

Windows Toolkit 1.7.1

Windows COM interface and additional functionality on Windows for GNU Octave.

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To download a copy of the GNU Octave Windows package, please visit <https://gnu-octave.github.io/octave-windows/>.

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1 Installing and loading

The Windows toolkit must be installed and then loaded to be used.

It can be installed in GNU Octave directly from octave-forge, or can be installed in an off-line mode via a downloaded tarball.

The toolkit must be then be loaded once per each GNU Octave session in order to use its functionality.

1.1 Windows install

If running in Windows, the package may already be installed, to check run:

```
pkg list windows
```

Otherwise it can be installed by installing the requirements and then using the online or offline install method.

1.2 Online Direct install

With an internet connection available, the Windows package can be installed from octave-forge using the following command within GNU Octave:

```
pkg install -forge windows
```

The latest released version of the toolkit will be downloaded and installed.

1.3 Off-line install

With the Windows toolkit package already downloaded, and in the current directory when running GNU Octave, the package can be installed using the following command within GNU Octave:

```
pkg install windows-1.7.1.tar.gz
```

1.4 Loading

Regardless of the method of installing the Windows toolkit, in order to use its functions, the toolkit must be loaded using the pkg load command:

```
pkg load windows
```

The toolkit must be loaded on each GNU Octave session.

2 Basic Usage Overview

The Windows package must be loaded each time a GNU Octave session is started:

```
pkg load windows
```

The Windows toolkit provides 2 main types of functionality:

COM Interface functions

These are functions that allow interfacing to COM objects.

Windows Utilities

Functions that provide additional functions for windows

2.1 COM objects

2.1.1 Creating a COM object

To create a COM object, you use the `actxserver` function with the name of the object to create.

```
wshell = actxserver ("WScript.Shell");
```

A `octave_com_object` type will be returned that provides an interface to the functions and properties of the object.

To get a list of properties for the object, use the `get` function. Assuming we have the `wshell` object from the previous example:

```
get(wshell)
```

A list of the properties of the object will be displayed.

To get a list of the methods available for the object, use the `methods` function.

```
methods(wshell)
```

2.1.2 Using a COM object

Once a object is created using the `actxserver` function, and you know the methods and properties available, call the properties of methods using the dot notation.

The following example will display the current directory.

```
wshell = actxserver ("WScript.Shell");
wshell.CurrentDirectory
```

Calling functions is performed in the same way.

```
wshell = actxserver ("WScript.Shell");
wshell.Exec("notepad.exe");
```

2.1.3 Releasing COM object

A COM object should be released when it is not going to be used anymore to free any resources it may have allowed.

```
release(wshell);
```

2.2 Windows Utility functions

A number of utility functions are available. See the reference for their usage.

3 Function Reference

The functions currently available in the Windows toolkit are described below:

3.1 Windows Utilities

3.1.1 clipboard

```
clipboard ('copy', data)
txt = clipboard ('paste')
```

Insert or get data from the clipboard.

'copy' or 'paste' is the required operation to perform, where 'copy' will copy data to the clipboard, and 'paste' will paste data from the clipboard to a variable.

data is the data to copy to the clipboard.

txt is the text from the clipboard or an empty string if it can not convert to text..

Examples:

Copy a string to the clipboard:

```
clipboard('copy', 'hello world');
```

Get a string from the clipboard:

```
txt = clipboard('paste');
```

3.1.2 grab

```
[x,y] = grab (axis)
```

Grab positions of landmarks on the screen.

x is the x coordinates of the points.

y is the y coordinates of the points.

axis (optional) if specified then the first 2 clicks must be on the appropriate axes. *x* and *y* (or just *x* if only 2 points specified) will then be normalised.

for example:

```
x=grab([1 10])
```

the first two clicks should correspond to *x*=1 and *x*=10 subsequent clicks will then be normalized to graph units.

for example:

```
[x,y]=grab;
```

gives *x* and *y* in screen pixel units (upper left = 0,0)

Select points by positioning the cursor over the points and clicking <SPACE>. 'q' or <ESC> quits

3.1.3 win32_DeleteRegistry

```
code = win32_DeleteRegistry (key, subkey, valuenamename)
```

Delete a value from the Windows registry.

Example:

```
key='test\\\\\\temp';
# create key
win32_WriteRegistry('HKLM',key,'test_value', 0)
# delete it
```



```
win32_DeleteRegistry('HKLM',key,'test_value')
```

key must be one of the following strings:

```
HKCR      HKEY_CLASSES_ROOT
HKCU      HKEY_CURRENT_USER
HKLM      HKEY_LOCAL_MACHINE
HKU       HKEY_USERS
```

subkey is the subkey to the registry value.

valuename is the name of the value to delete from the registry.

code is the success code. Values correspond to the codes in the winerror.h header file. The code of 0 is success, while other codes indicate failure

3.1.4 win32_MessageBox

```
rv = win32_MessageBox (title, text)
rv = win32_MessageBox (title, text, MboxType)
```

Display a message box using the win32 API.

title MessageBox title string

text MessageBox text string

MBoxType can be an integer or a string.

