Package 'OhdsiRTools'

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Description Includes functions to format and check syntax of R code and packages following the 'OHD R style guidelines. Support for parallel computation, logging, and function automation. Furtionality for interacting with instances of the open source `OHDSI` `WebApi'.	
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addDefaultConsoleLogger

Add the default console logger

Description

Add the default console logger

Usage

addDefaultConsoleLogger()

Details

Creates a logger that writes to the console using the "INFO" threshold and the layoutSimple layout.

addDefaultFileLogger Add the default file logger

Description

Add the default file logger

Usage

addDefaultFileLogger(fileName)

Arguments

fileName

The name of the file to write to.

Details

Creates a logger that writes to a file using the "TRACE" threshold and the layoutParallel layout. The output can be viewed with the built-in log viewer that can be started using launchLogViewer.

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checkUsagePackage

Check all code in a package

Description

Check all code in a package

Usage

```
checkUsagePackage(package, ignoreHiddenFunctions = TRUE,
    suppressBindingKeywords = c("ggplot2", "ffwhich", "subset.ffdf", "glm"))
```

Arguments

package The name of the package to check.

ignoreHiddenFunctions

Ignore functions for which the definition cannot be retrieved?

suppressBindingKeywords

A set of keywords that are indicative of non-standard evaluation.

Details

This function uses the codetools package to check the code from problems. Heuristics are used to eliminate false positives due to non-standard evaluation.

clearLoggers

Remove all registered loggers

Description

Remove all registered loggers

Usage

clearLoggers()

clusterApply 5

clusterApply	Apply a function to a list using the cluster	

Description

Apply a function to a list using the cluster

Usage

```
clusterApply(cluster, x, fun, ..., stopOnError = FALSE, progressBar = TRUE)
```

Arguments

cluster	The cluster of threads to run the function.
x	The list on which the function will be applied.
fun	The function to apply. Note that the context in which the function is specifies matters (see details).
	Additional parameters for the function.
stopOnError	Stop when one of the threads reports an error? If FALSE, all errors will be reported at the end.
progressBar	Show a progress bar?

Details

The function will be executed on each element of x in the threads of the cluster. If there are more elements than threads, the elements will be queued. The progress bar will show the number of elements that have been completed. It can sometimes be important to realize that the context in which a function is created is also transmitted to the worker node. If a function is defined inside another function, and that outer function is called with a large argument, that argument will be transmitted to the worker node each time the function is executed. It can therefore make sense to define the function to be called at the package level rather than inside a function, to save overhead.

Value

A list with the result of the function on each item in x.

Examples

```
fun <- function(x) {
  return (x^2)
}

cluster <- makeCluster(numberOfThreads = 3)
clusterApply(cluster, 1:10, fun)
stopCluster(cluster)</pre>
```

6 createArgFunction

Description

Calls the require function in each node of the cluster.

Usage

```
clusterRequire(cluster, package)
```

Arguments

cluster The cluster object.

package The name of the package to load in all nodes.

createArgFunction Create an argument function

Description

Create an argument function

Usage

```
createArgFunction(functionName, excludeArgs = c(), includeArgs = NULL,
  addArgs = list(), rCode = c(), newName)
```

Arguments

functionName The name of the function for which we want to create an args function.

excludeArgs Exclude these arguments from appearing in the args function.

includeArgs Include these arguments in the args function.

addArgs Add these arguments to the args functions. Defined as a list with format name =

default.

rCode A character vector representing the R code where the new function should be

appended to.

newName The name of the new function. If not specified, the new name will be automati-

cally derived from the old name.

Details

This function can be used to create a function that has (almost) the same interface as the specified function, and the output of this function will be a list of argument values.

Value

A character vector with the R code including the new function.

createConsoleAppender

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Examples

```
createArgFunction("read.csv", addArgs = list(exposureId = "exposureId"))
```

 ${\tt createConsoleAppender} \ \ {\it Create\ console\ appender}$

Description

Create console appender

Usage

```
createConsoleAppender(layout = layoutSimple)
```

Arguments

layout

The layout to be used by the appender.

Details

Creates an appender that will write to the console.

createFileAppender

Create file appender

Description

Create file appender

Usage

```
createFileAppender(layout = layoutParallel, fileName)
```

Arguments

layout The layout to be used by the appender.

fileName The name of the file to write to.

Details

Creates an appender that will write to a file.

