

Package ‘ProjectTemplate’

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Type Package

Title Automates the Creation of New Statistical Analysis Projects

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Description Provides functions to automatically build a directory structure for a new R project. Using this structure, 'ProjectTemplate' automates data loading, preprocessing, library importing and unit testing.

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Language en-US

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Suggests foreign, feather, reshape, plyr, digest, formatR, stringr, ggplot2, lubridate, log4r (>= 0.1-5), DBI, RMySQL, RSQLite, gdata, RODBC, RJDBC, readxl, xlsx, tuneR, pixmap, data.table, RPostgreSQL, GetoptLong, whisker, tibble, testthat (>= 0.8)

URL <http://projecttemplate.net>

BugReports <https://github.com/johnmyleswhite/ProjectTemplate/issues>

Collate 'add.config.R' 'preinstalled.readers.R' 'add.extension.R' 'addins.R' 'arff.reader.R' 'cache.R' 'cache.name.R' 'cache.project.R' 'clean.variable.name.R' 'clear.R' 'clear.cache.R' 'translate.dcf.R' 'config.R' 'create.project.R' 'create.template.R' 'csv.reader.R' 'csv2.reader.R' 'db.reader.R' 'dbf.reader.R' 'epiinfo.reader.R' 'feather.reader.R' 'file.reader.R' 'get.project.R' 'help.R' 'list.data.R' 'load.project.R' 'migrate.project.R' 'migrate.template.R' 'mp3.reader.R' 'mtp.reader.R' 'octave.reader.R' 'ppm.reader.R' 'project.config.R' 'r.reader.R' 'rdata.reader.R' 'rds.reader.R' 'reload.project.R'

```
'require.package.R' 'run.project.R' 'show.project.R'
'spss.reader.R' 'sql.reader.R' 'stata.reader.R'
'stopifnotproject.R' 'stub.tests.R' 'systat.reader.R'
'test.project.R' 'tsv.reader.R' 'url.reader.R' 'wsv.reader.R'
'xls.reader.R' 'xlsx.reader.R' 'xport.reader.R'
```

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| | |
|-----------------------------|---|
| <code>.add.extension</code> | <i>Associate a reader function with an extension.</i> |
|-----------------------------|---|

Description

This function will associate an extension with a custom reader function.

Usage

```
.add.extension(extension, reader)
```

Arguments

- `extension` The extension of the new data file.
- `reader` The function to use when reading the data file. It should accept three arguments: `data.file`, `filename` and `variable.name` (in that order). The function should read the contents of the file `filename`, and save it into the workspace under the name `variable.name`. The `data.file` argument is just a relative file name and can be ignored.

Value

No value is returned; this function is called for its side effects.

Warning

This interface should not be considered as stable and is likely to be replaced by a different mechanism in a forthcoming version of this package.

See Also

[preinstalled.readers](#)

Examples

```
## Not run: .add.extension('foo', foo.reader)
```

| | |
|------------|---|
| add.config | <i>Add project specific config to the global config</i> |
|------------|---|

Description

Enables project specific configuration to be added to the global config object. The allowable format is key value pairs which are appended to the end of the config object, which is accessible from the global environment.

Usage

```
add.config(..., apply.override = FALSE)
```

Arguments

| | |
|----------------|---|
| ... | A series of key-value pairs containing the configuration. The key is the name that gets added to the config object. These can be overridden at load time through the ... argument to load.project . |
| apply.override | A boolean indicating whether overrides should be applied. This can be used to add a setting disregarding arguments to load.project |

Details

Once defined, the value can be accessed from any ProjectTemplate script by referencing `config$my_project_var`.

Examples

```
library('ProjectTemplate')
## Not run:
add.config(
  keep_bigdata=TRUE,    # Whether to keep the big data file in memory
  parse=7              # number of fields to parse
)

if (config$keep_bigdata) ...

## End(Not run)
```

| | |
|-------|---|
| cache | <i>Cache a data set for faster loading.</i> |
|-------|---|

Description

This function will store a copy of the named data set in the cache directory. This cached copy of the data set will then be given precedence at load time when calling [load.project](#). Cached data sets are stored as .RData files.

