

# Package ‘sig’

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**Type** Package

**Title** Print Function Signatures

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**Description** Print function signatures and find overly complicated code.

**URL** <https://bitbucket.org/richierocks/sig>

**BugReports** <https://bitbucket.org/richierocks/sig/issues>

**Depends** R (>= 2.15.0)

**License** Unlimited

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**Collate** 'sig.R' 'list\_sigs.R' 'as.R' 'is.R' 'sig\_report.R'  
'indexing.R' 'utils.R' 'write\_sigs.R'

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## Contents

as.list.sig . . . . .	2
as.sig . . . . .	3
as.siglist . . . . .	4
backquote . . . . .	5
exponential_cut . . . . .	5

fix_fn_names . . . . .	6
is.sig . . . . .	7
is.siglist . . . . .	7
list_sigs . . . . .	8
pkg2env . . . . .	9
print_engine . . . . .	9
sig . . . . .	10
sig_report . . . . .	11
source_to_new_env . . . . .	13
toString.sig . . . . .	14
toString.siglist . . . . .	14
write_sigs . . . . .	15
[ . . . . .	16

<b>Index</b>	<b>18</b>
--------------	-----------

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as.list.sig	<i>Convert to list</i>
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---

## Description

Strips class attributes to return a list.

## Usage

```
## S3 method for class 'sig'
as.list(x, ...)

## S3 method for class 'siglist'
as.list(x, ...)

## S3 method for class 'sigreport'
as.list(x, ...)
```

## Arguments

x	sig, siglist or sigreport object.
...	Passed from other as.list methods.

## Value

A list.

## Examples

```
as.list(sig(read.csv))
head(as.list(list_sigs(pkg2env(stats))))
as.list(sig_report(baseenv()))
```

---

as.sig	<i>Coerce object to be a sig</i>
--------	----------------------------------

---

**Description**

Coerces an object to be a sig.

**Usage**

```
as.sig(x, ...)  
  
## Default S3 method:  
as.sig(x, ...)  
  
## S3 method for class 'siglist'  
as.sig(x, ...)  
  
## S3 method for class 'list'  
as.sig(x, ...)  
  
## S3 method for class 'sig'  
as.sig(x, ...)
```

**Arguments**

x	Object to coerce.
...	Passed to other as.sig methods.

**Value**

An object of class sig.

**See Also**

[as.siglist](#)

**Examples**

```
as.sig(  
  list(name = "fun", alist(x =, y = 1))  
)
```

---

as.siglist	<i>Coerce object to be a siglist</i>
------------	--------------------------------------

---

### Description

Coerces an object to be a siglist.

### Usage

```
as.siglist(x, ...)  
  
## S3 method for class 'sig'  
as.siglist(x, ...)  
  
## S3 method for class 'list'  
as.siglist(x, ...)  
  
## S3 method for class 'siglist'  
as.siglist(x, ...)
```

### Arguments

x	Object to coerce.
...	Passed to other as.siglist methods.

### Value

An object of class siglist.

### See Also

[as.sig](#)

### Examples

```
as.siglist(list(  
  sig(mean),  
  list(name = "fun", alist(x =, y = 1))  
))
```

---

backquote	<i>Wrap in backquotes</i>
-----------	---------------------------

---

**Description**

Wraps strings in backquotes.

**Usage**

```
backquote(x)
```

**Arguments**

x                    A character vector.

**Value**

A character vector.

**Note**

Existing backquote characters are escaped with a backslash.

**See Also**

[sQuote](#)

**Examples**

```
## Not run:  
backquote(c("foo bar", "a`b`c"))  
  
## End(Not run)
```

---

exponential_cut	<i>Cut with exponential breaks</i>
-----------------	------------------------------------

---

**Description**

Wrapper to cut for positive integers.

**Usage**

```
exponential_cut(x)
```

**Arguments**

x                    A vector of positive integers.

**Value**

A factor.

**Note**

The breaks are 1, 2, 3 to 4, 5 to 8, etc. No input checking is done; use at your peril.

**See Also**

[cut](#)

**Examples**

```
## Not run:  
exponential_cut(c(1:10, 500))  
  
## End(Not run)
```

---

fix_fn_names	<i>Fix names for sigs</i>
--------------	---------------------------

---

**Description**

Make anonymous functions and special functions safe.

