

MBS Compression Plugin Documentation

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0.1 Introduction

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

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Chapter 5

Archive

5.1 class ArchiveEntryMBS

5.1.1 class ArchiveEntryMBS

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

Function: The class for an archive entry.

Example:

```
dim data as string = "Hello World test file. Hello World again."
```

```
dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
e.Size = lenb(data)
e.Permissions = &o0644
e.FileType = e.kFileTypeRegular
```

Blog Entries

- [MBS Xojo Plugins, version 20.5pr6](#)
- [MBS Xojo Plugins, version 19.2pr7](#)
- [New Archive classes for handling zip and tar archives](#)

Xojo Developer Magazine

- [19.4, page 83: Archives in Xojo, How to Use Zip Archives by Stefanie Juchmes](#)
- [19.4, page 81: Archives in Xojo, How to Use Zip Archives by Stefanie Juchmes](#)

5.1.2 Methods

5.1.3 Clear

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clears entry for later use.

5.1.4 ClearACL

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clears access control lists.

5.1.5 ClearXAttr

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clears extended attributes.

5.1.6 Clone as ArchiveEntryMBS

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

Function: Creates a copy of the entry.

Notes: Does a deep copy; all of the strings are copied too.

5.1.7 Constructor

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

Function: Creates a new archive entry.

See also:

- 5.1.8 Constructor(Archive as ArchiverMBS)

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5.1.8 Constructor(Archive as ArchiverMBS)

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

5.1. CLASS ARCHIVEENTRYMBS

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Function: Creates a new archive entry for a given archive.

Notes: This will pick the character set from the archive.

See also:

- 5.1.7 Constructor

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5.1.9 Destructor

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

Function: The destructor.

5.1.10 GetFFlags(byref FlagsSet as UInt64, byref FlagsClear as UInt64)

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

Function: Queries file flags.

5.1.11 SetFFlags(FlagsSet as UInt64, FlagsClear as UInt64)

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

Function: Sets the file flags.

5.1.12 SetLink(link as string)

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

Function: Sets the link.

Notes: Update only. For a symlink, update the destination. Otherwise, make the entry a hardlink and alter the destination for that.

5.1.13 UnsetATime

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

Function: Unsets the last access timestamp.

5.1.14 UnsetBTime

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

Function: Unsets the birth timestamp.

5.1.15 UnsetCTime

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

Function: Unsets the last modification timestamp.

5.1.16 UnsetGName

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

Function: Unsets the group name.

5.1.17 UnsetHardLink

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

Function: Unset the hard link field.

5.1.18 UnsetMTime

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

Function: Unsets the modification timestamp.

5.1.19 UnsetPathName

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

Function: Unsets the pathname field.

5.1.20 UnsetSize

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

Function: Unsets the size.

5.1.21 UnsetSymLink

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

Function: Unsets the symbolic link field.

5.1.22 UnsetUName

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

Function: Unsets the user name field.

5.1.23 Properties

5.1.24 ADateTime as DateTime

Plugin Version: 20.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last access timestamp.

Notes: For Xojo 2019r2 or newer.

(Read and Write property)

5.1.25 ATime as Date

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The last access timestamp.

Notes: (Read and Write property)

5.1.26 ATimeSet as Boolean

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

Function: Whether last access timestamp is set.

Notes: (Read only property)

5.1.27 `BDateTime` as `DateTime`

Plugin Version: 20.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The birth timestamp.

Notes: This is the creation time.

For Xojo 2019r2 or newer.

(Read and Write property)

5.1.28 `BTime` as `Date`

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The birth timestamp.

Notes: This is the creation time.

(Read and Write property)

5.1.29 `BTimeSet` as `Boolean`

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

Function: Whether the birth timestamp field is set.

Notes: (Read only property)

5.1.30 `CDateTime` as `DateTime`

Plugin Version: 20.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The attribute modification timestamp.

Notes: Last time an inode property was changed.

For Xojo 2019r2 or newer.

(Read and Write property)

5.1.31 `CTime` as `Date`

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The attribute modification timestamp.

Notes: Last time an inode property was changed.
(Read and Write property)

5.1.32 CTimeSet as Boolean

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

Function: Whether last modification timestamp is set.

Notes: (Read only property)

5.1.33 Dev as Integer

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

Function: The device number.

Notes: (Read and Write property)

5.1.34 DevMajor as Integer

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

Function: The minor part of the dev field.

Notes: (Read and Write property)

5.1.35 DevMinor as Integer

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

Function: The major part of the dev field.

Notes: (Read and Write property)

5.1.36 DevSet as Boolean

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

Function: Whether dev is set.

Notes: (Read only property)

5.1.37 FFlags as String

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

Function: The file flags.

Notes: (Read and Write property)

5.1.38 FileName as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file name.

Notes: Taken from PathName property at runtime.

(Read only property)

5.1.39 FileType as Integer

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

Function: Queries file type.

Example:

```
dim e as new ArchiveEntryMBS
e.FileType = e.kFileTypeRegular
```

Notes: Check the kFileType* constants.

(Read and Write property)

5.1.40 GID as Int64

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

Function: The group ID.

Notes: (Read and Write property)

5.1.41 GName as String

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

Function: The group name.

Notes: (Read and Write property)

5.1.42 Handle as Integer

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

Function: The internal object reference.

Notes: (Read and Write property)

5.1.43 HardLink as String

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

Function: Destination of the hardlink.

Notes: (Read and Write property)

5.1.44 INo as Int64

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

Function: The inode number.

Notes: (Read and Write property)

5.1.45 INo64 as Int64

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

Function: The inode number.

Notes: (Read and Write property)

5.1.46 INoSet as Boolean

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

Function: Whether inode number is set.

Notes: (Read only property)

5.1.47 IsDataEncrypted as Boolean

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether data is encrypted.

Notes: (Read and Write property)

5.1.48 IsMetaDataEncrypted as Boolean

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether metadata is encrypted.

Notes: (Read and Write property)

5.1.49 MacMetadata as MemoryBlock

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

Function: The Mac Metadata.

Notes: Storage for Mac OS-specific AppleDouble metadata information. Apple-format tar files store a separate binary blob containing encoded metadata with ACL, extended attributes, etc. This provides a place to store that blob.

(Read and Write property)

5.1.50 MDateTime as DateTime

Plugin Version: 20.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: The modification timestamp.

Notes: For Xojo 2019r2 or newer.

(Read and Write property)

5.1.51 Mode as Integer

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

Function: The permissions mode.

Notes: (Read and Write property)

5.1.52 ModeString as String

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

Function: The permissions mode as string.

Notes: (Read only property)

5.1.53 MTime as Date

Plugin Version: 16.2, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The modification timestamp.

Notes: (Read and Write property)

5.1.54 MTimeSet as Boolean

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

Function: Whether the modification time stamp field is set.

Notes: (Read only property)

5.1.55 NLink as Integer

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

Function: The number of hardlinks.

Notes: (Read and Write property)

5.1.56 PathName as String

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

Function: Path in the archive.

Example:

```
dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
```

Notes: Text encoding works partly.

Best to use only ASCII file paths for compatibility.

If the archive is opened/created with UTF-8 support, you may use other characters.

On Windows text encoding conversion may require use of LoadIconvLibrary method to load iconv.dll.
(Read and Write property)

5.1.57 Permissions as Integer

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

Function: The permissions.

Example:

```
dim e as new ArchiveEntryMBS
e.Permissions = &o0644
```

Notes: (Read and Write property)

5.1.58 RDev as Integer

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

Function: The device ID (if special file).

Notes: (Read and Write property)

5.1.59 RDevMajor as Integer

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

Function: The major part of RDev field.

Notes: (Read and Write property)

5.1.60 RDevMinor as Integer

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

Function: The minor part of RDev field.

Notes: (Read and Write property)

5.1.61 Size as UInt64

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

Function: The size of the file.

Notes: (Read and Write property)

5.1.62 SizeSet as Boolean

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

Function: Whether size field is set.

Notes: (Read only property)

5.1.63 SourcePath as String

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

Function: Path on the disk for use.

Notes: (Read and Write property)

5.1.64 Stat as MemoryBlock

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Get and set stat structure.

Notes: Routines to bulk copy fields to/from a platform-native "struct stat."

Libarchive used to just store a struct stat inside of each archive entry object, but this created issues when trying to manipulate archives on systems different than the ones they were created on.

(Read and Write property)

5.1.65 SymLink as String

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

Function: Destination of the symbolic link..

Notes: (Read and Write property)

5.1.66 SymlinkType as Integer

Plugin Version: 20.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The type of symlink for this entry.

Notes: (Read and Write property)

5.1.67 UID as UInt64

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

Function: The user ID.

Notes: (Read and Write property)

5.1.68 UName as String

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

Function: The user name.

Notes: (Read and Write property)

5.1.69 XAttrCount as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Number of extended attributes for this entry.

Notes: (Read only property)

5.1.70 Constants

File Types

Constant	Value	Description
kFileTypeBlock	&o0060000	Block device.
kFileTypeCharacter	&o0020000	Character device.
kFileTypeDirectory	&o0040000	Directory
kFileTypeIFO	&o0010000	Named pipe (fifo)
kFileTypeLink	&o0120000	Symbolic link
kFileTypeMT	&o0170000	MT?
kFileTypeRegular	&o0100000	Regular file.
kFileTypeSOCK	&o0140000	Socket

Symlink Types

Constant	Value	Description
kSymlinkTypeDirectory	2	Symlink is a directory.
kSymlinkTypeFile	1	Symlink is a file.
kSymlinkTypeUndefined	0	Symlink is of unknown type.

5.2 class ArchiveReadDiskMBS

5.2.1 class ArchiveReadDiskMBS

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The archive subclass class for reading files from disk.

Notes: Subclass of the ArchiveReaderMBS class.

Blog Entries

- [MBS Xojo Plugins, version 20.3pr4](#)
- [MBS Xojo Plugins, version 18.6pr3](#)

5.2.2 Methods

5.2.3 CanDescend as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether you can descend into current item.

Notes: True if current item is a folder.

5.2.4 Constructor

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The constructor.

5.2.5 CurrentFileSystem as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries ID for current file system.

Notes: Lasterror is set.

5.2.6 CurrentFileSystemIsRemote as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether current file system is remote.

Notes: Lasterror is set.

5.2.7 CurrentFileSystemIsSynthetic as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether current file system is synthetic.

Notes: Lasterror is set.

5.2.8 Descend

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Request that current entry be visited.

Notes: If you invoke it on every directory, you'll get a physical traversal. This is ignored if the current entry isn't a directory or a link to a directory. So, if you invoke this on every returned path, you'll get a full logical traversal.

Lasterror is set.

5.2.9 Destructor

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.

Notes: Lasterror is set.

5.2.10 GroupName(ID as Int64) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries group name for given ID.

Notes: May invoke GroupLookup event.

Lasterror is set.

5.2.11 Open(Folder as FolderItem) as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Opens a folderitem.

Notes: Returns true on success and false on errors.
Lasterror is set.

See also:

- 5.2.12 Open(Path as String) as Boolean

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5.2.12 Open(Path as String) as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Opens a file path.

Notes: Returns true on success and false on errors.
Lasterror is set.

See also:

- 5.2.11 Open(Folder as FolderItem) as Boolean

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5.2.13 SetAccessTimeRestored

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Request that the access time of the entry visited by traversal be restored.

Notes: Lasterror is set.

5.2.14 SetStandardLookup

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets standard lookup for mapping user and group IDs to names.

Notes: "Standard" implementation uses getpwuid_r, getgrgid_r and caches the results for performance.
Lasterror is set.

5.2.15 SetSymlinkHybrid

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Set to follow symlink initially, then not.

Notes: Lasterror is set.

5.2.16 SetSymlinkLogical

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets to follow all symlinks.

Notes: Lasterror is set.

5.2.17 SetSymlinkPhysical

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets to follow no symlinks.

Notes: Lasterror is set.

5.2.18 UserName(ID as Int64) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries user name for given ID.

Notes: May invoke UserLookup event.

Lasterror is set.

5.2.19 Properties

5.2.20 BehaviorFlags as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Select optional behavior.

Notes: See kBehavior constants.

Setting the value sets Lasterror.

By default MBS Plugin sets kBehaviorRestoreAccessTime, kBehaviorRestoreHonorNoDump, kBehaviorRestoreMacCopyFile and kBehaviorRestoreNoTraverseMounts.

(Read and Write property)

5.2.21 Events

5.2.22 GroupLookup(ID as Int64) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event to let you lookup manually the name for a group ID.

5.2.23 UserLookup(ID as Int64) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event to let you lookup manually the name for a group ID.

5.2.24 Constants

Behavior Flags

Constant	Value	Description
kBehaviorRestoreAccessTime	1	Request that the access time of the entry visited by traversal be restored. This is the same as SetAccessTimeRestored.
kBehaviorRestoreHonorNoDump	2	Default: Do not skip an entry which has nodump flags.
kBehaviorRestoreMacCopyFile	4	Default: Skip a mac resource fork file whose prefix is ”. ” because of u copyfile.
kBehaviorRestoreNoACL	32	Default: ACLs are read from disk.
kBehaviorRestoreNoFFlags	64	Default: File flags are read from disk.
kBehaviorRestoreNoTraverseMounts	8	Default: Traverse mount points.
kBehaviorRestoreNoXAttr	16	Default: Xattrs are read from disk.

5.3 class ArchiveReaderMBS

5.3.1 class ArchiveReaderMBS

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

Function: The class to read archive content.

Example:

```
dim a as new ArchiveReaderMBS
a.SupportFilterAll
a.SupportFormatAll
a.SetOptions "hdrcharset=UTF-8" // for unicode file names

// open file

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")

if not a.OpenFile(f) then
Break // path invalid?
end if

dim e as ArchiveEntryMBS = a.NextHeader
while e <> nil

print e.PathName

e = a.NextHeader
wend
```

Notes: Can be used to read zip, tar and other image formats.

Subclass of the ArchiverMBS class.

Blog Entries

- [MBS Xojo Plugins, version 18.6pr3](#)
- [New Archive classes for handling zip and tar archives](#)

5.3.2 Methods

5.3.3 AddPassphrase(passphrase as string)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds a password to the archive.

5.3.4 AppendFilter(Filter as Integer)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds a filter to the reader manually.

Notes: This is useful to bypass the bidding process when the format and filters to use is known in advance. Lasterror property is set.

5.3.5 AppendFilterProgram(Program as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Adds a filter program.

Notes: Lasterror property is set.

5.3.6 Close

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close the file and release most resources.

Notes: Lasterror property is set.

5.3.7 Constructor

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

Function: The constructor.

Example:

```
dim a as new ArchiveReaderMBS
a.SupportFilterAll
a.SupportFormatAll
a.SetOptions "hdrcharset=UTF-8" // for unicode file names
```

Notes: To create an archive:

- 1) Ask Constructor for an archive writer object.
- 2) Set any global properties. In particular, you should set the compression and format to use.
- 3) Call one of the open methods to open the file (most people will use OpenFile, which provide convenient canned I/O callbacks for you).
- 4) For each entry, construct an appropriate ArchiveEntryMBS object, call WriteHeader to write the header, call WriteData methods to write the entry data.
- 5) call close method to close the output

5.3.8 Destructor

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

Function: The destructor.

5.3.9 Extract(Entry as ArchiveEntryMBS, DestArchive as ArchiverMBS)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Convenience function to recreate the current entry (whose header has just been read) on disk.

Notes: This does quite a bit more than just copy data to disk. It also:

- Creates intermediate directories as required.
- Manages directory permissions: non-writable directories will be initially created with write permission enabled; when the archive is closed, dir permissions are edited to the values specified in the archive.
- Checks hardlinks: hardlinks will not be extracted unless the linked-to file was also extracted within the same session. (TODO)

Lasterror property is set.

See also:

- 5.3.10 Extract(Entry as ArchiveEntryMBS, flags as Integer = &h123F7) 49

5.3.10 Extract(Entry as ArchiveEntryMBS, flags as Integer = &h123F7)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Convenience function to recreate the current entry (whose header has just been read) on disk.

Notes: This does quite a bit more than just copy data to disk. It also:

- Creates intermediate directories as required.
- Manages directory permissions: non-writable directories will be initially created with write permission enabled; when the archive is closed, dir permissions are edited to the values specified in the archive.
- Checks hardlinks: hardlinks will not be extracted unless the linked-to file was also extracted within the same session. (TODO)

The "flags" argument selects optional behavior, 'OR' the flags you want.

Lasterror property is set.

See also:

- 5.3.9 Extract(Entry as ArchiveEntryMBS, DestArchive as ArchiverMBS) 49

5.3.11 NextHeader(entry as ArchiveEntryMBS = nil) as ArchiveEntryMBS

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

Function: Reads next header.

Notes: If you pass in an existing entry, we can recycle the object.

Returns nil in case of error.

Lasterror property is set.

5.3.12 OpenData(Data as String) as Boolean

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

Function: Opens an archive from memory.

Notes: Returns true on success and false on failure.

Lasterror property is set.

5.3.13 OpenFile(File as FolderItem, BlockSize as Integer = 10240) as Boolean

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

Function: Opens an archive from a folderitem.

Notes: Returns true on success and false on failure.

Lasterror property is set.

See also:

- 5.3.14 OpenFile(Files() as FolderItem, BlockSize as Integer = 10240) as Boolean 50

5.3.14 OpenFile(Files() as FolderItem, BlockSize as Integer = 10240) as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Use this for reading multivolume files by filenames.

Notes: Returns true on success and false on errors.

Lasterror property is set.

See also:

- 5.3.13 OpenFile(File as FolderItem, BlockSize as Integer = 10240) as Boolean 50

5.3.15 OpenPath(Path as String, BlockSize as Integer = 10240) as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Opens the file at the given path.

Notes: Lasterror property is set.

See also:

- 5.3.16 OpenPath(Paths() as String, BlockSize as Integer = 10240) as Boolean 51

5.3.16 OpenPath(Paths() as String, BlockSize as Integer = 10240) as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Use this for reading multivolume files by filenames.

Notes: Returns true on success and false on errors.

Lasterror property is set.

See also:

- 5.3.15 OpenPath(Path as String, BlockSize as Integer = 10240) as Boolean 50

5.3.17 ReadDataBlockMemory(byref offset as Int64) as MemoryBlock

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads next block of data.

Notes: Size is given by archive reader used.

Offset is given so you know where you are in the file currently.

Data returned as new memory block.

Lasterror property is set.

A zero-copy version of `archive_read_data` that also exposes the file offset of each returned block. Note that the client has no way to specify the desired size of the block. The API does guarantee that offsets will be strictly increasing and that returned blocks will not overlap.

5.3.18 ReadDataBlockString(byref offset as Int64) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads next block of data.

Notes: Size is given by archive reader used.

Offset is given so you know where you are in the file currently.

Data returned as new string.

Lasterror property is set.

A zero-copy version of `archive_read_data` that also exposes the file offset of each returned block. Note that the client has no way to specify the desired size of the block. The API does guarantee that offsets will be

strictly increasing and that returned blocks will not overlap.

5.3.19 ReadDataMemory(ByteCount as Integer) as MemoryBlock

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

Function: Reads data from current file into memoryblock.

Notes: Lasterror property is set.

5.3.20 ReadDataString(ByteCount as Integer) as String

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

Function: Reads data from current file into string.

Notes: Lasterror property is set.

5.3.21 Seek(Position as Int64, Mode as Integer = 0) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Seek within the body of an entry.

Notes: See kSeekSet, kSeekCur or kSeekEnd constants.

Returns new position.

Lasterror property is set.

5.3.22 SetExtractSkipFile(DeviceID as Int64, FileNo as Int64)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Record the dev/ino of a file that will not be written.

Notes: This is generally set to the dev/ino of the archive being read.

Lasterror property is set.

5.3.23 SetFilterOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to the filter only.

Notes: Lasterror property is set.

5.3.24 SetFormat(Format as Integer)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets the format for the reader manually.

Notes: This is useful to bypass the bidding process when the format and filters to use is known in advance. Lasterror property is set.

5.3.25 SetFormatOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to the format only.

Notes: Lasterror property is set.

5.3.26 SetOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to both the format and the filter.

Notes: Lasterror property is set.

5.3.27 SetOptions(Options as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option string to both the format and the filter.

Example:

```
dim a as new ArchiveReaderMBS
a.SupportFilterAll
a.SupportFormatAll
a.SetOptions "hdrcharset=UTF-8" // for unicode file names
```

Notes: Lasterror property is set.

5.3.28 Skip

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

Function: Skips a file in the archive.

5.3.29 SupportFilterAll

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

Function: Enables all filters.

Notes: Lasterror property is set.

5.3.30 SupportFilterBZip2

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

Function: Enables bzip2 filter.

Notes: Lasterror property is set.

5.3.31 SupportFilterCompress

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

Function: Enables compress filter.

Notes: Lasterror property is set.

5.3.32 SupportFilterGRZip

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

Function: Enables GRZip filter.

Notes: Lasterror property is set.

5.3.33 SupportFilterGZip

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

Function: Enable gzip filter.

Notes: Lasterror property is set.

5.3.34 SupportFilterLRZip

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

Function: Enable LRZip filter.

Notes: Lasterror property is set.

5.3.35 SupportFilterLZip

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

Function: Enable LZip filter.

Notes: Lasterror property is set.

5.3.36 SupportFilterLzma

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

Function: Enable LZMA filter.

Notes: Lasterror property is set.

5.3.37 SupportFilterLzop

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

Function: Enable Lzop filter.

Notes: Lasterror property is set.

5.3.38 SupportFilterNone

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

Function: Enable none filter.

Notes: Lasterror property is set.

5.3.39 SupportFilterProgram(command as string)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Enable support for given filter program.

Notes: Lasterror property is set.

5.3.40 SupportFilterRpm

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

Function: Enable RPM filter.

Notes: Lasterror property is set.

5.3.41 SupportFilterUU

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

Function: Enable UU filter.

Notes: Lasterror property is set.

5.3.42 SupportFilterXz

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

Function: Enable XZ filter.

Notes: xz is a lossless data compression program and file format which incorporates the LZMA/LZMA2 compression algorithms.

5.3.43 SupportFormat7zip

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

Function: Enable 7zip format.

Notes: Lasterror property is set.

5.3.44 SupportFormatAll

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

Function: Enable all formats.

Notes: Lasterror property is set.

5.3.45 SupportFormatAr

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

Function: Enables At format.

Notes: Lasterror property is set.

5.3.46 SupportFormatByCode(FilterCode as Integer)

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

Function: Enables format with given code.

Notes: Lasterror property is set.

5.3.47 SupportFormatCab

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

Function: Enables cab format.

Notes: Lasterror property is set.

5.3.48 SupportFormatCpio

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

Function: Enables cpio format.

Notes: Lasterror property is set.

5.3.49 SupportFormatEmpty

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

Function: Enables empty format.

Notes: Lasterror property is set.

5.3.50 SupportFormatGnutar

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

Function: Enables gnutar format.

Notes: Lasterror property is set.

5.3.51 SupportFormatIso9660

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

Function: Enables iso 9660 format.

Notes: Lasterror property is set.

5.3.52 SupportFormatLha

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

Function: Enables lha format.

Notes: Lasterror property is set.

5.3.53 SupportFormatLZ4

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Enables support for LZ4 format.

Notes: Lasterror property is set.

5.3.54 SupportFormatMTree

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

Function: Enables mtree format.

Notes: Lasterror property is set.

5.3.55 SupportFormatRar

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

Function: Enables rar format.

Notes: Lasterror property is set.

5.3.56 SupportFormatRar5

Plugin Version: 20.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Enables rar v5 format.

Notes: Lasterror property is set.

5.3.57 SupportFormatRaw

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

Function: Enables raw format.

Notes: Lasterror property is set.

5.3.58 SupportFormatTar

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

Function: Enables tape archive files format.

Notes: Lasterror property is set.

5.3.59 SupportFormatWArc

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Enables support for WArc format.

Notes: Lasterror property is set.

5.3.60 SupportFormatXar

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

Function: Enables xar format.

Notes: Lasterror property is set.

5.3.61 SupportFormatZip

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

Function: Enables zip format.

Notes: Enables both streamable and seekable zip readers.
Lasterror property is set.

5.3.62 SupportFormatZipSeekable

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Allows only support for seekable zip archives.

Notes: Reads starting from central directory; requires seekable input.
Lasterror property is set.

5.3.63 SupportFormatZipStreamable

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Enables support only for streamable zip archives.

Notes: Reads Zip archives as stream from beginning to end. Doesn't correctly handle SFX ZIP files or ZIP archives that have been modified in-place.
Lasterror property is set.

5.3.64 Properties

5.3.65 FormatCapabilities as Integer

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns a bitmask of capabilities that are supported by the archive format reader.

Notes: If the reader has no special capabilities, kFormatCapabilitiesNone is returned.
See also kFormatCapabilitiesEncryptMetaData and kFormatCapabilitiesEncryptData.
(Read only property)

5.3.66 HasEncryptedEntries as Integer

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns 1 if the archive contains at least one encrypted entry.

Notes: If the archive format not support encryption at all kEncryptionUnsupported is returned. If for any other reason (e.g. not enough data read so far) we cannot say whether there are encrypted entries, then kEncryptionDontKnow is returned. In general, this function will return values below zero when the reader is uncertain or totally incapable of encryption support. When this function returns 0 you can be sure that

the reader supports encryption detection but no encrypted entries have been found yet.

If the metadata/header of an archive is also encrypted, you cannot rely on the number of encrypted entries. That is why this function does not return the number of encrypted entries but `#` just shows that there are some.

(Read only property)

5.3.67 HeaderPosition as Int64

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

Function: The current header position.

Notes: Retrieve the byte offset in uncompressed data where last-read header started.

(Read only property)

5.3.68 ReadDataBlockSupported as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether this reader supports block operations.

Notes: Some do and if you call `ReadDataBlock` on a reader which can't, it will return only errors.

(Read only property)

5.3.69 Events

5.3.70 ExtractProgress(entry as ArchiveEntryMBS)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: .

Function: Event called regularly while extracting to report progress.

Notes: Check properties of archive on how many bytes have been processed.

Called only by `Extract` methods.

5.3.71 Constants

Encryption Status constants.

Constant	Value	Description
kEncryptionDontKnow	-1	If the reader for some other reason (e.g. not enough bytes read) cannot say if there are encrypted entries, kEncryptionDontKnow is returned.
kEncryptionUnsupported	-2	In case the archive does not support encryption detection at all kEncryptionUnsupported is returned.