Usage

```
cache(variable = NULL, CODE = NULL, depends = NULL, ...)
```

Arguments

| | |
|----------|---|
| variable | A character string containing the name of the variable to be saved. If the CODE parameter is defined, it is evaluated and saved, otherwise the variable with that name in the global environment is used. |
| CODE | A sequence of R statements enclosed in { . . } which produce the object to be cached. |
| depends | A character vector of other global environment objects that the CODE depends upon. Caching will be forced if those objects have changed since last caching |
| ... | additional arguments passed to save |

Details

Usually you will want to cache datasets during munging. This can be the raw data just loaded, or it can be the result of further processing during munge. Either way, it can take a while to cache large variables, so cache will only cache when it needs to. The `clear.cache("variable")` command can be run to flush individual items from the cache.

Calling `cache()` with no arguments returns the current status of the cache.

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')
## Not run: create.project('tmp-project')

setwd('tmp-project')

dataset1 <- 1:5
cache('dataset1')

setwd('..')
unlink('tmp-project')
## End(Not run)
```

| | |
|---------------|--|
| cache.project | <i>Cache a project's data sets in binary format.</i> |
|---------------|--|

Description

This function will cache all of the data sets that were loaded by the [load.project](#) function in a binary format that is easier to load quickly. This is particularly useful for data sets that you've modified during a slow munging process that does not need to be repeated.

Usage

```
cache.project()
```

Value

No value is returned; this function is called for its side effects.

See Also

[create.project](#), [load.project](#), [get.project](#), [show.project](#)

Examples

```
library('ProjectTemplate')  
## Not run: load.project()  
  
cache.project()  
## End(Not run)
```

| | |
|-------|--|
| clear | <i>Clear objects from the global environment</i> |
|-------|--|

Description

This function removes specific (or all by default) named objects from the global environment. If used within a ProjectTemplate project, then any variables defined in the `config$sticky_variables` will remain.

Usage

```
clear(..., keep = c(), force = FALSE)
```

Arguments

| | |
|-------|--|
| ... | A sequence of character strings of the objects to be removed from the global environment. If none given, then all items except those in keep will be deleted. This includes items beginning with . |
| keep | A character vector of variables that should remain in the global environment |
| force | If TRUE, then variables will be deleted even if specified in keep or config\$sticky_variables |

Value

The variables kept and removed are reported

Examples

```
library('ProjectTemplate')
## Not run:
clear("x", "y", "z")
clear(keep="a")
clear()

## End(Not run)
```

clear.cache

Clear data sets from the cache

Description

This function remove specific (or all by default) named data sets from the cache directory. This will force that data to be read in from the data directory next time [load.project](#) is called.

Usage

```
clear.cache(...)
```

Arguments

| | |
|-----|--|
| ... | A sequence of character strings of the variables to be removed from the cache. If none given, then all items in the cache will be removed. |
|-----|--|

Value

Success or failure is reported

Examples

```
library('ProjectTemplate')
## Not run:
clear.cache("x", "y", "z")

## End(Not run)
```

create.project *Create a new project.*

Description

This function will create all of the scaffolding for a new project. It will set up all of the relevant directories and their initial contents. For those who only want the minimal functionality, the `template` argument can be set to `minimal` to create a subset of ProjectTemplate's default directories. For those who want to dump all of ProjectTemplate's functionality into a directory for extensive customization, the `dump` argument can be set to `TRUE`.

Usage

```
create.project(  
  project.name = "new-project",  
  template = "full",  
  dump = FALSE,  
  merge.strategy = c("require.empty", "allow.non.conflict"),  
  rstudio.project = FALSE  
)
```

Arguments

| | |
|------------------------------|---|
| <code>project.name</code> | A character vector containing the name for this new project. Must be a valid directory name for your file system. |
| <code>template</code> | A character vector containing the name of the template to use for this project. By default a <code>full</code> and <code>minimal</code> template are provided, but custom templates can be created using <code>create.template</code> . |
| <code>dump</code> | A boolean value indicating whether the entire functionality of ProjectTemplate should be written out to flat files in the current project. |
| <code>merge.strategy</code> | What should happen if the target directory exists and is not empty? If <code>"force.empty"</code> , the target directory must be empty; if <code>"allow.non.conflict"</code> , the method succeeds if no files or directories with the same name exist in the target directory. |
| <code>rstudio.project</code> | A boolean value indicating whether the project should also be an 'RStudio Project'. Defaults to <code>FALSE</code> . If <code>TRUE</code> , then a <code>'projectname.Rproj'</code> with usable defaults is added to the ProjectTemplate directory. |

Details

If the target directory does not exist, it is created. Otherwise, it can only contain files and directories allowed by the merge strategy.

Value

No value is returned; this function is called for its side effects.

See Also

[load.project](#), [get.project](#), [cache.project](#), [show.project](#)

Examples

