

# Package ‘RcppOctave’

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**Type** Package

**Title** Seamless Interface to Octave -- and Matlab

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**Description** Direct interface to Octave. The primary goal is to facilitate the port of Matlab/Octave scripts to R. The package enables to call any Octave functions from R and as well as browsing their documentation, passing variables between R and Octave, using R core RNGs in Octave, which ensure stochastic computations are also reproducible.

**License** GPL (>=2)

**URL** <http://r-forge.r-project.org/projects/rcppoctave/>

**LazyLoad** yes

**SystemRequirements** Octave (>= 3.2.4) and its development files

**OS\_type** unix

**Depends** methods, digest, stringr, Rcpp (>= 0.9.4), pkgmaker (>= 0.6.4)

**Imports** utils

**Suggests** RUnit, devtools, knitr, bibtex

**LinkingTo** Rcpp

**Collate** 'devutils.R' 'utils.R' 'package.R' 'interface.R' 'Octave-class.R' 'OctaveFunction-class.R' 'base-functions.R' 'eval.R' 'random.R'

**Repository** R-Forge

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.CallOctave	<i>Calling an Octave Function</i>
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**Description**

.CallOctave calls an Octave function and returns its value.

**Usage**

```
.CallOctave(.NAME, ..., argout = -1,  
  unlist = !is.character(argout))
```

**Arguments**

- |       |  |
|-------|--|
| .NAME | an Octave function name. The function must be a valid function name in the current Octave session. |
| ...   | arguments passed to the Octave function  |

<code>argout</code>	<p>the number of output values, or a vector of names to use as output variable names. The names are directly used and applied to the result list in their original order.</p> <p>The default value <code>argout=-1</code> returns:</p> <ul style="list-style-type: none"> <li>• all output values when their number can be determined. This would typically be the case for functions defined in <code>.m</code> files. Please do read section <i>Details</i> for considerations about the functions that use <code>varargout</code>.</li> <li>• only the first one otherwise.</li> </ul>
<code>unlist</code>	<p>a logical that specifies if an output list of length one should be simplified and returned as a single value or kept as a list. The default is to unlist unless output names were passed in <code>argout</code>.</p>

**Value**

the value returned by the Octave function – converted into standard R objects.

**Examples**

```
# data matrix
x <- matrix(1:9, 3)

# call Octave function 'svd': equivalent to [S] = svd(x). See o_help(svd)
.CallOctave('svd', x)

# call Octave function 'svd' asking for 3 output values: [U, S, V] = svd(x)
.CallOctave('svd', x, argout=3)

# call Octave function 'svd' asking for 3 named output values: [U, S, V] = svd(x)
.CallOctave('svd', x, argout=c('U', 'S', 'V'))
```

---

*.DollarNames, Octave-method*

*Auto-completion for **Octave** objects*

---

**Description**

Auto-completion for **Octave** objects

**Usage**

```
## S4 method for signature 'Octave'
.DollarNames(x, pattern = "")
```

**Arguments**

<code>x</code>	An R object for which valid names after "\$" are computed and returned.
<code>pattern</code>	A regular expression. Only matching names are returned.

---

`.O` *Direct Interface to Octave*

---

## Description

RcppOctave provides a simple interface to Octave via the object `.O`, an instance of class `Octave`, that allows for direct access to Octave functions and variables using calls such as: `.O$svd(matrix(1:9,3))`.

## Usage

```
.O

## S4 method for signature 'Octave'
x$name

## S4 replacement method for signature 'Octave'
x$name <- value
```

## Arguments

<code>x</code>	object from which to extract element(s) or in which to replace element(s).
<code>name</code>	A literal character string or a <a href="#">name</a> (possibly <a href="#">backtick</a> quoted). For extraction, this is normally (see under ‘Environments’) partially matched to the <a href="#">names</a> of the object.
<code>value</code>	typically an array-like R object of a similar class as <code>x</code> .

## Format

`.O` is an object of class [Octave](#).

## Methods

`$` signature(`x = "Octave"`): The method `$` provides a direct way of calling Octave functions or retrieving variables from Octave base context, via e.g. `.O$svd(x)` or `.O$a`. It is equivalent to `o_get(name)`.

`$<=` signature(`x = "Octave"`): The method `$<=` allow to directly assign/set Octave variables via e.g. `.O$a <- 10`.

## See Also

[o\\_get](#)

**Examples**

```
.0
# assign/get Octave variables
.0$a <- 10
.0$a

# call Octave functions
.0$help()
.0$svd(matrix(runif(9), 3))
```

check.equal

*Compare Lists or Environments***Description**

This function compares two lists or environments. It is useful for comparing results obtained in R and Octave.