Extract Flags

Constant	Value	Description
kExtractACL	&h20	Default: Do not restore ACLs.
kExtractClearNoChangeFFlags	&h20000	Default: Do not clear no-change flags when unlinking object.
kExtractFileFlags	&h40	Default: Do not restore fflags.
kExtractHFSCompressionForced	&h8000	Default: Do not use HFS+ compression if it was not compressed. This has no effect except on Mac OS v10.6 or later.
kExtractMacMetadata	&h2000	Default: Do not restore Mac extended metadata. This has no effect except on Mac OS.
kExtractNoAutoDir	&h400	Default: Create parent directories as needed.
kExtractNoHFSCompression	&h4000	Default: Use HFS+ compression if it was compressed. This has no effect except on Mac OS v10.6 or later.
kExtractNoOverwrite	8	Default: Replace existing files.
kExtractNoOverwriteNewer	&h800	Default: Overwrite files, even if one on disk is newer.
kExtractOwner	1	Default: Do not try to set owner/group.
kExtractPermission	2	Default: Do obey umask, do not restore SUID/SGID/SVTX bits.
kExtractSecureNoAbsolutePath	&h10000	Default: Do not reject entries with absolute paths
kExtractSecureNoDotDot	&h200	Default: Do not reject entries with '.' as path elements.
kExtractSecureSymLinks	&h100	Default: Do not try to guard against extracts redirected by symlinks. Note: With kExtractUnlink, will remove any intermediate symlink.
kExtractSparse	&h1000	Detect blocks of 0 and write holes instead.
kExtractTime	4	Default: Do not restore mtime/atime.
kExtractUnlink	&h10	Default: Try create first, unlink only if create fails with EEXIST.
kExtractXAttr	&h80	Default: Do not restore xattrs.

Encryption Capabilities

Constant	Value	Description
kFormatCapabilitiesEncryptData	1	Reader can detect encrypted data.
kFormatCapabilitiesEncryptMetaData	2	Reader can detect encryptable metadata (pathname, mtime, etc.).
kFormatCapabilitiesNone	0	Current format supports no encryption.

Seek Modes

Constant	Value	Description
kSeekCur	1	Seek relative to current position.
kSeekEnd	2	Seek relative to end of file.
kSeekSet	0	Seek relative to begin of file.

5.4 class ArchiverMBS

5.4.1 class ArchiverMBS

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

Function: The abstract super class for common archiver methods.

Notes: Currently we build this library without lzma and lz4 support. That could be changed if needed. This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

Blog Entries

- [News from the MBS Xojo Plugins Version 20.4](#)
- [MBS Xojo Plugins, version 20.4pr9](#)
- [MBS Xojo Plugins, version 18.6pr3](#)

5.4.2 Methods

5.4.3 ClearError

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Clears error.

5.4.4 Constructor

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

Function: The private constructor.

5.4.5 CopyError(source as ArchiverMBS)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies error state from one archive object to other.

5.4.6 Destructor

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

Function: The destructor.

5.4.7 FilterBytes(FilterIndex as Integer) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The current byte count for the filter with given index.

Notes: Pass index of filter, e.g. 0 to FilterCount-1.

Pass -1 to query last filter.

5.4.8 FilterCode(FilterIndex as Integer) as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries ID of filter.

Notes: Pass index of filter, e.g. 0 to FilterCount-1.

Pass -1 to query last filter.

5.4.9 FilterName(FilterIndex as Integer) as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries name of filter.

Notes: Pass index of filter, e.g. 0 to FilterCount-1.

Pass -1 to query last filter.

5.4.10 LoadIconvLibrary(path as String, byref Error as String) as boolean

Plugin Version: 20.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Loads the iconv library.

Notes: The Archive classes may use libiconv for text encoding conversion.

If you explicitly need, you can load the library on start of solution.

MBS Plugin may try to load iconv.dll/dylib/so automatically when first iconv function is called.

5.4.11 NewReader as ArchiveReaderMBS

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

Function: Creates a new archive reader.

5.4.12 NewWriter as ArchiveWriterMBS

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

Function: Creates a new archive writer.

5.4.13 SetCurrentWorkingDirectory(path as folderitem) as boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets current working directory for the application.

Notes: Returns true on success or false on failure.

See also:

- 5.4.14 SetCurrentWorkingDirectory(path as String) as boolean

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5.4.14 SetCurrentWorkingDirectory(path as String) as boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets current working directory for the application.

Notes: Returns true on success or false on failure.

See also:

- 5.4.13 SetCurrentWorkingDirectory(path as folderitem) as boolean

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5.4.15 Properties

5.4.16 BZLibVersion as String

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The bzlib version used in this plugin.

Example:

```
MsgBox ArchiverMBS.BZLibVersion
```

Notes: This is empty if we compiled plugin without this library.
(Read only property)

5.4.17 Compression as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The ID of the compression algorithm.

Notes: This is an alias for FilterCode(0).
(Read only property)

5.4.18 CompressionName as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The name of the compression algorithm.

Notes: This is an alias for FilterName(0).
(Read only property)

5.4.19 ErrNo as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Last error's errno value.

Notes: The unix error code.
(Read only property)

5.4.20 ErrorString as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last error string.

Notes: (Read only property)

5.4.21 FileCount as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file count.

Notes: May not be known before all files have been seen/processed.
(Read only property)

5.4.22 FilterCount as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The number of filters currently in use.

Notes: An archive may have several filters, e.g. tar to archive and gzip to compress.
(Read only property)

5.4.23 Format as Integer

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The ID of the current format.

Notes: (Read only property)

5.4.24 FormatName as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The name of the current format.

Notes: (Read only property)

5.4.25 Handle as Integer

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

Function: The internal object reference.

Notes: (Read only property)

5.4.26 Lasterror as Integer

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

Function: The last error code.

Notes: See kArchive constants.
(Read only property)

5.4.27 LibVersion as Integer

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

Function: The version of the archive C++ library.

Example:

```
MsgBox str(ArchiverMBS.LibVersion)
```

Notes: e.g. 3001002 for version 3.1.2.
(Read only property)

5.4.28 LibVersionDetails as String

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The detailed version string for libArchive.

Example:

```
MsgBox ArchiverMBS.LibVersionDetails
```

Notes: Detailed textual name/version of the library and its dependencies.

This has the form:

```
"libarchive x.y.z zlib/a.b.c liblzma/d.e.f ... etc ..."
```

the list of libraries described here will vary depending on how libarchive was compiled.
(Read only property)

5.4.29 LibVersionString as String

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

Function: The version of the archive C++ library as text.

Example:

```
MsgBox ArchiverMBS.LibVersionString
```

Notes: e.g. "libarchive 3.1.2"
(Read only property)

5.4. CLASS ARCHIVERMBS

5.4.30 LZ4Version as String

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The lz4 version used in this plugin.

Example:

MsgBox ArchiverMBS.LZ4Version

Notes: This is empty if we compiled plugin without this library.
(Read only property)

5.4.31 LzmaVersion as String

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The lzma version used in this plugin.

Example:

MsgBox ArchiverMBS.LzmaVersion

Notes: This is empty if we compiled plugin without this library.
(Read only property)

5.4.32 Open as Boolean

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

Function: Whether an archive is currently open.

Notes: (Read only property)

5.4.33 PositionCompressed as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The position in the archive compressed.

Notes: This is an alias for FilterBytes(-1).

(Read only property)

5.4.34 PositionUncompressed as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The position in the archive uncompressed.

Notes: This is an alias for FilterBytes(0).
(Read only property)

5.4.35 Yield as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether to yield on extract methods.

Notes: Set true to pass CPU time to other Xojo threads.
(Read and Write property)

5.4.36 ZLibVersion as String

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The zlib version used in this plugin.

Example:

```
MsgBox ArchiverMBS.ZLibVersion
```

Notes: This is empty if we compiled plugin without this library.
(Read only property)

5.4.37 ZStdVersion as String

Plugin Version: 23.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The zlib version used in this plugin.

Example:

```
MsgBox ArchiverMBS.ZStdVersion
```

Notes: This is empty if we compiled plugin without this library.
(Read only property)

5.4.38 Events

5.4.39 Passphrase(byref password as String) as Boolean

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: .

Function: The event to query for passphrase.

Notes: Please set password property and return true if you have one.

5.4.40 Constants

Error Codes

Constant	Value	Description
kArchiveEOF	1	Found end of archive.
kArchiveFailed	-25	Current operation cannot complete. But if writeHeader is "fatal," then this archive is dead and useless.
kArchiveFatal	-30	No more operations are possible.
kArchiveOK	0	Operation was successful.
kArchiveRetry	-10	Retry might succeed.
kArchiveWarn	-20	Partial success. For example, if writeHeader "fails", then you can't push data.

Filters

Constant	Value	Description
kFilterBZip2	2	bzip2 filter
kFilterCompress	3	compress filter.
kFilterGRZip	12	GRZip filter.
kFilterGZip	1	gzip filter.
kFilterLRZip	10	LRZip filter.
kFilterLZ4	13	LZ4 Filter.
kFilterLZip	9	LZip filter.
kFilterLZMA	5	LZMA filter.
kFilterLZOP	11	Lzop filter.
kFilterNone	0	No filter.
kFilterProgram	4	Program filter.
kFilterRPM	8	RPM filter.
kFilterUU	7	UU filter.
kFilterXZ	6	XZ filter.

Formats

Constant	Value	Description
kFormat7Zip	&he0000	7Zip
kFormatAr	&h70000	Unix Archive format, base type.
kFormatArBsd	&h70002	Archive, BSD format.
kFormatArGnu	&h70001	Archive, GNU format.
kFormatBaseMask	&hff0000	Mask for Base Type.
kFormatCab	&hc0000	Windows CAB format.
kFormatCpio	&h10000	CPIO base format.
kFormatCpioAfiolarge	&h10006	CPIO format, AFIO large variant.
kFormatCpioBinBe	&h10003	CPIO format, BIN BE variant.
kFormatCpioBinLe	&h10002	CPIO format, BIN LE variant.
kFormatCpioPosix	&h10001	CPIO format, Posix variant.
kFormatCpioSvr4Crc	&h10005	CPIO format, SVR4 CRC variant.
kFormatCpioSvr4Nocrc	&h10004	CPIO format, SVR4 no CRC variant.
kFormatEmpty	&h60000	Empty format.
kFormatIso9660	&h40000	IOS 9660 base type.
kFormatIso9660Rockridge	&h40001	IOS 9660, Rockridge variant.
kFormatLha	&hb0000	LHA format.
kFormatMtree	&h80000	MTree format.
kFormatRar	&hd0000	RAR format.
kFormatRARv5	&h10000	Rar v5 format
kFormatRaw	&h90000	Raw format.
kFormatShar	&h20000	SHAR base format.
kFormatSharBase	&h20001	SHAR base format, base variant.
kFormatSharDump	&h20002	SHAR base format, dump variant.
kFormatTar	&h30000	Tar base format.
kFormatTarGnutar	&h30004	Tar format, GNU variant.
kFormatTarPaxInterchange	&h30002	Tar format, Pax Interchange variant.
kFormatTarPaxRestricted	&h30003	Tar format, Pax Restricted variant.
kFormatTarUstar	&h30001	Tar format, US variant.
kFormatWarc	&hf0000	WArc format.
kFormatXar	&ha0000	Xar format
kFormatZip	&h50000	Zip format.

5.5 class ArchiveWriteDiskMBS

5.5.1 class ArchiveWriteDiskMBS

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The archive subclass class for writing files to disk.

Notes: To create objects on disk:

- 1) Ask Constructor for a new ArchiveWriteDiskMBS object.
- 2) Set any global properties. In particular, you probably want to set the options.
- 3) For each entry: construct an appropriate ArchiveEntryMBS object, use WriteHeader to create the file/dir/etc on disk, use WriteData to write the entry data
- 4) Release object to cleanup the writer and release resources

In particular, you can use this in conjunction with ArchiveReaderMBS to pull entries out of an archive and create them on disk.

Subclass of the ArchiveWriterMBS class.

Blog Entries

- [MBS Xojo Plugins, version 18.6pr3](#)

5.5.2 Methods

5.5.3 Constructor

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The constructor.

Notes: Connects GroupLookup and UserLookup events if set.

5.5.4 Destructor

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.

5.5.5 GID(Group Name as string, DefaultGID as Int64) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Query ID of group.

Notes: Returns default ID if name not found.

This may invoke GroupLookup event.

Lasterror property is set.

5.5.6 SetSkipFile(DeviceID as Int64, FileNo as Int64)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Record the dev/ino of a file that will not be written.

Notes: This is generally set to the dev/ino of the archive being written.

Lasterror property is set.

5.5.7 SetStandardLookup

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets standard lookup for mapping user and group names to IDs.

Notes: Lasterror property is set.

The lookup functions are given uname/uid (or gname/gid) pairs and return a uid (gid) suitable for this system. These are used for restoring ownership and for setting ACLs. The default functions are naive, they just return the uid/gid. These are small, so reasonable for applications that don't need to preserve ownership; they are probably also appropriate for applications that are doing same-system backup and restore.

The "standard" lookup functions use common system calls to lookup the uname/gname, falling back to the uid/gid if the names can't be found. They cache lookups and are reasonably fast, but can be very large, so they are not used unless you ask for them. In particular, these match the specifications of POSIX "pax" and old POSIX "tar".

5.5.8 UID(UserName as string, DefaultUID as Int64) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Query ID of user.

Notes: Returns default ID if name not found.

This may invoke UserLookup event.

Lasterror property is set.

5.5.9 WriteDataBlock(data as MemoryBlock, offset as Int64) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes data block to file.

Notes: Returns number of bytes written.

Lasterror property is set.

See also:

- 5.5.10 WriteDataBlock(data as Ptr, Size as Int64, offset as Int64) as Int64 75
- 5.5.11 WriteDataBlock(data as string, offset as Int64) as Int64 75

5.5.10 WriteDataBlock(data as Ptr, Size as Int64, offset as Int64) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes data block to file.

Notes: Returns number of bytes written.

Lasterror property is set.

See also:

- 5.5.9 WriteDataBlock(data as MemoryBlock, offset as Int64) as Int64 75
- 5.5.11 WriteDataBlock(data as string, offset as Int64) as Int64 75

5.5.11 WriteDataBlock(data as string, offset as Int64) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes data block to file.

Notes: Returns number of bytes written.

Lasterror property is set.

See also:

- 5.5.9 WriteDataBlock(data as MemoryBlock, offset as Int64) as Int64 75
- 5.5.10 WriteDataBlock(data as Ptr, Size as Int64, offset as Int64) as Int64 75

5.5.12 Properties**5.5.13 Options as Integer**

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The options flags set.

Notes: Setting options sets lasterror property.

See `ArchiveReaderMBS.kExtract*` constants.
(Read and Write property)

5.5.14 Events

5.5.15 `GroupLookup(Name as String, GID as Int64) as Int64`

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event to let you lookup manually the ID for a group name.

Notes: If you can't find the group, you can just pass through the given default ID.

If neither the default (naive) nor the standard (big) functions suit your needs, you can write your own in this event.

5.5.16 `UserLookup(Name as String, GID as Int64) as Int64`

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: .

Function: The event to let you lookup manually the ID for a user name.

Notes: If you can't find the user, you can just pass through the given default ID.

If neither the default (naive) nor the standard (big) functions suit your needs, you can write your own in this event.

5.6 class ArchiveWriterMBS

5.6.1 class ArchiveWriterMBS

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

Function: The class to write archive content.

Example:

```
dim a as new ArchiveWriterMBS

a.SetFormatZip
a.ZipSetCompressionDeflate

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
if not a.CreateFile(f) then
break // failed
else

dim data as string = "Hello World test file. Hello World again."

dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
e.Size = lenb(data)
e.Permissions = &o0644
e.FileType = e.kFileTypeRegular

a.WriteHeader e
call a.WriteData data

a.FinishEntry

a.Close
end if
```

Notes: Can be used to write zip, tar and other image formats.

Subclass of the ArchiverMBS class.

Blog Entries

- [MBS Xojo Plugins, version 21.2pr5](#)
- [MBS Xojo Plugins, version 18.6pr3](#)
- [MBS Xojo / Real Studio Plugins, version 16.4pr2](#)
- [New Archive classes for handling zip and tar archives](#)

Xojo Developer Magazine

- [19.4, page 81: Archives in Xojo, How to Use Zip Archives by Stefanie Juchmes](#)

5.6.2 Methods

5.6.3 AddFilter(FilterCode as Integer)

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

Function: Adds filter by code number.

Notes: Lasterror property is set.

5.6.4 AddFilterB64encode

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

Function: Adds base 64 filter.

Notes: Lasterror property is set.

5.6.5 AddFilterByName(Name as String)

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

Function: Adds filter by name.

Notes: Lasterror property is set.

5.6.6 AddFilterBZip2

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

Function: Add bzip2 filter.

Notes: Lasterror property is set.

5.6.7 AddFilterCompress

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

Function: Add compress filter.

Notes: Lasterror property is set.

5.6.8 AddFilterGRZip

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

Function: Add grzip filter.

Notes: Lasterror property is set.

5.6.9 AddFilterGZip

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

Function: Add gzip filter.

Notes: Lasterror property is set.

5.6.10 AddFilterLRZip

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

Function: Add lrzip filter.

Notes: Lasterror property is set.

5.6.11 AddFilterLZ4

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Add support for LZ4 compression.

Notes: Lasterror property is set.

5.6.12 AddFilterLZip

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

Function: Add lzip filter.

Notes: Lasterror property is set.

5.6.13 AddFilterLZMA

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

Function: Add lzma filter.

Notes: Lasterror property is set.

5.6.14 AddFilterLZO

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

Function: Add lzop filter.

Notes: Lasterror property is set.

5.6.15 AddFilterNone

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

Function: Add none filter.

Notes: Lasterror property is set.

5.6.16 AddFilterProgram(Command as String)

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

Function: Adds a filter calling external application.

Notes: Lasterror property is set.

5.6.17 AddFilterUUEncode

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

Function: Add uu filter.

Notes: Lasterror property is set.

5.6.18 AddFilterXZ

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

Function: Add xy filter.

Notes: Lasterror property is set.

5.6.19 Close

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

Function: Closes the archive.

Notes: Lasterror property is set.

5.6.20 Constructor

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

Function: The constructor.

5.6.21 CreateFile(File as FolderItem) as boolean

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

Function: Creates a new archive file.

Notes: Returns true on success.

5.6.22 CreateMemoryFile as boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Creates in memory output file.

Notes: Please use later MemoryData, MemoryString, MemoryPointer, or MemorySize later to get data after closing archive.

Lasterror property is set.

5.6.23 Destructor

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

Function: The destructor.

5.6.24 Fail

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

Function: Marks archive as failed.

Notes: We will not close the archive properly and you can delete file.

5.6.25 FinishEntry

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

Function: Finishes an entry.

Notes: Lasterror property is set.

5.6.26 SetFilterOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to the filter only.

Notes: Lasterror property is set.

5.6.27 SetFormat(FormatCode as Integer)

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

Function: Sets format by code.

Notes: Lasterror property is set.

5.6.28 SetFormat7Zip

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

Function: Sets format to 7zip.

Notes: Lasterror property is set.

5.6.29 SetFormatArBsd

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

Function: Sets format to ar bsd.

Notes: Lasterror property is set.

5.6.30 SetFormatArSvr4

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

Function: Sets format to ar svr4.

Notes: Lasterror property is set.

5.6.31 SetFormatByExtension(FileName as String, defaultExtension as String = "")

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Set file format by extension of filename.

Notes: e.g. pass "test.zip" for file name and ".zip" for default extension (if filename has none).

Lasterror property is set.

5.6.32 SetFormatByName(Name as String)

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

Function: Sets format by name.

Notes: Lasterror property is set.

5.6.33 SetFormatCpio

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

Function: Sets format to cpio.

Notes: Lasterror property is set.

5.6.34 SetFormatCpioNewc

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

Function: Sets format to cpio newc.

Notes: Lasterror property is set.

5.6.35 SetFormatGnutar

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

Function: Sets format to gnu tape archive files.

Notes: Lasterror property is set.

5.6.36 SetFormatIso9660

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

Function: Sets format to iso 9660.

Notes: Lasterror property is set.

5.6.37 SetFormatMTree

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

Function: Sets format tomtree.

Notes: Lasterror property is set.

5.6.38 SetFormatMTreeClassic

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

Function: Sets format tomtree classic.

Notes: Lasterror property is set.

5.6.39 SetFormatOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to the format only.

Notes: Lasterror property is set.

5.6.40 SetFormatPax

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

Function: Sets format to pax.

Notes: Lasterror property is set.

5.6.41 SetFormatPaxRestricted

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

Function: Sets format to pax restricted.

Notes: Lasterror property is set.

5.6.42 SetFormatRaw

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets raw format.

Notes: Lasterror property is set.

5.6.43 SetFormatShar

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

Function: Sets format to shar.

Notes: Lasterror property is set.

5.6.44 SetFormatSharDump

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

Function: Sets format to shar dump.

Notes: Lasterror property is set.

5.6.45 SetFormatUstar

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

Function: Sets format to Unix Standard TAR.

Notes: Lasterror property is set.

5.6.46 SetFormatV7tar

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

Function: Sets format to v7 tape archive files.

Notes: Lasterror property is set.

5.6.47 SetFormatWArc

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets format to web archive.

Notes: Lasterror property is set.

5.6.48 SetFormatXar

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

Function: Sets format to xar.

Notes: Lasterror property is set.

5.6.49 SetFormatZip

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

Function: Sets format to zip.

Example:

```
dim a as new ArchiveWriterMBS

a.SetFormatZip
a.ZipSetCompressionDeflate

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
if not a.CreateFile(f) then
break // failed

else

dim data as string = "Hello World test file. Hello World again."

dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
e.Size = lenb(data)
e.Permissions = &o0644
e.FileType = e.kFileTypeRegular
```

```

a.WriteHeader e
call a.WriteData data

a.FinishEntry

a.Close
end if

```

Notes: Lasterror property is set.

5.6.50 SetOption(Module as String, Option as String, Value as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option to both the format and the filter.

Notes: Lasterror property is set.

5.6.51 SetOptions(Options as String)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Apply option string to both the format and the filter.

Example:

```

dim a as new ArchiveWriterMBS
a.SetOptions "hdrcharset=UTF-8" // for unicode file names

```

Notes: Lasterror property is set.

The options to pass to writer.

This is a comma-separated list of options. Option names can be prefixed with module name.

Sample options:

```

compression=9
zip:encryption=zipcrypt
zip:encryption=aes128
zip:encryption=aes256
zip64
gzip:compression-level=9
hdrcharset=UTF-8

```

5.6.52 SetPassphrase(Password as String)

Plugin Version: 16.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets the passphrase to use.

Example:

```
dim a as new ArchiveWriterMBS

a.SetFormatZip
a.ZipSetCompressionDeflate

a.SetOptions "zip:encryption=zipcrypt" // enable encryption
a.SetPassphrase "HelloWorld" // set password
```

Notes: Alternatively you can use the Passphrase event.
LastError property is set.

5.6.53 SetSkipFile(DeviceID as Int64, FileNo as Int64)

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Record the dev/ino of a file that will not be written.

Notes: This is generally set to the dev/ino of the archive being written.
LastError property is set.

5.6.54 WriteData(data as MemoryBlock) as Int64

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

Function: Writes data to current file.

Notes: Returns number of bytes written.

LastError property is set.

See also:

- 5.6.55 WriteData(data as Ptr, Size as Int64) as Int64 88
- 5.6.56 WriteData(data as string) as Int64 89
- 5.6.57 WriteData(SourceArchive as ArchiveReaderMBS) as Int64 89

5.6.55 WriteData(data as Ptr, Size as Int64) as Int64

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

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Function: Writes data to current file.

Notes: Returns number of bytes written.

Lasterror property is set.

See also:

- 5.6.54 WriteData(data as MemoryBlock) as Int64 88
- 5.6.56 WriteData(data as string) as Int64 89
- 5.6.57 WriteData(SourceArchive as ArchiveReaderMBS) as Int64 89

5.6.56 WriteData(data as string) as Int64

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

Function: Writes data to current file.

Notes: Returns number of bytes written.

Lasterror property is set.

See also:

- 5.6.54 WriteData(data as MemoryBlock) as Int64 88
- 5.6.55 WriteData(data as Ptr, Size as Int64) as Int64 88
- 5.6.57 WriteData(SourceArchive as ArchiveReaderMBS) as Int64 89

5.6.57 WriteData(SourceArchive as ArchiveReaderMBS) as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes data to current file.

Notes: Loops over blocks in source archive entry and copies them all to current archive.

Returns number of bytes written.

Lasterror property is set.

See also:

- 5.6.54 WriteData(data as MemoryBlock) as Int64 88
- 5.6.55 WriteData(data as Ptr, Size as Int64) as Int64 88
- 5.6.56 WriteData(data as string) as Int64 89

5.6.58 WriteHeader(Entry as ArchiveEntryMBS)

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

Function: Writes an archive item.

Notes: Lasterror property is set.

5.6.59 ZipSetCompressionDeflate

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

Function: Sets compression for zip to deflate.

Notes: Lasterror property is set.

5.6.60 ZipSetCompressionStore

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

Function: Sets compression for zip to store.

Notes: Store is no compression.

Lasterror property is set.

5.6.61 Properties

5.6.62 MemoryData as MemoryBlock

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies data in memory buffer as MemoryBlock.

Notes: (Read only property)

5.6.63 MemoryPointer as Ptr

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries pointer for memory block.

Notes: Only valid till more data is added, which may reallocate the buffer to grow it.
(Read only property)

5.6.64 MemorySize as Int64

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The memory size.

Notes: Current memory used for memory output in bytes.
(Read only property)

5.6.65 MemoryString as String

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Copies data in memory buffer as String.

Notes: (Read only property)

5.6.66 WriteDataBlockSupported as Boolean

Plugin Version: 19.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Whether this writer supports block operations.

Notes: Some do and if you call WriteDataBlock on a writer which can't, it will return only errors.
(Read only property)

Chapter 6

Compression

6.1 Globals

6.1.1 CompressBZip2MBS(buf as string,level as Integer) as string

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

Function: Compresses the data and returns it as string.

Example:

```
dim s as string = "Hello World"  
s=CompressBZip2MBS(s,9)
```

Notes: Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression.

