

Package ‘wyz.code.offensiveProgramming’

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Type Package

Title Wizardry Code Offensive Programming

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Description Allows to turn standard R code into offensive programming code.

Provides code instrumentation to ease this change and tools to assist and accelerate code production and tuning while using offensive programming code technics.

Should improve code robustness and quality. Function calls can be easily verified on-demand or in batch mode to assess parameter types and length conformities.

Should improve coders productivity as offensive programming reduces the code size due to reduced number of controls all along the call chain.

Should speed up processing as many checks will be reduced to one single check.

Encoding UTF-8

LazyData true

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Depends R (>= 3.5)

Imports methods, data.table (>= 1.11.8), tidyr, lubridate (>= 1.7.4), stringr (>= 1.4.0), R6 (>= 2.4.0), crayon

Suggests testthat, knitr, rmarkdown

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R topics documented:

defineEvaluationModes	3
defineFunctionReturnTypesParameterName	3
defineTestCaseDefinitionsParameterName	4
EvaluationMode	5
exploreObjectNamesVerification	5
findFilesInPackage	6
FunctionParameterName	7
FunctionParameterTypeFactory	8
getEllipsisName	9
getObjectClassKind	10
getObjectClassNames	11
getObjectFunctionArgumentNames	12
getObjectFunctionNames	13
identifyOPIstrumentationLevel	14
isAuditable	15
matchFunctionSignature	16
opInformation	17
print.EvaluationMode	18
print.FunctionParameterName	18
print.TestCaseDefinition	19
retrieveFactory	20
retrieveFunctionArgumentNames	21
retrieveFunctionArguments	22
retrieveFunctionReturnTypes	23
retrievePackageFunctionNames	24
retrieveTestCaseDefinitions	25
runFunction	26
runTestCase	27
runTransientFunction	28
TestCaseDefinition	29
verifyClassName	30
verifyFunctionArguments	31
verifyFunctionName	32
verifyFunctionReturnTypesDefinition	33
verifyObjectNames	35
verifyTestCaseDefinitions	36

defineEvaluationModes *Define evaluation modes*

Description

Get all predefined evaluation mode names

Usage

```
defineEvaluationModes()
```

Value

A vector of strings, each representing a reusable evaluation mode name.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [EvaluationMode](#).

Examples

```
##---- typical case ----  
defineEvaluationModes()
```

defineFunctionReturnTypesParameterName
define function return type parameter name

Description

Provides the parameter name to use to define function return type.

Usage

```
defineFunctionReturnTypesParameterName()
```

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [EvaluationMode](#).

Examples

```
##---- typical case ----  
defineFunctionReturnTypesParameterName()
```

```
defineTestCaseDefinitionsParameterName  
    Test case definition parameter name
```

Description

Define the parameter name to hold test case definitions

Usage

```
defineTestCaseDefinitionsParameterName()
```

Value

A single string that is the parameter name to use.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [EvaluationMode](#). See sibling [EvaluationMode](#).

Examples

```
##---- typical case ----  
defineTestCaseDefinitionsParameterName()
```

EvaluationMode	<i>Evaluation mode definition</i>
----------------	-----------------------------------

Description

Class to define your evaluation mode

Usage

```
EvaluationMode(value_s_1 = defineEvaluationModes()[2])
```

Arguments

value_s_1 one string that must come from [defineEvaluationModes](#)

Value

An object that is an R environment.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#)

Examples

```
##---- typical case ----  
EvaluationMode(defineEvaluationModes()[3])
```

exploreObjectNamesVerification	<i>Verify object names</i>
--------------------------------	----------------------------

Description

Human readable output synthetized from [verifyObjectNames](#)

Usage

```
exploreObjectNamesVerification(object_o_1,  
                                  what_s_1 = c("names", "return type", "test cases", "*")[1])
```

Arguments

object_o_1 the object to be checked
 what_s_1 a single string that expresses what you want to focus on, should start by one of [nrt* character. Star means show all.

Value

The same value as [verifyObjectName](#) is returned in invisible mode.
 It adds stdout output to give very short synthesis about object names and content.