8 excludeFromList

createLogger	Create a logger
--------------	-----------------

Description

Create a logger

Usage

```
createLogger(name = "SIMPLE", threshold = "INFO",
   appenders = list(createConsoleAppender()))
```

Arguments

name A name for the logger.

threshold The threshold to be used for reporting.

appenders A list of one or more appenders as created for example using the createConsoleAppender

or createFileAppender function.

Details

Creates a logger that will log messages to its appenders. The logger will only log messages at a level equal to or higher than its threshold. For example, if the threshold is "INFO" then messages marked "INFO" will be logged, but messages marked "TRACE" will not. The order of levels is "TRACE", "DEBUG", "INFO", "WARN", "ERROR, "and FATAL".

Value

An object of type Logger, to be used with the registerLogger function.

excludeFromList	Exclude variables from a list of objects of the same type
-----------------	---

Description

Exclude variables from a list of objects of the same type

Usage

```
excludeFromList(x, exclude)
```

Arguments

x A list of objects of the same type.

exclude A character vector of names of variables to exclude.

formatRFile 9

formatRFile

Format an R file

Description

Format an R file

Usage

```
formatRFile(file, width.cutoff = 100)
```

Arguments

file The path to the file.

width.cutoff Number of characters that each line should be limited to.

formatRFolder

Format all R files in a folder

Description

Format all R files in a folder

Usage

```
formatRFolder(path = ".", recursive = TRUE, skipAutogenerated = TRUE, ...)
```

Arguments

path Path to the folder containing the files to format. Only files with the .R extension

will be formatted.

recursive Include all subfolders?

skipAutogenerated

Skip auto-generated files such as RcppExports.R?

... Parameters to be passed on the formatRFile function

Examples

```
## Not run:
formatRFolder()
## End(Not run)
```

formatRText

Format R code

Description

Format R code

Usage

```
formatRText(text, width.cutoff = 100)
```

Arguments

text A character vector with the R code to be formatted.

width.cutoff Number of characters that each line should be limited to.

Value

A character vector with formatted R code.

```
getCohortDefinitionName
```

Get a cohort definition's name from WebAPI

Description

Get a cohort definition's name from WebAPI

Usage

```
getCohortDefinitionName(baseUrl, definitionId, formatName = FALSE)
```

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

definitionId The cohort definition id in Atlas.

formatName Should the name be formatted to remove prefixes and underscores?

Details

Obtains the name of a cohort.

Value

The name of the cohort.

 ${\tt getCohortGenerationStatuses}$

Get Cohort Generation Statuses

Description

Get Cohort Generation Statuses

Usage

getCohortGenerationStatuses(baseUrl, definitionIds, sourceKeys)

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

definitionIds A list of cohort definition Ids

sourceKeys A list of CDM source keys. These can be found in Atlas -> Configure.

Details

Obtains cohort generation statuses for a collection of cohort definition Ids and CDM sources. Useful if running multiple cohort generation jobs that are long-running.

Value

A data frame of cohort generation statuses, start times, and execution durations per definition id and source key.

getConceptSetConceptIds

Get Concept Set Concept Ids

Description

Get Concept Set Concept Ids

Usage

getConceptSetConceptIds(baseUrl, setId, vocabSourceKey = NULL)

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

setId The concept set id in Atlas.

vocabSourceKey The source key of the Vocabulary. By default, the priority Vocabulary is used.

Details

Obtains the full list of concept Ids in a concept set.

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Value

A list of concept Ids.

getConceptSetName

Get a concept set's name from WebAPI

Description

Get a concept set's name from WebAPI

Usage

```
getConceptSetName(baseUrl, setId, formatName = FALSE)
```

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

setId The concept set id in Atlas.

formatName Should the name be formatted to remove prefixes and underscores?

Details

Obtains the name of a concept set.

Value

The name of the concept set.

getLoggers

Get all registered loggers

Description

Get all registered loggers

Usage

getLoggers()

Value

Returns all registered loggers.

getPriorityVocabKey 13

getPriorityVocabKey Get Priority Vocab Source Key

Description

Get Priority Vocab Source Key

Usage

getPriorityVocabKey(baseUrl)

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

Details

Obtains the source key of the default OMOP Vocab in Atlas.