**Usage**

```
fix_fn_names(fn_name)
```

**Arguments**

fn\_name            A character vector.

**Value**

A character vector.

**Note**

Strings beginning with “function” are given the value “. . anonymous . .”.  
Special function names are wrapped in backquotes.

**Examples**

```
## Not run:
fix_fn_names(c("%foo%", "?", "foo bar", "repeat", "function"))

## End(Not run)
```

---

is.sig	<i>Is the input a sig?</i>
--------	----------------------------

---

**Description**

Does the input inherit from “sig”?

**Usage**

```
is.sig(x)
```

**Arguments**

x                    Object to test.

**Value**

TRUE if the object inherits from class “sig”, and FALSE otherwise.

**Examples**

```
stopifnot(
  is.sig(sig(with)),
  !is.sig(with)     #functions are not their signatures.
)
```

---

is.siglist	<i>Is the input a siglist?</i>
------------	--------------------------------

---

**Description**

Does the input inherit from “siglist”?

**Usage**

```
is.siglist(x)
```

**Arguments**

x                    Object to test.

**Value**

TRUE if the object inherits from class “siglist” and `is.sig` returns TRUE for each element of the input, and FALSE otherwise.

**Examples**

```
stopifnot(
  !is.siglist(sig(with))    #1 sig is not a siglist.
)
```

---

list_sigs	<i>List the signatures of all functions</i>
-----------	---------------------------------------------

---

**Description**

Lists the signatures of all functions in an environment or file.

**Usage**

```
list_sigs(x, pattern = NULL, ...)

## Default S3 method:
list_sigs(x, pattern = NULL, ...)

## S3 method for class 'sig'
list_sigs(x, pattern = NULL, ...)

## S3 method for class 'character'
list_sigs(x, pattern = NULL, ...)
```

**Arguments**

x	An environment or the the path to a file.
pattern	An optional regular expression. Only names matching pattern are returned.
...	Currently ignored

**Value**

An object of class `siglist`, which is a list of `sig` objects.

**Examples**

```
#From a package
list_sigs(pkg2env(graphics))
#Just functions beginning with 'a'.
list_sigs(pkg2env(graphics), pattern = "^a")
#From a file
list_sigs(system.file("extdata", "sample.R", package = "sig"))
```

---

pkg2env	<i>Get environment of a package.</i>
---------	--------------------------------------

---

**Description**

Utility function to get the environment of a package on the search path.

**Usage**

```
pkg2env(pkg)
```

```
pkg2env_(pkg)
```

**Arguments**

pkg            A package.

**Value**

the environment corresponding to pkg.

**See Also**

[list2env](#)

**Examples**

```
# Non-standard evaluation version
pkg2env(graphics)

# Standard evaluations versions
pkg2env_("tools")
pkg2env_(~ utils)
pkg2env_(quote(stats))
```

---

print_engine	<i>Workhorse of the print methods</i>
--------------	---------------------------------------

---

**Description**

Wraps toString methods with cat.

**Usage**

```
print_engine(x, ...)
```

**Arguments**

x	Object to print
...	Passed to toString.

**Value**

The input is invisibly returned, but the function is mostly invoked for the side effect of printing the object.

**Note**

Not intended for general consumption. This function is only exported because of package build requirements.

---

sig	<i>Generate a function signature object</i>
-----	---------------------------------------------

---

**Description**

Generates a signature object for a function.

**Usage**

```
sig(fn, name_override, ...)

## Default S3 method:
sig(fn, ...)

## S3 method for class 'character'
sig(fn, ...)

## S3 method for class 'call'
sig(fn, ...)

## S3 method for class 'formula'
sig(fn, ...)

## S3 method for class 'name'
sig(fn, ...)
```

**Arguments**

fn	A function.
name_override	Override the default function name. See examples.
...	For possible additional future arguments, currently unused.

**Value**

A list, with the elements

- name The name of the function.
- args The arguments of the function.

**Note**

Anonymous functions are given the name `"..anonymous.."`.

Nonstandard names (`"foo bar"`), assignment fns (`"foo<-"`), operators (`"` in backquotes).