**Usage**

```
check.equal(x, y, msg)
```

**Arguments**

x	a list or an environment
y	a list or an environment
msg	a character string used (if not missing) in a message that is printed before the comparison. It is useful for separating multiple sequential comparisons.

**Value**

No value is returned, but prints out:

- the element/variable names of each input list or environment,
- the result of the comparison of the elements in x and the corresponding element in y – if present.

**Examples**

```
X <- matrix(1:64, 8)
ref <- svd(X)
res <- .0$svd(X,argout=3)

check.equal(ref, res, "R and Octave function 'svd'")
```

---

ostart

*Low-level Function Interfacing with Octave*


---

## Description

ostart Initialize an Octave session.

oend clears and terminates the current Octave session.

overbose toggles the verbosity of RcppOctave calls: messages tracks any function call, or conversion of objects between R and Octave (e.g. arguments and results).

oconfig retrieves Octave configuration variables.

omodules add the Octave modules shipped with RcppOctave to Octave path.

## Usage

```
ostart(verbose = FALSE)
```

```
oend()
```

```
overbose(value)
```

```
oconfig(varname, verbose = FALSE, warn = TRUE)
```

```
omodules(verbose = getOption("verbose"))
```

## Arguments

verbose	logical value used as the initial verbosity status.
value	logical value to toggle verbosity
varname	Name (as a character string) of the Octave configuration variable to retrieve. It is used in following system call ‘octave-config -p <varname>’. This function is vectorised and returns a character vector of the same length as its argument.
warn	logical that indicates if a warning should be thrown when a variable is returned empty, which generally means that x is not a valid config variable name.

## See Also

OctaveConfig

**Description**

Adds a directory at the beginning of Octave search path.

**Usage**

```
o_addpath(DIR1, ..., OPTION = "-begin")
```

**Arguments**

DIR1	path specification to add to Octave search path. See section <i>Octave Documentation</i> .
...	other path specifications
OPTION	option that specifies how the path should be added. Possible values are: '-begin', 0, '-end', 1. See section <i>Octave Documentation</i> .

**Details**

The .oct files present in directories from the search path are looked up when an object or function is requested but not loaded in the current session. The files are watched and automatically reloaded in case modification.

**Value**

returns invisibly the old value of search path.

**Octave Documentation for *addpath***

'addpath' is a built-in function

```
-- Built-in Function:  addpath (DIR1, ...)
-- Built-in Function:  addpath (DIR1, ..., OPTION)
    Add DIR1, ... to the current function search path.  If OPTION is
    "-begin" or 0 (the default), prepend the directory name to the
    current path.  If OPTION is "-end" or 1, append the directory
    name to the current path.  Directories added to the path must
    exist.
```

See also: path, rmpath, genpath, pathdef, savepath, pathsep

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command

'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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## See Also

Other Octave\_files: [o\\_source](#)

## Examples

```
# call an undefined function
try(CallOctave('fun1'))

# add to the path a directory with a .oct file that contains a definition for 'fun1'
o_addpath(system.file('scripts', package='RcppOctave'))

# re-call the function
#.CallOctave('fun1')

# change the .oct file
```

---

o\_assign

*Assign/Get Octave Variables*

---

## Description

o\_assign assigns a variable in Octave. o\_assignin is an alias for o\_assign.

o\_get fetches Octave variables/functions and possibly rename them on the fly with the provided argument names when present. Functions are returned as objects of class [OctaveFunction](#), that can be called subsequently (see the examples).

## Usage

```
o_assign(...)
```

```
o_assignin(...)
```

```
o_get(..., unlist = TRUE, rm.ans = TRUE, pattern)
```

## Arguments

...	variables to assign in Octave global context for o_assign , or object names to retrieve from Octave for o_get.
unlist	a logical that specifies it single variables should be returned as a single value (default), or as a list.



rm.ans	a logical that indicates if the automatic Octave variable ans should be included in the result. Default is not to include it unless otherwise explicitly specified with this argument, or if it is part of the requested variables in . . . . When present, argument rm.ans is always honoured.
pattern	regular expression used to filter the requested variable names. Only names matching the pattern are returned.

### Details

o\_assign assigns the variables using the arguments' names if present. Variables can also be specified as a single named list or environment. Single variable assignments can also be specified as o\_assign('a', 10). See *Examples* for more details.

### Value

o\_assign returns invisibly the names of the assigned variables.

o\_get returns a list of the retrieved variable/object. If unlist=TRUE and a single – not re-named – variable/object is requested then only its value is returned.

### Octave Documentation for *assignin*

'assignin' is a built-in function

```
-- Built-in Function:  assignin (CONTEXT, VARNAME, VALUE)
    Assign VALUE to VARNAME in context CONTEXT, which may be either
    "base" or "caller".
```

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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### Note

The function o\_get is the equivalent of R [get](#) function and is not related to the Octave function get which returns graphics' properties.