Author(s)

Fabien Gelineau <neonira@gmail.com>
 Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [verifyClassName](#) and [verifyFunctionName](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',
                  package = 'wyz.code.offensiveProgramming'))
fi <- AdditionFI()
exploreObjectNameVerification(fi)
```

findFilesInPackage *find files in package*

Description

Use function findFilesInPackage to find files in package.

Usage

```
findFilesInPackage(filename_s, packageName_s_1)
```

Arguments

filename_s An unconstrained vector of string values.
 packageName_s_1 A length-1 vector of string values.

Value

This function is vectorized. It returns a list with one entry for each file searched for.

Author(s)

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Examples

```
# ----- example 1 -----
findFilesInPackage(c("AdditionTCFIG1.R", "Addition_TCFI_Partial_R6.R",
                    "Addition_TCFI_Partial_S3.R"),
                  "wyz.code.offensiveProgramming")
# ../wyz.code.offensiveProgramming/code-samples/both-defs/good/full/AdditionTCFIG1.R
# ../wyz.code.offensiveProgramming/code-samples/both-defs/good/partial/Addition_TCFI_Partial_R6.R
# ../wyz.code.offensiveProgramming/code-samples/both-defs/good/partial/Addition_TCFI_Partial_S3.R

# ----- example 2 -----
findFilesInPackage("datatable-intro.html", "data.table")
# ../data.table/doc/datatable-intro.html
```

FunctionParameterName *Function parameter name*

Description

Class to define and handle a function parameter

Usage

```
FunctionParameterName(name_s_1)
```

Arguments

name_s_1 a string that is the name of the parameter

Details

The name of the parameter should be a semantic name. A semantic name is a compound string based on a special format allowing to distinguish by the name, the parameter type, and to express some length constraints.

Value

An object that is an R environment. Use functions `isSemanticName`, `isPolymorphic`, `isEllipsis`, `isValid` to check the provided name. Functions `get*` allows to retrieve parts of the name.

Author(s)

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See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----
fpn <- FunctionParameterName('values_s_7m')
fpn$isPolymorphic()
fpn$isSemanticName()
fpn$isValid()
fpn$getTypeSuffix() # 's'
fpn$getLengthSpecification() # '7m'
fpn$getLengthSuffix() # 7
fpn$getLengthModifier() # 'm'

fpn <- FunctionParameterName('object_')
fpn$isPolymorphic()
fpn$isSemanticName()
fpn$isValid()
```

FunctionParameterTypeFactory

Function parameter type factory

Description

This factory is a parameter type check factory. It provides type checking for each allowed type.

Usage

```
FunctionParameterTypeFactory()
```

Details

Many common types are already recorded and available through the factory. Use the function `getRecordedTypes` to get more insight.

If you desire to verify a type instrumentation, just use `checkSuffix` function. If you want to add an instrumentation for a new type, use `addSuffix` function.

See examples below for more hands-on approach.

Value

An object that is an R environment.

Author(s)

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See Also

Refer to [defineEvaluationModes](#)

Examples

```
##---- typical case ----
ff <- FunctionParameterTypeFactory()
ff$checkSuffix('b') # TRUE

# see verify_function recorded for 'boolean' entries
ff$getRecordedTypes()[suffix == 'b']$verify_function[[1]]

# record a new entry for suffix 'wo'
ff$addSuffix('wo', "wo class", function(o_) is(o, "wo")) # TRUE
ff$getRecordedTypes()[suffix == 'wo']
```

getEllipsisName	<i>Get ellipsis.</i>
-----------------	----------------------

Description

Get ellipsis argument name value.

Usage

```
getEllipsisName()
```

Value

A string with value "...", no more no less.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
# typical test
getEllipsisName()
#[1] "..."
```

getObjectClassKind *Get R object class kind*

Description

Get the class kind of an R object as a string.

Usage

```
getObjectClassKind(object_o_1)
```

Arguments

object_o_1 the object to analyze. See [is.object](#).

Value

A single character value, taken in set "S3", "S4", "RC", "R6", "environment", "unknown".
When provided object_ is not an R object, then value NA_character_ is returned.

Author(s)

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Examples

```
##---- typical case ----
getObjectClassKind(new.env())
# [1] NA

myrc <- setRefClass("RC",
  fields = list(x = "numeric"),
  methods = list(
    initialize = function(x = 1) .self$x <- x,
    getx = function() x,
    inc = function(n = 1) x <<- x + n
  )
)

getObjectClassKind(myrc$new())
# [1] RC

myr6 <- R6::R6Class("R6",
  public = list(
    x = NULL,
    initialize = function(x = 1) self$x <- x,
    getx = function() self$x,
    inc = function(n = 1) self$x <- x + n
  )
)
```

```
)  
)  
  
getObjectClassKind(myr6$new())  
# [1] R6
```

getObjectClassNames *Retrieve Function Arguments.*

Description

Retrieve the class names of an object (see `is.object()`).

Usage