**Examples**

```
sig(R.Version)           #no args
sig(scan)                 #lots of args
sig(function(x, y) {x + y}) #anonymous
sig(sum)                  #primitive

sig("sd")                 #string input
sig("function(x, y) {x + y}")
sig(~ prod)               #formula input
sig(~ function(x, y) {x + y})
sig(quote(paste0))        #name input
sig(quote(function(x, y) {x + y}))

fn_list <- list(
  mean = mean,
  var = var
)
lapply(fn_list, sig)      #names are a mess
Map(                       #use Map for lists
  sig,
  fn_list,
  names(fn_list)          #Map mangles names, so override
)
```

---

 sig\_report

*Summarise function complexity of a file or environment*


---

**Description**

Summarise function complexity of a file or environment

**Usage**

```

sig_report(x, ...)

## Default S3 method:
sig_report(x, ...)

## S3 method for class 'environment'
sig_report(
  x,
  too_many_args = 10,
  too_many_lines = 50,
  length_metric = c("deparse", "body"),
  ...
)

## S3 method for class 'character'
sig_report(x, ...)

## S3 method for class 'sigreport'
print(x, ...)

```

**Arguments**

<code>x</code>	A path to an R file or an environment.
<code>...</code>	Passed to <code>sig_report.environment</code> .
<code>too_many_args</code>	Upper bound for a sensible number of args.
<code>too_many_lines</code>	Upper bound for a sensible number of lines.
<code>length_metric</code>	Either "deparse" or "body". See note.

**Details**

`sig_report` summarises the number of input arguments and the number of lines of each function in an environment of file, and identifies problem files, in order to help you refactor your code. If the input is a path to an R file, then that file is sourced into a new environment and the report is generated from that. The number of lines of code that a function takes up is subjective in R; this function gives you a choice of `length(deparse(fn))` or `length(body(fn))`, depending upon the value of `length_metric`. The body metric tends to give smaller values than `deparse`, so you may want to reduce the `too_many_lines` argument.

**Value**

An object of class "sigreport" with the elements:

- `n_vars` Number of variables.
- `n_fns` Number of functions.
- `n_args` Table of the number of args of each function.
- `too_many_args` Upper bound for a sensible number of args.

- `fns_with_many_args` Names of each function with more args than `too_many_args`.
- `n_lines` Table of the number of lines of each function body.
- `too_many_lines` Upper bound for a sensible number of lines.
- `long_fns` Names of each function with more lines than `too_many_lines`.

## Examples

```
# Summarize function complexity in an environment
sig_report(pkg2env(stats))
# Summarize function complexity in a file

# From a file
tmp <- tempfile(fileext = ".R")
dump("scan", tmp)
sig_report(tmp)

# From an environment, adjusting the cutoff for reporting
sig_report(
  baseenv(),
  too_many_args = 20,
  too_many_lines = 100
)
# Alternate length metric
sig_report(baseenv(), length_metric = "body")
```

---

`source_to_new_env`      *Source a file into a new environment.*

---

## Description

Silently sources a file into a new environment, returning that environment.

## Usage

```
source_to_new_env(file, encoding = getOption("encoding"))
```

## Arguments

<code>file</code>	a file to source.
<code>encoding</code>	character encoding of that file.

## Value

An environment containing the sourced variables.

---

toString.sig	<i>Print a sig object</i>
--------------	---------------------------

---

**Description**

Prints a function signature object.

**Usage**

```
## S3 method for class 'sig'
toString(x, width = getOption("width"), exdent = nchar(x$name), ...)
```

```
## S3 method for class 'sig'
print(x, width = getOption("width"), exdent = nchar(x$name), ...)
```

**Arguments**

x	An object of class sig.
width	Width of string to display.
exdent	Non-negative integer specifying the indentation of subsequent lines in the string.
...	Passed to toString

**Value**

toString creates a string representation of a function signature. print is mostly invoked for the side effect of printing a function signature, invisibly returning its input.

**Examples**

```
print_default_sig <- sig(print.default)
print(print_default_sig)
print(print_default_sig, width = 40)
print(print_default_sig, width = 40, exdent = 2)
toString(print_default_sig)
```

---

toString.siglist	<i>Print a siglist object</i>
------------------	-------------------------------

---

**Description**

Prints a list of function signature objects.