For integer values, consult <windows.h>

The following string values are recognized:

- MB_OK
- MB_OKCANCEL
- MB_ABORTRETRYIGNORE
- MB_YESNOCANCEL
- MB_YESNO
- MB_RETRYCANCEL

Default is MB_OK

Returns a value *rv*:

- | | |
|----|------------------------|
| 1 | User Clicked OK |
| 2 | User Clicked Cancel |
| 3 | User Clicked Abort i |
| 4 | User Clicked Retry |
| 5 | User Clicked Ignore |
| 6 | User Clicked Yes |
| 7 | User Clicked No |
| 10 | User Clicked Try Again |
| 11 | User Clicked Continue |

3.1.5 win32_ReadRegistry

[*rv*, *code*] = win32_ReadRegistry (*key*, *subkey*, *value*)

Read a value from the Windows registry.

Example:

```
key='SOFTWARE\\Cygnus Solutions\\Cygwin\\mounts v2';
win32_ReadRegistry('HKLM',key,'cygdrive prefix')
```

key must be one of the following strings:

HKCR	HKEY_CLASSES_ROOT
HKCU	HKEY_CURRENT_USER
HKLM	HKEY_LOCAL_MACHINE
HKU	HKEY_USERS

rv is an octave string of the returned bytes. This is a natural format for REG_SZ data; however, if the registry data was in another format, REG_DWORD then the calling program will need to process them

code is the success code. Values correspond to the codes in the winerror.h header file. The code of 0 is success, while other codes indicate failure In the case of failure, 'rv' will be empty

3.1.6 win32_RegEnumKey

[*rv*, *code*] = win32_RegEnumKey (*key*, *subkey*)

Read the keys of a given subkey from the Windows registry.

Example:

```
key='SOFTWARE\\Cygnus Solutions\\Cygwin\\mounts v2';
win32_RegEnumKey('HKLM',key)
```

key must be one of the following strings:

HKCR	HKEY_CLASSES_ROOT
HKCU	HKEY_CURRENT_USER
HKLM	HKEY_LOCAL_MACHINE
HKU	HKEY_USERS

rv is an array of value strings for the name of keys for a given key and subkey.

code is the success code. Values correspond to the codes in the winerror.h header file. The code of 0 is success, while other codes indicate failure In the case of failure, 'rv' will be empty

See also: winqueryreg.

3.1.7 win32_RegEnumValue

[*rv*, *code*] = win32_RegEnumValue (*key*, *subkey*)

Read value names from from the Windows registry.

Example:

```
key='SOFTWARE\\Cygnus Solutions\\Cygwin\\mounts v2';
win32_RegEnumValue('HKLM',key)
```

key must be one of the following strings:

HKCR	HKEY_CLASSES_ROOT
HKCU	HKEY_CURRENT_USER

HKLM HKEY_LOCAL_MACHINE

HKU HKEY_USERS

rv is an array of value strings for the name of values for a given key and subkey.

code is the success code. Values correspond to the codes in the winerror.h header file. The code of 0 is success, while other codes indicate failure. In the case of failure, 'rv' will be empty.

See also: winqueryreg.

3.1.8 win32_WriteRegistry

code = win32_WriteRegistry (*key*, *subkey*, *valuenam*e, *value*)

Write a value to the Windows registry.

Example:

```
key='test\\\\\\temp';
win32_WriteRegistry('HKLM',key,'test_value', 0)
```

key must be one of the following strings:

HKCR HKEY_CLASSES_ROOT

HKCU HKEY_CURRENT_USER

HKLM HKEY_LOCAL_MACHINE

HKU HKEY_USERS

subkey is the subkey to the registry value.

*valuenam*e is the name of the value to write to the registry.

value is the value to write. It must be a string or an integer value.

code is the success code. Values correspond to the codes in the winerror.h header file. The code of 0 is success, while other codes indicate failure.

3.1.9 win32api

rv = win32_MessageBox (*title*, *text*)

rv = win32_MessageBox (*title*, *text*, *MboxType*)

Display a message box using the win32 API.

title MessageBox title string

text MessageBox text string

MBoxType can be an integer or a string.

For integer values, consult <windows.h>

The following string values are recognized:

- MB_OK
- MB_OKCANCEL
- MB_ABORTRETRYIGNORE
- MB_YESNOCANCEL
- MB_YESNO
- MB_RETRYCANCEL

Default is MB_OK

Returns a value *rv*:

1 User Clicked OK

2	User Clicked Cancel
3	User Clicked Abort i
4	User Clicked Retry
5	User Clicked Ignore
6	User Clicked Yes
7	User Clicked No
10	User Clicked Try Again
11	User Clicked Continue

3.1.10 winopen

winopen (*name*)

Open the file or directory *name* in the windows registered application for the file, using shell open command.