```
getObjectClassNames(object_o_1)  
hasMainClass(object_o_1, classname_s_1)
```

Arguments

`object_o_1` the object to analyze.
`classname_s_1` a string that is the class name to match the classname entry returned by [getObjectClassNames](#).

Value

A list with two character entries. First one is named `classname`, provides the main classname (the one found in first position). Second one is named `classnames`, provides all the class names born by the object.

Author(s)

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Examples

```
# typical test  
getObjectClassNames(getObjectClassNames(factor(letters[1:3])))  
# $classname  
# [1] "factor"  
  
# $classnames  
# [1] "factor"  
  
# another test  
getObjectClassNames(new.env())
```

```
##$classname  
#[1] NA  
  
##$classnames  
#[1] "environment"
```

getObjectFunctionArgumentNames
Retrieve Function Arguments.

Description

Retrieve function argument names from an object.

Usage

```
getObjectFunctionArgumentNames(object_o_1, allNames_b_1 = TRUE)
```

Arguments

object_o_1	the object to analyze.
allNames_b_1	A boolean value. Passed to function getObjectFunctionNames to restrict output if needed.

Value

A list. Entries are named with function names. Each entry is of type character, and holds function argument names. Could be empty if function takes no argument.

Author(s)

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See Also

See [is.object](#).

Examples

```
# typical test  
MyEnv <- function() {  
  self <- environment()  
  class(self) <- append('MyEnv', class(self))  
  f <- function(x_3, y_3n) x_3 + y_3n  
  self  
}
```

```
getObjectFunctionArgumentNames(MyEnv())
# $f
#[1] "x_3" "y_3n"
```

getObjectFunctionNames

Retrieve Function Names From Object

Description

Retrieve function names of an object (see [is.object](#)).)

Usage

```
getObjectFunctionNames(object_o_1, allNames_b_1 = FALSE)
```

```
getClassTypicalFunctionNames(object_o_1)
```

Arguments

`object_o_1` the object to analyze.

`allNames_b_1` A boolean value. When TRUE, uses [getClassTypicalFunctionNames](#) to restrict the set of function names returned.

Details

Function [getClassTypicalFunctionNames](#) gives back function names that are related to R class style, and automatically added by R to your class object.

Value

A vector of function names (character).

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
# typical test
MyEnv <- function() {
  self <- environment()
  class(self) <- append('MyEnv', class(self))
  f <- function(x_3, y_3n) x_3 + y_3n
  self
}
```

```
}  
  
getObjectFunctionNames(MyEnv())  
# [1] "f"  
  
# another test  
getObjectFunctionNames(new.env())  
#[1] NA
```

identifyOPInstrumentationLevel

Identify Offensive Programming Instrumentation Level

Description

Provide short information about offensive programming instrumentation level

Usage

```
identifyOPInstrumentationLevel(object_o_1 = NULL,  
                               methodName_s_1 = NA_character_)
```

Arguments

object_o_1 the object to be checked
methodName_s_1 the function name to consider, if any.

Value

A list with following names

- offensive_programming
 a single boolean
- full_instrumentation
 a single boolean
- semantic_naming
 a single boolean
- function_return_type
 a single boolean
- test_case_definition
 a single boolean

Author(s)

Fabien Gelineau <neonira@gmail.com>
Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [verifyClassName](#) and [verifyFunctionName](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',
                  package = 'wyz.code.offensiveProgramming'))
identifyOPInstrumentationLevel(AdditionFI())

#offensive_programming
#[1] TRUE

#full_instrumentation
#[1] FALSE

#semantic_naming
#[1] TRUE

#function_return_type
#[1] TRUE

#test_case_definition
#[1] FALSE
```

isAuditable

Is Auditable

Description

Retrieve option telling if code is auditable

Usage

```
isAuditable()
```

Value

A boolean value. To turn value to TRUE, set option `op_audit` to TRUE.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
# typical case
isAuditable()
# FALSE
```

matchFunctionSignature

Retrieve Function Arguments.

Description

Compare two functions signatures and tells if they are exactly the same.

Usage

```
matchFunctionSignature(aFunction_f_1, aFunctionTemplate_f_1 = function(){}))
```

Arguments

```
aFunction_f_1  a function or primitive. Not a string!
aFunctionTemplate_f_1
                a function or primitive to be used as model. Not a string!
```

Details

To get TRUE as result, function and function model must share exactly the same attributes names and values, including default values if any used.