**Usage**

```
## S3 method for class 'siglist'
toString(x, width = getOption("width"), ...)

## S3 method for class 'siglist'
print(x, width = getOption("width"), ...)
```

**Arguments**

x	An object of class siglist.
width	Width of string to display.
...	Passed to the equivalent sig method.

**Value**

toString creates a string representation of a function signature. print is mostly invoked for the side effect of printing a function signature, invisibly returning its input.

**Examples**

```
method_sigs <- list_sigs(pkg2env(methods))
print(method_sigs)
print(method_sigs, width = 40)
print(method_sigs, width = 40, exdent = 2)
toString(method_sigs)
```

---

write\_sigs

*Write sigs to file*

---

**Description**

Writes a list of function signatures to a file.

**Usage**

```
write_sigs(x, file = stdout(), ...)

## Default S3 method:
write_sigs(x, file = stdout(), ...)

## S3 method for class 'siglist'
write_sigs(x, file = stdout(), ...)

## S3 method for class 'list'
write_sigs(x, file = stdout(), ...)

## S3 method for class 'environment'
```

```
write_sigs(x, file = stdout(), ...)

## S3 method for class 'character'
write_sigs(x, file = stdout(), ...)
```

### Arguments

x	A list of function signatures. See details.
file	A file path or connection to write the output to (stdout by default).
...	passed to toString.siglist.

### Details

Where x is an object of class siglist, the function essentially calls writeLines(tostring(x)). If the input is a single function signature (of class sig), then it is coerced into a siglist. If the input is an environment or path to a file, then list\_sigs is called on the input before writing.

### Value

A character vector of the lines that were written to file is invisibly returned. Mostly invoked for the side effect of writing function signatures to a file.

### Examples

```
#Step by step:
#First, list some sigs.
utils_sigs <- list_sigs(pkg2env(utils))
#Without a file argument, sigs are just printed to the console.
head(write_sigs(utils_sigs))
#Write to a file
tmpf <- tempfile("sig", fileext = ".R")
write_sigs(utils_sigs, tmpf)
#Open the file we've just written
readLines(tmpf, n = 6)
#Can also list and write in one line.
tmpf2 <- tempfile("sig", fileext = ".R")
write_sigs(pkg2env(grDevices), tmpf2)
#Single sigs are coerced to siglists
write_sigs(sig(stats::var))
```

[

*Indexing for siglists*

### Description

Get or set a subset of a siglist.

**Usage**

```
## S3 method for class 'siglist'
x[i, ...]

## S3 method for class 'siglist'
x[[i, ...]]

## S3 replacement method for class 'siglist'
x[...] <- value

## S3 replacement method for class 'siglist'
x[[...]] <- value
```

**Arguments**

x	A siglist object.
i	An integer vector index.
...	Passed from other index methods.
value	A value to set the subset to.

**Value**

A siglist.

**See Also**

[Extract](#)

**Examples**

```
methods_sigs <- list_sigs(pkg2env(methods))
methods_sigs[1:5]
methods_sigs[[1]]
```

# Index

[, 16  
[<-.siglist ([], 16  
[[.siglist ([], 16  
[[<-.siglist ([], 16  
  
as.list.sig, 2  
as.list.siglist (as.list.sig), 2  
as.list.sigreport (as.list.sig), 2  
as.sig, 3, 4  
as.siglist, 3, 4  
  
backquote, 5  
  
cut, 6  
  
exponential\_cut, 5  
Extract, 17  
Extract.siglist ([], 16  
  
fix\_fn\_names, 6  
  
is.sig, 7  
is.siglist, 7  
  
list2env, 9  
list\_sigs, 8  
  
pkg2env, 9  
pkg2env\_ (pkg2env), 9  
print.sig (toString.sig), 14  
print.siglist (toString.siglist), 14  
print.sigreport (sig\_report), 11  
print\_engine, 9  
  
sig, 10  
sig\_report, 11  
source\_to\_new\_env, 13  
sQuote, 5  
  
toString.sig, 14  
toString.siglist, 14  
  
write\_sigs, 15