Examples:

Open file document.docx in the docx viewer:

```
winopen ("document.docx");
```

Open the current directory in explorer:

```
winopen (pwd);
```

3.2 COM Interface

3.2.1 @octave_com_object/delete

delete (*obj*)

A delete override for octave_com_object objects.

Release interfaces from COM object *obj* and then delete the COM server.

See also: com_delete delete.

3.2.2 @octave_com_object/fieldnames

S = fieldnames (*comobj*)

A fieldnames override for octave_com_object objects.

The function will return a list of property names in *S*.

See also: com_get, get.

3.2.3 @octave_com_object/get

S = get (*obj*)

S = get (*obj*, *propertynames*)

A get override for octave_com_object objects.

When specifying just *obj*, the function will return a list of property names in *S*. When also providing *propertynames*, the function return the values of the properties.

See also: com_get, get.

3.2.4 @octave_com_object/invoke

```
invoke (obj)
S = invoke (obj, methodname)
S = invoke (obj, methodname, arg1, ..., argN)
```

Invoke a method on a COM object.

When called with just the single *obj*, *invoke* displays the methods available to the object. When called with *methodname*, *invoke* will invoke the method with optional args and return the result in *S*.

See also: *com_invoke*, *methods*.

3.2.5 @octave_com_object/isprop

```
S = isprop (comobj, property)
```

A *isprop* override for *octave_com_object* objects.

For a string property, the function will return true or false if the property exists for the com object.

If *property* is a string array, the function will return an array of same size with true/false for each string in the array that is a property.

See also: *fieldnames*.

3.2.6 @octave_com_object/methods

```
methods (obj)
mtds = methods (obj)
```

List the names of the public methods for the object *octave_com_object obj*.

When called with no output arguments, *methods* prints the list of method names to the screen. Otherwise, the output argument *mtds* contains the list in a cell array of strings.

See also: *methods*.

3.2.7 @octave_com_object/release

```
release (obj)
```

Release the COM object *obj* and all of its resources.

See also: *com_release*, *delete*.

3.2.8 @octave_com_object/set

```
S = set (obj, propname, value)
```

A *set* override for *octave_com_object* objects.

Call *set* function on COM object *obj* to set property *propname* to value *value*. Returns any result in *S*.

See also: *com_set*.

3.2.9 actxGetRunningServer

```
h = actxGetRunningServer (progid)
```

Get a running COM server using the *progid* identifier.

Returns *h*, a handle to the default interface of the COM server.

If the server is not already running the function will return an error.

Example:

```
# Get the COM server running Microsoft Excel (If running)
app = actxGetRunningServer ('Excel.Application');
# list the fields
f = fieldnames(app)
```

See also: `actxserver`.

3.2.10 `actxserver`

`h = actxserver (progid)`

Create a COM server using the *progid* identifier.

Returns *h*, a handle to the default interface of the COM server.

Example:

```
# create a COM server running Microsoft Excel
app = actxserver ('Excel.Application');
# free the object
destroy (app);
```

3.2.11 `com_atexit`

`com_atexit ()`

Close down all GNU Octave managed COM handles.

Called during pkg unload.

3.2.12 `com_delete`

`com_delete (obj)`

Release interfaces from COM object *obj* and then delete the COM server

3.2.13 `com_get`

`S = com_get (obj)`

`S = com_get (obj, property)`

Call get function on COM object *obj*. Returns any result in *S*

If no property is provided, all properties will be returned in *S*.

3.2.14 `com_invoke`

`result = com_invoke (obj)`

`result = com_invoke (obj, method)`

Call invoke on *obj* to run a method, or obtain a list of all methods.

`com_invoke (obj)` returns a list of all methods available for object *obj* in *result*.

`com_invoke (obj, method)` invokes *method* method for object *obj* and returns result *result*.

3.2.15 `com_release`

`com_release (obj)`

Release interfaces from COM object *obj*

3.2.16 `com_set`

`S = com_set (obj, propname, value)`

Call set function on COM object *obj* to set property *propname* to value *value*. Returns any result in *S*

3.2.17 iscom

```
tf = iscom (h)
```

Determine whether *h* is a COM object.

if *h* is a COM object, returns true, otherwise returns false.

See also: actxserver.

3.3 Features

3.3.1 windows_feature

```
value = windows_feature (name)
```

```
windows_feature (name, value)
```

Set or get a feature value.

name - name of feature to get or set.

value - value to set for feature.

3.4 Examples

3.4.1 mat2xls

```
mat2xls (obj,filename)
```

Save *obj* as an Excel sheet into the file *filename*. The object *obj* must be either a cell matrix or a real matrix, that is a 2-dimensional object. All elements of the matrix are converted to Excel cells and put into the first worksheet, starting at cell A1. Supported types are real values and strings.

If *filename* does not contain any directory, the file is saved in the current directory.

This function is intended to demonstrate the use of the COM interface within octave. You need Excel installed on your computer to make this function work properly.

Examples:

```
mat2xls (rand (10, 10), 'test1.xls');  
mat2xls ({'This', 'is', 'a', 'string'}, 'test2.xls');
```

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