### Examples

```
## directly assign variables
o_assign(a=1, b=2, c=matrix(1:9, 3))
# retrieve their values
```

```

o_get()

## assign a variable for each element in a list
x <- list(a=10, b=20, c=matrix(101:109, 3))
o_assign(x)
o_get()

## assign the content of an environment
e <- list2env(setNames(x, paste('env', names(x), sep='_')))
o_assign(e)
o_get(pattern="^env_")

# get all currently defined variables
o_get()

# by default, the automatic variable 'ans' is not returned but might be there
# from unstored previous computation
o_eval('svd(rand(3,3))')
o_get()
o_get(rm.ans=FALSE)

# load some variables
x <- list(b=1, c=3, d=matrix(1:9, 3))
o_assign(x)

# re-fetch all variables
o_get()

# only fetch specific variables
o_get('b')
o_get('b', 'c')
# one can rename variables on the fly
o_get(a='b', 'c')
o_get(c(othername='b'))
o_get(c(othername='b', 'c'))

# fetching using a regular expression
o_assign( setNames(1:3, paste("test", 1:3, sep='_')))
o_get()
o_get(pattern="^test")

# works with functions
f <- o_get('svd')
f
f(matrix(1:9,3))
f(matrix(1:9,3), argout=3)

# an error is thrown in the case of multiple matches (the alternatives are shown)
o_clear()

```

```
o_assign(aaa=1, ab=2)
try(o_get('a'))
```

o\_clear

*Deleting Octave Variables***Description**

Deletes variables from Octave global context.

The function `o_rm` is an alias to `o_clear`.

**Usage**

```
o_clear(..., all = FALSE, options)
```

```
o_rm(..., all = FALSE, options)
```

**Arguments**

<code>...</code>	names or pattern of the variables to delete, as character strings.
<code>all</code>	a logical indicating whether all user-defined objects should be deleted. See section <i>Octave Documentation</i> for details.
<code>options</code>	options passed to Octave function <code>clear</code> . See section <i>Octave Documentation</i> .

**Value**

None

**Octave Documentation for *clear***

‘clear’ is a built-in function

```
-- Command: clear [options] pattern ...
```

Delete the names matching the given patterns from the symbol table. The pattern may contain the following special characters:

```
‘?’
```

Match any single character.

```
‘*’
```

Match zero or more characters.

```
‘[ LIST ]’
```

Match the list of characters specified by LIST. If the first character is ‘!’ or ‘^’, match all characters except those specified by LIST. For example, the pattern ‘[a-zA-Z]’ will match all lower and upper case alphabetic characters.

For example, the command

```
clear foo b*r
```

clears the name 'foo' and all names that begin with the letter 'b' and end with the letter 'r'.

If 'clear' is called without any arguments, all user-defined variables (local and global) are cleared from the symbol table. If 'clear' is called with at least one argument, only the visible names matching the arguments are cleared. For example, suppose you have defined a function 'foo', and then hidden it by performing the assignment 'foo = 2'. Executing the command 'clear foo' once will clear the variable definition and restore the definition of 'foo' as a function. Executing 'clear foo' a second time will clear the function definition.

The following options are available in both long and short form  
'-all, -a'

Clears all local and global user-defined variables and all functions from the symbol table.

'-exclusive, -x'

Clears the variables that don't match the following pattern.

'-functions, -f'

Clears the function names and the built-in symbols names.

'-global, -g'

Clears the global symbol names.

'-variables, -v'

Clears the local variable names.

'-classes, -c'

Clears the class structure table and clears all objects.

'-regexp, -r'

The arguments are treated as regular expressions as any variables that match will be cleared.

With the exception of 'exclusive', all long options can be used without the dash as well.

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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## Examples

```
# Assign a variable in Octave
o_assign('a', 10)
o_who()

# Clear
o_clear()
o_who()

# Assign other variables in Octave
.O$a <- 10
.O$b <- 100
.O$ba <- 1000
o_who()
o_get()

# Clear variable starting with 'b'
o_clear('b*')
o_who()
```

---

o\_eval

---

*Evaluate an Octave Expression*


---

## Description

Evaluates an Octave expression in the current embedded Octave session. The variables assigned in the expression are available for subsequent o\_eval calls.

## Usage

```
o_eval(..., CATCH, unlist = TRUE)
```

## Arguments

...	The Octave expression(s) to evaluate, as a character string.
CATCH	The Octave expression(s) to evaluate if the evaluation(s) of ... fails. See section <i>Octave Documentation</i> for more details.
unlist	a logical that specifies if single variables should be returned as a single value (default), or as a list.