Value

A boolean value.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
matchFunctionSignature(sum, function(..., na.rm = FALSE) { NULL })
# [1] TRUE
```

```
matchFunctionSignature(sum, function(..., na.rm) { NULL })
#[1] FALSE
```

`opInformation`*Package functions information*

Description

A reminder of available functions from this package, and, most common usage intent. A poor man CLI cheat sheet.

Usage

```
opInformation()
```

Value

A data.table with following columns

<code>name</code>	the object name
<code>category</code>	the category of the object describe by function name. Could be CLASS, FUNCTION or DATA.
<code>nature</code>	either INTERNAL or EXPORTED.
<code>stratum</code>	the stratum the object belongs to. Values are CORE, LAYER_1, LAYER_2, LAYER_3.
<code>phasing</code>	main usage phase of the object. Values are DESIGN, BUILD, TEST, RUN, MAINTAIN, EVOLVE and TRANSVERSAL.
<code>intent</code>	main global intent of the object. Values are PARTS_BUILDING, PARTS_ASSEMBLY, QUALITY_CONTROL, FEEDBACK, STATISTICS, CONTENT_GENERATION and UTILITIES.

Author(s)

Fabien Gelineau <neonira@gmail.com>

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See Also

Refer also to package vignettes.

Examples

```
##---- typical case ----  
opInformation()
```

print.EvaluationMode *Print generic method for S3 class [EvaluationMode](#)*

Description

Prints the EvaluationMode data

Usage

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

Arguments

x the EvaluationMode object to consider
... any other argument, passed to print.

Author(s)

Fabien Gelineau <neonira@gmail.com>
Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
b <- EvaluationMode(defineEvaluationModes()[2])  
print(b)
```

print.FunctionParameterName
Print generic method for S3 class [FunctionParameterName](#)

Description

Prints the FunctionParameterName data

Usage

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

Arguments

x the FunctionParameterName object to consider
... any other argument, passed to print.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
fn <- FunctionParameterName('x_s')
print(fn)
```

`print.TestCaseDefinition`

Print generic method for S3 class [TestCaseDefinition](#)

Description

Prints the `TestCaseDefinition` data

Usage

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

Arguments

`x` the `TestCaseDefinition` object to consider
`...` any other argument, passed to `print`.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
b <- TestCaseDefinition(list(1L, 2L), 3L, 'sum of 2 integers')
print(b)
```

retrieveFactory	<i>Retrieve the type factory object</i>
-----------------	---

Description

As factory may be modified, this function allows you to make changes and to record them in your own specialized type factory, to match various needs and ease reuse.

Usage

```
retrieveFactory()
```

Details

Retrieves a [FunctionParameterTypeFactory](#) from options variable named `op_type_factory` or provides a default type factory.

Value

An R object that is a [FunctionParameterTypeFactory](#).

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
##---- typical case ----
ff <- retrieveFactory()
ff$addSuffix('wo', "wo class", function(o_) is(o_, "wo"))
ff$addSuffix('yo', "yo class", function(o_) is(o_, "yo"))
ff$addSuffix('zo', "zo class", function(o_) is(o_, "zo"))

options('op_type_factory' = ff)
fg <- retrieveFactory() # retrieves the factory pointed by R variable ff
fg$getRecordedTypes()[suffix %in% c('wo', 'yo', 'zo')] # right behavior !

# wrong behavior as retrieveFactory will provide the default factory and not yours!
options('op_type_factory' = ff)
fh <- retrieveFactory() # retrieves the default factory
fh$getRecordedTypes()[suffix %in% c('wo', 'yo', 'zo')]
```

retrieveFunctionArgumentNames
Retrieve Function Argument Names.

Description

Retrieve function argument names from a function or a primitive.

Usage

```
retrieveFunctionArgumentNames(fun_f_1)
```

Arguments

fun_f_1 a function or primitive. Not a string!

Value

A vector of strings that are the function names.

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

See [retrieveFunctionArguments](#). See [formalArgs](#).

Examples

```
# typical test on a primitive
retrieveFunctionArgumentNames(sin)
#[1] "x"

# typical test on a function
retrieveFunctionArguments(ls)
#[1] "name"        "pos"        "envir"        "all.names" "pattern"    "sorted"
```

retrieveFunctionArguments

Retrieve Function Arguments.

Description

Retrieve function arguments to get arguments from a function or a primitive.

Usage

```
retrieveFunctionArguments(fun_f_1)
```

Arguments

fun_f_1 a function or primitive. Not a string!

Value

A pairlist.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

See [retrieveFunctionArguments](#). See [formalArgs](#).

Examples

```
# typical test on a primitive
retrieveFunctionArguments(sin)
# $x
#
```

```
# typical test on a function
retrieveFunctionArguments(ls)
# $name
```

```
# $pos
# -1L
```

```
# $envir
# as.environment(pos)
```

```
# $all.names
# [1] FALSE
```

```
#$pattern  
#  
  
#$sorted  
#[1] TRUE
```

retrieveFunctionReturnTypes
Retrieve function return types

Description

Retrieve the function return type definitions from an object.

Usage