Value

A string with the source key of the default OMOP Vocab in Atlas.

insertCohortDefinitionInPackage

Load a cohort definition and insert it into this package

Description

Load a cohort definition and insert it into this package

Usage

```
insertCohortDefinitionInPackage(definitionId, name = NULL, baseUrl,
  generateStats = FALSE)
```

Arguments

definitionId The number indicating which cohort definition to fetch.

name The name that will be used for the json and SQL files. If not provided, the name

in cohort will be used, but this may not lead to valid file names.

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

generateStats Should the SQL include the code for generating inclusion rule statistics? Note

that if TRUE, several additional tables are expected to exists as described in the

details.

Details

Load a cohort definition from a WebApi instance and insert it into this package. This will fetch the json object and store it in the 'inst/cohorts' folder, and fetch the template SQL and store it in the 'inst/sql/sql_server' folder. Both folders will be created if they don't exist. When using generateStats = TRUE, the following tables are required to exist when executing the SQL: cohort_inclusion, cohort_inclusion_result, cohort_inclusion_stats, and cohort_summary_stats. Also note that the cohort_inclusion table should be populated with the names of the rules prior to executing the cohort definition SQL.

Examples

```
## Not run:
# This will create 'inst/cohorts/Angioedema.json' and 'inst/sql/sql_server/Angioedema.sql':
insertCohortDefinitionInPackage(282, "Angioedema")
## End(Not run)
```

insertCohortDefinitionSetInPackage

Insert a set of cohort definitions into package

Description

Insert a set of cohort definitions into package

Usage

```
insertCohortDefinitionSetInPackage(fileName, baseUrl, insertTableSql = TRUE,
  insertCohortCreationR = TRUE, generateStats = FALSE, packageName)
```

Arguments

fileName Name of a CSV file in the inst/settings folder of the package specifying the

cohorts to insert. See details for the expected file format.

baseUrl The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI".

insertTableSql Should the SQL for creating the cohort table be inserted into the package as

well? This file will be called CreateCohortTable.sql.

insertCohortCreationR

Insert R code that will create the cohort table and instantiate the cohorts? This

will create a file called R/CreateCohorts.R containing a function called .createCohorts.

generateStats Should cohort inclusion rule statistics be created?

packageName The name of the package (only needed when inserting the R code as well).

Details

The CSV file should have at least the following fields:

atlasId The cohort ID in ATLAS.

cohortId The cohort ID that will be used when instantiating the cohort (can be different from atlasId).

name The name to be used for the cohort. This name will be used to generate file names, so please use letters and numbers only (no spaces).

insertConceptSetConceptIdsInPackage

Insert a set of concept sets' concept ids into package

Description

Insert a set of concept sets' concept ids into package

Usage

insertConceptSetConceptIdsInPackage(fileName, baseUrl)

Arguments

fileName Name of a CSV file in the inst/settings folder of the package specifying the

concept sets to insert. See details for the expected file format.

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

Details

The CSV file should have:

atlasId The concept set Id in ATLAS.

 $insert {\tt EnvironmentSnapshotInPackage}$

Store snapshot of the R environment in the package

Description

Store snapshot of the R environment in the package

Usage

insertEnvironmentSnapshotInPackage(rootPackage)

Arguments

rootPackage The name of the root package

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Details

This function records all versions used in the R environment that are used by one root package, and stores them in the R package that is currently being developed in a file called inst/settings/rEnvironmentSnapshot.can be used for example to restore the environment to the state it was when a particular study package was run using the restoreEnvironment function.

Examples

```
## Not run:
insertEnvironmentSnapshotInPackage("OhdsiRTools")
## End(Not run)
```

invokeCohortSetGeneration

Invoke the generation of a set of cohort definitions

Description

Invoke the generation of a set of cohort definitions

Usage

invokeCohortSetGeneration(baseUrl, sourceKeys, definitionIds)

Arguments

baseUrl The base URL for the WebApi instance, for example: "http://api.ohdsi.org:80/WebAPI".

sourceKeys A list of CDM source keys. These can be found in Atlas -> Configure.

definitionIds A list of cohort definition Ids

Details

Invokes the generation of a set of cohort definitions across a set of CDMs set up in WebAPI. Use getCohortGenerationStatuses to check the progress of the set.

launchLogViewer Launch the log viewer Shiny app

Description

Launch the log viewer Shiny app

Usage

launchLogViewer(logFileName)

layoutParallel 17

Arguments

logFileName Name of the log file to view.