6.1.2 DecompressBZip2MBS(buf as string,size as Integer) as string

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

Function: Decompresses the data and returns it as string.

Example:

```
dim s as string = "Hello World"  
s=CompressBZip2MBS(s,9)  
s=DecompressBZip2MBS(s,10000)
```

MsgBox s

Notes: As DecompressZLibMBS can't know the size of the decompressed data you should give it a hint. Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

6.1.3 CompressZLibMBS(buf as string, level as Integer = 9) as string

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

Function: Compresses the data and returns it as string.

Example:

```
dim s as string = "Hello World"
```

```
dim l as Integer = lenb(s)
```

```
dim c as string = CompressZLibMBS(s,9)
```

```
dim d as string = DecompressZLibMBS(c, l)
```

```
MsgBox d
```

Notes: Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression.
Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

For result and temp memory this function needs maximum something like 110% of lenb(buf).

Version 18.5 and newer use level 9 as default.

See also:

- 6.1.4 CompressZLibMBS(buf as string, level as Integer, byref error as Integer) as string 94

6.1.4 CompressZLibMBS(buf as string, level as Integer, byref error as Integer) as string

Plugin Version: 12.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses the data and returns it as string.

Notes: Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression.

Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

For result and temp memory this function needs maximum something like 110% of lenb(buf).

Blog Entries

- [MBS Real Studio Plugins, version 12.4pr10](#)

See also:

- 6.1.3 CompressZLibMBS(buf as string, level as Integer = 9) as string 94

6.1.5 DecompressZLibMBS(buf as string, size as Integer = 0) as string

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

Function: Decompresses the data and returns it as string.

Example:

```
dim s as string = "Hello World"
s=CompressZLibMBS(s,9)
s=DecompressZLibMBS(s,10000)
```

MsgBox s

Notes: As DecompressZLibMBS can't know the size of the decompressed data you should give it a hint. Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

Version 18.5 and newer ignore size and manage it automatically.

See also:

- 6.1.6 DecompressZLibMBS(buf as string, size as Integer, byref error as Integer) as string 95

6.1.6 DecompressZLibMBS(buf as string, size as Integer, byref error as Integer) as string

Plugin Version: 12.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses the data and returns it as string.

Notes: As DecompressZLibMBS can't know the size of the decompressed data you should give it a hint. Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

Returned data is a string without known encoding.

Version 18.5 and newer ignore size and manage it automatically.

Blog Entries

- [MBS Xojo Plugins, version 18.5pr8](#)

- [MBS Xojo Plugins, version 18.5pr7](#)
- [MBS Real Studio Plugins, version 12.4pr10](#)

See also:

- 6.1.5 DecompressZLibMBS(buf as string, size as Integer = 0) as string

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6.1.7 CompressLZWMBS(buf as string) as string

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

Function: Compresses string using LZW algorithm.

Example:

```
dim s as string
dim b as BinaryStream
dim f as FolderItem
dim l as Integer
```

```
f=SpecialFolder.Desktop.Child("output.tiff")
b=f.OpenAsBinaryFile(false)
s=b.Read(b.Length)
b.Close
```

```
l=lenb(s)
s=CompressLZWMBS(s)
```

```
f=SpecialFolder.Desktop.Child("output.compressed.tiff")
b=f.CreateBinaryFile("text")
b.Write s
b.Close
```

```
s=DecompressLZWMBS(s,l)
```

```
f=SpecialFolder.Desktop.Child("output.uncompressed.tiff")
b=f.CreateBinaryFile("text")
b.Write s
b.Close
```

Notes: Please remember that the LZW algorithm can be implemented quite different. This one is byte based, uses 12bit offsets and a 4096 entry table.

Returns "" on low memory or Stack Overflow or Output buffer overflow.
(buffer and stack size may be increased on request for future plugin versions)

Blog Entries

- [MBS Real Studio Plugins, version 11.3pr2](#)

6.1.8 DecompressLZWMBS(buf as string, size as Integer) as string

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

Function: Decompresses string using LZW algorithm.

Notes: Please remember that the LZW algorithm can be implemented quite different. This one is byte based, uses 12bit offsets and a 4096 entry table.

Returns "" on low memory or Stack Overflow or Output buffer overflow.
(buffer and stack size may be increased on request for future plugin versions)

Size of the uncompressed length is only a guess for how big the output buffer needs to be. Actual string returned will often be smaller.

6.2 class BZip2CompressMBS

6.2.1 class BZip2CompressMBS

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

Function: A class for bzip2 compression.

6.2.2 Methods

6.2.3 Close

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

Function: The destructor.

Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

6.2.4 Constructor(BufferSize as Integer=20000)

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

Function: The constructor.

Notes: The buffer size you specify is the output buffer size.

If this size is small, you need to flush with `ProcessZip`.

6.2.5 EndZip

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

Function: Finalizes the current compression stream.

Notes: You may check the `Output` property after this.

Error is set.

6.2.6 GetOutput as string

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

Function: Returns the content of the output buffer.

Notes: The buffer is cleared after this function returns.

6.2.7 InitZip(level as Integer)

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

Function: Initializes the stream.

Notes: Level is from 0 to 9.

Error is set.

6.2.8 InputAvail as Integer

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

Function: Returns the number of bytes available in the input buffer.

6.2.9 OutputSize as Integer

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

Function: The size of bytes available in the output buffer.

6.2.10 ProcessZip(Flush as boolean=false)

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

Function: Does zip compression.

Notes: Reduces the size of the input buffer and writes new data to the output buffer.

If the input buffer is not empty after this call, you need to call it again, but empty the output buffer before. Error is set.

If flush is true, the data is flushed to output. Using flush=true all the the time will slow down compression, so use it only on the end to clear the output buffers.

6.2.11 SetInput(data as Memoryblock) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Fills the input buffer.

Notes: Returns true if successfull.

The current plugin uses a 128 K input buffer.

See also:

- 6.2.12 SetInput(data as string) as boolean

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6.2.12 SetInput(data as string) as boolean

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

Function: Fills the input buffer.

Notes: Returns true if successfull.

The current plugin uses a 128 K input buffer.

See also:

- 6.2.11 SetInput(data as Memoryblock) as boolean

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6.2.13 Properties**6.2.14 Error as Integer**

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

Function: The last error code.

Notes: (Read and Write property)

6.2.15 `OutputBufferSize` as Integer

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

Function: The output buffer size used in the constructor.

Notes: (Read only property)

6.2.16 `TotalInput` as `UInt64`

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.2.17 `TotalOutput` as `UInt64`

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.2.18 `Version` as String

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

Function: The version string of the used zlib library.

Notes: (Read only property)

6.2.19 Constants

Constants

Constant	Value	Description
kCONFIG_ERROR	-9	One of the error constants. Indicates that the library has been improperly compiled on your platform – a major configuration error. Specifically, it means that sizeof(char), sizeof(short) and sizeof(int) are not 1, 2 and 4 respectively, as they should be. Note that the library should still work properly on 64-bit platforms which follow the LP64 programming model – that is, where sizeof(long) and sizeof(void*) are 8. Under LP64, sizeof(int) is still 4, so libbzip2, which doesn't use the long type, is OK. This should never happen with the plugin.
kDATA_ERROR	-4	One of the error constants. Returned when a data integrity error is detected during decompression. Most importantly, this means when stored and computed CRCs for the data do not match. This value is also returned upon detection of any other anomaly in the compressed data.
kDATA_ERROR_MAGIC	-5	One of the error constants. As a special case of kDATA_ERROR, it is sometimes useful to know when the compressed stream does not start with the correct magic bytes ('B' 'Z' 'h').
kFINISH	2	One of the command constants for bzip.
kFINISH_OK	3	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kFLUSH	1	One of the command constants for bzip.
kFLUSH_OK	2	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kIO_ERROR	-6	One of the error constants. Returned by Read and Write when there is an error reading or writing in the compressed file, and by ReadOpen and WriteOpen for attempts to use a file for which the error indicator (viz, ferror(f)) is set. On receipt of kIO_ERROR, the caller should consult errno and/or perror to acquire operating-system specific information about the problem.
kMEM_ERROR	-3	One of the error constants. Returned when a request to allocate memory failed. Note that the quantity of memory needed to decompress a stream cannot be determined until the stream's header has been read. So Decompress and Read may return kMEM_ERROR even though some of the compressed data has been read. The same is not true for compression; once CompressInit or WriteOpen have successfully completed, kMEM_ERROR cannot occur.
kOK	0	One of the error constants. The requested action was completed successfully.
kOUTBUFF_FULL	-8	One of the error constants. Returned by BuffToBuffCompress and BuffToBuffDecompress to indicate that the output data will not fit into the output buffer provided.
kPARAM_ERROR	-2	One of the error constants. Returned when a parameter to a function call is out of range or otherwise manifestly incorrect. As with kSEQUENCE_ERROR, this denotes a bug in the client code. The distinction between kPARAM_ERROR and kSEQUENCE_ERROR is a bit hazy, but still worth making.
kRUN	0	One of the command constants for bzip.
kRUN_OK	1	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kSEQUENCE_ERROR	-1	One of the error constants. When using the library, it is important to call the functions in the correct sequence and with data structures (buffers etc) in the correct states. libbzip2 checks as much as it can to ensure this is happening, and returns kSEQUENCE_ERROR if not. Code which complies precisely with the function semantics, as detailed below, should never receive this value; such an event denotes buggy code which you should investigate.

6.3 class BZip2DecompressMBS

6.3.1 class BZip2DecompressMBS

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

Function: A class for bzip2 decompression.

6.3.2 Methods

6.3.3 Close

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

Function: The destructor.

Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

6.3.4 Constructor(BufferSize as Integer=20000)

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

Function: The constructor.

Notes: The buffer size you specify is the output buffer size.
If this size is small, you need to flush with ProcessZip.

6.3.5 EndZip

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

Function: Finalizes the current decompression stream.

Notes: You may check the Output property after this.
Error is set.

6.3.6 GetOutput as string

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

Function: Returns the content of the output buffer.

Notes: The buffer is cleared after this function returns.

6.3.7 InitZip

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

Function: Initializes the stream.

Notes: Error is set.

6.3.8 InputAvail as Integer

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

Function: Returns the number of bytes available in the input buffer.

6.3.9 OutputSize as Integer

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

Function: The size of bytes available in the output buffer.

6.3.10 ProcessZip

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

Function: Does zip compression.

Notes: Reduces the size of the input buffer and writes new data to the output buffer.

If the input buffer is not "" after this call, you need to call it again, but empty the output buffer before.
Error is set.

6.3.11 SetInput(data as Memoryblock) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Fills the input buffer.

Notes: Returns true if successful.

The current plugin uses a 128 K input buffer.

See also:

- 6.3.12 SetInput(data as string) as boolean

6.3.12 SetInput(data as string) as boolean

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

Function: Fills the input buffer.

Notes: Returns true if successful.

The current plugin uses a 128 K input buffer.

See also:

- 6.3.11 SetInput(data as Memoryblock) as boolean

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6.3.13 Properties

6.3.14 Error as Integer

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

Function: The last error code.

Notes: (Read and Write property)

6.3.15 OutputBufferSize as Integer

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

Function: The output buffer size used in the constructor.

Notes: (Read only property)

6.3.16 TotalInput as UInt64

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.3.17 TotalOutput as UInt64

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.3.18 Version as String

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

Function: The version string of the used zlib library.

Notes: (Read only property)

6.3.19 Constants

Constants

Constant	Value	Description
kCONFIG_ERROR	-9	One of the error constants. Indicates that the library has been improperly compiled on your platform – a major configuration error. Specifically, it means that sizeof(char), sizeof(short) and sizeof(int) are not 1, 2 and 4 respectively, as they should be. Note that the library should still work properly on 64-bit platforms which follow the LP64 programming model – that is, where sizeof(long) and sizeof(void*) are 8. Under LP64, sizeof(int) is still 4, so libbz2, which doesn't use the long type, is OK. This should never happen with the plugin.
kDATA_ERROR	-4	One of the error constants. Returned when a data integrity error is detected during decompression. Most importantly, this means when stored and computed CRCs for the data do not match. This value is also returned upon detection of any other anomaly in the compressed data.
kDATA_ERROR_MAGIC	-5	One of the error constants. As a special case of kDATA_ERROR, it is sometimes useful to know when the compressed stream does not start with the correct magic bytes ('B' 'Z' 'h').
kFINISH	2	One of the command constants for bzip.
kFINISH_OK	3	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kFLUSH	1	One of the command constants for bzip.
kFLUSH_OK	2	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kIO_ERROR	-6	One of the error constants. Returned by Read and Write when there is an error reading or writing in the compressed file, and by ReadOpen and WriteOpen for attempts to use a file for which the error indicator (viz, ferror(f)) is set. On receipt of kIO_ERROR, the caller should consult errno and/or perror to acquire operating-system specific information about the problem.
kMEM_ERROR	-3	One of the error constants. Returned when a request to allocate memory failed. Note that the quantity of memory needed to decompress a stream cannot be determined until the stream's header has been read. So Decompress and Read may return kMEM_ERROR even though some of the compressed data has been read. The same is not true for compression; once CompressInit or WriteOpen have successfully completed, kMEM_ERROR cannot occur.
kOK	0	One of the error constants. The requested action was completed successfully.
kOUTBUFF_FULL	-8	One of the error constants. Returned by BuffToBuffCompress and BuffToBuffDecompress to indicate that the output data will not fit into the output buffer provided.
kPARAM_ERROR	-2	One of the error constants. Returned when a parameter to a function call is out of range or otherwise manifestly incorrect. As with kSEQUENCE_ERROR, this denotes a bug in the client code. The distinction between kPARAM_ERROR and kSEQUENCE_ERROR is a bit hazy, but still worth making.
kRUN	0	One of the command constants for bzip.
kRUN_OK	1	One of the error constants. In Compress, the requested flush/finish/nothing-special action was completed successfully.
kSEQUENCE_ERROR	-1	One of the error constants. When using the library, it is important to call the functions in the correct sequence and with data structures (buffers etc) in the correct states. libbz2 checks as much as it can to ensure this is happening, and returns kSEQUENCE_ERROR if not. Code which complies precisely with the function semantics, as detailed below, should never receive this value; such an event denotes buggy code which you should investigate.

6.4 class BZip2FileMBS

6.4.1 class BZip2FileMBS

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

Function: A class to read and write bzip2 byte streams.

Notes: A .bz2 file is just the content of the original file compressed. No header.

6.4.2 Methods

6.4.3 Close

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

Function: The destructor.

Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

Lasterror and LasterrorMessage are set.

6.4.4 Flush

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

Function: Flushes all pending output into the compressed file.

Notes: Lasterror and LasterrorMessage are set.

6.4.5 Open(file as folderitem, mode as string) as boolean

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

Function: Opens a .bz2 file for reading or writing, using the given file path.

Notes: Returns false on failure.

Mode can be "r" for reading and "w" for writing. Or other values fopen accepts.

Lasterror and LasterrorMessage are set.

6.4.6 `OpenString(data as string)` as boolean

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

Function: Opens a bzip compressed file from the given string.

Notes: Returns true on success and false on failure.

Lasterror and LasterrorMessage are set.

6.4.7 `Read(ByteCount as Int64)` as string

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

Function: Reads data from a compressed file.

Notes: Lasterror and LasterrorMessage are set.

6.4.8 `ReadByte` as integer

Plugin Version: 18.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads a single byte.

Notes: Lasterror and LasterrorMessage are set.

6.4.9 `ReadData(ByteCount as Int64)` as Memoryblock

Plugin Version: 18.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads data into memoryblock.

Notes: Lasterror and LasterrorMessage are set.

6.4.10 `Write(data as Memoryblock)`

Plugin Version: 18.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes data to the file and compresses it.

Notes: Lasterror and LasterrorMessage are set.

See also:

- 6.4.11 `Write(data as string)`

6.4.11 Write(data as string)

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

Function: Writes data to the file and compresses it.

Notes: Lasterror and LasterrorMessage are set.

See also:

- 6.4.10 Write(data as Memoryblock)

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6.4.12 WriteByte(data as integer)

Plugin Version: 18.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes a single byte.

Notes: Lasterror and LasterrorMessage are set.

6.4.13 Properties

6.4.14 ErrorCode as Integer

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

Deprecated: This item is deprecated and should no longer be used. You can use Lasterror instead. **Function:** The last error code.

Notes: (Read and Write property)

6.4.15 ErrorMessage as String

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

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

Function: The last error message.

Notes: (Read and Write property)

6.4.16 Handle as Integer

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

Function: The current bzip file handle.

Notes: (Read and Write property)

6.4.17 Lasterror as Integer

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

Function: The last error value.

Notes: (Read and Write property)

6.4.18 LasterrorMessage as String

Plugin Version: 18.3, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last error message.

Notes: (Read and Write property)

6.4.19 Version as String

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

Function: Returns a string indicating the library version.

Notes: (Read only property)

6.5 class GZipFileMBS

6.5.1 class GZipFileMBS

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class to read and write gzip byte streams.

Notes: A .gz file is just the content of the original file compressed. No header.

See also ArchiveReaderMBS and ArchiveWriterMBS classes for more features and compression formats.

Blog Entries

- [MBS Xojo Plugins 18.3](#)
- [MBS Xojo Plugins, version 18.3pr1](#)
- [MBS Xojo Plugins, version 17.5pr8](#)
- [MBS Xojo / Real Studio Plugins, version 15.2pr1](#)
- [MBS Real Studio Plugins, version 13.0fc1](#)
- [MBS Real Studio Plugins, version 13.0pr8](#)
- [MBS Real Studio Plugins, version 13.0pr1](#)
- [MBS Real Studio Plugins, version 12.0pr4](#)
- [MBS Plugins 11.1 Release notes](#)
- [MBS REALbasic plug-in 9.6](#)

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- [16.5, page 9: News](#)

6.5.2 Methods

6.5.3 Adler32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Adler Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.5.4 Close

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.

Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

6.5.5 CloseForString as string

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

Function: Closes the file and returns the string.

Example:

```
Function GZIPStringWriteMBS(data as string) As string
dim g as new GZipFileMBS
```

```
if g.CreateForString then
g.Write data
```

```
Return g.CloseForString
end if
End Function
```

Notes: Only for use with CreateForString function.
Returns empty string on any error.

6.5.6 CRC32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.5.7 CreateForString as boolean

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

Function: Creates a new gzip file in memory.

Example:

```
Function GZIPStringWriteMBS(data as string) As string
dim g as new GZipFileMBS
```

```
if g.CreateForString then
g.Write data
```

```
Return g.CloseForString
end if
End Function
```

Notes: Use with the CloseForString method to compress data in memory. Returns false on any error and true on success.

6.5.8 Flush(flush as Integer)

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Flushes all pending output into the compressed file.

Notes: The parameter flush is as in the zlib deflate() function.

Lasterror is set.

Flush should be called only when strictly necessary because it can degrade compression.

6.5.9 Open(file as folderitem, mode as string) as boolean

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Opens a gzip (.gz) file for reading or writing.

Notes: The mode parameter is as in fopen ("rb" read binary or "wb" for write binary) but can also include a compression level ("wb9") or a strategy: 'f' for filtered data as in "wb6f", 'h' for Huffman only compression as in "wb1h".

Open can be used to read a file which is not in gzip format; in this case Read will directly read from the file without decompression.

Open returns NULL if the file could not be opened or if there was insufficient memory to allocate the (de)compression state; errno can be checked to distinguish the two cases (if errno is zero, the zlib error is Z_MEM_ERROR).

Returns false on any error and true on success.

6.5.10 OpenString(data as string) as boolean

Plugin Version: 9.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Opens a gzip (.gz) file for reading from a file.

Example:

```
Function GZipStringReadMBS(compressedData as string) As string
dim g as new GZipFileMBS

const BlockSize=1000000

if g.OpenString(compressedData) then

dim parts(-1) as string

while not g.eof
dim s as string=g.Read(BlockSize)
parts.Append s
wend

Return Join(parts,"")
end if
End Function
```

Notes: Same as Open, but reading from the given string.

6.5.11 Read(ByteCount as Int64) as string

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads the given number of bytes into a string.

Notes: Returns "" on any error.

May return less bytes than requested.

Lasterror is set.

6.5.12 ReadByte as Integer

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads one byte from the file.

6.5.13 ReadData(ByteCount as Int64) as Memoryblock

Plugin Version: 15.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Reads the given number of bytes into a memoryblock.

Notes: Returns nil on any error.

May return less bytes than requested.

Lasterror is set.

6.5.14 Rewind

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Moves the file position for reading files to the file start.

Notes: Equal to: position=0

6.5.15 SetParameter(level as Integer, strategy as Integer)

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Dynamically update the compression level or strategy.

Notes: Lasterror is set.

Possible values:

FILTERED	1
HUFFMAN_ONLY	2
DEFAULT_STRATEGY	0

6.5.16 Write(data as Memoryblock)

Plugin Version: 15.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes a Memoryblock to a file.

Notes: Lasterror is set.

See also:

- 6.5.17 Write(data as string)

6.5.17 Write(data as string)

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes a string to a file.

Notes: Note that encoding can make trouble as the raw bytes from the string are written.

Lasterror is set.

See also:

- 6.5.16 Write(data as Memoryblock)

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6.5.18 WriteByte(data as Integer)

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Writes one byte to the file.

6.5.19 Properties

6.5.20 Direct as Boolean

Plugin Version: 17.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if file is being copied directly while reading, or false if file is a gzip stream being decompressed.

Notes: If the input file is empty, Direct will return true, since the input does not contain a gzip stream.
(Read only property)

6.5.21 EOF as Boolean

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns true if reading is on the end of the file.

Notes: Returns true on any error.

(Read only property)

6.5.22 ErrorCode as Integer

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the last zlib error number.

Notes: If an error occurred in the file system and not in the compression library, errnum is set to Z_ERRNO

and the application may consult `errno` to get the exact error code. (`errno` is currently not available in Xojo)

Error codes:

<code>Z_OK</code>	0
<code>Z_STREAM_END</code>	1
<code>Z_NEED_DICT</code>	2
<code>Z_ERRNO</code>	-1
<code>Z_STREAM_ERROR</code>	-2
<code>Z_DATA_ERROR</code>	-3
<code>Z_MEM_ERROR</code>	-4
<code>Z_BUF_ERROR</code>	-5
<code>Z_VERSION_ERROR</code>	-6

(Read only property)

6.5.23 ErrorMessage as String

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the error message for the last error which occurred on the given compressed file.

Notes: (Read only property)

6.5.24 Handle as Integer

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The current zlib file handle.

Notes: (Read and Write property)

6.5.25 Lasterror as Integer

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last error code reported.

Notes: 0 for success.

-1 for failure.

(Read and Write property)

6.5.26 Position as Integer

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The current file position.

Notes: Not all positions are available.

e.g. on writing you can not move back.

Moving forward will add bytes with value 0 to the file.

Lasterror is set.

(Read and Write property)

6.5.27 Version as String

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: The version string of the used zlib library.

Notes: (Read only property)

6.6 module LZ4MBS

6.6.1 module LZ4MBS

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The module for LZ4 compression.

Example:

```
Dim m As String = "Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor site amat."
```

```
// make sure encoding is set  
m = ConvertEncoding(m, encodings.UTF8)
```

```
// compress  
Dim c As String = LZ4MBS.Compress(m)
```

```
// decompress  
Dim d As String = LZ4MBS.Decompress(c)
```

```
// set encoding after decompressing  
d = DefineEncoding(d, encodings.UTF8)
```

```
// and check  
If d = m Then  
MsgBox "Text match"  
Else  
MsgBox "Text doesn't match"  
End If
```

Blog Entries

- [MBS Xojo Plugins, version 21.1pr7](#)
- [MBS Xojo Plugins, version 19.5pr1](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 19.4](#)
- [MBS Xojo Plugins, version 19.4pr6](#)
- [LZ4 Extremely fast compression for Xojo](#)

Videos

- [XDC 2020 MBS Plugins Presentation](#)

6.6.2 Methods

6.6.3 Compress(InputData as MemoryBlock) as MemoryBlock

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a MemoryBlock.

Example:

```
// some 10 million zeros will compress well
Dim m As New MemoryBlock(10000000)

// compress
Dim c As MemoryBlock = LZ4MBS.Compress(m)

// decompress
Dim d As MemoryBlock = LZ4MBS.Decompress(c)

// and check
If d.Size = m.size Then
MsgBox "Sizes match"
Else
MsgBox "Sizes don't match"
End If
```

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

See also:

- 6.6.4 Compress(InputData as Ptr, Size as Integer) as MemoryBlock 120
- 6.6.5 Compress(InputData as string) as string 121

6.6.4 Compress(InputData as Ptr, Size as Integer) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses data in ptr.

Notes: Same as memoryblock version, but with ptr parameter, so you can pass ptr with size. Works also for passing memoryblocks and a custom size.

See also:

- 6.6.3 Compress(InputData as MemoryBlock) as MemoryBlock 120
- 6.6.5 Compress(InputData as string) as string 121

6.6.5 Compress(InputData as string) as string

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a string.

Example:

```
Dim m As String = "Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor site amat."

// make sure encoding is set
m = ConvertEncoding(m, encodings.UTF8)

// compress
Dim c As String = LZ4MBS.Compress(m)

// decompress
Dim d As String = LZ4MBS.Decompress(c)

// set encoding after decompressing
d = DefineEncoding(d, encodings.UTF8)

// and check
If d = m Then
MsgBox "Text match"
Else
MsgBox "Text doesn't match"
End If
```

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

See also:

- 6.6.3 Compress(InputData as MemoryBlock) as MemoryBlock 120
- 6.6.4 Compress(InputData as Ptr, Size as Integer) as MemoryBlock 120

6.6.6 CompressFast(InputData as MemoryBlock, Acceleration as Integer = 1) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a memoryblock.

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

Same as Compress(), but allows selection of "acceleration" factor.

The larger the acceleration value, the faster the algorithm, but also the lesser the compression. It's a trade-off. It can be fine tuned, with each successive value providing roughly +3% to speed.

An acceleration value of "1" is the same as regular Compress()
 Values <= 0 will be replaced by AccelerationDefault (currently = 1).

See also:

- 6.6.7 CompressFast(InputData as Ptr, Size as Integer, Acceleration as Integer = 1) as MemoryBlock 122
- 6.6.8 CompressFast(InputData as string, Acceleration as Integer = 1) as string 122

6.6.7 CompressFast(InputData as Ptr, Size as Integer, Acceleration as Integer = 1) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses data in ptr.