**Value**

the result of the evaluation

**Octave Documentation for *evalin***

‘evalin’ is a built-in function

```
-- Built-in Function:  evalin (CONTEXT, TRY, CATCH)
    Like ‘eval’, except that the expressions are evaluated in the
    context CONTEXT, which may be either “caller” or “base”.
```

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command ‘doc <topic>’ to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**Examples**

```
# assign some variable
o_eval("a=10")

# retrieve its value in a subsequent call
o_eval("a")

o_get('a')

# use its value
o_eval("b = a^2")

# multiple expression can be evaluated
o_eval(a="10^3", singular="svd(rand(4,4))", random="rand(10, 1)")
# or from a list
l <- list(a="10^3", singular="svd(rand(4,4))", random="rand(10, 1)")
o_eval(l)

# if the evaluation fails then an error is thrown
## Not run:  o_eval("a=svd()")

# except if argument CATCH is provided
o_eval("a=svd()", CATCH="a=2")
```

## Description

`o_help` retrieves the Octave help page associated with a given symbol. By default the page is printed out, but may also be silently retrieved or formatted for direct inclusion in R documentation files (i.e. Rd files).

`o_doc` displays documentation for the function `FUNCTION_NAME` directly from an on-line version of the printed manual, using the GNU Info browser. Type ‘q’ to quit the browser.

## Usage

```
o_help(NAME, character.only = FALSE, show = TRUE,
       rd = FALSE)
```

```
o_doc(FUNCTION_NAME)
```

## Arguments

NAME	Octave symbol (e.g. command, function, operator) passed to Octave function help to retrieve the related documentation.
character.only	a logical indicating whether NAME can be assumed to be a character string (TRUE) or should be substituted with <a href="#">substitute</a> before using them (default).
show	logical that specifies if the help page should be shown using the as R documentation file (default), e.g. using a pager, or only returned as a single string. Note that when show=TRUE, the string is still returned but invisibly.
rd	a logical that specifies if the result should be returned in a suitable way for including in Rd files. If TRUE, it wraps the Octave documentation string in Rd code that is rendered as in the Octave console.
FUNCTION_NAME	the name of the function from which to show the documentation. See the relevant <i>Octave Documentation</i> section below.

## Value

this function is usually called for its side effect of printing the help page on standard output (argument show=TRUE), but it invisibly returns the help page as a single character string.

## Octave Documentation for *help*

‘help’ is a function from the file `/usr/share/octave/3.2.4/m/help/help.m`

```
-- Command: help NAME
```

```
Display the help text for NAME. If invoked without any arguments,
‘help’ prints a list of all the available operators and functions.
```

For example, the command 'help help' prints a short message describing the 'help' command.

The help command can give you information about operators, but not the comma and semicolons that are used as command separators. To get help for those, you must type 'help comma' or 'help semicolon'.

See also: doc, lookfor, which

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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### **Octave Documentation for *doc***

'doc' is a function from the file /usr/share/octave/3.2.4/m/help/doc.m

-- Command: doc FUNCTION\_NAME

Display documentation for the function FUNCTION\_NAME directly from an on-line version of the printed manual, using the GNU Info browser. If invoked without any arguments, the manual is shown from the beginning.

For example, the command 'doc rand' starts the GNU Info browser at the 'rand' node in the on-line version of the manual.

Once the GNU Info browser is running, help for using it is available using the command 'C-h'.

See also: help

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**Examples**

```

o_help(print)
o_help(rand)
# or equivalently
o_help('rand')

# to include in Rd files, use argument rd=TRUE in an \Sexpr:
# \Sexpr[results=rd,stage=render]{RcppOctave::o_help(rand,rd=TRUE)}

# to see the included Rd code
o_help(rand, rd=TRUE)
o_doc(text)
# or equivalently
o_doc('text')
```

---

o_identity	<i>Octave Identity Function</i>
------------	---------------------------------

---

**Description**

This function calls the Octave function provided by the module shipped with RcppOctave. It Returns its arguments unchanged, and is mainly used to test and check the effect of object conversions between R and Octave.

**Usage**

```
o_identity(...)
```

**Arguments**

...                      any R object supported by RcppOctave.

**Value**

its argument – list – after its conversion from R to Octave and from Octave to R.

**Examples**

```

o_identity(1L)
o_identity(1:10)
o_identity(matrix(1:10, 2,5))

o_identity(1)
o_identity(runif(10))
o_identity(matrix(runif(10), 2,5))
```

o\_load

*Loading Variables into Octave***Description**

Loads variables from a file, a list or an environment.

**Usage**

```
o_load(from, ..., options)
```

**Arguments**

from	a list or an environment from where the objects should be loaded
...	names of the variables to load
options	argument passed to the Octave function load. See section <i>Octave Documentation</i> .

