] .00

To display	As	Use this code
1234.59	1234.6	# # # # .#
8.9	8.900	# .000
.631	0.6	0.#
12	12.0	# .0#
1234.568	1234.57	# .0#
44.398	44.398	???.???
102.65	102.65	???.???
2.8	2.8	???.???
5.25	5 1/4	# ??/??
5.3	5 3/10	# ??/??
12000	12,000	# ,# # #
12000	12	# ,
12400000	12.4	0.0,,