Notes: Same as memoryblock version, but with ptr parameter, so you can pass ptr with size.

Works also for passing memoryblocks and a custom size.

See also:

- 6.6.6 CompressFast(InputData as MemoryBlock, Acceleration as Integer = 1) as MemoryBlock 121
- 6.6.8 CompressFast(InputData as string, Acceleration as Integer = 1) as string 122

6.6.8 CompressFast(InputData as string, Acceleration as Integer = 1) as string

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a string.

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

Same as Compress(), but allows selection of "acceleration" factor.

The larger the acceleration value, the faster the algorithm, but also the lesser the compression. It's a trade-off. It can be fine tuned, with each successive value providing roughly +3% to speed.

An acceleration value of "1" is the same as regular Compress()
 Values <= 0 will be replaced by AccelerationDefault (currently = 1).

See also:

- 6.6.6 CompressFast(InputData as MemoryBlock, Acceleration as Integer = 1) as MemoryBlock 121
- 6.6.7 CompressFast(InputData as Ptr, Size as Integer, Acceleration as Integer = 1) as MemoryBlock 122

6.6.9 CompressHC(InputData as MemoryBlock, compressionLevel as Integer = 9) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a memoryblock with high compression.

Example:

```
// lets make some data to compress
Dim p As Picture = LogoMBS(500)
Dim m As MemoryBlock = p.GetData(Picture.FormatBMP)

// compress
Dim c1 As MemoryBlock = LZ4MBS.Compress(m)
Dim c2 As MemoryBlock = LZ4MBS.CompressHC(m, LZ4MBS.CompressionLevelMin)
Dim c3 As MemoryBlock = LZ4MBS.CompressHC(m, LZ4MBS.CompressionLevelDefault)
Dim c4 As MemoryBlock = LZ4MBS.CompressHC(m, LZ4MBS.CompressionLevelOptMin)
Dim c5 As MemoryBlock = LZ4MBS.CompressHC(m, LZ4MBS.CompressionLevelMax)
```

```
MsgBox _
Str(c1.Size)+" normal"+EndOfLine+_
Str(c2.size)+" min"+EndOfLine+_
Str(c3.size)+" default"+EndOfLine+_
Str(c4.size)+" opt min"+EndOfLine+_
Str(c5.size)+" max"
```

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

Compression level, with # being any value from 1 to 12. Higher values trade compression speed for compression ratio. Values above 12 are considered the same as 12. Recommended values are 1 for fast compression (default), and 9 for high compression. Speed/compression trade-off will vary depending on data to compress\.. Decompression speed remains fast at all settings.

See also:

- 6.6.10 CompressHC(InputData as Ptr, Size as Integer, compressionLevel as Integer = 9) as MemoryBlock 123
- 6.6.11 CompressHC(InputData as string, compressionLevel as Integer = 9) as string 124

6.6.10 CompressHC(InputData as Ptr, Size as Integer, compressionLevel as Integer = 9) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses data in ptr.

Notes: Same as memoryblock version, but with ptr parameter, so you can pass ptr with size.

Works also for passing memoryblocks and a custom size.

See also:

- 6.6.9 CompressHC(InputData as MemoryBlock, compressionLevel as Integer = 9) as MemoryBlock
123
- 6.6.11 CompressHC(InputData as string, compressionLevel as Integer = 9) as string 124

6.6.11 CompressHC(InputData as string, compressionLevel as Integer = 9) as string

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses a string with high compression.

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns string on success.

Compression level, with # being any value from 1 to 12. Higher values trade compression speed for compression ratio. Values above 12 are considered the same as 12. Recommended values are 1 for fast compression (default), and 9 for high compression. Speed/compression trade-off will vary depending on data to compress. Decompression speed remains fast at all settings.

See also:

- 6.6.9 CompressHC(InputData as MemoryBlock, compressionLevel as Integer = 9) as MemoryBlock
123
- 6.6.10 CompressHC(InputData as Ptr, Size as Integer, compressionLevel as Integer = 9) as MemoryBlock
123

6.6.12 Decompress(CompressedData as MemoryBlock, UncompressedSize as Integer = 0) as MemoryBlock

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses a MemoryBlock.

Example:

```
// some 10 million zeros will compress well
Dim m As New MemoryBlock(10000000)

// compress
Dim c As MemoryBlock = LZ4MBS.Compress(m)

// decompress
```

```
Dim d As MemoryBlock = LZ4MBS.Decompress(c)
```

```
// and check
If d.Size = m.size Then
MsgBox "Sizes match"
Else
MsgBox "Sizes don't match"
End If
```

Notes: Raises exception on failure (OutOfMemoryException or UnsupportedOperationException) and returns memoryblock on success.

If UncompressedSize is zero, we try to determinate it.

If you know the size of decompressed data, please pass it to make function more efficient.

See also:

- 6.6.13 Decompress(CompressedData as Ptr, Size as Integer, UncompressedSize as Integer = 0) as MemoryBlock 125
- 6.6.14 Decompress(CompressedData as string, UncompressedSize as Integer = 0) as string 125

6.6.13 Decompress(CompressedData as Ptr, Size as Integer, UncompressedSize as Integer = 0) as MemoryBlock

Plugin Version: 19.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses data in ptr.

Notes: Same as memoryblock version, but with ptr parameter, so you can pass ptr with size.

Works also for passing memoryblocks and a custom size.

If UncompressedSize is zero, we try to determinate it.

If you know the size of decompressed data, please pass it to make function more efficient.

See also:

- 6.6.12 Decompress(CompressedData as MemoryBlock, UncompressedSize as Integer = 0) as MemoryBlock 124
- 6.6.14 Decompress(CompressedData as string, UncompressedSize as Integer = 0) as string 125

6.6.14 Decompress(CompressedData as string, UncompressedSize as Integer = 0) as string

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses a String.

Example:

```
Dim m As String = "Lorem ipsum dolor sit amet, consectetur adipiscing elit. Lorem ipsum dolor site amat."
```

```
// make sure encoding is set
m = ConvertEncoding(m, encodings.UTF8)
```

```
// compress
Dim c As String = LZ4MBS.Compress(m)
```

```
// decompress
Dim d As String = LZ4MBS.Decompress(c)
```

```
// set encoding after decompressing
d = DefineEncoding(d, encodings.UTF8)
```

```
// and check
If d = m Then
  MsgBox "Text match"
Else
  MsgBox "Text doesn't match"
End If
```

Notes: Raises exception on failure (`OutOfMemoryException` or `UnsupportedOperationException`) and returns memoryblock on success.

If `UncompressedSize` is zero, we try to determinate it.

If you know the size of decompressed data, please pass it to make function more efficient.

See also:

- 6.6.12 `Decompress(CompressedData as MemoryBlock, UncompressedSize as Integer = 0) as MemoryBlock` 124
- 6.6.13 `Decompress(CompressedData as Ptr, Size as Integer, UncompressedSize as Integer = 0) as MemoryBlock` 125

6.6.15 LibVersion as string

Plugin Version: 19.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries version of the LZ4 library.

6.6.16 Constants

Constants

Constant	Value	Description
AccelerationDefault	1	The default acceleration level.
MaxInputSize	&h7E000000	Maximum input size LZ4 can handle.

Compression Levels

Constant	Value	Description
CompressionLevelDefault	9	Default compression level.
CompressionLevelMax	12	Maximum compression.
CompressionLevelMin	3	Minimum compression.
CompressionLevelOptMin	10	

6.7 module PackbitsMBS

6.7.1 module PackbitsMBS

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: A module with functions for packbits compression/decompression.

Example:

```
Dim test As String = "Helllllo Wooooorld"
```

```
Dim compressed As String = PackbitsMBS.Compress(test)
```

```
Dim uncompressed As String = PackbitsMBS.Decompress(compressed)
```

Print uncompressed

```
Dim Match As Boolean = test.Compare(uncompressed, ComparisonOptions.Binary) = 0
```

Print "Match: "+match.ToString

Break

Notes: see wikipedia:

<http://en.wikipedia.org/wiki/PackBits>

Blog Entries

- [MBS Xojo Plugins, version 23.5pr2](#)
- [MBS Xojo / Real Studio Plugins, version 15.1pr7](#)

6.7.2 Methods

6.7.3 Compress(data as MemoryBlock) as MemoryBlock

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses data in a memoryblock.

Notes: Can raise out of memory exception if running low on memory.

See also:

- 6.7.4 Compress(data as string) as string 128
- 6.7.5 Compress(InputFile as FolderItem, OutputFile as FolderItem) as boolean 129

6.7.4 Compress(data as string) as string

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Ccompresses data in a string.

Notes: Can raise out of memory exception if running low on memory.

Returned data is a string without known encoding. If you plan to store it in a file, use `binarystream` class, not `textoutputstream`. If you plan to store it in a database, please use BLOB field. For storing in a text field, you may need to use Base64 encoding.

See also:

- 6.7.3 `Compress(data as MemoryBlock) as MemoryBlock` 128
- 6.7.5 `Compress(InputFile as FolderItem, OutputFile as FolderItem) as boolean` 129

6.7.5 `Compress(InputFile as FolderItem, OutputFile as FolderItem) as boolean`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compresses data in a file.

Notes: Returns true on success.

See also:

- 6.7.3 `Compress(data as MemoryBlock) as MemoryBlock` 128
- 6.7.4 `Compress(data as string) as string` 128

6.7.6 `Decompress(data as MemoryBlock) as MemoryBlock`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses data in a memoryblock.

Notes: Can raise out of memory exception if running low on memory.

See also:

- 6.7.7 `Decompress(data as string) as string` 129
- 6.7.8 `Decompress(InputFile as FolderItem, OutputFile as FolderItem) as boolean` 130

6.7.7 `Decompress(data as string) as string`

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses data in a string.

Notes: Can raise out of memory exception if running low on memory.

Returned data is a string without known encoding.

See also:

- 6.7.6 `Decompress(data as MemoryBlock) as MemoryBlock` 129
- 6.7.8 `Decompress(InputFile as FolderItem, OutputFile as FolderItem) as boolean` 130

6.7.8 Decompress(InputFile as FolderItem, OutputFile as FolderItem) as boolean

Plugin Version: 15.1, Platforms: macOS, Linux, Windows, Targets: All.

Function: Decompresses data in a file.

Notes: Returns true on success.

See also:

- 6.7.6 Decompress(data as MemoryBlock) as MemoryBlock 129
- 6.7.7 Decompress(data as string) as string 129

6.8 class UnZipFileInfoMBS

6.8.1 class UnZipFileInfoMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: This class keeps the metadata for a zip file.

Blog Entries

- [MBS Real Studio Plugins, version 11.3pr1](#)

6.8.2 Properties

6.8.3 CompressedSize as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The compressed file size.

Notes: (Read and Write property)

6.8.4 CompressionMethod as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The compression method.

Notes: (Read and Write property)

6.8.5 CRC as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The 32bit file checksum.

Notes: (Read and Write property)

6.8.6 Date as Date

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: The date as a Xojo date object.

Notes: (Read and Write property)

6.8.7 Day as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: day of the month - [1,31]
(Read and Write property)

6.8.8 DiskNumStart as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Disk number start.

Notes: (Read and Write property)

6.8.9 DosDate as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Last mod file date in DOS format.

Notes: (Read and Write property)

6.8.10 ExternalFileAttributes as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: External file attributes.

Notes: (Read and Write property)

6.8.11 Flag as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: general purpose bit flag.

Notes: A 16 bit value.

The flag is a bit field with various values.

Last bit of the flag is encryption state: value is 1 (odd) for encrypted and 0 (even) for unencrypted value.

The bit values 2 and 4 define compression level between 0 to 9.

Flag Value	Encryption	Compression Level
0	no	6
1	yes	6
2	no	9
3	yes	9
4	no	2
5	yes	2
6	no	1
7	yes	1

(Read and Write property)

6.8.12 Hour as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: hours since midnight - [0,23]

(Read and Write property)

6.8.13 InternalFileAttributes as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Internal file attributes.

Notes: (Read and Write property)

6.8.14 Minute as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: minutes after the hour - [0,59]

(Read and Write property)

6.8.15 Month as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: months since January - [0,11]
(Read and Write property)

6.8.16 Second as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: seconds after the minute - [0,59]
(Read and Write property)

6.8.17 SizeFileComment as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: file comment length.

Notes: (Read and Write property)

6.8.18 SizeFileExtra as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: extra field length.

Notes: (Read and Write property)

6.8.19 SizeFilename as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: filename length.

Notes: (Read and Write property)

6.8.20 UncompressedSize as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The uncompressed file size.

Notes: (Read and Write property)

6.8.21 Version as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The version used to make the archive.

Notes: (Read and Write property)

6.8.22 VersionNeeded as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The version needed to extract.

Notes: (Read and Write property)

6.8.23 Year as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: years - [1980..2044]
(Read and Write property)

6.9 class UnZipFilePositionMBS

6.9.1 class UnZipFilePositionMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: This class contains information about a file in the zipfile.

6.9.2 Properties

6.9.3 NumberOfFile as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The index of the file.

Notes: (Read and Write property)

6.9.4 PositionInZipDirectory as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Offset in zip file directory.

Notes: (Read and Write property)

6.10 class UnZipMBS

6.10.1 class UnZipMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: A class to decompress a zip archive.

Example:

```
// open zip archive
dim f as FolderItem=SpecialFolder.Desktop.Child("test.zip")
dim z as new UnZipMBS(f)

// let's start
z.GoToFirstFile
do

// get details on this file:
dim info as UnZipFileInfoMBS = z.FileInfo
dim name as string = z.FileName

if left(name,8) <>"__MACOSX" then // ignore Mac special files for metadata
z.OpenCurrentFile
if z.Lasterror=0 then

// create output file (if you want to support folders, this needs to be changed. See other examples)
dim outfile as folderitem = GetFolderItem(Name)
dim b as BinaryStream = BinaryStream.Create(outfile, true)
dim s as string

// now read 100 KB chunks and write them to new file
do
s=z.ReadCurrentFile(100000)
b.Write s
loop until lenb(s)=0

// cleanup
b.Close
z.CloseCurrentFile

end if
end if

// move to next file until we reach the end
z.GoToNextFile
loop until z.Lasterror<>0
```

Notes: This is a simple class which uses zlib and has some limitations:

- only deflate as compression method
- only one date per file is preserved
- no resource forks on Mac OS
- no text encoding handling
- no Apple or Microsoft extensions for special file flags or permissions.

See also `ArchiveReaderMBS` and `ArchiveWriterMBS` classes for more features and compression formats.

Blog Entries

- [MBS Xojo Plugins, version 20.6pr1](#)
- [MBS Xojo plug-ins in version 16.0](#)
- [MBS Xojo / Real Studio Plugins, version 16.0pr7](#)
- [MBS Plugins 11.1 Release notes](#)
- [MBS Real Studio Plugins, version 11.1pr11](#)
- [MBS Real Studio Plugins, version 11.1pr10](#)
- [MBS REALbasic Plugins, version 11.0pr13](#)
- [MBS REALbasic Plugins, version 10.5pr2](#)
- [MonkeyBread Software Releases the MBS REALbasic plug-ins 8.6](#)

Xojo Developer Magazine

- [9.5, page 11: News](#)
- [9.1, page 25: Optimizing Client-Server Communications, Using ZIP-archives and AES encryption to improve security and performance by Mattias Sandström](#)
- [9.1, page 23: Optimizing Client-Server Communications, Using ZIP-archives and AES encryption to improve security and performance by Mattias Sandström](#)

6.10.2 Methods

6.10.3 Close

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close a ZipFile.

Notes: Use CloseCurrentFile to close any open file before using Close.
LastError is UnZipOK on success.

6.10.4 CloseCurrentFile

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close the file in the zip archive opened with OpenCurrentFile.

Notes: Lasterror is set to UnzipCRCError if all the file was read but the CRC was not correct.

6.10.5 Comment as string

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Get the global comment string of the ZipFile.

6.10.6 CommentSize as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Size of the global comment of the zipfile.

6.10.7 CompareFileNames(filename1 as string, filename2 as string, CaseSensitive as Integer) as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Compare two filename (fileName1,fileName2).

Notes: If iCaseSensitivity = 1, comparison is case sensitivity (like strcmp)

If iCaseSensitivity = 2, comparison is not case sensitivity (like strcmpi or strcasecmp)

If iCaseSensitivity = 0, case sensitivity is default of your operating system (like 1 on Unix, 2 on Windows)

6.10.8 Constructor(data as memoryblock)

Plugin Version: 10.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Open a Zip file from data in the memoryblock.

Notes: The Handle property is zero on failure and not zero on success. The memory block must have a known size.

See also:

- 6.10.9 Constructor(data as string) 140
- 6.10.10 Constructor(file as folderitem) 140
- 6.10.11 Constructor(file as folderitem, Offset as Integer) 141

6.10.9 Constructor(data as string)

Plugin Version: 10.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Open a Zip file from data in the string.

Notes: The Handle property is zero on failure and not zero on success.

See also:

- 6.10.8 Constructor(data as memoryblock) 140
- 6.10.10 Constructor(file as folderitem) 140
- 6.10.11 Constructor(file as folderitem, Offset as Integer) 141

6.10.10 Constructor(file as folderitem)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Open a Zip file from a file.

Notes: The Handle property is zero on failure and not zero on success.

If you run this class in a thread, please make sure your thread has a big stack (1 MB or more). Else it will crash.

See also:

- 6.10.8 Constructor(data as memoryblock) 140
- 6.10.9 Constructor(data as string) 140
- 6.10.11 Constructor(file as folderitem, Offset as Integer) 141

6.10.11 Constructor(file as folderitem, Offset as Integer)

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

Function: Open a Zip file from a file starting at the offset.

Notes: The Handle property is zero on failure and not zero on success.

See also:

- 6.10.8 Constructor(data as memoryblock) 140
- 6.10.9 Constructor(data as string) 140
- 6.10.10 Constructor(file as folderitem) 140

6.10.12 Count as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Total number of entries in the zip archive.

Notes: This value is stored in the zip archive as 16 bit integer, so maximum value is 65535. The plugin can extract more files than that number.

6.10.13 EOF as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns 1 if you are on the end of a file.

Notes: This is not to test whether you are on the end of the zip archive.

6.10.14 ExtractFiles(DestFolder as FolderItem, ExtractWithoutPath as boolean = false, Overwrite as Boolean = false, Password as String = "", byref ErrorMessage as String) as boolean

Plugin Version: 16.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Simple function to extract all files from archive into folder.

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
```

```
dim folder as FolderItem = SpecialFolder.Desktop.Child("test")
folder.CreateAsFolder
```

```
dim u as new UnZipMBS(f)
dim error as string
```

```
if u.ExtractFiles(folder, error) then
MsgBox "OK"
else
MsgBox "Error: "+error
end if
```

Notes: DestFolder: Destination folder.
ExtractWithoutPath: If true, all files are put in one folder.
Overwrite: Whether to allow overwriting files.
Password: The password to decrypt files.
ErrorMessage: An english error message.

Returns true on success or false on failure.
This function does not restore file permissions or other metadata.
And it may not work with non ASCII characters.

If you need more control over files being extracted, stored or error checking, please use example projects coming with plugin.

6.10.15 FileInfo as UnZipFileInfoMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Queries file information for the current file.

Notes: Returns nil on any error.

6.10.16 FileName as string

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The filename of the current open file.

Notes: This name has no text encoding defined, as the plugin has no idea what text encoding was used. You may need to define the text encoding as being ASCII, Windows, MacRoman or whatever, when you work with this file name.

This name may include path components for folders.

6.10.17 GetLocalExtrafield as string

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Read extra field from the current file (opened by unzOpenCurrentFile)

Notes: This is the local-header version of the extra field (sometimes, there is more info in the local-header version than in the central-header)

6.10.18 GoToFirstFile

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Set the current file of the zipfile to the first file.

Notes: Lasterror is UnzipOk on success.

6.10.19 GoToNextFile

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Set the current file of the zipfile to the next file.

Notes: Lasterror is UnzipOk if there is no problem and UnzipEndOfListError if the actual file was the latest.

6.10.20 LocateFile(filename as string, CaseSensitive as Integer)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Try locate the file filename in the zipfile.

Example:

```
// open zip archive
dim f as FolderItem=SpecialFolder.Desktop.Child("test.zip")
dim z as new UnZipMBS(f)

// let's search the file
z.LocateFile "test.rtf",2

if z.Lasterror = z.UnzipOk then
dim info as UnZipFileInfoMBS = z.FileInfo
MsgBox "OK: "+str(info.UncompressedSize)+" bytes"
else
MsgBox "Failed."
end if
```

Notes: For the CaseSensitivity signification, see CompareFileNames. Text encoding must match the text encoding of the files.

Lasterror is UnzipOk if the file is found. It becomes the current file, UnzipEndOfListError if the file is not found.

6.10.21 OpenCurrentFile

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Open for reading data the current file in the zipfile.

See also:

- 6.10.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean) 144
- 6.10.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string) 144
- 6.10.24 OpenCurrentFile(password as string) 145

6.10.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Same than OpenCurrentFile, but opens file for reading raw data (not uncompressed).

Notes: if raw=true the file data is returned uncompressed. If raw is false, it is decompressed for you.

Method will receive the method of compression.

level will receive the level of compression.

See also:

- 6.10.21 OpenCurrentFile 144
- 6.10.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string) 144
- 6.10.24 OpenCurrentFile(password as string) 145

6.10.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Same than OpenCurrentFile, but opens file for reading raw data (not uncompressed) and with a password.

Notes: if raw=true the file data is returned uncompressed. If raw is false, it is decompressed for you.

Method will receive the method of compression.

level will receive the level of compression.

See also:

6.10. CLASS UNZIPMBS	145
• 6.10.21 OpenCurrentFile	144
• 6.10.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)	144
• 6.10.24 OpenCurrentFile(password as string)	145

6.10.24 OpenCurrentFile(password as string)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Open for reading data the current file in the zipfile.

Notes: password is a crypting password.

See also:

• 6.10.21 OpenCurrentFile	144
• 6.10.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)	144
• 6.10.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string)	144

6.10.25 Position as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Returns the current position in uncompressed data.

6.10.26 Position2 as UInt64

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

Function: Returns the current position in compressed data.

Notes: This property is useful to show progressbar with progress over reading the original zip file.

6.10.27 ReadCurrentFile(size as Integer) as string

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Read bytes from the current file (opened by OpenCurrentFile).

Notes: Returns "" on any error or on file end.

6.10.28 Properties

6.10.29 Handle as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The internal handle for the unzip object.

Notes: (Read and Write property)

6.10.30 Lasterror as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last error code.

Notes: (Read and Write property)

6.10.31 FilePosition as UnZipFilePositionMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The current file position.

Notes: You can read or set the current file you edit.

(Read and Write computed property)

6.10.32 Offset as UInt64

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Get or set the current index of the file in the zip directory.

Notes: If you set this value, you basically move to another file.

(Read and Write computed property)

6.10.33 Constants

Constants

Constant	Value	Description
CompressionBestCompression	9	One of the compression level constants.
CompressionBestSpeed	1	One of the compression level constants.
CompressionDefault	-1	One of the compression level constants.
CompressionNo	0	One of the compression level constants.
MethodDeflated	8	One of the compression methods.
MethodNone	0	One of the compression methods.
StrategyDefault	0	One of the strategy constants.
StrategyFiltered	1	One of the strategy constants.
StrategyFixed	4	One of the strategy constants.
StrategyHuffmanOnly	2	One of the strategy constants.
StrategyRLE	3	One of the strategy constants.
UnzipBadUnZipFile	-103	One of the error constants.
UnzipCRCError	-105	One of the error constants.
UnzipEndOfListError	-100	One of the error constants.
UnzipInternalError	-104	One of the error constants.
UnzipOk	0	One of the error constants.
UnzipParameterError	-102	One of the error constants.

6.11 class ZipFileInfoMBS

6.11.1 class ZipFileInfoMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: This class keeps the metadata for a zip file.

Blog Entries

- [MBS Real Studio Plugins, version 11.3pr1](#)

6.11.2 Methods

6.11.3 SetDate(d as date)

Plugin Version: 10.0, Platforms: macOS, Linux, Windows, Targets: Desktop, Console & Web.

Function: Sets the date with a Xojo date object.

Notes: A convenience function to make your life easier.

6.11.4 SetDateTime(d as dateTime)

Plugin Version: 20.5, Platforms: macOS, Linux, Windows, Targets: All.

Function: Sets the date with a Xojo dateTime object.

Notes: A convenience function to make your life easier.

6.11.5 Properties

6.11.6 Day as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: day of the month - [1,31]
(Read and Write property)

6.11.7 DosDate as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The date in the 32bit DOS format.

Notes: If dos_date = 0, the plugin will calculate it from the day, month, year, hour, minute and second properties.

(Read and Write property)

6.11.8 ExternalFileAttributes as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: external file attributes.

Notes: A 32 bit value.

(Read and Write property)

6.11.9 Hour as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: hours since midnight - [0,23]

(Read and Write property)

6.11.10 InternalFileAttributes as UInt32

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Internal file attributes.

Notes: A 16 bit value.

(Read and Write property)

6.11.11 Minute as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: minutes after the hour - [0,59]

(Read and Write property)

6.11.12 Month as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: months since January - [0,11]
(Read and Write property)

6.11.13 Second as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: seconds after the minute - [0,59]
(Read and Write property)

6.11.14 Year as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The file time.

Notes: years - [1980..2044]
(Read and Write property)

6.12 class ZipMBS

6.12.1 class ZipMBS

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The class for writing to a zip file.

Notes: This is a simple class which uses zlib and has some limitations:

- only deflate as compression method
- only one date per file is preserved
- no resource forks on Mac OS
- no encoding handling
- no Apple or Microsoft extensions for special file flags or permissions.

But it works nice to provide a zip file to clients. For example a download of JPEG files in an archive with one download from Web Edition.

Be aware that you can't compress Mac applications with this class, as the we don't preserve permissions, so the decompressed file has not the right flags set to make it executable.

See also ArchiveReaderMBS and ArchiveWriterMBS classes for more features and compression formats.

Blog Entries

- [MBS Xojo plug-ins in version 16.0](#)
- [MBS Xojo / Real Studio Plugins, version 16.0pr7](#)
- [MBS Plugins 11.1 Release notes](#)
- [MBS Real Studio Plugins, version 11.1pr10](#)
- [MonkeyBread Software Releases the MBS REALbasic plug-ins 8.6](#)

Xojo Developer Magazine

- [9.5, page 11: News](#)

6.12.2 Methods

6.12.3 Close(GlobalComment as string="")

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close the zipfile.

6.12.4 CloseFile

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close the current file in the zipfile.

6.12.5 CloseFileRaw(UncompressedSize as Integer, CRC32 as Integer)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Close the current file in the zipfile.

Notes: For files opened with parameter `raw=true` in `CreateFile` `UncompressedSize` and `crc32` are value for the uncompressed size,

6.12.6 CompressFiles(ZipFile as FolderItem, SourceFolder as FolderItem, files() as string, Overwrite as Integer = 0, Password as string = "", CompressionLevel as Integer = 9, byref ErrorMessage as string) as Integer

Plugin Version: 16.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Simple implementation of a batch file compression method.

Example:

```

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
dim folder as FolderItem = SpecialFolder.Pictures // some folder with images
dim files() As string

dim c as Integer = folder.count
for i as Integer = 1 to c
dim file as FolderItem = folder.TrueItem(i)

if file.Directory then
// we go here for this example only one level deep

dim subfolder as FolderItem = file
dim cc as Integer = subfolder.count
for ii as Integer = 1 to cc
dim subfile as FolderItem = subfolder.TrueItem(ii)
if subfile.name.Right(4) = ".jpg" then
// here we pass a relative path
files.Append subfolder.name+"/"+subfile.name

```

```

end if
next

else

if file.name.Right(4) = ".jpg" then
// just padd a file name for files directly in source folder
files.Append file.name
end if
end if
next

dim ErrorMessage as string
dim e as Integer = ZipMBS.CompressFiles(f, folder, files, errorMessage)

MsgBox "Error: "+str(e)

```

Notes: ZipFile: The destination zip file.
SourceFolder: The source folder for the files.
files: relative file paths to source folder.
Overwrite: pass 1 to overwrite zip archive, 2 to append or 0 to not overwrite.
Password: the password for encryption.
CompressionLevel: The compression level to use from 0 (no compression) to 9 (maximum).
ErrorMessage: An english error message.

Returns 0 on success or error code on failure.

This is a simple function to compress a couple of files.
It does not preserve file permissions on Mac/Linux or other metadata.
And it may not work with non ASCII characters.

If you need more control over files being added, compression or error checking, please use example projects coming with plugin.

6.12.7 Constructor(file as folderitem, append as Integer = 0)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Create a zipfile.

Notes: If the file exist and append is AppendStatusCreateAfter, the zip will be created at the end of the file.

(useful if the file contain a self extractor code)

If the file exist and append is AppendStatusAddInZip, we will add files in existing zip (be sure you don't

add file that doesn't exist)

If the zipfile cannot be opened, the handle value will be zero.

AppendStatusCreateAfter seems not to be working currently.

If you run this class in a thread, please make sure your thread has a big stack (1 MB or more). Else it will crash.

6.12.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false)

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

Function: Open a file in the ZIP for writing.

Notes: filename: the filename in zip. This can include path information with slash as delimiter. e.g. "foldername/file.txt"

FileInfo: the file date.

ExtraLocal: contains the extrafield data the the local header.

ExtraGlobal: contains the extrafield data the the local header.

Comment: comment contain the comment string

CompressionMethod: contain the compression method (see Method* constants)

Level: contain the level of compression (a value from -1 to 9. see Compression* constants)

Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.

See also:

- 6.12.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean) 155
- 6.12.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32) 155
- 6.12.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 157

6.12.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean)

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

Function: Open a file in the ZIP for writing with the possibility to write raw files.

Notes: filename: the filename in zip. This can include path information with slash as delimiter. e.g. "foldername/file.txt"

FileInfo: the file date.

ExtraLocal: contains the extrafield data the the local header.

ExtraGlobal: contains the extrafield data the the local header.

Comment: comment contain the comment string

CompressionMethod: contain the compression method (see Method* constants)

Level: contain the level of compression (a value from -1 to 9. see Compression* constants)

Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.

Raw: If true you read the file raw (the data will not be compressed).

See also:

- 6.12.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false) 154
- 6.12.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32) 155
- 6.12.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 157

6.12.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32)

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

Function: Open a file in the ZIP for writing with the possibility to write raw files, chnage the compression and add a password.

Notes: filename: the filename in zip. This can include path information with slash as delimiter. e.g. "foldername/file.txt"

FileInfo: the file date.

ExtraLocal: contains the extrafield data the the local header.

ExtraGlobal: contains the extrafield data the the local header.

Comment: comment contain the comment string

CompressionMethod: contain the compression method (see Method* constants)

Level: contain the level of compression (a value from -1 to 9. see Compression* constants)

Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.

Raw: If true you read the file raw (the data will not be compressed).

windowBits: Parameters for zlib compression. (for example -15)

memLevel: Parameters for zlib compression. (for example 8 or 9)

Strategy: Parameters for zlib compression. (See Strategy* constants)

Password: The password to use.

crcForCtypting: the CRC value of the input file.

The windowBits parameter is the base two logarithm of the window size (the size of the history buffer). It should be in the range 8..15 for this version of the library. Larger values of this parameter result in better compression at the expense of memory usage. The default value is 15.

windowBits can also be -8..-15 for raw deflate. In this case, -windowBits determines the window size.

The memLevel parameter specifies how much memory should be allocated for the internal compression state. memLevel=1 uses minimum memory but is slow and reduces compression ratio; memLevel=9 uses maximum memory for optimal speed. The default value is 8. See zconf.h for total memory usage as a function of windowBits and memLevel.

The strategy parameter is used to tune the compression algorithm. Use the value StrategyDefault for normal data, StrategyFiltered for data produced by a filter (or predictor), StrategyHuffmanOnly to force Huffman encoding only (no string match), or StrategyRLE to limit match distances to one (run-length encoding). Filtered data consists mostly of small values with a somewhat random distribution. In this case, the compression algorithm is tuned to compress them better. The effect of StrategyFiltered is to force more Huffman coding and less string matching; it is somewhat intermediate between StrategyDefault and StrategyHuffmanOnly. StrategyRLE is designed to be almost as fast as StrategyHuffmanOnly, but give better compression for PNG image data. The strategy parameter only affects the compression ratio but not the correctness of the compressed output even if it is not set appropriately. StrategyFixed prevents the use of dynamic Huffman codes, allowing for a simpler decoder for special applications.

See also:

- 6.12.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false) 154
- 6.12.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean) 155
- 6.12.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw

as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 157

6.12.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32)

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

Function: Open a file in the ZIP for writing with the possibility to write raw files, chnage the compression and add a password.

Notes: filename: the filename in zip. This can include path information with slash as delimiter. e.g. "foldername/file.txt"

FileInfo: the file date.

ExtraLocal: contains the extrafield data the the local header.

ExtraGlobal: contains the extrafield data the the local header.

Comment: comment contain the comment string

CompressionMethod: contain the compression method (see Method* constants)

Level: contain the level of compression (a value from -1 to 9. see Compression* constants)

Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.

Raw: If true you read the file raw (the data will not be compressed).

windowBits: Parameters for zlib compression. (for example -15)

memLevel: Parameters for zlib compression. (for example 8 or 9)

Strategy: Parameters for zlib compression. (See Strategy* constants)

Password: The password to use.

crcForCtypting: the CRC value of the input file.

versionMadeBy: value for Version made by field

flagBase: value for flag field (compression level info will be added)

The windowBits parameter is the base two logarithm of the window size (the size of the history buffer). It should be in the range 8..15 for this version of the library. Larger values of this parameter result in better compression at the expense of memory usage. The default value is 15.

windowBits can also be -8..-15 for raw deflate. In this case, -windowBits determines the window size.

The memLevel parameter specifies how much memory should be allocated for the internal compression state. memLevel=1 uses minimum memory but is slow and reduces compression ratio; memLevel=9 uses maximum memory for optimal speed. The default value is 8. See zconf.h for total memory usage as a function of windowBits and memLevel.

The strategy parameter is used to tune the compression algorithm. Use the value `StrategyDefault` for normal data, `StrategyFiltered` for data produced by a filter (or predictor), `StrategyHuffmanOnly` to force Huffman encoding only (no string match), or `StrategyRLE` to limit match distances to one (run-length encoding). Filtered data consists mostly of small values with a somewhat random distribution. In this case, the compression algorithm is tuned to compress them better. The effect of `StrategyFiltered` is to force more Huffman coding and less string matching; it is somewhat intermediate between `StrategyDefault` and `StrategyHuffmanOnly`. `StrategyRLE` is designed to be almost as fast as `StrategyHuffmanOnly`, but give better compression for PNG image data. The strategy parameter only affects the compression ratio but not the correctness of the compressed output even if it is not set appropriately. `StrategyFixed` prevents the use of dynamic Huffman codes, allowing for a simpler decoder for special applications.

See also:

- 6.12.8 `CreateFile`(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false) 154
- 6.12.9 `CreateFile`(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean) 155
- 6.12.10 `CreateFile`(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32) 155

6.12.12 Write(data as string)

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: Write data in the zipfile.

Notes: A file in the zip archive must have been created.

6.12.13 Properties

6.12.14 Handle as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The internal handle for the open zip archive.

Notes: If 0 the constructor failed to create the file.

(Read and Write property)

6.12.15 Lasterror as Integer

Plugin Version: 8.6, Platforms: macOS, Linux, Windows, Targets: All.

Function: The last error code.

Notes: (Read and Write property)

6.12.16 ZipFileVersion32 as Integer

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

Function: The version number to put in Zip file header for 32bit zip archives.

Notes: Default is 20 for version 4.5. Apple Finder seems to prefer 10 for 1.0.
(Read and Write property)

6.12.17 ZipFileVersion64 as Integer

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

Function: The version number to put in Zip file header for 32bit zip archives.

Notes: Default is 45 for version 4.5. Apple Finder seems to prefer 10 for 1.0.
(Read and Write property)

6.12.18 Constants

Constants

Constant	Value	Description
AppendStatusAddInZip	2	One of the values for the constructor.
AppendStatusCreate	0	One of the values for the constructor.
AppendStatusCreateAfter	1	One of the values for the constructor.
CompressionBestCompression	9	One of the compression level constants.
CompressionBestSpeed	1	One of the compression level constants.
CompressionDefault	-1	One of the compression level constants.
CompressionNo	0	One of the compression level constants.
MethodDeflated	8	One of the compression method constants.
MethodNone	0	One of the compression method constants. Use this value for no compression.
StrategyDefault	0	One of the strategy modes.
StrategyFiltered	1	One of the strategy modes.
StrategyFixed	4	One of the strategy modes.
StrategyHuffmanOnly	2	One of the strategy modes.
StrategyRLE	3	One of the strategy modes.
ZipBadZipFile	-103	One of the error constants.
ZipInternalError	-104	One of the error constants.
ZipOk	0	One of the error constants.
ZipParameterError	-102	One of the error constants.

6.13 class ZLibCompressMBS

6.13.1 class ZLibCompressMBS

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

Function: A class for zlib compression.

Notes: See also ArchiveReaderMBS and ArchiveWriterMBS classes for more features and compression formats.

Blog Entries

- [MBS Xojo / Real Studio Plugins, version 14.4pr3](#)
- [MBS REALbasic plug-ins version 9.4](#)

6.13.2 Methods

6.13.3 Adler32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Adler Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.13.4 close

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.

Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Xojo to do it for you.

6.13.5 Constructor(BufferSize as Integer=20000)

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The constructor.

Notes: The buffer size you specify is the output buffer size.

If this size is small, you need to flush with ProcessZip.

6.13.6 CRC32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.13.7 EndZip

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

Function: Finalizes the current compression stream.

Notes: You may check the Output buffer after this.

Error is set.

6.13.8 GetOutput as string

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

Function: Returns the contents of the output buffer.

Notes: The buffer is cleared after this function returns.

6.13.9 InitZip(level as Integer)

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

Function: Initializes the stream.

Notes: Level is from 0 to 9.

Error is set.

6.13.10 InputAvail as Integer

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

Function: Returns the number of bytes available in the input buffer.

6.13.11 OutputSize as Integer

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

Function: The size of bytes available in the output buffer.

6.13.12 ProcessFinish

Plugin Version: 14.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: Same as process, but for finishing.

Notes: If error is zero after this function, please call it again.

Error is 1 if stream is at end, so you can call EndZip to finish.

6.13.13 ProcessZip(Flush as boolean=false)

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

Function: Does zip compression.

Notes: Reduces the size of the input buffer and writes new data to the output buffer.

If the input buffer is not empty after this call, you need to call it again, but empty the output buffer before.

Error is set.

If flush is true, the data is flushed to output. Using flush=true all the the time will slow down compression, so use it only on the end to clear the output buffers.

6.13.14 SetInput(data as MemoryBlock) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Fills the input buffer.

Notes: Returns true if successfull.

The current input buffer size is 128 K, so you may use something smaller.

See also:

- 6.13.15 SetInput(data as string) as boolean

6.13.15 SetInput(data as string) as boolean

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

Function: Fills the input buffer.

Notes: Returns true if successful.

The current input buffer size is 128 K, so you may use something smaller.

See also:

- 6.13.14 SetInput(data as MemoryBlock) as boolean

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6.13.16 Properties

6.13.17 CRC as UInt32

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

Function: The Adler32 CRC value of the uncompressed data.

Notes: (Read only property)

6.13.18 Error as Integer

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

Function: The last error code.

Notes: Values:

Z_OK	0	(no error)
Z_STREAM_END	1	(Should be handles by the plugin inside)
Z_NEED_DICT	2	
Z_ERRNO	-1	
Z_STREAM_ERROR	-2	
Z_DATA_ERROR	-3	
Z_MEM_ERROR	-4	
Z_BUF_ERROR	-5	
Z_VERSION_ERROR	-6	

(Read and Write property)

6.13.19 ErrorMessage as String

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

Function: The error message for the last error.

Notes: (Read only property)

6.13.20 OutputBufferSize as Integer

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The output buffer size used in the constructor.

Notes: (Read only property)

6.13.21 TotalInput as Integer

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.13.22 TotalOutput as Integer

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.13.23 Version as String

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

Function: The version string of the used zlib library.

Example:

```
Dim z As New ZLibCompressMBS
MessageBox z.Version
```

Notes: (Read only property)

6.13.24 Constants

Constants

Constant	Value	Description
kASCII	1	One of the data type constants.
kBEST_COMPRESSION	9	One of the compression level constants.
kBEST_SPEED	1	One of the compression level constants.
kBINARY	0	One of the data type constants.
kBLOCK	5	One of the flush constants.
kBUF_ERROR	-5	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kDATA_ERROR	-3	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kDEFAULT_COMPRESSION	-1	One of the compression level constants.
kDEFAULT_STRATEGY	0	One of the compression strategy constants.
kDEFLATED	8	One of the compression method constants. The deflate compression method (the only one supported in this version)
kERRNO	-1	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kFILTERED	1	One of the compression strategy constants.
kFINISH	4	One of the flush constants.
kFIXED	4	One of the compression strategy constants.
kFULL_FLUSH	3	One of the flush constants.
kHUFFMAN_ONLY	2	One of the compression strategy constants.
kMEM_ERROR	-4	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kNEED_DICT	2	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kNO_COMPRESSION	0	One of the compression level constants.
kNO_FLUSH	0	One of the flush constants.
kNULL	0	The null value.
kOK	0	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kPARTIAL_FLUSH	1	One of the flush constants.
kRLE	3	One of the compression strategy constants.
kSTREAM_END	1	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kSTREAM_ERROR	-2	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kSYNC_FLUSH	2	One of the flush constants.
kTEXT	1	One of the data type constants.
kUNKNOWN	2	One of the data type constants.
kVERSION_ERROR	-6	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.

6.14 class ZLibDecompressMBS

6.14.1 class ZLibDecompressMBS

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

Function: A class for zlib decompression.

Notes: See also ArchiveReaderMBS and ArchiveWriterMBS classes for more features and compression formats.

Blog Entries

- [MBS REALbasic plug-ins version 9.4](#)

6.14.2 Methods

6.14.3 Adler32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Adler Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.14.4 close

Plugin Version: 3.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The destructor.

6.14.5 Constructor(BufferSize as Integer=20000)

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The constructor.

Notes: The buffer size you specify is the output buffer size.

If this size is small, you need to flush with ProcessZip.

6.14.6 CRC32(start as UInt32, data as string) as UInt32

Plugin Version: 4.2, Platforms: macOS, Linux, Windows, Targets: All.

Function: Calculates a 32bit Checksum about a given string.

Notes: Set start to 0 for the first call.

Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

6.14.7 EndZip

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

Function: Finalizes the current decompression stream.

Notes: You may check the Output property after this.

Error is set.

6.14.8 GetOutput as string

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

Function: Returns the content of the output buffer.

Notes: The buffer is cleared after this function returns.

6.14.9 InitZip

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

Function: Initializes the stream.

Notes: Error is set.

6.14.10 InputAvail as Integer

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

Function: The number of bytes available in the input buffer.

6.14.11 OutputSize as Integer

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

Function: The number of bytes available in the output buffer.

6.14.12 ProcessZip(Flush as boolean=false)

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

Function: Does zip compression.

Notes: Reduces the size of the input buffer and writes new data to the output buffer.

If the input buffer is not "" after this call, you need to call it again, but empty the output buffer before.

Error is set.

If flush is true, the data is flushed to output. Using flush=true all the the time will slow down compression, so use it only on the end to clear the output buffers.

6.14.13 SetInput(data as Memoryblock) as boolean

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: Fills the input buffer.

Notes: Returns true if successfull.

The current plugin uses a 128 K input buffer.

See also:

- 6.14.14 SetInput(data as string) as boolean

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6.14.14 SetInput(data as string) as boolean

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

Function: Fills the input buffer.

Notes: Returns true if successfull.

The current plugin uses a 128 K input buffer.

See also:

- 6.14.13 SetInput(data as Memoryblock) as boolean

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6.14.15 Properties**6.14.16 CRC as UInt32**

Plugin Version: 13.0, Platforms: macOS, Linux, Windows, Targets: All.

Function: The CRC checksum.

Notes: (Read only property)

6.14.17 Error as Integer

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

Function: The last error code.

Notes: Values:

Z_OK	0	(no error)
Z_STREAM_END	1	(Should be handles by the plugin inside)
Z_NEED_DICT	2	
Z_ERRNO	-1	
Z_STREAM_ERROR	-2	
Z_DATA_ERROR	-3	
Z_MEM_ERROR	-4	
Z_BUF_ERROR	-5	
Z_VERSION_ERROR	-6	

(Read and Write property)

6.14.18 ErrorMessage as String

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

Function: The error message for the last error.

Notes: (Read only property)

6.14.19 OutputBufferSize as Integer

Plugin Version: 9.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The output buffer size used in the constructor.

Notes: (Read only property)

6.14.20 TotalInput as Integer

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.14.21 TotalOutput as Integer

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

Function: The number of bytes processed so far.

Notes: (Read and Write property)

6.14.22 Version as String

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

Function: The version string of the used zlib library.

Example:

```
Dim z As New ZLibDecompressMBS
MessageBox z.Version
```

Notes: (Read only property)

6.14.23 Constants

Constants

Constant	Value	Description
kASCII	1	One of the data type constants.
kBEST_COMPRESSION	9	One of the compression level constants.
kBEST_SPEED	1	One of the compression level constants.
kBINARY	0	One of the data type constants.
kBLOCK	5	One of the flush constants.
kBUF_ERROR	-5	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kDATA_ERROR	-3	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kDEFAULT_COMPRESSION	-1	One of the compression level constants.
kDEFAULT_STRATEGY	0	One of the compression strategy constants.
kDEFLATED	8	One of the compression method constants. The deflate compression method (the only one supported in this version)
kERRNO	-1	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kFILTERED	1	One of the compression strategy constants.
kFINISH	4	One of the flush constants.
kFIXED	4	One of the compression strategy constants.
kFULL_FLUSH	3	One of the flush constants.
kHUFFMAN_ONLY	2	One of the compression strategy constants.
kMEM_ERROR	-4	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kNEED_DICT	2	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kNO_COMPRESSION	0	One of the compression level constants.
kNO_FLUSH	0	One of the flush constants.
kNULL	0	The null value.
kOK	0	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kPARTIAL_FLUSH	1	One of the flush constants.
kRLE	3	One of the compression strategy constants.
kSTREAM_END	1	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kSTREAM_ERROR	-2	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.
kSYNC_FLUSH	2	One of the flush constants.
kTEXT	1	One of the data type constants.
kUNKNOWN	2	One of the data type constants.
kVERSION_ERROR	-6	One of the return codes for the compression/decompression functions. Negative values are errors, positive values are used for special but normal events.

6.15 class ZStdMBS

6.15.1 class ZStdMBS

Plugin Version: 22.2, Platforms: macOS, Linux, Windows, iOS, Targets: All.

Function: The class for ZStandard compression scheme.

Example:

```
Dim InputText As String = "Hello World. Hello World. Hello World. Hello World. Just a test! Hello World.
Testing üòù"
```

```
Dim Compressed As String = ZStdMBS.Compress(InputText)
```

```
Dim OutputText As String = ZStdMBS.Decompress(Compressed).DefineEncoding(encodings.UTF8)
```

Break

Blog Entries

- [News from the MBS Xojo Plugins Version 22.2](#)
- [MonkeyBread Software Releases the MBS Xojo Plugins in version 22.2](#)
- [MBS Xojo Plugins, version 22.2pr6](#)

Xojo Developer Magazine

- [21.1, page 28: News from MBS Xojo Plugins, What's up with MonkeyBread Software by Stefanie Juchmes](#)

6.15.2 Methods

6.15.3 Compress(Data as MemoryBlock, CompressionLevel as Integer = 1) as MemoryBlock

Plugin Version: 22.2, Platforms: macOS, Linux, Windows, iOS, Targets: All.

Function: Compresses the given MemoryBlock.

Example:

```
Dim InputText As String = "Hello World. Hello World. Hello World. Hello World. Just a test! Hello World.
Testing üòù"
```

```
Dim InputData As MemoryBlock = InputText
```

```
Dim Compressed As MemoryBlock = ZStdMBS.Compress(InputData)
```

```
Dim OutputData As MemoryBlock = ZStdMBS.Decompress(Compressed)
```

```
Dim OutputText As String = DefineEncoding(OutputData, encodings.UTF8)
```

Break

Notes: CompressionLevel range from 1 to 22 where 22 is best with most memory usage.

Raises exception (UnsupportedOperationException or OutOfMemoryException) in case it fails. Please read message property for details.

See also:

- 6.15.4 Compress(Data as String, CompressionLevel as Integer = 1) as String 174

6.15.4 Compress(Data as String, CompressionLevel as Integer = 1) as String

Plugin Version: 22.2, Platforms: macOS, Linux, Windows, iOS, Targets: All.

Function: Compresses the given string.

Example:

```
Dim InputText As String = "Hello World. Hello World. Hello World. Hello World. Just a test! Hello World.
Testing üòù"
```

```
Dim Compressed As String = ZStdMBS.Compress(InputText)
```

```
Dim OutputData As String = ZStdMBS.Decompress(Compressed).DefineEncoding(encodings.UTF8)
```

Break

Notes: CompressionLevel range from 1 to 22 where 22 is best with most memory usage.

Raises exception (UnsupportedOperationException or OutOfMemoryException) in case it fails. Please read message property for details.

See also:

- 6.15.3 Compress(Data as MemoryBlock, CompressionLevel as Integer = 1) as MemoryBlock 173

6.15.5 Decompress(Data as MemoryBlock) as MemoryBlock

Plugin Version: 22.2, Platforms: macOS, Linux, Windows, iOS, Targets: All.

Function: Decompresses MemoryBlock.

Example:

```
Dim InputText As String = "Hello World. Hello World. Hello World. Hello World. Just a test! Hello World.
Testing üòù"
```

```
Dim InputData As MemoryBlock = InputText
```

```
Dim Compressed As MemoryBlock = ZStdMBS.Compress(InputData)
Dim OutputData As MemoryBlock = ZStdMBS.Decompress(Compressed)

Dim OutputText As String = DefineEncoding(OutputData, encodings.UTF8)
```

Break

Notes: Raises exception (UnsupportedOperationException or OutOfMemoryException) in case it fails. Please read message property for details.
See also:

- 6.15.6 Decompress(Data as String) as String 175

6.15.6 Decompress(Data as String) as String

Plugin Version: 22.2, Platforms: macOS, Linux, Windows, iOS, Targets: All.

Function: Decompresses string.

Example:

```
Dim InputText As String = "Hello World. Hello World. Hello World. Hello World. Just a test! Hello World.
Testing üòù"
```

```
Dim Compressed As String = ZStdMBS.Compress(InputText)
Dim OutputData As String = ZStdMBS.Decompress(Compressed).DefineEncoding(encodings.UTF8)
```

Break

Notes: Raises exception (UnsupportedOperationException or OutOfMemoryException) in case it fails. Please read message property for details.
See also:

- 6.15.5 Decompress(Data as MemoryBlock) as MemoryBlock 174

Chapter 7

Encryption and Hash

7.1 Globals

7.1.1 Adler32MemoryMBS(adler as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32

Plugin Version: 5.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The Adler32 hash function from the zlib library.

Notes: Offset and length must be correct for your memoryblock or you will crash your application!

Update a running Adler-32 checksum with the bytes and return the updated checksum. If buf is nil, this function returns the required initial value for the checksum.

An Adler-32 checksum is almost as reliable as a CRC32 but can be computed much faster.

7.1.2 Adler32StringMBS(adler as UInt32, buf as string) as UInt32

Plugin Version: 5.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The Adler32 hash function from the zlib library.

Example:

```
dim b as binarystream // some stream
dim adler as Integer
dim data as string
dim originalAdler as Integer = 12345
```

```
adler=Adler32MemoryMBS(0,nil,0,0)
```

```

data=b.read(10000)
while data<>""
adler=Adler32StringMBS(adler, data)
data=b.read(10000)
wend

if adler <>originalAdler then msgbox "Error in checksum!"

```

Notes: Update a running Adler-32 checksum with the bytes and return the updated checksum. If buf is nil, this function returns the required initial value for the checksum.

An Adler-32 checksum is almost as reliable as a CRC32 but can be computed much faster.

7.1.3 CRC32MemoryMBS(crc as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32

Plugin Version: 5.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The crc32 hash function from the zlib library.

Notes: Offset and length must be correct for your memoryblock or you will crash your application!

Update a running crc with the bytes and return the updated crc. If buf is nil, this function returns the required initial value for the crc. Pre- and post-conditioning (one's complement) is performed within this function so it shouldn't be done by the application.

7.1.4 CRC32StringMBS(crc as UInt32, buf as string) as UInt32

Plugin Version: 5.4, Platforms: macOS, Linux, Windows, Targets: All.

Function: The crc32 hash function from the zlib library.

Example:

```

dim originalCrc as Integer // original CRC
dim crc as Integer // new crc
dim data as string
dim b as binarystream

crc=0

data=b.read(10000)
while data<>""
crc=CRC32StringMBS(crc, data)
data=b.read(10000)
wend

```

```
if crc <>originalCrc then msgbox "Error in checksum!"
```

Notes: Update a running crc with the bytes and return the updated crc. If buf is nil, this function returns the required initial value for the crc. Pre- and post-conditioning (one's complement) is performed within this function so it shouldn't be done by the application.

Chapter 8

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Chapter 9

The FAQ

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

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):

Example:

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

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

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

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

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

```

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

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

```

Notes: (from the rb mailinglist)

9.0.2 Do you have plugins for Android?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Since there is no plugin SDK for Android, we have no way to make a plugin for Android.

Notes: We support macOS, Windows, Linux and iOS.

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

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use functions from NSColor to get proper highlight color in RGB:

Example:

```

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

```

```

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibrate-

```

```

dRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
#else
return HighlightColor
#endif
End Function

```

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

- 9.0.4 How to catch delete key? 193
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- 9.0.6 How to delete a folder? 195
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- 9.0.8 How to query variant type string for a variant? 197
- 9.0.9 How to refresh a htmlviewer on Windows? 198

9.0.4 How to catch delete key?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code in keydown event catches delete or backspace keys.

Example:

```

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

```

See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192

- 9.0.5 How to convert cmyk to rgb? 194
- 9.0.6 How to delete a folder? 195
- 9.0.7 How to detect if CPU is 64bit processor? 196
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9.0.5 How to convert cmyk to rgb?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

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

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

Example:

Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color

// converts c,m,y,k values (0-100) to color data type RGB

// place this in a method. Supply C,M,Y,K values-

// it returns color datatype

```
dim color_RGB as color
```

```
dim r, g, b as Integer
```

```
r=255-round(2.55*(c+k))
```

```
if r<0 then
```

```
  r=0
```

```
end if
```

```
g=255-round(2.55*(m+k))
```

```
if g<0 then
```

```
  g=0
```

```
end if
```

```
b=255-round(2.55*(y+k))
```

```
if b<0 then
```

```
  b=0
```

```
end if
```

```
color_RGB=RGB(r,g,b)
```

```
return color_RGB
```

```
End Function
```

Notes:

(from the rb mailinglist)
See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192
- 9.0.4 How to catch delete key? 193
- 9.0.6 How to delete a folder? 195
- 9.0.7 How to detect if CPU is 64bit processor? 196
- 9.0.8 How to query variant type string for a variant? 197
- 9.0.9 How to refresh a htmlviewer on Windows? 198

9.0.6 How to delete a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code that deletes a folder recursively.

Example:

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

if f=nil then Return

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

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

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

```
fo.Delete
end if
next
```

```
f.Delete
End Sub
```

See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192
- 9.0.4 How to catch delete key? 193
- 9.0.5 How to convert cmyk to rgb? 194
- 9.0.7 How to detect if CPU is 64bit processor? 196
- 9.0.8 How to query variant type string for a variant? 197
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9.0.7 How to detect if CPU is 64bit processor?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Via CPUID you can ask CPU:

Example:

```
dim c as new CPUIDMBS

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

Notes: Should work on all intel compatible CPUs.

