

# Package ‘fail’

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**Type** Package

**Title** File Abstraction Interface Layer (FAIL)

**Description** More comfortable interface to work with R data or source files  
in a key-value fashion.

**Version** 1.3

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**URL** <https://github.com/mllg/fail>

**License** BSD\_3\_clause + file LICENSE

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`fail`*Create a file abstraction interface layer (FAIL) object.*

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## Description

The general idea is to not bother about file path joining or file extensions. Instead, FAIL offers a key-value like interface to RData files in a specified directory. The filename (without extension) acts as the key while the stored R objects are the values. Fail provides an interface to the basic file system actions: listing, reading / loading, writing / saving, removing and applying functions on files. An implemented cache mechanism can be used to avoid repeated disk reads.

## Usage

```
fail(path = getwd(), extension = "RData", all.files = FALSE,  
      use.cache = FALSE, simplify = TRUE)
```

## Arguments

<code>path</code>	[character(1)] Path to work in, will be created if it does not exists.
<code>extension</code>	[character(1)] File extension to work with. Default is "RData".
<code>all.files</code>	[logical(1)] Also include hidden files, i.e. files whose name start with a dot ("."). Default is FALSE.
<code>use.cache</code>	[logical(1)] Use a memory cache per global default. Global option which can locally be overwritten in most functions. Default is FALSE
<code>simplify</code>	[character(1)] If only one object is stored in a R data file, should the return value be simplified? If set to TRUE, instead of a list containing one element the object itself will be returned.

## Details

For a quick introduction on the usage, see <https://github.com/mllg/fail>.

An object with the following functions is returned by fail:

`ls(pattern=NULL)` Function to list keys in directory path matching a regular expression pattern `pattern`. Returns a character vector of keys.

`get(key, use.cache)` Function to load a file identified by key from directory path. To load many objects at once, use `as.list`, `assign` or `get` together with `lapply`. Argument `use.cache` can be set to temporarily overwrite the global `use.cache` flag.

- `put(..., li, keys, use.cache)` Function to save objects to directory path. Names for objects provided via ... will be looked up or can be provided using a key = value syntax. More objects can be passed as a named list using the argument `li`: Each list item will be saved to a separate file. If you provide keys as a character vector, these names will be taken for the arguments passed via ... Argument `use.cache` temporarily overwrites the global `use.cache` flag. Returns a character vector of stored keys.
- `remove(keys)` Function to remove files identified by keys from directory path. Returns a character vector of deleted keys.
- `apply(FUN, ..., keys, use.cache, simplify=FALSE, use.names=TRUE)` Apply function `FUN` on files identified by keys. `keys` defaults to all keys available and will be used to name the returned list. The loaded R objects will be past unnamed as first argument. Use ... for additional function arguments. Argument `use.cache` can be set to temporarily overwrite the global `use.cache` flag. For arguments `simplify` and `use.names`, see [lapply](#).
- `mapply(FUN, ..., keys, use.cache, moreArgs = NULL, simplify=FALSE, use.names=TRUE)` Apply function `FUN` on files identified by keys. `keys` defaults to all keys available and will be used to name the returned list. The function `FUN` must have the formal arguments “key” and “value”. Both key and value will be passed named. Use ... and/or `moreArgs` for additional function arguments. Argument `use.cache` can be set to temporarily overwrite the global `use.cache` flag. For arguments `moreArgs`, `simplify` and `use.names`, see [mapply](#).
- `as.list(keys, use.cache)` Return a named list of objects identified by keys. `keys` defaults to all keys available. Argument `use.cache` can be set to temporarily overwrite the global `use.cache` flag.
- `assign(keys, envir=parent.frame(), use.cache)` Assigns all objects identified by the character vector keys in the environment `envir`. Argument `use.cache` can be set to temporarily overwrite the global `use.cache` flag. Returns a character vector of assigned keys.
- `clear(keys)` Clear the cache to free memory. `keys` defaults to all keys available. Returns a character vector of cleared keys.
- `cached()` Returns a character vector of keys of cached objects.
- `size(keys, unit="b")` Get the file size in Bytes of the files identified by keys. `keys` defaults to all keys available. Argument `unit` accepts “b”, “Kb”, “Mb” and “Gb” and can be used to convert Bytes to KiloBytes, MegaBytes or GigaBytes, respectively.
- `info()` Returns a named list with path, extension and `use.cache`. Internally used for the [print](#) method with a much nicer summary of the FAIL object.

Furthermore, the package provides S3 methods for [print](#) and [as.list](#).

Be aware of the following restriction regarding file names and keys: The package performs some basic checks for illegal characters on the key names. In principle all characters matching the pattern “[a-zA-Z0-9.\_-]” are allowed and should work on most or all file systems. But be careful with key names which are not compatible with R’s variable naming restrictions, e.g. using the minus character or key names starting with a number: these provoke unwanted side effects and will result in errors if used with `assign`.

If two files would collide on case-insensitive file systems like Windows’ NTFS, the package will throw warnings. Best practice is to not rely on case sensitivity.

## Value

Object of class `fail`. See details.

## Examples

```

# initialize a FAIL in a temporary directory
path <- tempfile("")
files <- fail(path)

# save x and y, vectors of random numbers
x <- runif(100)
files$put(x, y = runif(100))

# save columns of the iris data set as separate files
files$put(li = as.list(iris))

# load all RData files in a named list as a one-liner
as.list(fail(path))

# load a single object from the file system
files$get("Species")
files$as.list(c("x", "y"))

# remove an object (and related file)
files$remove("Species")

# apply a function over files
files$apply(mean)
files$mapply(function(key, value) sprintf("%s -> %f", key, mean(value)), simplify = TRUE)

# show file size informations
files$size(unit = "Mb")

# get an object and cache it
files$get("x", use.cache = TRUE)
files$cached()
files$clear()
files$cached()

# assign variables in the current environment
files$assign("y")
mean(y)

```

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sail

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*Create a source abstraction interface layer (SAIL) object.*


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## Description

This function returns an object of class `sail` which behaves like `fail`, but is indented for loading and saving R source code files.

## Usage

```

sail(path = getwd(), extension = "R", all.files = FALSE,
      use.cache = FALSE, simplify = TRUE, suppressMessages = FALSE)

```

**Arguments**

path	[character(1)] Path to work in, will be created if it does not exists.
extension	[character(1)] File extension to work with. Default is "R".
all.files	[logical(1)] Also include hidden files, i.e. files whose name start with a dot ("."). Default is FALSE.
use.cache	[logical(1)] Use a memory cache per global default. Global option which can locally be overwritten in most functions. Default is FALSE
simplify	[character(1)] If only one object is defined in a sourced R file, should the return value be simplified? If set to TRUE, instead of a list containing one element the object itself will be returned.
suppressMessages	[logical(1)] Wrap the <code>sys.source</code> command into <code>suppressMessages</code> and <code>link[base]{suppressPackageStartupM</code> Default is FALSE, i.e. you will see regular output of sourced scripts.

**Value**

Object of class `sail`. See the documentation of `fail` for details.

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