Details

Launches a Shiny app that allows the user to view a log file created using the default file logger. Use addDefaultFileLogger to start the default file logger.

layoutParallel

Logging layout for parallel computing

Description

A layout function to be used with an appender. This layout adds the time, thread, level, package name, and function name to the message.

Usage

```
layoutParallel(level, message)
```

Arguments

level The level of the message (e.g. "INFO")

message The message to layout.

layoutSimple

Simple logging layout

Description

A layout function to be used with an appender. This layout simply includes the message itself.

Usage

```
layoutSimple(level, message)
```

Arguments

level The level of the message (e.g. "INFO")

message The message to layout.

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layoutStackTrace

Logging layout with timestamp

Description

A layout function to be used with an appender. This layout adds the time to the message.

Usage

```
layoutStackTrace(level, message)
```

Arguments

level The level of the message (e.g. "INFO")

message The message to layout.

layoutTimestamp La

Logging layout with timestamp

Description

A layout function to be used with an appender. This layout adds the time to the message.

Usage

```
layoutTimestamp(level, message)
```

Arguments

level The level of the message (e.g. "INFO")

message The message to layout.

loadSettingsFromJson Load a settings object from a JSON file

Description

Load a settings object from a JSON file

Usage

loadSettingsFromJson(fileName)

Arguments

fileName Name of the JSON file to load.

logDebug 19

Details

Load a settings object from a JSON file, restoring object classes and attributes.

Value

An R object as specified by the JSON.

logDebug

Log a message at the DEBUG level

Description

Log a message at the DEBUG level

Usage

```
logDebug(...)
```

Arguments

Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers.

logError

Log a message at the ERROR level

Description

Log a message at the ERROR level

Usage

```
logError(...)
```

Arguments

... Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers.

20 logInfo

logFatal

Log a message at the FATAL level

Description

Log a message at the FATAL level

Usage

```
logFatal(...)
```

Arguments

Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers. This function is be automatically called when an error occurs, and should not be called directly. Use stop() instead.

logInfo

Log a message at the INFO level

Description

Log a message at the INFO level

Usage

```
logInfo(...)
```

Arguments

Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers.

logTrace 21

logTrace

Log a message at the TRACE level

Description

Log a message at the TRACE level

Usage

```
logTrace(...)
```

Arguments

Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers.

logWarn

Log a message at the WARN level

Description

Log a message at the WARN level

Usage

```
logWarn(...)
```

Arguments

Zero or more objects which can be coerced to character (and which are pasted together with no separator).

Details

Log a message at the specified level. The message will be sent to all the registered loggers. This function is automatically called when a warning is thrown, and should not be called directly. Use warning() instead.

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makeCluster

Create a cluster of nodes for parallel computation

Description

Create a cluster of nodes for parallel computation

Usage

```
makeCluster(numberOfThreads, singleThreadToMain = TRUE,
    divideFfMemory = TRUE, setFfTempDir = TRUE)
```

Arguments

numberOfThreads

Number of parallel threads.

singleThreadToMain

If numberOfThreads is 1, should we fall back to running the process in the main thread?

divideFfMemory When TRUE, the

When TRUE, the memory available for processing ff and ffdf objects will be

equally divided over the threads.

setFfTempDir When TRUE, the ffTempDir option will be copied to each thread.

Value

An object representing the cluster.

Examples

```
fun <- function(x) {
  return (x^2)
}

cluster <- makeCluster(numberOfThreads = 3)
clusterApply(cluster, 1:10, fun)
stopCluster(cluster)</pre>
```

matchInList

In a list of object of the same type, find those that match the input

Description

In a list of object of the same type, find those that match the input

Usage

```
matchInList(x, toMatch)
```

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Arguments

x A list of objects of the same type. toMatch The object to match.

Details

Typically, toMatch will contain a subset of the variables that are in the objects in the list. Any object matching all variables in toMatch will be included in the result.

Value

A list of objects that match the toMatch object.

Examples

OhdsiRTools

OhdsiRTools

Description

OhdsiRTools

registerLogger

Register a logger

Description

Register a logger

Usage

```
registerLogger(logger)
```

Arguments

logger

An object of type Logger as created using the createLogger function.

Details

Registers a logger as created using the createLogger function to the logging system.

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restoreEnvironment

Restore the R environment to a snapshot

Description

Restore the R environment to a snapshot

Usage

```
restoreEnvironment(snapshot, stopOnWrongRVersion = FALSE)
```

Arguments

snapshot

The snapshot data frame as generated using the takeEnvironmentSnapshot

function.

stopOnWrongRVersion

Should the function stop when the wrong version of R is installed? Else just a

warning will be thrown when the version doesn't match.