```
retrieveFunctionReturnTypes(object_o_1)
```

Arguments

object_o_1 the object to consider

Value

A polymorphic return that is either

a list as returned by the [verifyObjectNames](#) function

another list as returned by the [verifyFunctionReturnTypesDefinition](#) function

a data.table the function parameter types definition as declared in the source class

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----  
library('data.table')  
source(system.file('code-samples/no-defs/Addition.R',  
                  package = 'wyz.code.offensiveProgramming'))  
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',  
                  package = 'wyz.code.offensiveProgramming'))  
retrieveFunctionReturnTypes(AdditionFI()) # works, renders a data.table  
retrieveFunctionReturnTypes(Addition()) # fails, renders a list
```

retrievePackageFunctionNames

Retrieve Package Function Names

Description

Get the function names from a package name

Usage

```
retrievePackageFunctionNames(packageName_s_1, libraryPath_s_1 = .libPaths()[1])
```

Arguments

packageName_s_1
a string that is the package name to seek for

libraryPath_s_1
a string that is the folder to scrutinize

Value

A vector of function names

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

Examples

```
retrievePackageFunctionNames('wyz.code.offensiveProgramming')
```

`retrieveTestCaseDefinitions`*Retrieve test case definitions or test case descriptions.*

Description

From an instrumented class, retrieve the test case definitions or descriptions.

Usage

```
retrieveTestCaseDefinitions(object_o_1)
retrieveTestCaseDescriptions(object_o_1)
```

Arguments

`object_o_1` the object to consider

Value

For function, [retrieveTestCaseDefinitions](#), a polymorphic return that is either

a list	as returned by the verifyObjectNames function
another list	as returned by the verifyFunctionReturnTypesDefinition function
a data.table	the test case definitions as declared in the source class

For function, [retrieveTestCaseDescriptions](#), either a character vector when no test case definitions exists or a data.table of the test case descriptions.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/tcd-defs/good/partial/AdditionTCPartial.R',
                  package = 'wyz.code.offensiveProgramming'))
source(system.file('code-samples/no-defs/Addition.R',
                  package = 'wyz.code.offensiveProgramming'))
retrieveTestCaseDefinitions(AdditionTCPartial()) # works, renders a data.table
retrieveTestCaseDefinitions(Addition()) # fails, renders a list

retrieveTestCaseDescriptions(Addition())
retrieveTestCaseDescriptions(AdditionTCPartial())
```

runFunction	<i>Run a function</i>
-------------	-----------------------

Description

Run a function from an object, according to the mentioned evaluation mode, and to the chosen type factory

Usage

```
runFunction(object_o_1, functionName_s_1, arguments_l, evaluationMode_o_1)
```

Arguments

object_o_1	the object to consider
functionName_s_1	a single string that is the name of the function to run
arguments_l	a list of arguments to pass to the function
evaluationMode_o_1	an evaluation mode object. See EvaluationMode

Value

A list with names

status	a single boolean. Always TRUE when evaluation mode is standard_R_evaluation. Otherwise, will reflect result validity in the chose evaluation mode.
value	the result of the computation, might be a scalar or not, a warning, an error, ...
mode	the evaluation mode used to check the results
function_return_type_check	available if mode is different of standard_R_evaluation
parameter_type_checks	available if mode is type_checking_inforcement

Author(s)

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See Also

Refer to [FunctionParameterTypeFactory](#) and [runFunction](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',
                  package = 'wyz.code.offensiveProgramming'))
fi <- AdditionFI()
runFunction(fi, 'addDouble', list(34, 44.6), EvaluationMode(defineEvaluationModes()[1]))
runFunction(fi, 'addDouble', list(34, 44.6), EvaluationMode(defineEvaluationModes()[2]))
runFunction(fi, 'addDouble', list(34, 44.6), EvaluationMode(defineEvaluationModes()[3]))
```

runTestCase	<i>Run test cases</i>
-------------	-----------------------

Description

Run specified test cases under the given evaluation mode

Usage

```
runTestCase(object_o_1, testCaseIndexes_i, evaluationMode_o_1 = EvaluationMode())
```

Arguments

object_o_1 The R object to consider
 testCaseIndexes_i
 a vector of numbers identifying the test cases to run
 evaluationMode_o_1
 the evaluation mode to use. see [EvaluationMode](#)

Value

A list with two names

raw a list with one entry for each test ran, holding all data and metadata related to the test

synthesis a summary data.table that allows to see at a glance all the tests results. Also eases comparisons of results between various evaluation modes.