See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192
- 9.0.4 How to catch delete key? 193
- 9.0.5 How to convert cmyk to rgb? 194
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- 9.0.8 How to query variant type string for a variant? 197
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9.0.8 How to query variant type string for a variant?

Plugin Version: 20.5, Platforms: macOS, Linux, Windows.

Answer: The following example function returns type string for variant.

Example:

```
Public Function VariantTypeString(v as Variant) as string
// Xojo's VarType doesn't know Unsigned integers
'Dim type As Integer = VarType(v)

// MBS VarType can detect unsigned integer
Dim type As Integer = GetVariantTypeMBS(v)

Dim IsArray As Boolean = BitwiseAnd(type, Variant.TypeArray) = Variant.TypeArray

// type without array
type = BitwiseAnd(type, Bitwise.OnesComplement(Variant.TypeArray))

// build a dictionary to map types on first call
Static TypeMap As Dictionary
If TypeMap = Nil Then
TypeMap = New Dictionary
TypeMap.Value(Variant.TypeBoolean) = "Boolean"
TypeMap.Value(Variant.TypeCFStringRef) = "CFStringRef"
TypeMap.Value(Variant.TypeColor) = "Color"
TypeMap.Value(Variant.TypeCString) = "CString"
TypeMap.Value(Variant.TypeCurrency) = "Currency"
TypeMap.Value(Variant.TypeDate) = "Date"
TypeMap.Value(Variant.TypeDateTime) = "DateTime"
TypeMap.Value(Variant.TypeDouble) = "Double"
TypeMap.Value(Variant.TypeInt32) = "Int32"
TypeMap.Value(Variant.TypeInt64) = "Int64"
TypeMap.Value(Variant.TypeInteger) = "Integer"
TypeMap.Value(Variant.TypeNil) = "Nil"
TypeMap.Value(Variant.TypeObject) = "Object"
TypeMap.Value(Variant.TypeOSType) = "OSType"
TypeMap.Value(Variant.TypePString) = "PString"
TypeMap.Value(Variant.TypePtr) = "Ptr"
TypeMap.Value(Variant.TypeSingle) = "Single"
TypeMap.Value(Variant.TypeString) = "String"
TypeMap.Value(Variant.TypeStructure) = "Structure"
TypeMap.Value(Variant.TypeText) = "Text"
TypeMap.Value(Variant.TypeWindowPtr) = "WindowPtr"
TypeMap.Value(Variant.TypeWString) = "WString"

// MBS extra types
TypeMap.Value(Variant.TypeInt32+100) = "UInt32"
TypeMap.Value(Variant.TypeInt64+100) = "UInt64"
```

End If

```
// lookup type

#if DebugBuild then
If Not TypeMap.HasKey(type) Then
Break // missing type
End If
#endif

If IsArray Then
Return "Array of " + TypeMap.Lookup(type,"?")
Else
Return TypeMap.Lookup(type,"?")
End If
End Function
```

See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192
- 9.0.4 How to catch delete key? 193
- 9.0.5 How to convert cmyk to rgb? 194
- 9.0.6 How to delete a folder? 195
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- 9.0.9 How to refresh a htmlviewer on Windows? 198

9.0.9 How to refresh a htmlviewer on Windows?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can ask the browser to reload the website with this code line:

Example:

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

See also:

- 9.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 192
- 9.0.4 How to catch delete key? 193
- 9.0.5 How to convert cmyk to rgb? 194

- 9.0.6 How to delete a folder? 199
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- 9.0.8 How to query variant type string for a variant? 196

9.0.10 Is there an example for vector graphics in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this example inside the paint event of a window:

Example:

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

```
const pi=3.14
```

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

```
r=new RectShape
```

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

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

```
g.DrawObject v
```

9.0.11 Picture functions do not preserve resolution values?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the picture functions return pictures with no/default resolution values.

Example:

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

```
l.HorizontalResolution = 300
```

```
l.VerticalResolution = 300
```

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

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

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

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

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

Notes: So please fix them yourself after calling a function.

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

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

Plugin Version: all, Platforms: macOS, Windows.

Answer: Fill a memoryblock like this:

Example:

```
Dim MB As Memoryblock
```

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

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

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

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

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

9.0.13 API client not supported?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you get this exception message on `SQLConnectionMBS.Connect`, we may have a problem.

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

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

9.0.14 Can I access Access Database with Java classes?

Plugin Version: all, Platform: Windows.

Answer: You can use `ucanaccess` to access databases created with Microsoft

Example:

```

dim options(-1) as string

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

dim appFolder as FolderItem = GetFolderItem("")

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

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

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

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

end if

```

Exception e as JavaExceptionMBS
MsgBox e.message+" **errorcode:** "+str(e.ErrorNumber)

Notes: see website:
<http://ucanaccess.sourceforge.net/site.html>

9.0.15 Can I create PDF from Xojo Report using DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, we have a graphics class integration for DynaPDF.

Notes: Since MBS Plugin in version 19.2, we can integrate reports with Xojo.

9.0.16 Can I use AppleScripts in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.

Example:

```
dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

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

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

9.0.17 Can I use graphics class with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sorry, no. We can't provide a graphics subclass from plugin.

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

9.0.18 Can I use sockets on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.

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

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

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

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our ChartDirector plugin works just fine on the Xojo Web Edition.

Example:

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

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

// The colors to use for the sectors
dim colors(-1) as Integer

colors.Append &h66aaee
colors.Append &heebb22
colors.Append &hbbsbbb
colors.Append &h8844ff

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

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

```

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

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

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

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

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

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

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

ImageView1.Picture=wp

```

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

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

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

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our DynaPDF plugin works just fine on the Xojo Web Edition.

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

See our Create PDF example for the Xojo Web Edition.

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

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: No.

9.0.22 Can you get an unique machine ID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There is nothing like an unique machine ID.

Notes: 1:

You can use the MAC IDs of the network interfaces.

This can be changed by the user with software tools.

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

2:

You can use the system folder creation date/time.

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

3:

You can use the Mac Serialnumber.

Mac only and it can happen that a Mac does not have a serial number.

4:

You can use the x86 CPU ID.

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

9.0.23 ChartDirector: Alignment Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Alignment Specification

Notes: In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using TextBox.setAlignment.

The ChartDirector API defines several constants for the alignment options.

ConstantValueDescription

BottomLeft	1	The leftmost point on the bottom line.
BottomCenter	2	The center point on the bottom line.
BottomRight	3	The rightmost point on the bottom line.
Left	4	The leftmost point on the middle horizontal line.
Center	5	The center point on the middle horizontal line.
Right	6	The rightmost point on the middle horizontal line.
TopLeft	7	The leftmost point on the top line.
TopCenter	8	The center point on the top line.
TopRight	9	The rightmost point on the top line.
Bottom	2	The center point on the bottom line. Same as BottomCenter.
Top	8	The center point on the top line. Same as TopCenter.
TopLeft2	10	An alternative top-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopLeft2 refers to refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2	11	An alternative top-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopRight2 refers to refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2	12	An alternative bottom-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomLeft2 refers to refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2	13	An alternative bottom-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomRight2 refers to refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

9.0.24 ChartDirector: Color Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Color Specification

Notes: Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports col-

ors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports "dynamic" colors. A dynamic color is a color that changes depending on the position of the pixels. The "dynamic" colors that ChartDirector supports include "pattern colors", "metal colors", "gradient colors", "zone colors" and "dash line colors".

ChartDirector supports specifying colors indirectly using "palette colors". When a "palette color" is used, the color is specified as an index to a palette. The actual color is looked up from the palette. ARGB Color ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AAR-RGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is "0x". For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.

For the alpha transparency component, a zero value means the color is not transparent at all. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.

Note that ChartDirector's ARGB color is web and HTML compatible. For example, red is FF0000, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in ChartDirector.

If alpha transparency is FF (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in ChartDirector, only one totally transparent color is used - FF000000. All other colors of the form FFnnnnnn are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color FF000000 is often used in ChartDirector to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, ChartDirector defines a constant called Transparent, which is equivalent to FF000000. Pattern Color

A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using `BaseChart.patternColor`, `BaseChart.patternColor2`, `DrawArea.patternColor` and `DrawArea.patternColor2`. The `patternColor` method creates pattern colors using an array of colors as a bitmap. The `patternColor2` method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any `ChartDirector` API that expects a color as its input.

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.

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.

A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using `BaseChart.dashLineColor` and `DrawArea.dashLineColor`. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any `ChartDirector` API that expects a color as its input.

Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using `Layer.xZoneColor`, `Layer.yZoneColor`, `XYChart.xZoneColor` or `XYChart.yZoneColor`.

Palette Colors
Palette colors are colors of the format `FFFFnnnn`, where the least significant 16 bits (`nnnn`) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by

looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

ConstantValueDescription

Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.

ConstantDescription

9.0.25 ChartDirector: Font Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

Answer: ChartDirector: Font Specification

Notes: Font Name

In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information

In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location

ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the " [windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the " [windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at

http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355

is highly recommended. Please refer to

<http://www.microsoft.com/typography/faq/faq8.htm>

on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTSPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories.

Artificial Boldening and Italicizing
Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".

Font List
Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.

ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

KeywordsDescription

"normal"	This default normal font, which is the first font in the font table. This is initially mapped to "arial.ttf" (Arial).
"bold"	The default bold font, which is the second font in the font table. This is initially mapped to "arialbd.ttf" (Arial Bold).
"italic"	The default italic font, which is the third font in the font table. This is initially mapped to "ariali.ttf" (Arial Italic).
"boldItalic"	The default bold-italic font, which is the fourth font in the font table. This is initially mapped to "arialbi.ttf" (Arial Bold Italic).
"fontN"	The (N + 1)th font in the font table (the first font is "font0").

The font table can be modified using `BaseChart.setFontTable` or `DrawArea.setFontTable`.

The advantage of using indirect font names is that you can change the fonts in your charts in one place.

Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.

The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. `TextBox.setFontSize`) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.

This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)

This is the angle in degrees by which the font should be rotated anti-clockwise.

By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use `BaseChart.addText` to add text that are laid out vertically. Vertical layout is common for

oriental languages such as Chinese, Japanese and Korean.

9.0.26 ChartDirector: Mark Up Language

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Mark Up Language

Notes: ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text. **Font Styles**

You can change the style of the text by using CDML tags. For example, the line:

```
<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
```

will result in the following text rendered:

In general, all tags in CDML are enclosed by <*> and *>. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include <*> in text without being interpreted as CDML tags, use «* as the escape sequence.

The following table describes the supported font style attributes in CDML. See [Font Specification](#) for details on various font attributes.

Attribute	Description
super	Set the following text to be in superscript style. This attribute does not need to have a value. (You may use "super" as the attribute instead of "super=1".)

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.
xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

section. You may use `</font*>` to terminate a style section, which will restore the font styles to the state before the style section.

Blocks and Lines

In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("`\n`") or with `<br*>`. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

```
<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO
```

will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using `<*block*>` as the start tag and

`<*/*>` as the end tag.

When a block ends, font styles will be restored to the state before entering the block. Embedding Images
CDML supports embedding images in text using the following syntax:

```
<*img=my_image_file.png*>
where my_image_file.png is the path name of the image file.
```

For example, the line:

```
<*size=20*>A <*img=sun.png*>day
will result in the following text rendered:
```

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to `BaseChart.setSearchPath` or `DrawArea.setSearchPath` on the directory that ChartDirector will search for the file.

The `<*img*>` tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and height. Blocks Attributes

CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the `<*block*>` tag to control the alignment and orientation of the sub-blocks. The `<*img=my_image_file.png*>` is treated as a block for layout purposes.

For example, the line:

```
<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
will result in the following text rendered:
```

The the above starts `<*block,valign=absmiddle*>` which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside `<*block*>` tag:

AttributeDescription

The value `baseline` means the baseline of sub-blocks should align with the baseline of the block. The `baseline`

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

9.0.27 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Parameter Substitution and Formatting

Notes: ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.

Format Strings

In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

```
" { label } ( { percent } %)"
```

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

```
" { label } : US$ { value | 2 } K ( { percent } %)"
```

The sector label will then become something like "ABC: US\$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

```
"USD { value } (Euro { = { value } *0.9 } )"
```

In the above, "{ value }" will be substituted with the actual value of the sector. The expression "{ = { value } *0.9 }" will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "%" (modulo) and "^" (exponentiation). Operators "*", "/", "%", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers

The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers

The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers

The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis

The following table describes the parameters available for pie charts.

Number Formatting

For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2, . } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

```
{ [ param ] | [ a ] [ b ] [ c ] [ d ] }
```

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting

For parameters that are dates/times, the formatting options can be specified using the following syntax:

```
{ [ param ] | [ datetime_format_string ] }
```

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' ' . (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format { value | mmm '<*color=dd0000*>'yyyy } will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*> is a CDML tag to specify red text color). Note that the <*color=dd0000*>tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.

Escaping URL/HTML/CDML characters

Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '&' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "%XX" (eg. "?" will become "%3F"). After that, it will modify HTML special characters to the HTML escape format "&#nn;" (eg. ">" will become ">"). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } " and " { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

9.0.28 ChartDirector: Shape Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Shape Specification

Notes: Several ChartDirector API accept shape specification as arguments. For example, BarLayer.setBarShape and BarLayer.setBarShape2 can be used to specify shapes of bars in bar charts, while DataSet.setDataSymbol, DataSet.setDataSymbol4, PolarLayer.setDataSymbol and PolarLayer.setDataSymbol4 can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see DataSet.setDataSymbol2, DataSet.setDataSymbol3, PolarLayer.setDataSymbol2 and PolarLayer.setDataSymbol3.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a `ChartDirector` method for parameterized shapes. For example, a circle is represented by an explicit constant `CircleShape (=7)`. On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the `PolygonShape` method, passing in the number of sides as argument.

The following table illustrates the various `ChartDirector` shapes:

Custom Shapes

In `ChartDirector`, custom shapes are specified as an array of integers `x0, y0, x1, y1, x2, y2 ...` representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

`ChartDirector` will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various `ChartDirector` API.

As an example, the shape of the standard diamond shape in `ChartDirector` is represented as an array with 8 numbers:

```
0, 0, 500, 500, 0, 1000, -500, 500
```

9.0.29 Copy styled text?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to quickly copy styled text from one textarea to another?

Example:

```
#if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
#elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
#else
TextArea1.StyledText = TextArea2.StyledText
#endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

9.0.30 Do you have code to validate a credit card number?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can check the checksum to tell if a credit card number is not valid.

Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
    nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
    If nValue < 10 Then
        nChecksum = nChecksum + nValue
    Else
        nChecksum = nChecksum + (nValue - 9)
    End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
    MsgBox("The credit card number looks valid")
Else
    MsgBox("The credit card number is invalid")
End IF
```

Notes: Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

9.0.31 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all.

Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.

Notes: Please first go to X-Rite and get a SDK license.

Then we can talk about the plugin.

9.0.32 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the plugin can work with multiple recordsets.

Notes: You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all records in the first result set. Then you simply start again with FetchNext to get the second record set.

Even the RecordSet functions should work, just use them twice to get all records from both record sets.

9.0.33 Does the plugin home home?

Plugin Version: all, Platform: macOS.

Answer: Yes, we like to know who is using the plugin, so the plugin may contact our server.

Example:

none.

Notes: Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall.

Blocking the transfer will not disable the plugin or change the features.

Or contact us for a plugin version which explicitly does not contain this feature.

9.0.34 folderitem.absolutePath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Paths on a Mac are not unique, so use them only to display them to the user.

Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + "." + s
nf = nf.parent
wend
Return s
End Function
```

9.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Platform: macOS.

Answer: This code implements animations for a tabpanel change:

Example:

// in a tabpanel.change event:

```
dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
```

```

// watch the value of the clicked tab versus the last tab
if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value

```

Notes: See CGS* classes for more details.

9.0.36 How about Plugin support for older OS X?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We support in general Mac OS X 10.5 and newer.

Notes: All the 64-bit plugins on Mac require OS X 10.7.

Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6. Also for SQL Plugin the built in SQLite library requires 10.6.

9.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all.

Answer: Look on the CPU family returned by sysctl:

Example:

Function is64bit() As Boolean

```
#if TargetLittleEndian
```

```
dim m as MemoryBlock = NewMemoryBlock(8)
```

```
dim family as Integer
```

```
dim s as string
```

```
m=SystemControlNameToMIBMBS("hw.cpufamily")
```

```
m=SystemControlMBS(m)
```

```
if m<>nil then
```

```
m.LittleEndian=True
```

```
family=m.Long(0)
```

```
const CPUFAMILY_INTEL_6_14 = &h73d67300 /* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
```

```
const CPUFAMILY_INTEL_6_15 = &h426f69ef /* "Intel Core 2 Duo" */
```

```
const CPUFAMILY_INTEL_6_23 = &h78ea4fbc /* Penryn */
```

```
const CPUFAMILY_INTEL_6_26 = &h6b5a4cd2 /* Nehalem */
```

```
Select case family
```

```
case CPUFAMILY_INTEL_6_14
```

```
Return false
```

```
case CPUFAMILY_INTEL_6_15
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_23
```

```
Return true
```

```
case CPUFAMILY_INTEL_6_26
```

```
Return true
```

```
// newer CPUs may be missing here
```

```
end Select
```

```
end if
```

```
#endif
```

```
Return false
```

```
Exception
```

```
Return false
```

```
End Function
```

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

9.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Platform: Windows.

Answer: The following code will remove the close item from the system menu of the window.

Example:

```
#if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, &HF060, &H0
#endif
```

Notes: The window may not be updated directly.

9.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
```

```
loop until m.byte(n)=0
#endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

9.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Platform: macOS.

Answer: You need to get a media reservation.

Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation.

See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

9.0.41 How can I get text from a PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Crossplatform you can use DynaPDF Pro.

Notes: On Mac OS X you can also use PDFKit for the same job.

While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

9.0.42 How can I get text from a Word Document?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: to get the text string from a doc file, use the NSAttributedStringMBS class.

Notes: The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the `NSAttributedStringMBS.initWithDocFormat(data as string)` as boolean method.

9.0.43 How can I get the item string for a given file creator?

Plugin Version: all.

Answer: Try this function:

Example:

```
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer
```

```
Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")
```

```
listBox1.deleteAllRows
```

```
m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <> 0 then
listBox1.addRow "<Not found.>"
return
end if
```

```
do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if
end if
```

loop

End Sub

Notes: Change "Translation" to "CarbonLib" for Mac OS X.

9.0.44 How can I launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "odoc" with the creator code to the Finder ("MACS"):

Example:

```
Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent("aevt","odoc","MACS")
A.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf",nil,C)
return A.Send
End Function
```

9.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please use the ldd command in the terminal.

Notes: You build an app on any platform, but for Linux.

For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
```

```

/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$

```

As you see all library have been found and their load address is printed behind the na,e.
 If a library is missing, you usually see the address missing there or being zero.


```

while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result

```

Notes: May not look nice depending on the controls used.
This is no longer needed when using MimeEmailMBS class which decodes for you.

9.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.

Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.

For Cocoa, please use enabled property of NSTabViewItemMBS class.

9.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:

Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <> nil then
root = f // f might be the volume
do
dum = root.parent
if dum <> nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

9.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
dim p as new CFPREFERENCESMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFOBJECTMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages", ".GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

9.0.51 How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if

```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

9.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.

Example:

```

dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if

```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn't provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource #-8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

9.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.

Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)
```

```
ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

9.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have 255 different colors. If the bars are longer than 255 pixels, would this look nice?

Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

```

c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub

```

Notes:

Try the code above in a window paint event handler.

9.0.55 How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPreferencesMBS class like in this example:

Example:

```

// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser,
pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

```

```

// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if

```

Notes: You can use the `CFPreferencesMBS.SetValue` to change a value and `CFPreferencesMBS.Synchronize` to write the values to disc. You may need to restart the `Dock.app` if you modified things.

9.0.56 How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a `binarystream` you can set the `length` property to truncate.

9.0.57 How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—")=f
if not ae.send then
//something went wrong

```

end if

Notes: The `folderitem.finderupdate` from the MBS Plugin does something like this.

9.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.

Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the `QTGrabberClassMBS`
- Mass storage devices using the `folderitem` class.
- Serial devices using the `System.SerialPort` function.
- HID USB devices can be used with `MacHIDMBS`, `WinHIDMBS` or `LinuxHIDInterface` class.
- Any USB device may be used with `MacUSBMBS` or `WinUSBMBS` classes.

In general it is always the best to take the most high level access to have others do the work for the details.

9.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use `FolderItem.AddCustomIcon` or `NSWorkspaceMBS.setIcon` functions.

Notes: Please close any open stream for the file you want to add an icon.

9.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:

Example:

Function `Computername()` *As string*

```

dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function

```

Notes: Code above is for Mac OS 9!

Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

9.0.61 How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable""
YES")

```

Notes: This will set the NSHighResolutionCapable flag to YES.

9.0.62 How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:

Example:

```

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

```

```

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS

```

End Sub

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the `NSAutoreleasePools` for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a `objc_msgSend` call.

9.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.

Notes: In environment variables, the paths like `ORACLE_HOME` must be defined.

On Mac OS X you also need to define `DYLD_LIBRARY_PATH` to point to the dylib files from oracle.

For that you need to modify `/etc/launchd.conf` for Mac OS X 10.8 and newer.

In older versions those variables in `.MacOSX/environment.plist` file in user's home.

Another way for the case you bundle things inside your app is to use the `LSEnvironment` key in `info.plist`. In `info.plist` it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

9.0.64 How to avoid `___NSAutoreleaseNoPool` console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own `NSAutoreleasePool` on a thread like this:

Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

```
end sub
```

Notes: For more details read here:

http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

9.0.65 How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:

Example:

```
// First way:  
app.FrontMostMBS = true
```

```
// second way:  
dim p as new ProcessMBS  
p.GetCurrentProcess  
p.FrontProcess = true
```

```
// third way:  
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)
```

```
// for Windows:  
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

9.0.66 How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code txt) to the frontmost application:

Example:

```
Dim A As AppleEvent  
A = NewAppleEvent("misc", "actv", "")  
If Not A.Send then  
Beep  
end if
```

Notes: (Code is Mac only)

9.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.

Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is caught, a flag is set and you can ask later in your normal application flow for the result.

9.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:

Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

9.0.69 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

```
<key>CFBundleExecutable</key>
<string>Executable file name here</string>
```

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

```
<key>CFBundleName</key>
<string>Name for menu here</string>
```

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at <http://www.bitjuggler.com/products/appbundler/>.

9.0.70 How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:

Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count
```

```
for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)
```

```
if item<>Nil and item.Directory then
Return true
end if
```

next

End Function

Notes: We use trueitem() here to avoid resolving alias/link files. Also we check for nil as we may not have permission to see all items. And if one is a directory, we return without checking the rest.

9.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:

Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

9.0.72 How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:

Example:

```
Function OutlookInstalled() As Boolean
    #if TargetWin32 then

    try
    dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

    Return true

    catch r as RegistryAccessErrorException
    // not installed
    Return false

    end try

    #else

    // Windows only, so false on other platforms
    Return false

    #endif

End Function
```

9.0.73 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.