```
library('ProjectTemplate')

## Not run: create.project('MyProject')
```

| | |
|-----------------|------------------------------|
| create.template | <i>Create a new template</i> |
|-----------------|------------------------------|

Description

This function writes a skeleton directory structure for creating your own custom templates.

Usage

```
create.template(target, source = "minimal")
```

Arguments

| | |
|--------|---|
| target | Name of the new template. It is created under the directory specified by <code>options('ProjectTemplate.target.dir')</code> or, when missing, in the current directory. |
| source | Name of an existing template to copy, defaults to the built in 'minimal' template. |

| | |
|-------------|--|
| get.project | <i>Show information about the current project.</i> |
|-------------|--|

Description

This function will return all of the information that ProjectTemplate has about the current project. This information is gathered when [load.project](#) is called. At present, ProjectTemplate keeps a record of the project's configuration settings, all packages that were loaded automatically and all of the data sets that were loaded automatically. The information about autoloading data sets is used by the [cache.project](#) function.

Usage

```
get.project()
```

Details

In previous releases this information has been available through the global variable `project.info`. Using this variable is now deprecated and will result in a warning.

Value

A named list.

See Also

[create.project](#), [load.project](#), [cache.project](#), [show.project](#)

Examples

```
library('ProjectTemplate')

## Not run: load.project()

get.project()
## End(Not run)
```

list.data

Listing the data for the current project

Description

This function produces a data.frame of all data files in the project, with meta data on if and how the file will be loaded by `load.project`.

Usage

```
list.data(...)
```

Arguments

... Named arguments to override configuration from `config/global.dcf` and `lib/global.R`.

Details

The returned data.frame contains the following variables, with one observation per file in `data/`:

| | |
|--------------|--|
| filename | Character variable containing the filename relative to <code>data/</code> directory. |
| varname | Character variable containing the name of the variable into which the file will be imported. * |
| is_ignored | Logical variable that indicates whether the file. is ignored through the <code>data_ignore</code> option in the configuration. |
| is_directory | Logical variable that indicates whether the file is a directory. |
| is_cached | Logical variable that indicates whether the file is already available in the <code>cache/</code> directory. |
| cached_only | Logical variable that indicates whether the variable is only available in the <code>cache/</code> directory. This occurs when the file is only in the cache. |
| reader | Character variable containing the name of the reader function that will be used to load the data. Contains a character vector of length one. |

* Note that some readers return more than one variable, usually with the listed variable name as prefix. This is true for for example the `xls.reader` and `xlsx.reader`.

Value

A data.frame listing the available data, with relevant meta data

See Also

[load.project](#), [show.project](#), [project.config](#)

Examples

```
library('ProjectTemplate')  
  
## Not run: list.data()
```

| | |
|--------------|--|
| load.project | <i>Automatically load data and packages for a project.</i> |
|--------------|--|

Description

This function automatically load all of the data and packages used by the project from which it is called. The behavior can be controlled by adjusting the [project.config](#) configuration.

Usage

```
load.project(...)
```

Arguments

... Named arguments to override configuration from config/global.dcf and lib/global.R.

Details

... can take an argument override.config or a single named list for backward compatibility. This cannot be mixed with the new style override. When a named argument override.config is present it takes precedence over the other options. If any of the provided arguments is unnamed an error is raised.

Value

No value is returned; this function is called for its side effects.

See Also

[create.project](#), [get.project](#), [cache.project](#), [show.project](#), [project.config](#)

Examples

```
library('ProjectTemplate')  
  
## Not run: load.project()
```

migrate.project *Migrates a project from a previous version of ProjectTemplate*

Description

This function automatically performs all necessary steps to migrate an existing project so that it is compatible with this version of ProjectTemplate

Usage

```
migrate.project()
```

Value

No value is returned; this function is called for its side effects.

See Also

[create.project](#)

Examples

```
library('ProjectTemplate')  
  
## Not run: migrate.project()
```

migrate.template *Migrate a template to a new version of ProjectTemplate*

Description

This function updates a skeleton project to the current version of ProjectTemplate.

Usage

```
migrate.template(template)
```

Arguments

template Name of the template to upgrade.

project.config *ProjectTemplate Configuration file*

Description

Every ProjectTemplate project has a configuration file found at `config/global.dcf` that contains various options that can be tweaked to control runtime behavior. The valid options are shown below, and must be encoded using the DCF format.

Usage