**Octave Documentation for *load***

‘load’ is a built-in function

```
-- Command: load file
-- Command: load options file
-- Command: load options file v1 v2 ...
-- Command: S = load("options", "file", "v1", "v2", ...)
Load the named variables V1, V2, ..., from the file FILE. If no
variables are specified then all variables found in the file will
be loaded. As with ‘save’, the list of variables to extract can
be full names or use a pattern syntax. The format of the file is
automatically detected but may be overridden by supplying the
appropriate option.
```

If load is invoked using the functional form

```
load ("--option1", ..., "file", "v1", ...)
```

then the OPTIONS, FILE, and variable name arguments (V1, ...) must be specified as character strings.

If a variable that is not marked as global is loaded from a file when a global symbol with the same name already exists, it is loaded in the global symbol table. Also, if a variable is marked as global in a file and a local symbol exists, the local symbol is moved to the global symbol table and given the value from the file.

If invoked with a single output argument, Octave returns data

instead of inserting variables in the symbol table. If the data file contains only numbers (TAB- or space-delimited columns), a matrix of values is returned. Otherwise, 'load' returns a structure with members corresponding to the names of the variables in the file.

The 'load' command can read data stored in Octave's text and binary formats, and MATLAB's binary format. If compiled with zlib support, it can also load gzip-compressed files. It will automatically detect the type of file and do conversion from different floating point formats (currently only IEEE big and little endian, though other formats may be added in the future).

Valid options for 'load' are listed in the following table.

'-force'

This option is accepted for backward compatibility but is ignored. Octave now overwrites variables currently in memory with those of the same name found in the file.

'-ascii'

Force Octave to assume the file contains columns of numbers in text format without any header or other information. Data in the file will be loaded as a single numeric matrix with the name of the variable derived from the name of the file.

'-binary'

Force Octave to assume the file is in Octave's binary format.

'-hdf5'

Force Octave to assume the file is in HDF5 format. (HDF5 is a free, portable binary format developed by the National Center for Supercomputing Applications at the University of Illinois.) Note that Octave can read HDF5 files not created by itself, but may skip some datasets in formats that it cannot support.

'-import'

This option is accepted for backward compatibility but is ignored. Octave can now support multi-dimensional HDF data and automatically modifies variable names if they are invalid Octave identifiers.

'-mat'

'-mat-binary'

'-6'

'-v6'

'-7'

```

'-v7'
    Force Octave to assume the file is in MATLAB's version 6 or 7
    binary format.

'-mat4-binary'
'-4'
'-v4'
'-V4'
    Force Octave to assume the file is in the binary format
    written by MATLAB version 4.

'-text'
    Force Octave to assume the file is in Octave's text format.

See also: save, dlmwrite, csvwrite, fwrite

```

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

*[Generated from Octave-3.2.4 on 2012-06-25 20:19:30]*

## Examples

```

# Loading from a MATLAB/Octave file
#o_load

# Loading from an R list
o_clear()
l <- list(a=1, b=20, c=runif(10), d="this is a string", e=matrix(1:15, 3, 5))
o_load(l)

# Loading from an R environment
o_load( list2env(l) )

# Partial loading
o_clear()
o_load(l, a, b, c)
o_clear()
o_load(list2env(l), d, e)

```

## Description

The function `o_ls` is an enhanced listing function, which also lists user-defined functions, as opposed to `o_who` or `o_whos`, which only list variables. Note that this function works properly on Octave  $\geq 3.6.1$ , but is known not to list user-defined functions on Octave 3.4.1 (for some unknown reason the Octave function `completion_matches` does not return the names of user-defined functions).

## Usage

```
o_ls(long = FALSE, rm.ans = TRUE)
```

## Arguments

<code>rm.ans</code>	a logical that indicates if the automatic Octave variable <code>ans</code> should be included in the result. Default ( <code>TRUE</code> ) is not to include it.
<code>long</code>	logical that indicates the desired type of output: if <code>FALSE</code> (default) then only the names of the variables are returned (like dispatched <code>o_who</code> ), otherwise a list with more detailed information about each variable is returned (like <code>o_whos</code> ).

## Value

a character vector or a list depending on the value of argument `long`.

## See Also

Other listoct: [o\\_who](#), [o\\_whos](#)

## Examples

```
# only variables
o_assign(list(a=1, b=2, c=5))
o_ls()
# compare with the output of standard Octave functions
o_who() # should be the same output
o_whos()

# variables and user-defined functions
o_clear(all=TRUE) # first clear Octave session
o_source(system.file('scripts/ex_source.m', package='RcppOctave'))
o_ls()
o_ls(long=TRUE)
# compare with the output of standard Octave functions
o_who()
o_whos()
```

o\_rexp

*Drawing from R Exponential Distribution in Octave***Description**

This function wraps a call to the standard Octave function `rande`, which is redefined by `RcppOctave` to call the R base function `rexp`. This enables to exactly reproduce stochastic computations in R and Octave, without changing the original Octave/Matlab code. See `o_runif` for more details.