Example:

```
dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
```

```

CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

```

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

9.0.74 How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.

Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature. We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of app>
```

```

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

```

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder. If you have helper apps you need to sign them first.

You can use a build step to automatically sign your app on build.

9.0.75 How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):

Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock
```

```
Declare Function CollapseWindow Lib "Carbon" (window as Integer, collapse as Integer) as Integer
```

```
IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF
```

```
err = CollapseWindow(w.MacWindowPtr, state)
```

```
End Sub
```

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set. For Windows the MBS Plugin has a window.isiconicmbs property.

9.0.76 How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:

Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color
```

```
h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth
```

```
if d1<>d2 then
Return 1
elseif w1<>w2 then
```

```

return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function

```

Notes: Remember that this only works on bitmap pictures, so the `picture.BitmapMBS` function may be useful.

9.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.
- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure --enable-embed --with-curl --enable-ftp --enable-zip --enable-sockets --enable-static --enable-soap --with-zlib --with-bz2 --enable-exif --enable-bcmath --enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole __yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;"
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.

9.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return "Andriod"
case WebSession.BrowserType.Blackberry
Return "Blackberry"
case WebSession.BrowserType.Chrome
Return "Chrome"
case WebSession.BrowserType.ChromeOS
Return "ChromeOS"
case WebSession.BrowserType.Firefox
Return "Firefox"
case WebSession.BrowserType.InternetExplorer
Return "InternetExplorer"
case WebSession.BrowserType.Opera
Return "Opera"
case WebSession.BrowserType.Safari
Return "Safari"
case WebSession.BrowserType.SafariMobile
Return "SafariMobile"
case WebSession.BrowserType.Unknown
Return "Unknown"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

9.0.79 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

9.0.80 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:

Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```

case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

End Function

```

9.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you although it's not perfect.
You need to set lc to the current color you use.

Example:

```

dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear

```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

9.0.82 How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:

Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

9.0.83 How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.

Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: `TextInputStream` will read any input line endings and with `delimiter` property in `TextOutputStream` you can easily define your new delimiter.

9.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:

Notes: JPEG:

`JPEGStringToPictureMBS(buf as string)` as picture
`JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean)` as picture
`PictureToJPEGStringMBS(pic as picture,quality as Integer)` as string

PNG:

`PictureToPNGStringMBS(pic as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single)` as string
`PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer)` as string
`PNGStringToPictureMBS(data as string, gamma as single)` as picture
`PNGStringToPNGPictureMBS(data as string, gamma as single)` as PNGpictureMBS

Tiff:

`TIFFStringToPictureMBS(data as string)` as picture
`TIFFStringToTiffPictureMBS(data as string)` as TiffPictureMBS

BMP:

`BMPStringtoPictureMBS(data as string)` as picture
`Picture.BMPDataMBS(ResolutionValueDPI as Integer=72)` as string

GIF:

`GifStringToGifMBS(data as string)` as GIFMBS
`GifStringToPictureMBS(data as string)` as Picture

9.0.85 How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:

Example:

```
Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

9.0.86 How to copy a dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:

Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of a dictionary of objects, you need to change code to also make a copy of those objects.

9.0.87 How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```

dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))

```

Notes: If result is not 0, the method fails.

9.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every
year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars

```

```

// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if

```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

9.0.89 How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

9.0.90 How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.

Example:

```

dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99

```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99
```

```
dim r As ResourceFork 'ResourceFork is needed for a clip file
```

```
// Please define a file type Any
r=f.CreateResourceFork("Any")
```

```
// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")
```

```
dim m as new MemoryBlock(8)
```

```
m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height
```

```
r.AddResource(m,"RECT",256,"")
```

```
'Values taken from a sample file and irrelevant to the problem
```

```
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAABAAAAAAAAAAAAAAAAABUQ0IQAAAAA")
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

9.0.91 How to create a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check our DynaPDF plugin and the examples.

Notes: An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X. For Windows, we can only suggest our DynaPDF plugin.

9.0.92 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Platform: macOS.

Answer: You can use code like the one below:

Example:

Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
 dim a as new EmailAttachment

```
a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMETYPE = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename
```

Return a

End Function

Notes: Compared to sample code from Xojo documentation, we set the mime type correct for PDF. The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients. "prvw" is the creator code for Apple's preview app.

9.0.93 How to create PDF for image files?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use DynaPDF like this:

Example:

```
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight as Integer) As Boolean
  // have files?
  If pdfFile = Nil Then Return False
  If jpgFiles = Nil Then Return False

  If jpgFiles.Ubound < 0 Then Return False

  // new DynaPDF
  Dim pdf As New MyDynapdfMBS

  // page width/height in MilliMeter
  Dim pdfWidth as Integer = PageWidth * 72 / 25.4
  Dim pdfHeight as Integer = PageHeight * 72 / 25.4

  // put your license here
  Call pdf.SetLicenseKey "Starter"

  // create pdf
  Call pdf.CreateNewPDF pdfFile
```

```

// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
Next

// close
Call pdf.CloseFile

Return True
End Function

```

Notes: This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

9.0.94 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a few tips on how to translate command line CURL calls to plugin calls.

Notes: `curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456 -data-binary @DocumentRegister.docx -H "Content-Type: application/msword"`

- The option `-v` means verbose. You can use `OptionVerbose` and listen for messages in the `DebugMessage` event.
- The option `-X PUT` means we want to do a HTTP PUT Request. So set `OptionPut` to true. Also you will want to set `OptionUpload` to true as you upload data.
- We have the URL which you put into `OptionURL` property.

- The `-data-binary` option tells CURL to pass the given data. With the `@` before the data, it is interpreted as a file name, so the data is read from the given file. You'll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)
- The last option `-H` specifies an additional header for the upload. Pass this additional header with the `SetOptionHTTPHeader` method.

```
curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfc4328001c59 -d '{ "type": "Product", "description": "Application Serial", "acronym": "AppSerial", "dateAdded": "2011-03-21 14:57:36" } '
```

- Option `-X PUT` like above.
- Pass the URL again in `OptionURL`
- This time data is passed in command line for CURL. You'd put this data in the quotes into a string and make it available in the Read event. (See CURLS ftp upload example project)

9.0.95 How to delete file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object
```

```
// delete file
```

```
dim ws() As String
```

```
ws.Append "DELE Temp.txt"
```

```
d.SetOptionPostQuote(ws)
```

Notes: Use `SetOptionPostQuote`, `SetOptionPreQuote` or `SetOptionQuote`.

The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use `DELE` and the file path.

9.0.96 How to detect display resolution changed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X simply listen for display changed notifications.

Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

9.0.97 How to detect retina?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use `Window.BackingScaleFactorMBS` to query the factor.

Example:

```
msgbox str(window1.BackingScaleFactorMBS)
```

9.0.98 How to disable force quit?

Plugin Version: all, Platform: macOS.

Answer:

Please visit this website and get the control panel for Mac OS 9 there:

<http://www3.sk.sympatico.ca/tinyjohn/DFQ.html>

For Mac OS X use the MBS Plugin with the `SetSystemUIModeMBS` method.

Notes:

Please use `presentationOptions` in `NSApplicationMBS` for Cocoa applications.

9.0.99 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Platform: Windows.

Answer: You can use this code in the `htmlviewer` open event:

Example:

```
if targetwin32 then
htmlviewer1._ole.Content.value("Silent") = True
end if
```

Notes: This disables the error dialogs from Internet Explorer.

9.0.100 How to display a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.

Notes: An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it. On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

9.0.101 How to do a lottery in RB?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:

Example:

```

Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)

for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max

d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub

```

```

Sub Open()
// Test it

dim za(0) as Integer ' the array of the numbers

lotto 49,6,za ' 6 of 49 in Germany

' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za(5))+chr(13)+str(za(6))+chr(13)+str(za(7))+chr(13)+str(za(8))+chr(13)+str(za(9))+chr(13)+str(za(10))+chr(13)+str(za(11))+chr(13)+str(za(12))+chr(13)+str(za(13))+chr(13)+str(za(14))+chr(13)+str(za(15))+chr(13)+str(za(16))+chr(13)+str(za(17))+chr(13)+str(za(18))+chr(13)+str(za(19))+chr(13)+str(za(20))+chr(13)+str(za(21))+chr(13)+str(za(22))+chr(13)+str(za(23))+chr(13)+str(za(24))+chr(13)+str(za(25))+chr(13)+str(za(26))+chr(13)+str(za(27))+chr(13)+str(za(28))+chr(13)+str(za(29))+chr(13)+str(za(30))+chr(13)+str(za(31))+chr(13)+str(za(32))+chr(13)+str(za(33))+chr(13)+str(za(34))+chr(13)+str(za(35))+chr(13)+str(za(36))+chr(13)+str(za(37))+chr(13)+str(za(38))+chr(13)+str(za(39))+chr(13)+str(za(40))+chr(13)+str(za(41))+chr(13)+str(za(42))+chr(13)+str(za(43))+chr(13)+str(za(44))+chr(13)+str(za(45))+chr(13)+str(za(46))+chr(13)+str(za(47))+chr(13)+str(za(48))+chr(13)+str(za(49))+chr(13)+str(za(50))+chr(13)+str(za(51))+chr(13)+str(za(52))+chr(13)+str(za(53))+chr(13)+str(za(54))+chr(13)+str(za(55))+chr(13)+str(za(56))+chr(13)+str(za(57))+chr(13)+str(za(58))+chr(13)+str(za(59))+chr(13)+str(za(60))+chr(13)+str(za(61))+chr(13)+str(za(62))+chr(13)+str(za(63))+chr(13)+str(za(64))+chr(13)+str(za(65))+chr(13)+str(za(66))+chr(13)+str(za(67))+chr(13)+str(za(68))+chr(13)+str(za(69))+chr(13)+str(za(70))+chr(13)+str(za(71))+chr(13)+str(za(72))+chr(13)+str(za(73))+chr(13)+str(za(74))+chr(13)+str(za(75))+chr(13)+str(za(76))+chr(13)+str(za(77))+chr(13)+str(za(78))+chr(13)+str(za(79))+chr(13)+str(za(80))+chr(13)+str(za(81))+chr(13)+str(za(82))+chr(13)+str(za(83))+chr(13)+str(za(84))+chr(13)+str(za(85))+chr(13)+str(za(86))+chr(13)+str(za(87))+chr(13)+str(za(88))+chr(13)+str(za(89))+chr(13)+str(za(90))+chr(13)+str(za(91))+chr(13)+str(za(92))+chr(13)+str(za(93))+chr(13)+str(za(94))+chr(13)+str(za(95))+chr(13)+str(za(96))+chr(13)+str(za(97))+chr(13)+str(za(98))+chr(13)+str(za(99))
End Sub

```

9.0.102 How to do an asycron DNS lookup?

Plugin Version: all, Platform: Windows.

Answer: use CFHostMBS class (Mac OS X only).

Notes: Xojo internal functions and plugin DNS functions are sycronized.

You can use DNSLookupThreadMBS class for doing them asycron.

9.0.103 How to draw a dushed pattern line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:

Example:

// call like this: DrawDushedPatternLine g,0,0,width,height,10

```

Sub DrawDushedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen

```

```

b=true
x=x1
while (x<x2) and (y<y2)
  ox=x
  oy=y

  x=x+dx
  y=y+dy

  if b then
    g.DrawLine ox,oy,x,y
  end if

  b=not b
wend

```

End Sub

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Xojo code, so it even works on Windows.

9.0.104 How to draw a nice antialiased line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you although it's not perfect.
You need to set lc to the current color you use.

Example:

```

Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as
color)
  dim intX, intY, count, n, xDiff, yDiff as Integer
  dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
  dim c as color

  const st=1.0

  xDiff=xe-xs
  yDiff=ye-ys
  count=max(abs(xDiff), abs(yDiff))
  xStep=xDiff/count
  yStep=yDiff/count

```

```

xx=xs
yy=ys
for n=1 to count
intX=xx
intY=yy
floatX=xx-intX
floatY=yy-intY

v=(1-floatX)*(1-floatY)*st
v1=1-v
c=face.pixel(intX, intY)
face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*(1-floatY)*st
v1=1-v
c=face.pixel(intX+1, intY)
face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=(1-floatX)*floatY*st
v1=1-v
c=face.pixel(intX, intY+1)
face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*floatY*st
v1=1-v
c=face.pixel(intX+1, intY+1)
face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)

xx=xx+xStep
yy=yy+yStep
next

End Sub

```

Notes:

PS: st should be 1 and face should be a RGBSurface or a Graphics object.

9.0.105 How to dump java class interface?

Plugin Version: all, Platforms: macOS, Linux, Windows.

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

Notes: For example show ResultSet class: javap -s java.sql.ResultSet

9.0.106 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this function:

Example:

```
Function Duplicate(extends p as Picture) As Picture
#if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
#endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes: Simply copy it to a module and call it like this: `q = p.duplicate`.

The code above works with old Xojo versions because of the `#if` even if your RS version does not support alpha channel pictures. This way it's future proof.

9.0.107 How to enable assistive devices?

Plugin Version: all, Platform: macOS.

Answer: You can use AppleScript code like below:

Notes: tell application "System Events"
activate

```
set UI elements enabled to true
```

```
return UI elements enabled
end tell
```

You can run this with AppleScriptMBS class.

9.0.108 How to encrypt a file with Blowfish?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")
```

```
// read input
```

```
dim bi as BinaryStream = BinaryStream.Open(fi)
```

```
dim si as string = bi.Read(bi.Length)
```

```
bi.Close
```

```
// encrypt
```

```
dim so as string = BlowfishMBS.Encrypt("MyKey",si)
```

```
// write output
```

```
dim bo as BinaryStream = BinaryStream.Create(fo)
```

```
bo.Write so
```

```
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

9.0.109 How to extract text from HTML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:

Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)
```

MsgBox text // shows: Gr√üë

Notes: You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.

DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like ä to √.

9.0.110 How to find empty folders in a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this code:

Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

9.0.111 How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Platform: macOS.

Answer: You can try Launch Services.

Example:

```
dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.NativePath
```

9.0.112 How to find network interface for a socket by it's name?

Plugin Version: all, Platform: macOS.

Answer: You can use our plugin to build a lookup table.

Example:

```
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
dim IPv4s() as string = n.IPv4s
dim IPv6s() as string = n.IPv6s

for each IPv4 as string in IPv4s
map.Value(IPv4) = n.Name
next
for each IPv6 as string in IPv6s
map.Value(IPv6) = n.Name
next
if n.MAC<>>" then
map.Value(n.MAC) = n.Name
```

```

end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function

```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

9.0.113 How to find version of Microsoft Word?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```

// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.microsoft.Word", "")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion", "")

```

Notes: Older versions of Word can be found with creator code "MSWD".

9.0.114 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Platform: macOS.

Answer: You probably connect with SSL and you have no valid certificate.

Example:

```
dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.NativePath
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
```

Notes: You can either use the code above to disable the SSL verification and have no security. Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:

<http://curl.haxx.se/ca/>

9.0.115 How to format double with n digits?

Plugin Version: all, Platform: macOS.

Answer: You can use the FormatMBS function for this.

Example:

```
dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
```

```
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)
```

Notes: see FormatMBS for details.

In general %f is normal style, %e is scientific and %g is whichever gives best result for given space.

9.0.116 How to get a time converted to user time zone in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.GMTOffset property.

Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

9.0.117 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: This function returns a handle for the frontmost window:

Example:

```
Function GetForegroundWindowHandle() as Integer
#if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
#endif
End Function
```

9.0.118 How to get CFAbsoluteTime from date?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use code like this:

Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianCalendarMBS
g.Day = d.Day
g.Month = d.Month
g.Year = d.Year
g.Minute = d.Minute
g.Hour = d.Hour
g.Second = d.Second

dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value
```

```
MsgBox str(x)
```

Notes: As you see we need a timezone and put the date values in a gregorian date record. Now we can query absolute time for the given timezone.

9.0.119 How to get client IP address on web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.RemoteAddress property.

Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

9.0.120 How to get fonts to load in charts on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.

Example:

```

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype;/usr/share/fonts/truetype/msttcorefonts"
else
// on Mac and Windows we use system fonts.
end if

// also you can later switch default fonts:

dim Chart as CDBaseChartMBS // your chart

#If TargetARM And TargetLinux Then
// use specific fonts on Linux on Raspberry Pi
Call Chart.setDefaultFonts("/usr/share/fonts/truetype/piboto/PibotoLt-Regular.ttf", "/usr/share/fonts/truetype/piboto/Pi
#EndIf

```

Notes: On macOS, iOS and Windows, the fonts are loaded from the system's font folder.

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

9.0.121 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.

Example:

```

dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
// on Mac and Windows we use system fonts.
end if

```

Notes: On Mac OS X and Windows, the fonts are loaded from the system's font folder.

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

9.0.122 How to get GMT time and back?

Plugin Version: all, Platform: macOS.

Answer: You can use the date class and the GMTOffset property.

Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+ " " +str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+" (" +str(d.GMTOffset)+") " +str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+" (" +str(e.GMTOffset)+") " +str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+" (" +str(f.GMTOffset)+") " +str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

9.0.123 How to get good crash reports?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check this website from the webkit website:

Notes: <http://webkit.org/quality/crashlogs.html>

9.0.124 How to get list of all threads?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the runtime module like in this function:

Example:

```
Function Threads() As Thread()
#pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function
```

Notes: This returns an array of all thread objects currently in memory.

The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

9.0.125 How to get parameters from webpage URL in Xojo Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the Webpage.ParametersReceived event.

Example:

```
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->" +Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Xojo 2010r5. Please use DefineEncoding.

9.0.126 How to get the color for disabled textcolor?

Plugin Version: all, Platform: macOS.

Answer: Ask the appearance manager:

Example:

```
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as
Boolean, outColor as Ptr) as Integer
```

```
dim i as Integer
```

```
dim col as MemoryBlock
```

```
col = newMemoryBlock(6)
```

```
i = GetThemeTextColor(inColor, inDepth, inColorDev, col)
```

```
return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
```

```
End Function
```

Notes: The color for this is:

```
const kThemeTextColorDialogInactive = 2.
```

```
c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

9.0.127 How to get the current free stack space?

Plugin Version: all, Platform: macOS.

Answer: You can something like the code below:

Example:

```
Sub ShowStackSize()
```

```
dim threadid as Integer
```

```
dim size as Integer
```

```
declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
```

```
declare function ThreadCurrentStackSize lib "Carbon" (threadid as Integer, byref size as Integer) as short
```

```
if GetCurrentThread(threadid)=0 then
```

```
if 0=ThreadCurrentStackSize(threadid,size) then
```

```
MsgBox str(size)
```

```
end if
```

```
end if
```

End Sub

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use #if if you like for that.

9.0.128 How to get the current timezone?

Plugin Version: all, Platforms: macOS, Windows.

Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:

Example:

```
Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

#if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info
if false then
// bad, because it does not work on Intel Macs:
'offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), &hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
```

```

offset = offset \60
return offset

#endif

#if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// - Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

#endif

End Function

```

9.0.129 How to get the current window title?

Plugin Version: all, Platform: macOS.

Answer: The code below returns the current window title for the frontmost window on Mac OS X if Accessibility services are

Example:

```

Function CurrentWindowTitle() As string
// your application needs permissions for accessibility to make this work!

dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS

```

```

SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function

```

9.0.130 How to get the cursor blink interval time?

Plugin Version: all, Platform: macOS.

Answer: On Mac OS you can use GetCaretTime from the toolbox.

Example:

```
declare function GetCaretTime lib "Carbon" () as Integer
```

```
MsgBox str(GetCaretTime()+ " ticks")
```

Notes: 60 ticks make one second.

9.0.131 How to get the list of the current selected files in the Finder?

Plugin Version: all, Platform: macOS.

Answer:

Use the AppleScript like this one:

```
tell application "finder"
return selection
end tell
```

Which translates into this AppleEvent:

```
Process("Finder").SendAE "core,getd,'—':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"
```

and as Xojo code it looks like this:

Example:

```
dim ae as appleEvent
dim o1 as appleEventObjectSpecifier
dim f as folderItem
dim alist as appleEventDescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItem(i)

dateiname=f.name
// editfield1 with property "multiline=true"!
editfield1.text=editfield1.text + dateiname + chr(13)
next
```

end if

9.0.132 How to get the Mac OS system version?

Plugin Version: all, Platform: macOS.

Answer: The following code queries the value and displays the version number:

Example:

```

dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+" "+str(Second)+" "+str(third)
else
msgbox "Mac OS "+str(First)+" "+str(Second)+" "+str(third)
end if

```

9.0.133 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```

Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)

```

```

For i =Len(s)-1 DownTo 1
s=Left(s,i)+””+Mid(s,i+1)
Next
MsgBox ”Systemversion: Mac OS ” + s
end if

```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

9.0.134 How to get the screensize excluding the task bar?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Notes: Use the Screen class with the available* properties.

9.0.135 How to get the size of the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Notes: Make yourself a class for the WindowRect with four properties:

```

Bottom as Integer
Left as Integer
Right as Integer
Top as Integer

```

Add the following method to your class:

```

Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
#if targetwin32 then
Declare Function GetWindowRect Lib ”user32.dll” (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)

```

```
#endif  
End Sub
```

Good to use for the MDI Master Window!

9.0.136 How to get the source code of a HTMLViewer?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
// for Windows:
```

```
msgbox HTMLViewer1.IEHTMLTextMBS
```

```
// for MacOS with WebKit 2.x:
```

```
msgbox HTMLViewer1.WKWebViewMBS.HTMLText
```

9.0.137 How to get Xojo apps running Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You need to install some require packages.

Notes: You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

9.0.138 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sometimes it may be better to use an extra application to process images.

Notes: A typical 32 bit app made with Xojo can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

9.0.139 How to handle tab key for editable cells in listbox?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this function:

Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event
```

```
Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
```

```

// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function

```

Notes: You call it from CellKeyDown event like this:

```

EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler

```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

9.0.140 How to hard link MapKit framework?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:

Example:

```

Sub ReferenceMapKit()
// just put this in window or app class

#if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
#endif

End Sub

```

Notes: No need to call the method.

Just having it in a window or app, will cause the compiler to hard link the framework.

9.0.141 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.

Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Xojo Web Edition.

9.0.142 How to hide all applications except mine?

Platform: macOS.

Answer: The code below will on Mac OS hide all applications except your one:

Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

9.0.143 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Platform: Windows.

Answer: Set Internet Explorer to silent mode with code like this:

Example:

```
htmlviewer1._ole.Content.value("Silent") = True
```

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

9.0.144 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you want to hide something in a chart, simply assign the kTransparent constant as color.

9.0.145 How to hide the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")
```

```
HideCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

9.0.146 How to insert image to NSTextView or TextArea?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to insert file:

Example:

```
// insert a file to textview
```

```
Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
```

```
// read to file
```

```

dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// build wrapper
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
fileWrapper.preferredFilename = f.name

// make attachment
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(fileAttachment)

// add to a NSTextViewMBS
textview.insertText attributedString

End Sub

```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

9.0.147 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You can use javascript to change the current window's location.

Example:

```

// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""#16""
end if

```

9.0.148 How to keep a movieplayer unclickable?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.

Example:

```
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function
```

9.0.149 How to keep my web app from using 100% CPU time?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Linux and MacOS you can use renice command in the terminal. On Windows use the task manager to reduce priority.

Notes: If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

```
nohup /webapps/MyApp/MyApp &
```

you can simply have a second line saying this:

```
renice 20 $ !
```

which tells the system to lower priority to lowest value for the latest background process.

9.0.150 How to kill a process by name?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can kill a process (or application) by name if you loop over all the processes and kill the one you need.

Example:

```
dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess
```

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

9.0.151 How to know how many CPUs are present?

Plugin Version: all, Platform: macOS.

Answer: Try this function:

Example:

```
Function GetCPUCount() as Integer
Declare Function MPPProcessors Lib "Carbon" () as Integer
```

```
Return MPPProcessors()
End Function
```

Notes: Your app will than need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

9.0.152 How to know the calling function?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use a helper function like this this code:

Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function
```

```
#Pragma BreakOnExceptions false
```

```
try
```

```
// raise a dummy exception
dim r as new NilObjectException
raise r
```

```
catch x as NilObjectException
```

```
// get stack
dim stack() as string = x.Stack
```

```
// pick function name and return
dim name as string = stack(2)
Return name
```

```
end try
End Function
```

Notes: You need to include function names in your application.

9.0.153 How to launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):

Example:

```
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occured"
else

end if
```

9.0.154 How to launch disc utility?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this code:

Example:

```
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.apple.DiskUtility", "")

if f<>Nil then
f.Launch
end if
```

Notes: This works even if people renamed the disc utility or moved it to another folder.

9.0.155 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You may try to embed your changes to the database between two transaction calls.

Example:

```
dim db as Database // some database

db.SQLiteExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLiteExecute "END TRANSACTION"
```

Notes: This can increase speed by some factors.

9.0.156 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Platform: macOS.

Answer: You can use code like this:

Example:

```
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function
```

Notes: The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points.

You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

9.0.157 How to make a window borderless on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this declares:

Example:

```
// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).
```

```
Const SWP_NOMOVE = &H2
Const SWP_FRAMECHANGED = &H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = &H80880000
```

```
Dim styleFlags as Integer
```

```
#If TargetWin32 Then
```

```
Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
```

```
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer
```

```
styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )
```

```
#EndIf
```

9.0.158 How to make an alias using AppleEvents?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
```

```
dim ev as AppleEvent
```

```
dim myResult as boolean
```

```
dim properties as AppleEventRecord
```

```
ev = NewAppleEvent("core", "crel", "MACS")
```

```
ev.MacTypeParam("kocl") = "alis"
```

```
ev.FolderItemParam("to ") = target
```

```
ev.FolderItemParam("insh") = folder
```

```
properties=new AppleEventRecord
```

```

properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

myResult = ev.send
// true on success, false on error
End Sub

```

Notes: Call it like this:

```
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"
```

Seems to not work on Mac OS X 10.6

9.0.159 How to make AppleScripts much faster?

Plugin Version: all, Platform: macOS.

Answer: use "ignoring application responses" like in this example:

```

Notes: on run { fn,fpx,fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx,fpy
end ignoring
end run

```

9.0.160 How to make double clicks on a canvas?

Plugin Version: all, Platform: macOS.

Answer:

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

```
dim doubleClickTime, currentClickTicks as Integer

#if targetMacOS then
Declare Function 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

9.0.161 How to make my Mac not sleeping?

Plugin Version: all, Platform: macOS.