```
project.config()
```

Details

Calling the `project.config()` function will display the current project configuration.

The options that can be configured in the `config/global.dcf` are shown below

| | |
|--|--|
| <code>data_loading</code> | This can be set to TRUE or FALSE. If <code>data_loading</code> is on, the system will load data from bo |
| <code>data_loading_header</code> | This can be set to TRUE or FALSE. If <code>data_loading_header</code> is on, the system will load text o |
| <code>data_ignore</code> | A comma separated list of files to be ignored when importing from the <code>data/</code> directory. Reg |
| <code>cache_loading</code> | This can be set to TRUE or FALSE. If <code>cache_loading</code> is on, the system will load data from th |
| <code>recursive_loading</code> | This can be set to TRUE or FALSE. If <code>recursive_loading</code> is on, the system will load data from |
| <code>munging</code> | This can be set to TRUE or FALSE. If <code>munging</code> is on, the system will execute the files in the |
| <code>logging</code> | This can be set to TRUE or FALSE. If <code>logging</code> is on, a logger object using the <code>log4r</code> package |
| <code>logging_level</code> | The value of <code>logging_level</code> is passed to a logger object using the <code>log4r</code> package during loggi |
| <code>load_libraries</code> | This can be set to TRUE or FALSE. If <code>load_libraries</code> is on, the system will load all of the R |
| <code>libraries</code> | This is a comma separated list of all the R packages that the user wants to automatically loa |
| <code>as_factors</code> | This can be set to TRUE or FALSE. If <code>as_factors</code> is on, the system will convert every charac |
| <code>tables_type</code> | This is the format for default tables. Values can be 'tibble' (default), 'data_table', or 'data_fr |
| <code>attach_internal_libraries</code> | This can be set to TRUE or FALSE. If <code>attach_internal_libraries</code> is on, then every time a new |
| <code>cache_loaded_data</code> | This can be set to TRUE or FALSE. If <code>cache_loaded_data</code> is on, then data loaded from the d |
| <code>sticky_variables</code> | This is a comma separated list of any project-specific variables that should remain in the glo |

If the `config/globals.dcf` is missing some items (for example because it was created under an old version of ProjectTemplate, then the following configuration is used for any missing items during `load.project()`:

| | |
|----------------------------------|-------|
| <code>data_loading</code> | TRUE |
| <code>data_loading_header</code> | TRUE |
| <code>data_ignore</code> | |
| <code>cache_loading</code> | TRUE |
| <code>recursive_loading</code> | FALSE |
| <code>munging</code> | TRUE |
| <code>logging</code> | FALSE |
| <code>logging_level</code> | INFO |

| | |
|---------------------------|---|
| load_libraries | FALSE |
| libraries | reshape2, plyr, tidyverse, stringr, lubridate |
| as_factors | FALSE |
| tables_type | tibble |
| attach_internal_libraries | TRUE |
| cache_loaded_data | FALSE |
| sticky_variables | NONE |
| underscore_variables | FALSE |

When a new project is created using `create.project()`, the following values are pre-populated:

| | |
|---------------------------|---|
| version | 0.9.2 |
| data_loading | TRUE |
| data_loading_header | TRUE |
| data_ignore | |
| cache_loading | TRUE |
| recursive_loading | FALSE |
| munging | TRUE |
| logging | FALSE |
| logging_level | INFO |
| load_libraries | FALSE |
| libraries | reshape2, plyr, tidyverse, stringr, lubridate |
| as_factors | FALSE |
| tables_type | tibble |
| attach_internal_libraries | FALSE |
| cache_loaded_data | TRUE |
| sticky_variables | NONE |
| underscore_variables | TRUE |

Value

The current project configuration is displayed.

See Also

[load.project](#)

ProjectTemplate

Automates the creation of new statistical analysis projects.

Description

ProjectTemplate provides functions to automatically build a directory structure for a new R project. Using this structure, ProjectTemplate automates data loading, preprocessing, library importing and unit testing.

Details

A list of file types is supported by default. See the [preinstalled.readers](#) for more information which those are.

References

This code is inspired by the skeleton structure used by Ruby on Rails.

Examples

```
library('ProjectTemplate')