Author(s)

Fabien Gelineau <neonira@gmail.com>
 Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/both-defs/good/full/AdditionTCFI_G1.R',
                  package = 'wyz.code.offensiveProgramming'))
em <- EvaluationMode('type_checking_enforcement')
runTestCase(AdditionTCFI_G1(), c(3, 5, 7), em)
```

runTransientFunction *Run Transient Function*

Description

Run a function in a transient (non persistent) context.

Usage

```
runTransientFunction(function_f_1,
                    arguments_l,
                    evaluationMode_o_1,
                    function_return_type_s_1)
```

Arguments

function_f_1 a single R function

arguments_l a list of arguments to pass to the function

evaluationMode_o_1
 an evaluation mode object. See [EvaluationMode](#)

function_return_type_s_1
 a string that is a semantic parameter name, to express expected function return type

Value

A list with names

status a single boolean. Always TRUE when evaluation mode is standard_R_evaluation. Otherwise, will reflect result validity in the chose evaluation mode.

value the result of the computation, might be a scalar or not, a warning, an error, ...

mode the evaluation mode used to check the results

function_return_type_check
 available if mode is different of standard_R_evaluation

parameter_type_checks
 available if mode is type_checking_inforcement

Author(s)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [runFunction](#).

Examples

```
##---- typical case ----
em <- EvaluationMode(defineEvaluationModes()[3])
h <- function(x_s) x_s
runTransientFunction(h, list('neonira'), em, 'x_s')
runTransientFunction(h, list(pi), em, 'x_s')
runTransientFunction(h, list(pi), em, 'x_d')
```

TestCaseDefinition	<i>Test Case Definition</i>
--------------------	-----------------------------

Description

Defines a test case

Usage

```
TestCaseDefinition(params_l, expectedResult_, description_s_1)
```

Arguments

`params_l` a list that holds the test case input values

`expectedResult_` test case expected result. This will be used to compare with function execution results

`description_s_1` a single entry character vector, that is the test case description string

Value

An object that is an R environment class.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [FunctionParameterTypeFactory](#)

Examples

```
##---- typical case ----
tcd <- TestCaseDefinition(list(1:5), 15, 'sum of 5 first non nul integers')
tcd <- TestCaseDefinition(list(1:7, 3:5, sample(1:100, 19, FALSE)),
                        list(3:5), 'extract smallest length from input')
```

verifyClassName	<i>Verify Class Name</i>
-----------------	--------------------------

Description

Verifies class name compliance with a policy.

Usage

```
verifyClassName(name_s = "MyClassName", strictSyntax_b_1 = TRUE)
```

Arguments

name_s	a string that is the class name to be checked
strictSyntax_b_1	<p>A boolean value. When TRUE, allowed character set is [A-Za-z0-9]+. A class name must start with an uppercase letter. The name is required to be camel cased, although this cannot be checked.</p> <p>When FALSE, allowed character set is [A-Za-z0-9_]+. Classic R class naming applies.</p>

Value

TRUE when name complies with policy, FALSE otherwise.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----
verifyClassName('matrix')
verifyClassName('matrix', FALSE)
```

`verifyFunctionArguments`*Verify Function Arguments*

Description

Use this function to verify function arguments.

Usage

```
verifyFunctionArguments(arguments_l, abort_b_1 = TRUE, verbosity_b_1 = FALSE)
```

Arguments

<code>arguments_l</code>	An unconstrained list, representing the arguments. Should always result from a call to <code>mget(ls())</code> .
<code>abort_b_1</code>	A single boolean value stating if processing abortion should be triggered in case of error
<code>verbosity_b_1</code>	A single boolean value.

Details

This function allows to check all parameter types and values in a single line of code.

See examples below to know how to put this function in action.

Value

Returned value depends on parameter `abort_b_1` value.

When set to TRUE, any error will abort processing by issuing a call to `stop` function.

When set to FALSE, returned value is a boolean. It is TRUE only when no error have been detected. Otherwise FALSE.

Note

This function whenever used, should be the first statement of your function code.

Using this function outside function code is a non-sense.

