

# Package ‘logging’

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**Version** 0.10-111

**Title** R Logging Package

**Description** Pure R implementation of the ubiquitous log4j package. It offers hierarchic loggers, multiple handlers per logger, level based filtering, space handling in messages and custom formatting.

**URL** <https://github.com/WLOGSolutions/r-logging>

**BugReports** <https://github.com/WLOGSolutions/r-logging/issues>

**License** GPL-3

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logging-package	<i>A tentative logging package.</i>
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## Description

A logging package emulating the Python logging package.

What you find here behaves similarly to what you also find in Python. This includes hierarchic loggers, multiple handlers at each logger, the possibility to specify a formatter for each handler (one default formatter is given), same levels (names and numeric values) as Python's logging package, a simple logging.BasicConfig function to quickly put yourself in a usable situation...

This package owes a lot to my employer, r-forge, the stackoverflow community, Brian Lee Yung Rowe's futile package (v1.1) and the documentation of the Python logging package.

## Details

Index:

basicConfig bootstrapping the logging package  
 addHandler add a handler to a logger  
 getLogger set defaults and get current values for a logger  
 removeHandler remove a handler from a logger  
 setLevel set logging.level for a logger

To use this package, include logging instructions in your code, possibly like this:

```
library(logging)
basicConfig()
addHandler(writeToFile, logger="company", file="sample.log")
loginfo("hello world", logger="")
logwarn("hello company", logger="company.module")
```

The basicConfig function adds a console handler to the root logger, while the explicitly called addHandler adds a file handler to the 'company' logger. the effect of the above example is two lines on the console and just one line in the sample.log file.

The web pages for this package on r-forge are kept decently up to date and contain a usable tutorial. Check the references.

## References

the python logging module: <https://docs.python.org/3/library/logging.html>  
 this package at github: <https://github.com/WLOGSolutions/r-logging/>

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`bootstrapping`*Bootstrapping the logging package.*

---

### Description

`basicConfig` and `logReset` provide a way to put the logging package in a known initial state.

### Usage

```
basicConfig(level = 20)
```

```
logReset()
```

### Arguments

<code>level</code>	The logging level of the root logger. Defaults to INFO. Please do notice that this has no effect on the handling level of the handler that <code>basicConfig</code> attaches to the root logger.
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### Details

`basicConfig` creates the root logger, attaches a console handler (by `basic.stdout` name) to it and sets the level of the handler to `level`. You must not call `basicConfig` for the logger to work any more: then the root logger is created it gets initialized by default the same way as `basicConfig` does. If you need clear the logger to fill with your own handlers use `logReset` to remove all default handlers.

`logReset` reinitializes the whole logging system as if the package had just been loaded except it also removes all default handlers. Typically, you would want to call `basicConfig` immediately after a call to `logReset`.

### Examples

```
basicConfig()
logdebug("not shown, basic is INFO")
logwarn("shown and timestamped")
logReset()
logwarn("not shown, as no handlers are present after a reset")
```

---

`getHandler`*Retrieves a handler from a logger.*

---

### Description

Handlers are not uniquely identified by their name. Only within the logger to which they are attached is their name unique. This function is here to allow you to grab a handler from a logger so you can examine and alter it.

Typical use of this function is in `setLevel(newLevel, getHandler(...))`.

**Usage**

```
getHandler(handler, logger = "")
```

**Arguments**

handler	The name of the handler, or its action.
logger	Optional: the name of the logger. Defaults to the root logger.

**Value**

The retrieved handler object. It returns NULL if handler is not registered.

**Examples**

```
logReset()
addHandler(writeToConsole)
getHandler("basic.stdout")
```

---

getLogger

*Set defaults and get the named logger.*

---

**Description**

Make sure a logger with a specific name exists and return it as a *Logger S4* object. if not yet present, the logger will be created and given the values specified in the ... arguments.

**Usage**

```
getLogger(name = "", ...)
```

**Arguments**

name	The name of the logger
...	Any properties you may want to set in the newly created logger. These have no effect if the logger is already present.

**Value**

The logger retrieved or registered.

**Examples**

```
getLogger() # returns the root logger
getLogger('test.sub') # constructs a new logger and returns it
getLogger('test.sub') # returns it again
```

---

handlers-management    *Add a handler to or remove one from a logger.*

---

### Description

Use this function to maintain the list of handlers attached to a logger.

addHandler and removeHandler are also offered as methods of the *Logger S4* class.

### Usage

```
addHandler(handler, ..., logger = "")
```

```
removeHandler(handler, logger = "")
```

### Arguments

handler	The name of the handler, or its action
...	Extra parameters, to be stored in the handler list ... may contain extra parameters that will be passed to the handler action. Some elements in the ... will be interpreted here.
logger	the name of the logger to which to attach the new handler, defaults to the root logger.

### Details

Handlers are implemented as environments. Within a logger a handler is identified by its *name* and all handlers define at least the three variables:

**level** all records at level lower than this are skipped.

**formatter** a function getting a record and returning a string

**action(msg, handler)** a function accepting two parameters: a formatted log record and the handler itself. making the handler a parameter of the action allows us to have reusable action functions.