## Not run: create.project('project_name')

setwd('project_name')
load.project()
## End(Not run)
```

| | |
|----------------|----------------------------------|
| reload.project | <i>Reload or reset a project</i> |
|----------------|----------------------------------|

Description

This function will clear the global environment and reload a project. This is useful when you've updated your data sets or changed your preprocessing scripts. Any `sticky_variables` configuration parameter in `project.config` will remain both in memory and (if present) in the cache by default. If the `reset` parameter is TRUE, then all variables are cleared from both the global environment and the cache.

Usage

```
reload.project(..., reset = FALSE)
```

Arguments

| | |
|-------|---|
| ... | Optional parameters passed to load.project |
| reset | A boolean value, which if set TRUE clears the cache and everything in the global environment, including any <code>sticky_variables</code> |

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')

## Not run: load.project()

reload.project()
## End(Not run)
```

| | |
|-----------------|---|
| require.package | <i>Require a package for use in the project</i> |
|-----------------|---|

Description

This functions will require the given package. If the package is not installed it will stop execution and print a message to the user instructing them which package to install and which function caused the error.

Usage

```
require.package(package.name, attach = TRUE)
```

Arguments

| | |
|--------------|--|
| package.name | A character vector containing the package name. Must be a valid package name installed on the system. |
| attach | Should the package be attached to the search path (as with library) or not (as with loadNamespace)? Defaults to TRUE. (Internal code will use FALSE by default unless a compatibility switch is set, see below.) |

Details

The function `.require.package` is called by internal code. It will attach the package to the search path (with a warning) only if the compatibility configuration `attach_internal_libraries` is set to TRUE. Normally, packages used for loading data are not needed on the search path, but not loading them might break existing code. In a forthcoming version this compatibility setting will be removed, and no packages will be attached to the search path by internal code.

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')

## Not run: require.package('PackageName')
```

| | |
|-------------|--|
| run.project | <i>Run all of the analyses in the src directory.</i> |
|-------------|--|

Description

This function will run each of the analyses in the src directory in separate processes. At present, this is done serially, but future versions of this function will provide a means of running the analyses in parallel.

Usage

```
run.project()
```

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')  
  
## Not run: run.project()
```

| | |
|--------------|--|
| show.project | <i>Show information about the current project.</i> |
|--------------|--|

Description

This function will show the user all of the information that ProjectTemplate has about the current project. This information is gathered when `load.project` is called. At present, ProjectTemplate keeps a record of the project's configuration settings, all packages that were loaded automatically and all of the data sets that were loaded automatically. The information about autoloading data sets is used by the `cache.project` function.

Usage

```
show.project()
```

Value

No value is returned; this function is called for its side effects.

See Also

[create.project](#), [load.project](#), [get.project](#), [cache.project](#)

Examples

```
library('ProjectTemplate')

## Not run: load.project()

show.project()
## End(Not run)
```

| | |
|------------|---|
| stub.tests | <i>Generate unit tests for your helper functions.</i> |
|------------|---|

Description

This function will parse all of the functions defined in files inside of the lib directory and will generate a trivial unit test for each function. The resulting tests are stored in the file tests/autogenerated.R. Every test is expected to fail by default, so you should edit them before calling [test.project](#).

Usage

```
stub.tests()
```

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')

## Not run: stub.tests()
```

| | |
|--------------|---|
| test.project | <i>Run all unit tests for this project.</i> |
|--------------|---|

Description

This function will run all of the testthat style unit tests for the current project that are defined inside of the tests directory. The tests will be run in the order defined by the filenames for the tests: it is recommend that each test begin with a number specifying its position in the sequence.

Usage

```
test.project()
```

Value

No value is returned; this function is called for its side effects.

Examples

```
library('ProjectTemplate')

## Not run: load.project()

test.project()
## End(Not run)
```

| | |
|---------------|--|
| translate.dcf | <i>Read a DCF file into an R list.</i> |
|---------------|--|

Description

This function will read a DCF file and translate the resulting data frame into a list. The DCF format is used throughout ProjectTemplate for configuration settings and ad hoc file format specifications.

Usage

```
translate.dcf(filename)
```

Arguments

filename A character vector specifying the DCF file to be translated.

Details

The content of the DCF file are stored as character strings. If the content is placed between the back tick character , then the content is evaluated as R code and the result returned in a string

Value

Returns a list containing the entries from the DCF file.

Examples

```
library('ProjectTemplate')

## Not run: translate.dcf(file.path('config', 'global.dcf'))
```

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