Author(s)

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Examples

```

fun <- function(values_i_3m) {
  verifyFunctionArguments(mget(ls()), FALSE, FALSE)
}

fun(1)
# [1] FALSE

fun(1:7)
# [1] TRUE

nonOPFun <- function(x) {
  verifyFunctionArguments(mget(ls()), FALSE, TRUE)
}

nonOPFun(1:7)
# $x
# [1] 1 2 3 4 5 6 7
#
# x FALSE unknown suffix, [NA]
#
# [1] FALSE

# real use case with abortion
myFunWithAbortion <- function(values_i_3m) {
  verifyFunctionArguments(mget(ls()))
  # ...
}

tryCatch(myFunWithAbortion(1), error = function(e) cat(e$message, '\n'))
# argument mismatch [values_i_3m] wrong length, was expecting [3m] , got [1]

# real use case without abortion
myFunWithoutAbortion <- function(values_i_3m) {
  if (!verifyFunctionArguments(mget(ls()), FALSE)) return(FALSE)
  cat('continuing processing ... \n')
  TRUE
}

myFunWithoutAbortion(1)
# FALSE

myFunWithoutAbortion(1:3)
# continuing processing ...
# TRUE

```

verifyFunctionName	<i>Verify function name</i>
--------------------	-----------------------------

Description

Function name must comply with a policy. This function allows to check compliance.

Usage

```
verifyFunctionName(name_s = "aSimpleFunctionName", strictSyntax_b_1 = TRUE)
```

Arguments

name_s	The function name to be checked
strictSyntax_b_1	A boolean value. When TRUE, allowed character set is [A-Za-z0-9]+. A function name must start with a lowercase letter. The name is required to be camel cased, although this cannot be checked. When FALSE, allowed character set is [A-Za-z0-9_]+. Classic R function naming applies.

Value

A boolean value, either TRUE or FALSE.

Author(s)

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Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineEvaluationModes](#).

Examples

```
##---- typical case ----  
verifyFunctionName('matrix')  
verifyFunctionName('matrix', FALSE)
```

verifyFunctionReturnTypesDefinition

Verify Function Return Types Definition

Description

Verifies your declared return type definitions and detects anomalies.

Usage

```
verifyFunctionReturnTypesDefinition(object_o_1,  
                                   requiresFullInstrumentation_b_1 = TRUE)
```

Arguments

object_o_1 The object to be considered
 requiresFullInstrumentation_b_1
 a boolean stating if full instrumentation is required

Details

When requiresFullInstrumentation_b_1 is TRUE, each function must have an entry in the test case parameter definition.

Value

A list with names

validity a single boolean value
 class the class name of the provided object.
 intent the stage of the failure, provides hint about the faced issue
 message some hints to resolve the issue(s).

Author(s)

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 Maintainer: Fabien Gelineau <neonira@gmail.com>

See Also

Refer to [defineTestCaseDefinitionsParameterName](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',
                  package = 'wyz.code.offensiveProgramming'))
fi <- AdditionFI()
print(verifyFunctionReturnTypesDefinition(fi))
print(verifyFunctionReturnTypesDefinition(fi, FALSE))
```

verifyObjectName	<i>Verify Object Names</i>
------------------	----------------------------

Description

Verify object class name, object function names, and object function parameter names, and provides a synthesis of executed checks.

Proceeds also to some introspection on object to identify instrumentation of function return types and test case definitions. Provides information about completeness of instruction, and about missing functions and test cases.

Usage

```
verifyObjectName(object_o_1)
```

Arguments

object_o_1	the object to be checked
------------	--------------------------

Value

A list with following names

class_name	the class name of the provided object.
------------	--

supports_strict_compliance	a single boolean.
----------------------------	-------------------

supports_lazy_compliance	a single boolean.
--------------------------	-------------------

class_name_compliance	a boolean value expression class name compliance
-----------------------	--

class_name_compliance	a vector of booleans, where names are the function names and values express the name compliance
-----------------------	---

class_name_compliance	a data.table exposing the name compliance and the semanting name compliance for each paramter
-----------------------	---

owns_function_return_type_information	a single boolean
---------------------------------------	------------------

can_be_type_checked	a single boolean
---------------------	------------------

is_function_fully_instrumented	a single boolean
--------------------------------	------------------

missing_function	a vector of uninstrumented function names
------------------	---

```
owns_test_case_definitions
    a single boolean
is_test_case_fully_instrumented
    a single boolean
missing_test_cases
    a single boolean
```

Author(s)

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See Also

Refer to [verifyClassName](#) and [verifyFunctionName](#).

Examples

```
##---- typical case ----
library('data.table')
source(system.file('code-samples/frt-defs/good/full/AdditionFI.R',
                  package = 'wyz.code.offensiveProgramming'))
fi <- AdditionFI()
print(verifyObjectNames(fi))
```

```
verifyTestCaseDefinitions
    Verify Test Case Definitions
```

Description

Checks for test cases definition compliance and dectects uncompliances.

Usage