**Usage**

```
o_rexp(n, p = n)
```

**Arguments**

<code>n</code>	number of output rows
<code>p</code>	number of output columns (default to <code>n</code> )

**Octave Documentation for *rande***

'rande' is a function from the file `/tmp/Rtmp8f8S7Q/Rinst3af869130fd6/RcppOctave/modules/Rrng.oct`

USAGE: `E = rande( n [, k])`

Generates standard-exponential random variates as R function 'rexp' -- using the current RNG from R.

Possible calls:

`rande(n, k)` returns `n*k` matrix with uncorrelated  $E(0, 1)$  deviates drawn in columns

`rande(n)` returns `n*n` matrix with uncorrelated  $E(0, 1)$  deviates drawn in columns

NOTE:

This function substitutes Octave original function in calls from `RcppOctave`

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command '`doc <topic>`' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**See Also**

rexp

Other orandom: [o\\_rgamma](#), [o\\_rnorm](#), [o\\_runif](#)**Examples**

```
# Draw random exponential values (in vector form)
set.seed(123)
o_rexp(1)
o_rexp(1, 10)

# Draw random normal values (in matrix form)
set.seed(123)
o_rexp(2)
o_rexp(2, 5)
```

o\_rgamma

*Drawing from R Gamma Distribution in Octave***Description**

This function wraps a call to the standard Octave function `randg`, which is redefined by `RcppOctave` to call the R base function [rgamma](#). This enables to exactly reproduce stochastic computations in R and Octave, without changing the original Octave/Matlab code. See [o\\_runif](#) for more details.

**Usage**

```
o_rgamma(n, p = n, shape = 1, scale = 1)
```

**Arguments**

shape	Mean of the Gamma distribution
scale	Scale of the Gamma distribution
n	number of output rows
p	number of output columns (default to n)

**Octave Documentation for *randg***

'randg' is a function from the file `/tmp/Rtmp8f8S7Q/Rinst3af869130fd6/RcppOctave/modules/Rrng.oct`

USAGE: `E = randg( n [, k, shape, scale])`

Generates Gamma random variates as R function 'rgamma' -- using the current RNG from R.

Possible calls:

`randg(shape)` returns a single draw from  $G(\text{shape}, 1)$

```
randg(shape, n) returns n*n matrix with uncorrelated G(shape, 1) deviates drawn in columns
randg(shape, n, p) returns n*p matrix with uncorrelated G(shape, 1) deviates drawn in columns
randg(shape, n, p, scale) returns n*p matrix with uncorrelated G(shape, scale) deviates drawn in columns
```

**NOTE:**

This function substitutes Octave original function in calls from RcppOctave

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**See Also**

rgamma

Other orandom: [o\\_rexp](#), [o\\_rnorm](#), [o\\_runif](#)

**Examples**

```
# Draw random gamma values (in vector form)
set.seed(123)
o_rgamma(1)
o_rgamma(1, 10)

# Draw random gamma values (in matrix form)
set.seed(123)
o_rgamma(2)
o_rgamma(2, 5)

# Draw random gamma values with shape and scale parameters
o_rgamma(1, 5, shape=2)
o_rgamma(1, 10, scale=0.5)
```

---

o\_rnorm

*Drawing from R Normal Distribution in Octave*

---

**Description**

This function wraps a call to the standard Octave function `randn`, which is redefined by RcppOctave to call the R base function [rnorm](#). This enables to exactly reproduce stochastic computations in R and Octave, without changing the original Octave/Matlab code. See [o\\_runif](#) for more details.



**Usage**

```
o_rnorm(n, p = n)
```

**Arguments**

n	number of output rows
p	number of output columns (default to n)

**Octave Documentation for *randn***

'randn' is a function from the file /tmp/Rtmp8f8S7Q/Rinst3af869130fd6/RcppOctave/modules/Rrng.oct

USAGE: N = randn( n [, k])

Generates standard-normal random variates as R function 'rnorm' -- using the current RNG from R.