Answer: Just inform the Mac OS about some system activity with code like this:

Example:

```

Sub UpdateSystemActivity()

#if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDAActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)

```

```
// you may react on an error if e is not 0 after the call.
```

```
#endif
End Sub
```

Notes: You may use another constant if you prefer some different behavior. Call it maybe every second.

9.0.162 How to make my own registration code scheme?

Plugin Version: all, Platform: Windows.

Answer: There are excellent articles about how to make a registration code scheme, but you can also simply use our RegistrationEngineMBS class.

Notes: If you need a license text, why not use the one from Xojo as a starting point?

9.0.163 How to make small controls on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:

Example:

```

'/*
** Use the control's default drawing variant. This does not apply to
** Scroll Bars, for which Normal is Large.
**/
const kControlSizeNormal = 0

'/*
** Use the control's small drawing variant. Currently supported by
** the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
** controls.
**/
const kControlSizeSmall = 1

'/*
** Use the control's small drawing variant. Currently supported by
** the Indeterminate Progress Bar, Progress Bar and Round Button
** controls.
**/
const kControlSizeLarge = 2

```

```

'/*
' * Control drawing variant determined by the control's bounds. This
' * ControlSize is only available with Scroll Bars to support their
' * legacy behavior of drawing differently within different bounds.
' */
const kControlSizeAuto = &hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OS-
Type, size as Integer, data as ptr) as short

dim m as MemoryBlock

m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall

Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))

```

9.0.164 How to mark my Mac app as background only?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:

Example:

```

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")

```

Notes: This will set the NSUIElement flag to YES.

9.0.165 How to move a file or folder to trash?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:

Example:

```

Function MoveToTrash(f as FolderItem) As Boolean
#if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFile-
OperationDefaultOptions)

```

```

if e = 0 then
Return true // Ok
end if

#elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent
+ w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
#else
// Target not supported
break
Return false
#endif
End Function

```

Notes: If you want to move a file to trash, you could use `f.movefileto f.trashfolder`, but that will overwrite existing files in the trash. You can use our `MacFileOperationMBS` class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use `WindowsFileCopyMBS` class.
Requires Mac OS X 10.5.

9.0.166 How to move an application to the front using the creator code?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:

Example:

```

dim a as appleevent

a=newappleEvent("misc","actv","ttxt")

```

```
if a.send then
end if
```

Notes: (Code is Mac only)

9.0.167 How to move file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.

Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNT0 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 RNT0 with the new file name. To delete use DELE and the file path.

9.0.168 How to normalize string on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:

Example:

```
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)
```

```
Return m.str  
End Function
```

Notes: This uses Apple's CFString functions to normalize unicode variants.

9.0.169 How to obscure the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub ObscureCursor Lib "Carbon" ()
```

```
ObscureCursor
```

Notes: The MBS Plugin has this function, but it's not supported for Windows.

9.0.170 How to open icon file on Mac?

Plugin Version: all, Platform: macOS.

Answer: Use the NSImageMBS class like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")  
dim n as new NSImageMBS(f)
```

```
window1.Backdrop = n.CopyPictureWithMask
```

9.0.171 How to open PDF in acrobat reader?

Plugin Version: all, Platform: macOS.

Answer: Try this code:

Example:

```
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
```

```

// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if

```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

9.0.172 How to open printer preferences on Mac?

Plugin Version: all, Platform: macOS.

Answer: You can use our OpenMacOSXPreferencesPaneMBS function like this:

Example:

```

dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
MsgBox "OK"
elseif e = -43 then
MsgBox "File not found."
else
MsgBox "Error: "+str(e)
end if

```

9.0.173 How to open special characters panel on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have functions for that in Cocoa and Carbon.

Example:

```
dim a as new NSApplicationMBS
a.orderFrontCharacterPalette
```

Notes: For Cocoa, you can use `orderFrontCharacterPalette` method in `NSApplicationMBS` class.

Or simply for Carbon and Cocoa the `ShowCharacterPaletteMBS` method.

9.0.174 How to optimize picture loading in Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the `WebPicture` class.

Notes: Take your picture and create a `WebPicture` object. Store this `WebPicture` in a property of the `WebPage`, `Session` or `app` (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.

Having pictures in `App` or some module reuses the same picture for all sessions which reduces memory footprint.

This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our `Map` example.

9.0.175 How to parse XML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:

Example:

```
dim s as string = "<test><test /></test>"
```

```
try
```

```

dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try

```

Notes: If you got an exception, you have a parse error.

9.0.176 How to play audio in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the HTML5 audio tag and control it with javascript.

Notes: This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Xojo 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```

audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"

```

```

audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"

```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Than we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

```
dim urlO as string = app.audioFileOGG.URL
dim urlM as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto""><source src="""+urlO+""" type=""audio/ogg""
/><source src="""+urlM+""" type=""audio/mpeg"" />Your browser does not support the audio ele-
ment.</audio>"
```

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once we got the object, we call it's play method to start playback.

```
me.ExecuteJavaScript("document.getElementById('mymusic').play();")
```

same for pause:

```
me.ExecuteJavaScript("document.getElementById('mymusic').pause();")
```

and finally for changing volume:

```
me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+";")
```

9.0.177 How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.

Notes: Learn more here:

<http://docs.xojo.com/index.php/XMLDocument.Transform>

9.0.178 How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.

Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20

```

Notes: And you can use normal graphics class for that.

9.0.179 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS object to query this value:

Example:

```

Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function

```

Notes: Thanks for Josh Hoggan for this example code.

9.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

9.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:

Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow """
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

9.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

9.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:

Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```

if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if

```

Notes: PDFKit works only on Mac OS X.

9.0.184 How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```

dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if

```

9.0.185 How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value. Don't forget to implement the read event and return data there as requested.

9.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90–∞ rotation.

Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90–∞
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

```
c = nil

// show in PDF viewer
destfile.Launch
```

Notes: This code is Mac only as it needs CoreGraphics.

9.0.187 How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:

Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

9.0.188 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.

Notes: The package is called ia32-libs for ubuntu (and others).

Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

9.0.189 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.

Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

9.0.190 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:

Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtf")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
```

```

else
MsgBox e.LocalizedDescription
end if

```

Notes: For TextArea you can query the underlying NSTextViewMBS object via TextArea.NSTextViewMBS method.

9.0.191 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?

Example:

```

Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub

```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

9.0.192 How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Pic-
ture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if

// return result
Return NewPic
End Function

```

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

9.0.193 How to scale a picture proportionally?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

```

Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

```

```

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function

```

Notes: This does not handle mask, but you can scale the mask the same way and assign it to the new picture.
(see other FAQ entry with mask)

9.0.194 How to scale/resize a CIIImageMBS?

Plugin Version: all, Platform: Windows.

Answer: Use the CIFilterLanczosScaleTransform filter to scale down a picture to a specific size.

Example:

```

Dim pic As Picture = LogoMBS(500)
Dim image As CIIImageMBS = CIIImageMBS.imageWithPicture(pic)

Dim filter As New CIFilterLanczosScaleTransformMBS

Const targetWidth = 600.0
Const targetHeight = 400.0

Dim scale As Double = targetHeight / image.Extent.Height
Dim aspect As Double = targetWidth / (image.Extent.Width * scale)

filter.inputImage = image
filter.inputScale = scale
filter.inputAspectRatio = aspect

Dim result As Picture = filter.outputImage.RenderPicture

Backdrop = result

```

Notes: This is same code as our scaleTo convenience method.

9.0.195 How to scale/resize a picture?

Plugin Version: all, Platform: Windows.

Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.

Example:

```
dim Original,Scaled as Picture
```

```
Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)
```

Notes: The plugin ways:

- GraphicsMagick can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure Xojo:

- make a new picture and draw the old one with new size inside.

9.0.196 How to search with regex and use unicode codepoints?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can specify unicode characters in search string with backslash x and digits.

Example:

```
dim r as RegExMbs
dim s as string
dim c as Integer
```

```

s="123 √$√√° ABC 456"

r=new RegExMBS
if r.Compile("√") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile("\xF6") then // finds √ using Unicode codepoint
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

```

9.0.197 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: Try this function:

Example:

```

Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)

```

```

If S=F.name Then
Return True
End If
Next
end if
End if
End Function

```

9.0.198 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You use the pragma cache_size command on the database.

Example:

```

// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"

```

Notes: Default cache size is 2000 pages which is not much.

You get best performance if whole database fits in memory.

At least you should try to have a cache big enough so you can do queries in memory.

You only need to call this pragma command once after you opened the database.

9.0.199 How to set the modified dot in the window?

Plugin Version: all, Platform: macOS.

Answer: Try this declares:

Example:

```

window1.ModifiedMBS=true

```

9.0.200 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the

Example:

```

dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL

```

Notes: See our Create PDF example for the Xojo Web Edition.

9.0.201 How to show Keyboard Viewer programmatically?

Platform: macOS.

Answer: Use Xojo or AppleScript to launch the KeyboardViewerServer.app.

Example:

```

dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-
Support/KeyboardViewerServer.app""
lines.append ""
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose
name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)

a.Compile text
a.Execute

```

Notes: AppleScript code:

```
set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/KeyboardViewerServer.app"
```

```
set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 <(count (application processes whose name is theApplication))
if isRunning then tell application POSIXPath to quit
delay 0.15
```

```
ignoring application responses
tell application POSIXPath to run
end ignoring
```

9.0.202 How to show the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:

Example:

```
Declare Sub ShowCursor Lib "Carbon" ()
```

```
ShowCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

9.0.203 How to shutdown a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","shut","MACS")
if not ae.send then
msgBox "The computer couldn't be shutdown."
end if
```

Notes: Or toolbox call (Attention: This method will stop the computer immediatly: No document asked to be saved, all applications quitting without knowing).

```
Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower
```

9.0.204 How to sleep a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:

Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

9.0.205 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Here a few speed tips:

Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

9.0.206 How to use PDFLib in my RB application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The PDFlib plugin was discontinued in favor of our DynaPDF plugin.

Notes: If you need help to move, please contact us.

9.0.207 How to use quotes in a string?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Just double them.

Example:

```
msgbox "This String contains ""quotes"""
```

9.0.208 How to use Sybase in Web App?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use our MBS Xojo SQL Plugin to connect to a Sybase Database in your web application.

Notes: If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.

The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
SetEnv SYBASE /opt/sybase
```

9.0.209 How to use the Application Support folder?

Plugin Version: all, Platform: macOS.

Answer:

I was saving a registration code for an app to the Preference folder. People on the list have suggested that it would be better in the ApplicationSupportFolder. How do I save the file called CWWPrefs into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

```
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

Example:

```

dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.NativePath

```

Notes:

You may not be able to write there with a normal user account!

9.0.210 How to use the IOPMCopyScheduledPowerEvents function in Xojo?

Plugin Version: all, Platform: macOS.

Answer: You can use the following code which does this using the SoftDeclareMBS class.

Example:

```

Sub Open()
dim c as CFDateMBS
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights

```

```

Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As carrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS
dim m as MemoryBlock

'/*
'* Types of power event
'* These are potential arguments to IOPMSchedulePowerEvent().
'* These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionaryes
'* returned by IOPMCopyScheduledPowerEvents().
'*/
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
'*/
'#define kIOPMAutoWake "wake"
,
'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.

```

```

*/
`#define kIOPMAutoPowerOn "poweron"
,
`/*!
`@define kIOPMAutoWakeOrPowerOn
`@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
`power on, whichever is necessary.
*/
,
`#define kIOPMAutoWakeOrPowerOn "wakepoweron"
`/*!
`@define kIOPMAutoSleep
`@abstract Value for scheduled sleep.
*/
,
`#define kIOPMAutoSleep "sleep"
`/*!
`@define kIOPMAutoShutdown
`@abstract Value for scheduled shutdown.
*/
,
`#define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil
m.Long(8)=type.Handle

if s.CallFunction(3,m) then
Return s.Result
end if
end if
end if

End Function

```

Notes: Requires Mac OS X and to execute root rights.

9.0.211 How to validate a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:

Example:

Function IsGUID(guid as string) As Boolean

dim r as new RegEx

```
r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$ "
```

Return r.Search(guid)<>nil

End Function

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

9.0.212 How to walk a folder hierarchie non recursively?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this one:

Example:

Sub Walk(folder as FolderItem)

dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count

for i as Integer = 1 to c

dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then

// no permission

elseif item.Visible then // only visible

if item.Directory then

folders.Append item

```
else
// work with file here
end if

end if

next

wend
End Sub
```

Notes: As you see we go with a long loop which runs until we don't have more folders to process. We ignore items we can't access due to permission limits. And we only work visible items. If you like, check `folderitem.isBundleMBS` on item to handle packages and applications better on Mac OS X.

9.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Platform: macOS.

Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.

Notes: We splitted the plugin because the Xojo IDE on Windows crashed on compilation.

9.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There are two main reasons.

Notes: 1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.

On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.

In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the temporary files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Next check if you can clear the Xojo caches and that helps. This includes the Xojo Scratch folder and the Plugins & Project caches. Simply locate those folders and delete them. For Windows look in hidden AppData folder in your user folder. For Mac, please check textasciitilde /Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

9.0.215 I want to accept Drag & Drop from iTunes

Plugin Version: all, Platform: macOS.

Answer: You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.

Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub
```

```
Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem
```

```
if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")
```

```

// Parse XML
o=NewCFOBJECTMBSFromXML(NewCFBinaryDataMBS(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then
MsgBox file.NativePath
end if
end if
end if
next
end if
end if
end if
End Sub

```

Notes: The code above inside a window on Xojo 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

9.0.216 I'm drawing into a listbox but don't see something.

Plugin Version: all.

Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position

Example:

```
Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function
```

Notes: Try this in a listbox. The Graphics object there has a clipping and an offset which the plugin doesn't know about.

9.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Platform: macOS.

Answer:

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.

Notes:

See Window.Transition functions.

9.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Platforms: macOS, Linux, Windows.

Answer: Stand alone.

Notes: Xojo compiles all used plugins into the application binary.

Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

9.0.219 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?

Example:

' Window.Open Event of a blank project:

```
dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

9.0.220 Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.

Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.

If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

```
IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class
```

9.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:

Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

9.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:

Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

9.0.223 List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.

Notes: <http://www.monkeybreadsoftware.de/xojo/winerror.shtml>

9.0.224 Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.

Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

9.0.225 My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:

Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error "Premature end of script headers" in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don't have code in app.open, session.open and other events which crashes app right at launch?
- You don't have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

9.0.226 SQLiteDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLiteDatabaseMBS, it must be initialized.

Example:

```
dim d as new SQLiteDatabaseMBS
```

Notes: This happens normally when you use "new SQLiteDatabaseMBS".

But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happened, yet.

So please simply add a line "dim d as new SQLiteDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

9.0.227 Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

Notes:

Xojo seems not to support Textconverters at all on Windows.

9.0.228 The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:

Notes: Cocoa NSObject to Variant:

```

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTime ->QTimeMBS
NSValue with QTimeRange ->QTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

```

- ->*MBS

Variant to Cocoa NSObject:

```

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

```

NSPointMBS ->NSValue with NSPoint
 NSRangeMBS ->NSValue with NSRange
 NSBurnMBS ->NSBurn
 NSViewMBS ->NSView
 NSFontMBS ->NSFont
 NSParagraphStyleMBS ->NSParagraphStyle
 NSAttributedStringMBS ->NSAttributedString
 WebPolicyDelegateMBS ->WebPolicyDelegate
 WebUIDelegateMBS ->WebUIDelegate
 WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
 WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
 NSIndexSetMBS ->NSIndexSet
 QTTimeMBS ->QTTime
 QTTimeRangeMBS ->QTTimeRange
 Array of Variant ->NSArray
 Array of String ->NSArray
 CFStringMBS ->NSString
 CFNumberMBS ->NSNumber
 CFDataMBS ->NSData
 CFURLMBS ->NSURL
 CFArrayMBS ->NSArray
 CFDictionaryMBS ->NSDictionary
 CFBinaryDataMBS ->NSData

Carbon CTypeRef to Variant:

CFDictionaryRef ->Dictionary
 CFStringRef ->String
 CFDataRef ->String
 CFURL ->String
 CFNumber ->Integer/Double/Int64
 CFArray ->Array
 CFDate ->date
 nil ->nil
 CGColorSpace ->CGColorSpaceMBS
 CGColor ->CGColorMBS
 CGImage ->CGImageMBS
 CF* ->CF*MBS

Variant to Carbon CTypeRef:

Dictionary ->CFDictionaryRef
 Boolean ->CFBooleanRef
 Color ->CFNumberRef
 Integer ->CFNumberRef

Int64 ->CFNumberRef
 Single ->CFNumberRef
 Double ->CFNumberRef
 String ->CFStringRef
 Color ->CGColorRef
 Date ->CFDateRef
 nil ->nil
 Memoryblock ->CFDataRef
 FolderItem ->CFURLRef
 Dictionary ->CFDictionaryRef
 Array of Variant/String/Date/Double/Single/Int64/Integer ->CFArray
 CGRectMBS ->CGRect as CFDataRef
 CGSizeMBS ->CGSize as CFDataRef
 CGPointMBS ->CGPoint as CFDataRef
 CGColorMBS ->CGColor
 CGColorSpaceMBS ->CGColorSpace
 CGImageMBS ->CGImage
 CGDataConsumerMBS ->CGDataConsumer
 CGDataProviderMBS ->CGDataProvider
 CF*MBS ->CF*

Strings without encodings should be put into dictionaries as memoryblocks.

9.0.229 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

9.0.230 What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

9.0.231 What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.

Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so”
- libgtk-x11-2.0.so.0”
- /usr/lib/libgtk-x11-2.0.so”
- /usr/lib32/libgtk-x11-2.0.so”
- /usr/lib/libgtk-x11-2.0.so.0”
- /usr/lib32/libgtk-x11-2.0.so.0”

gdk is loaded with this paths:

- libgdk-x11-2.0.so”
- libgdk-x11-2.0.so.0”
- /usr/lib/libgdk-x11-2.0.so”
- /usr/lib32/libgdk-x11-2.0.so”
- /usr/lib/libgdk-x11-2.0.so.0”
- /usr/lib32/libgdk-x11-2.0.so.0”

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

9.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

9.0.233 What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant "SmallSystem" to use for a font name.

For older versions try this code:

Example:

```

Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontName as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock

const smSystemScript = -1

Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style

err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub

```

9.0.234 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.

Notes: With version 15.4 you can build applications for OS X 10.4 and newer.

For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

9.0.235 What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.

Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.

For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

9.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.

Notes: We stopped including 32-bit code for macOS in version 23.1.

Please use older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

9.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Timer is server side and WebTimer client side.

Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

9.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.

Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, Deref, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUNDBAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARDIZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TERMINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREGISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

9.0.239 What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

9.0.240 What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like "This item conflicts with another item of the same name" when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.

Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

9.0.241 What to do with a NSImageCacheException?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for NSExcptionMBS in order to catch this exception.

Notes: You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So 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.

9.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

9.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.

Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.

e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.

If encoding is set to none, it may get confused for non-ascii text.

9.0.244 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetActiveDisplayList.

9.0.245 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

9.0.246 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

9.0.247 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

9.0.248 Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:

Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

9.0.249 Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basically it's not useful. If you want to check whether you have a network, than do a DNS resolve:

Example:

```

// two independent domain names
const domain1 = "www.google.com"
const domain2 = "www.macsw.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if

```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

9.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.

Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

9.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.

Notes: This classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

9.0.252 Where to get information about file formats?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Please visit this web page:

<http://www.wotsit.org>

9.0.253 Where to register creator code for my application?

Plugin Version: all, Platform: macOS.

Answer:

Register at Apple:

<http://developer.apple.com/dev/cftype/information.html>

9.0.254 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins for Xojo until 64bit target is available.

Notes: For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit
- MediaLibrary
- Social
- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

9.0.255 Which plugins are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.

Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

9.0.256 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install DirectX from Microsoft on your Windows.

9.0.257 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.

Notes: This bug is for several older Windows 95 editions.

9.0.258 Why do I hear a beep on keydown?

Plugin Version: all, Platform: Windows.

Answer: When the user presses a key, RB goes through all keydown event handlers till on returns true.

Notes: If no keydown event handler returns true for the key, a beep is performed.

9.0.259 Why does folderitem.item return nil?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Because Xojo fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.

Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

9.0.260 Why doesn't showurl work?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

There are three main reasons:

1. showurl is not supported by Xojo in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

9.0.261 Why don't the picture functions not work on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please make sure libcairo is installed.

Notes: For accessing pictures on Linux, the MBS Plugin relays on the cairo library.

Please install the package if you don't have it already.

Our plugin looks for library called libcairo.so or libcairo.so.2.

9.0.262 Why have I no values in my chart?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You have no data points visible, there may be several reasons:

Notes: For example one of the data values may be infinite or invalid.

Or the scaling may be out of range, so you simply see nothing.

9.0.263 Will application size increase with using plugins?

Plugin Version: all, Platform: Windows.

Answer: All plugins used by your application will be included in the application.

Notes: If you use no plugins, your application will not change size.

And if you use one class from the plugins, your application size will increase by a few kilobytes.

The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

9.0.264 XLS: Custom format string guidelines

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.

Notes: Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

```
#,###.00_); [ Red ] (#,###.00);0.00;"sales "@
```

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.

Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.

```
[ Red ] [ <=100 ] ; [ Blue ] [ >100 ]
```

If the cell value does not meet any of the criteria, then pound signs ("##") are displayed across the width of the cell.

Dates and times

Examples

9.0.265 Xojo doesn't work with your plugins on Windows 98.

Plugin Version: all, Platform: Windows.

Answer: Please upgrade your Windows version.

9.0.266 Xojo or my RB application itself crashes on launch on Mac OS Classic.
Why?

Plugin Version: all.

Answer:

You may check if the application has enough memory to be loaded.

RB should have on Mac OS Classic more than 20 MB of RAM.

I preferred to use 50 MB and for an application a 10 MB partition is a good way to start.

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see <code>Axis.setLabels</code> on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).
xLabel	The bottom x-axis label of the data point.
x2Label	The top x-axis label of the data point.
value	The value of the data point.
accValue	The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
totalValue	The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
percent	The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
accPercent	The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
gpercent	The percentage of the data point based on the total value of all data points in a layer.
dataSet	The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).
dataSetName	The name of the data set to which the data point belongs.
dataItem	The data point number within the data set. The first data point is 0. The nth data point is (n-1).
dataGroup	The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).
dataGroupName	The name of the data group to which the data point belongs.
layerId	The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using <code>Layer.addExtraField</code> , <code>Layer.addExtraField2</code> , <code>BaseChart.addExtraField</code> or <code>BaseChart.addExtraField2</code> .

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
zx	The symbol scale in the x dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by <code>LineStyle.setSymbolScale</code> .

Parameter	Description
slope	The slope of the trend line.
intercept	The y-intercept of the trend line.
corr	The correlation coefficient in linear regression analysis.
stderr	The standard error in linear regression analysis.

Parameter	Description
top	The value of the top edge of the box-whisker symbol.
bottom	The value of the bottom edge of the box-whisker symbol.
max	The value of the maximum mark of the box-whisker symbol.
min	The value of the minimum mark of the box-whisker symbol.
med	The value of the median mark of the box-whisker symbol.

Parameter	Description
high	The high value.
low	The low value.
open	The open value.
close	The close value.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
radius	The radial value of the data point.
value	Same as { radius } . See above.
angle	The angular value of the data point.
x	Same as { angle } . See above.
label	The angular label of the data point.
xLabel	Same as { label } . See above.
name	The name of the layer to which the data point belongs.
dataSetName	Same as { name } . See above.
i	The data point number. The first data point is 0. The nth data point is (n-1).
dataItem	Same as { i } . See above.
z	The symbol scale. Applicable for layers with symbol scales set by Polar-Layer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.
diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.
Parameter	Description
dir	The direction of the vector.
len	The length of the vector.
Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.
Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b]	The thousand separator. Should be a non-alphanumeric character (not 0-9, A-Z, a-z). Use ' '.
textasciitilde ' for no thousand separator. The default is ' '.	
textasciitilde ', which can be modified using BaseChart.setNumberFormat.	
[c]	The decimal point character. The default is '.', which can be modified using BaseChart.setNumberFormat.
[d]	The negative sign character. Use ' '.
textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.	

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6, 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val("x7")
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format #.00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is #.##, and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and add the percentage symbol in the cell.
, (comma)	Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (#) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is #.0,, and the cell value is 12,200,000 then the number 12.2 is displayed.
E- E+ e- e+	Scientific format. The application shall display a number to the right of the "E" symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is #0.0E+0, then the number 12.2E+6 is displayed.
\$ -+/():space	Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (\). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.
\	Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0\!, and the value 3 is in the cell, the value 3! is displayed.
*	Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.
_ (underline)	Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format _(0.0_);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.
"text"	Display whatever text is inside the quotation marks. For example, the format 0.00 "dollars" displays 1.23 dollars when the value 1.23 is in the cell.
@	Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is "Bob "@ Smith" (including quotation marks), and the value "John" is in the cell, the value Bob John Smith is displayed.

[Black] [Green] [White] [Blue] [Magenta] [Yellow] [Cyan] [Red]

To display	As	Use this code
Months	1-12	m
Months	01-12	mm
Months	Jan-Dec	mmm
Months	January-December	mmmm
Months	J-D	mmmmm
Days	1-31	d
Days	01-31	dd
Days	Sun-Sat	ddd
Days	Sunday-Saturday	dddd
Years	00-99	yy
Years	1900-9999	yyyy
Hours	0-23	h
Hours	00-23	hh
Minutes	0-59	m
Minutes	00-59	mm
Seconds	0-59	s
Seconds	00-59	ss
Time	4 AM	h AM/PM
Time	4:36 PM	h:mm AM/PM
Time	4:36:03 P	h:mm:ss A/P
Time	4:36:03.75	h:mm:ss.00
Elapsed time	1:02	[h] :mm
Elapsed time	62:16	[mm] :ss
Elapsed time	3735.80	[ss] .00

To display	As	Use this code
1234.59	1234.6	#####.#
8.9	8.900	#.000
.631	0.6	0.#
12	12.0	#.0#
1234.568	1234.57	#.0#
44.398	44.398	???.???
102.65	102.65	???.???
2.8	2.8	???.???
5.25	5 1/4	# ??/??
5.3	5 3/10	# ??/??
12000	12,000	#,###
12000	12	#,
12400000	12.4	0.0,,