Being an environment, a handler may define as many variables as you think you need. keep in mind the handler is passed to the action function, which can check for existence and can use all variables that the handler defines.

### Examples

```
logReset()
addHandler(writeToConsole)
names(getLogger()[["handlers"]])
loginfo("test")
removeHandler("writeToConsole")
logwarn("test")
```

---

inbuilt-actions	<i>Predefined(sample) handler actions</i>
-----------------	---

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### Description

When you define a handler, you specify its name and the associated action. A few predefined actions described below are provided.

### Usage

```
writeToConsole(msg, handler, ...)
```

```
writeToFile(msg, handler, ...)
```

### Arguments

<code>msg</code>	A formatted message to handle.
<code>handler</code>	The handler environment containing its options. You can register the same action to handlers with different properties.
<code>...</code>	parameters provided by logger system to interact with the action.

### Details

A handler action is a function that accepts a formatted message and handler configuration.

Messages passed are filtered already regarding loglevel.

`...` parameters are used by logging system to interact with the action. `...` can contain *dry* key to inform action that it meant to initialize itself. In the case action should return TRUE if initialization succeeded.

If it's not a dry run `...` contain the whole preformatted *logging.record*. A *logging.record* is a named list and has following structure:

**msg** contains the real formatted message

**level** message level as numeric

**levelname** message level name

**logger** name of the logger that generated it

**timestamp** formatted message timestamp

`writeToConsole` detects if crayon package is available and uses it to color messages. The coloring can be switched off by means of configuring the handler with *color\_output* option set to FALSE.

`writeToFile` action expects file path to write to under *file* key in handler options.

### Examples

```
## define your own function and register it with a handler.
## author is planning a sentry client function. please send
## any interesting function you may have written!
```

---

logging-entrpoints    *Entry points for logging actions*

---

## Description

Generate a log record and pass it to the logging system.

## Usage

```
logdebug(msg, ..., logger = "")
logfinest(msg, ..., logger = "")
logfiner(msg, ..., logger = "")
logfine(msg, ..., logger = "")
loginfo(msg, ..., logger = "")
logwarn(msg, ..., logger = "")
logerror(msg, ..., logger = "")
levellog(level, msg, ..., logger = "")
```

## Arguments

msg	the textual message to be output, or the format for the ... arguments
...	if present, msg is interpreted as a format and the ... values are passed to it to form the actual message.
logger	the name of the logger to which we pass the record
level	The logging level

## Details

A log record gets timestamped and will be independently formatted by each of the handlers handling it.

Leading and trailing whitespace is stripped from the final message.

## Examples

```
logReset()
addHandler(writeToConsole)
loginfo('this goes to console')
```

```
logdebug('this stays silent')
```

---

loglevels	<i>The logging levels, names and values</i>
-----------	---

---

### Description

This list associates names to values and vice versa.  
Names and values are the same as in the python standard logging module.

### Usage

```
loglevels
```

### Format

An object of class numeric of length 11.

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resetMsgComposer	<i>Resets previously set message composer.</i>
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---

### Description

Resets previously set message composer.

### Usage

```
resetMsgComposer(container = "")
```

### Arguments

container	name of logger to reset message composer for (type: character)
-----------	--

---

setLevel	<i>Set logging.level for the object.</i>
----------	--

---

### Description

Alter an existing logger or handler, setting its *logging.level* to a new value. You can access loggers by name, while you must use `getHandler` to get a handler.

### Usage

```
setLevel(level, container = "")
```

### Arguments

level	The new level for this object. Can be numeric or character.
container	a logger, its name or a handler. Default is root logger.

### Examples

```
basicConfig()  
setLevel("FINEST")  
setLevel("DEBUG", getHandler("basic.stdout"))
```

---

setMsgComposer	<i>Sets message composer for logger.</i>
----------------	--

---

### Description

Message composer is used to compose log message out of formatting string and arguments. It is function with signature `function(msg, ...)`. Formatting message is passed under `msg` and formatting arguments are passed as `...`

### Usage

```
setMsgComposer(composer_f, container = "")
```

### Arguments

composer_f	message composer function (type: <code>function(msg, ...)</code> )
container	name of logger to reser message composer for (type: character)

### Details

If message composer is not set default is in use (realized with `sprintf`). If message composer is not set for sub-logger, parent's message composer will be used.

## Examples

```
setMsgComposer(function(msg, ...) paste0("s-", msg, "-e"))
loginfo("a message") # will log '<TS> INFO::s-a message-e'
resetMsgComposer()
loginfo("a message") # will log '<TS> INFO::a message'
```

---

updateOptions	<i>Changes settings of logger or handler.</i>
---------------	---

---

## Description

Changes settings of logger or handler.

## Usage

```
updateOptions(container, ...)

## S3 method for class 'character'
updateOptions(container, ...)

## S3 method for class 'environment'
updateOptions(container, ...)

## S3 method for class 'Logger'
updateOptions(container, ...)
```

## Arguments

container	a logger, its name or a handler.
...	options to set for the container.

## Methods (by class)

- character: Update options for logger identified by name.
- environment: Update options of logger or handler passed by reference.
- Logger: Update options of logger or handler passed by reference.

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