Possible calls:

randn(n, k) returns a n\*k matrix with uncorrelated N(0, 1) deviates drawn in columns

randn(n) returns a n\*n matrix with uncorrelated N(0, 1) deviates draw in columns

NOTE:

This function substitutes Octave original function in calls from RcppOctave

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

*[Generated from Octave-3.2.4 on 2012-06-25 20:19:31]*

**See Also**

rnorm

Other orandom: [o\\_rexp](#), [o\\_rgamma](#), [o\\_runif](#)

**Examples**

```
# Draw random normal values (in vector form)
set.seed(123)
o_rnorm(1)
o_rnorm(1, 10)

# Draw random normal values (in matrix form)
set.seed(123)
```

```
o_rnorm(2)
o_rnorm(2, 5)
```

---

o\_runif

*Drawing from R Uniform Distribution in Octave*

---

## Description

This function wraps a call to the standard Octave function `rand`, which is redefined by `RcppOctave` to call the R base function `runif`. This enables to exactly reproduce stochastic computations in R and Octave, without changing the original Octave/Matlab code.

## Usage

```
o_runif(n, p = n)
```

## Arguments

n	number of output rows
p	number of output columns (default to n)

## Value

a numeric vector or a matrix

## Difference with plain `runif`

Since calling `o_runif` or `runif` is equivalent, this function may not be really useful for the end user, and is defined for testing purposes essentially. One possible advantage over plain `runif` however, is that it can generate random matrices, instead of only vectors (see examples).

## Seeding

Because the RNG of R is called used, seeding computations is achieved by a standard call to `set.seed`.

## Octave details

`RcppOctave` defines a set of functions like `rand` that shadow Octave built-in functions. These functions are defined in the Octave module `Rrng.oct` that is stored in the package `modules/` sub-directory (call `OctaveConfig()` to see the exact path to this location).

**Octave Documentation for *rand***

'rand' is a function from the file /usr/lib/octave/3.2.4/oct/x86\_64-pc-linux-gnu/rand.oct

USAGE: U = rand( n [, k])

Generates uniform random variates as R function 'runif' -- using the current RNG from R.

Possible calls:

rand(n, k) returns a n\*k matrix with uncorrelated U(0, 1) deviates drawn in columns

rand(n) returns a n\*n matrix with uncorrelated U(0, 1) deviates drawn in columns

NOTE:

This function substitutes Octave original function in calls from RcppOctave

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**See Also**

runif

Other orandom: [o\\_rexp](#), [o\\_rgamma](#), [o\\_rnorm](#)

**Examples**

```
# Draw random uniform values (in vector form)
set.seed(123)
o_runif(1)
o_runif(1, 10)
# The result is identical as calling runif
set.seed(123)
runif(1)
runif(10)

# Draw random uniform values (in matrix form)
set.seed(123)
o_runif(2)
o_runif(2, 5)
```

o\_source

*Sourcing Octave/Matlab Files***Description**

This function sources an Octave file within the current Octave session. The loaded functions are accessible by subsequent calls of [.CallOctave](#).

**Usage**

```
o_source(file = "", text = NULL, sep = ";\n")
```

**Arguments**

file	the path to the Octave/Matlab source file – typically with extension ".m".
text	a character vector containing <i>Octave</i> statements, that are concatenated in a temporary file, which is then sourced. This argument typically enables the evaluation of multiple statements, as opposed to single statement evaluation performed by <a href="#">o_eval</a> .
sep	single character string added as suffix to each element of text. The concatenation of all suffixed element should form a valid <i>Octave</i> block.

**Value**

None

**Octave Documentation for *source***

‘source’ is a built-in function

```
-- Built-in Function:  source (FILE)
    Parse and execute the contents of FILE.  This is equivalent to
    executing commands from a script file, but without requiring the
    file to be named ‘FILE.m’.
```

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command ‘doc <topic>’ to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**See Also**

Other Octave\_files: [o\\_addpath](#)

**Examples**

```
# source file
mfile <- system.file("scripts/ex_source.m", package='RcppOctave')
o_source(mfile)

# pass multiple statements
o_source(text="a=1;b=3;c=randn(1,5);")
o_get('a','b','c')

# also works with a character vector of statements
o_source(text=c("a=10;b=30;", "c=randn(1,5)", "d=4"))
o_get('a','b','c','d')
```

---

o\_version

*Get Octave Version*

---

**Description**

Returns the version of Octave currently used by RcppOctave.

**Usage**

```
o_version()
```

**Value**

Octave version as a single character string

**Examples**

```
o_version()
```

o\_who

*Listing Octave Variables***Description**

Lists currently defined variables in Octave global context.

**Usage**

```
o_who(..., options, rm.ans = FALSE, unique = TRUE)
```

**Arguments**

...	filtering patterns or extra arguments passed to o_who and o_whos. Only names matching any of the patterns are returned.
rm.ans	a logical that indicates if the automatic Octave variable ans should be included in the result (FALSE) or removed (TRUE).
options	options passed to Octave function who. See section <i>Octave Documentation</i> .
unique	a logical that indicates whether unique names should be returned. This argument is relevant in the case multiple patterns are specified in ...