Details

This function restores the R environment to a previous snapshot, meaning all the packages will be restored to the versions they were at at the time of the snapshot. Note: on Windows you will very likely need to have RTools installed to build the various packages.

Examples

```
## Not run:
snapshot <- takeEnvironmentSnapshot("OhdsiRTools")
write.csv(snapshot, "snapshot.csv")
# 5 years later
snapshot <- read.csv("snapshot.csv")
restoreEnvironment(snapshot)
## End(Not run)</pre>
```

runAndNotify

Run code and send e-mail notification on error, warning, or completion

Description

Run code and send e-mail notification on error, warning, or completion

Usage

```
runAndNotify(expression, mailSettings, label = "R", stopOnWarning = FALSE)
```

saveSettingsToJson 25

Arguments

expression The expression to run.

mailSettings Arguments to be passed to the send.mail function in the mailR package (except

subject and body).

label A label to be used in the subject to identify a run. stopOnWarning Stop expression on warning and send notification?

Value

The output of expression.

Examples

saveSettingsToJson

Save a settings object as JSON file

Description

Save a settings object as JSON file

Usage

```
saveSettingsToJson(object, fileName)
```

Arguments

object R object to be saved.

fileName File name where the object should be saved.

Details

Save a setting object as a JSON file, using pretty formatting and preserving object classes and attributes.

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selectFromList

Select variables from a list of objects of the same type

Description

Select variables from a list of objects of the same type

Usage

```
selectFromList(x, select)
```

Arguments

x A list of objects of the same type.

select A character vector of names of variables to select.

Examples

stopCluster

Stop the cluster

Description

Stop the cluster

Usage

```
stopCluster(cluster)
```

Arguments

cluster The cluster to stop

Examples

```
fun <- function(x) {
  return (x^2)
}

cluster <- makeCluster(numberOfThreads = 3)
clusterApply(cluster, 1:10, fun)
stopCluster(cluster)</pre>
```

takeEnvironmentSnapshot

Take a snapshot of the R environment

Description

Take a snapshot of the R environment

Usage

takeEnvironmentSnapshot(rootPackage)

Arguments

rootPackage The name of the root package

Details

This function records all versions used in the R environment that are used by one root package. This can be used for example to restore the environment to the state it was when a particular study package was run using the restoreEnvironment function.

Value

A data frame listing all the dependencies of the root package and their version numbers, in the order in which they should be installed.

Examples

```
snapshot <- takeEnvironmentSnapshot("OhdsiRTools")
snapshot</pre>
```

unregisterLogger

Unregister a logger

Description

Unregister a logger

Usage

```
unregisterLogger(x)
```

Arguments

Χ

Can either be an integer (e.g. 2 to remove the second logger), the name of the logger, or the logger object itself.

Details

Unregisters a logger from the logging system.

Value

Returns TRUE if the logger was removed.

```
updateCopyrightYearFile
```

Update the copyright year in a R or SQL file

Description

Update the copyright year in a R or SQL file

Usage

```
updateCopyrightYearFile(file)
```

Arguments

file

The path to the file.

update Copyright Year Folder

Update the copyright year in all R and SQL files in a folder

Description

Update the copyright year in all R and SQL files in a folder

Usage

```
updateCopyrightYearFolder(path = ".", recursive = TRUE)
```

Arguments

path Path to the folder containing the files to update. Only files with the .R and .SQL

extension will be updated.

recursive Include all subfolders?

Examples

```
## Not run:
updateCopyrightYearFolder()
## End(Not run)
```

updatePackageName

Update the package name in a R or SQL file

Description

Update the package name in a R or SQL file

Usage

```
updatePackageName(file, packageName)
```

Arguments

file The path to the file.

packageName The replacement package name

updatePackageNameFolder

Update the package name in all R and SQL files in a folder

Description

Update the package name in all R and SQL files in a folder

Usage

```
updatePackageNameFolder(path = ".", packageName, recursive = TRUE)
```

Arguments

path Path to the folder containing the files to update. Only files with the .R and .SQL

extension will be updated.

packageName The replacement package name

recursive Include all subfolders?

Examples

```
## Not run:
updateCopyrightYearFolder()
## End(Not run)
```

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