**Value**

None

**Octave Documentation for *who***

‘who’ is a built-in function

```
-- Command: who
-- Command: who pattern ...
-- Command: who option pattern ...
-- Command: C = who("pattern", ...)
```

List currently defined variables matching the given patterns.  
Valid pattern syntax is the same as described for the ‘clear’  
command. If no patterns are supplied, all variables are listed.  
By default, only variables visible in the local scope are  
displayed.

The following are valid options but may not be combined.

```
‘global’
    List variables in the global scope rather than the current
    scope.

‘-regexp’
```

The patterns are considered to be regular expressions when matching the variables to display. The same pattern syntax accepted by the 'regexp' function is used.

'-file'

The next argument is treated as a filename. All variables found within the specified file are listed. No patterns are accepted when reading variables from a file.

If called as a function, return a cell array of defined variable names matching the given patterns.

See also: whos, regexp

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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## See Also

Other listoct: [o\\_ls](#), [o\\_whos](#)

## Examples

```
o_who()
l <- as.list(setNames(1:10, letters[1:10]))
o_assign(l)
o_who()

prefnames <- paste('pref', letters[1:10], sep='')
o_assign( setNames(l, prefnames) )
o_who()
o_who('pref*')
```

**Description**

The function `o_whos` returns a detailed description of the variables defined in the current Octave session.

**Usage**

```
o_whos(..., options, rm.ans = FALSE)
```

**Arguments**

<code>...</code>	filtering patterns or extra arguments passed to <code>o_who</code> and <code>o_whos</code> . Only names matching any of the patterns are returned.
<code>options</code>	options passed to Octave function <code>who</code> . See section <i>Octave Documentation</i> .
<code>rm.ans</code>	a logical that indicates if the automatic Octave variable <code>ans</code> should be included in the result (FALSE) or removed (TRUE).

**Octave Documentation for *whos***

‘whos’ is a built-in function

```
-- Command: whos
-- Command: whos pattern ...
-- Command: whos option pattern ...
-- Command: S = whos("pattern", ...)
    Provide detailed information on currently defined variables
    matching the given patterns. Options and pattern syntax are the
    same as for the ‘who’ command. Extended information about each
    variable is summarized in a table with the following default
    entries.
```

Attr	Attributes of the listed variable. Possible attributes are:
blank	Variable in local scope
‘g’	Variable with global scope
‘p’	Persistent variable
Name	The name of the variable.
Size	The logical size of the variable. A scalar is 1x1, a vector is 1xN or Nx1, a 2-D matrix is MxN.



**Bytes**

The amount of memory currently used to store the variable.

**Class**

The class of the variable. Examples include double, single, char, uint16, cell, and struct.

The table can be customized to display more or less information through the function 'whos\_line\_format'.

If 'whos' is called as a function, return a struct array of defined variable names matching the given patterns. Fields in the structure describing each variable are: name, size, bytes, class, global, sparse, complex, nesting, persistent.

See also: who, whos\_line\_format

Additional help for built-in functions and operators is available in the on-line version of the manual. Use the command 'doc <topic>' to search the manual index.

Help and information about Octave is also available on the WWW at <http://www.octave.org> and via the [help@octave.org](mailto:help@octave.org) mailing list.

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**See Also**

Other listoct: [o\\_ls](#), [o\\_who](#)

**Examples**

```
.0$a <- 1
.0$b <- 10
o_whos()

o_eval("sqrt(2)")
o_whos()
```

**Description**

Interfacing R with Octave.

**Details**

Package:	RcppOctave
Type:	Package
Version:	1.0
Date:	2011-11-01
License:	GPL (>= 2)
LazyLoad:	yes

**Author(s)**

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Maintainer: Renaud Gaujoux <renaud@cbio.uct.ac.za>

**References**

Eaton JW (2002). *\_GNU Octave Manual\_*. Network Theory Limited. ISBN 0-9541617-2-6, <URL: <http://www.octave.org/>>.

**See Also**

See [.CallOctave](#), [o\\_source](#), [o\\_help](#)

**Examples**

```
.CallOctave('svd', matrix(1:9, 3))  
o_help('svd')
```

---

show, Octave-method	<i>Show method for <a href="#">Octave</a> objects</i>
---------------------	---

---

**Description**

Show method for [Octave](#) objects

**Usage**

```
## S4 method for signature 'Octave'  
show(object)
```

**Arguments**

object	Any R object
--------	--------------

---

sourceExamples	<i>Loading Example M-files</i>
----------------	--------------------------------

---

**Description**

Source an example M-file in the sub-directory “scripts/” of RcppOctave installation.

**Usage**

```
sourceExamples(file)
```

**Arguments**

file	filename of the example script to source. If missing, the function lists all the m-files from the “scripts/” sub-directory.
------	---

**Examples**

```
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