```
verifyTestCaseDefinitions(object_o_1, requiresFullInstrumentation_b_1 = TRUE)
```

Arguments

```
object_o_1      The object to be considered
requiresFullInstrumentation_b_1
    a boolean stating if full instrumentation is required
```

Details

When `requiresFullInstrumentation_b_1` is TRUE, each function must have an entry in the test case parameter definition.

Value

A list with names

validity	a single boolean value
class	the class name of the provided object
intent	the stage of the failure, provides hint about the faced issue
message	some hints to resolve the issue(s).

Author(s)

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See Also

Refer to [defineTestCaseDefinitionsParameterName](#).

Examples

```
##---- typical case ----  
library('data.table')  
source(system.file('code-samples/tcd-defs/good/full/AdditionTC.R',  
                  package = 'wyz.code.offensiveProgramming'))  
tc <- AdditionTC()  
print(verifyTestCaseDefinitions(tc))
```

Index

*Topic **classes**

print.EvaluationMode, 18
print.FunctionParameterName, 18
print.TestCaseDefinition, 19

*Topic **documentation**

findFilesInPackage, 6

*Topic **function**

verifyFunctionArguments, 31

*Topic **programming**

defineEvaluationModes, 3
defineFunctionReturnTypesParameterName,
3
defineTestCaseDefinitionsParameterName,
4

EvaluationMode, 5
exploreObjectNamesVerification, 5
FunctionParameterName, 7
FunctionParameterTypeFactory, 8
getObjectClassKind, 10
identifyOPInstrumentationLevel, 14
opInformation, 17
retrieveFactory, 20
retrieveFunctionReturnTypes, 23
retrieveTestCaseDefinitions, 25
runFunction, 26
runTestCase, 27
runTransientFunction, 28
TestCaseDefinition, 29
verifyClassName, 30
verifyFunctionName, 32
verifyFunctionReturnTypesDefinition,
33
verifyObjectNames, 35
verifyTestCaseDefinitions, 36

*Topic **utilities**

defineEvaluationModes, 3
defineFunctionReturnTypesParameterName,
3
defineTestCaseDefinitionsParameterName,

4

EvaluationMode, 5
exploreObjectNamesVerification, 5
FunctionParameterName, 7
FunctionParameterTypeFactory, 8
getObjectClassKind, 10
identifyOPInstrumentationLevel, 14
opInformation, 17
retrieveFactory, 20
retrieveFunctionReturnTypes, 23
retrieveTestCaseDefinitions, 25
runFunction, 26
runTestCase, 27
runTransientFunction, 28
TestCaseDefinition, 29
verifyClassName, 30
verifyFunctionName, 32
verifyFunctionReturnTypesDefinition,
33
verifyObjectNames, 35
verifyTestCaseDefinitions, 36

defineEvaluationModes, 3, 5, 8, 9, 23, 25,
27, 30, 33
defineFunctionReturnTypesParameterName,
3
defineTestCaseDefinitionsParameterName,
4, 34, 37

EvaluationMode, 3, 4, 5, 18, 26–28
exploreObjectNamesVerification, 5

findFilesInPackage, 6
formalArgs, 21, 22
FunctionParameterName, 7, 18
FunctionParameterTypeFactory, 8, 20, 26,
30

getClassTypicalFunctionNames, 13
getClassTypicalFunctionNames
(getObjectFunctionNames), 13

- getEllipsisName, 9
- getObjectClassKind, 10
- getObjectClassNames, 11, 11
- getObjectFunctionArgumentNames, 12
- getObjectFunctionNames, 12, 13

- hasMainClass (getObjectClassNames), 11

- identifyOPInstrumentationLevel, 14
- is.object, 10, 12, 13
- isAuditable, 15

- matchFunctionSignature, 16

- opInformation, 17

- print.EvaluationMode, 18
- print.FunctionParameterName, 18
- print.TestCaseDefinition, 19

- retrieveFactory, 20
- retrieveFunctionArgumentNames, 21
- retrieveFunctionArguments, 21, 22, 22
- retrieveFunctionReturnTypes, 23
- retrievePackageFunctionNames, 24
- retrieveTestCaseDefinitions, 25, 25
- retrieveTestCaseDescriptions, 25
- retrieveTestCaseDescriptions
 (retrieveTestCaseDefinitions),
 25
- runFunction, 26, 26, 29
- runTestCase, 27
- runTransientFunction, 28

- stop, 31

- TestCaseDefinition, 19, 29

- verifyClassName, 6, 15, 30, 36
- verifyFunctionArguments, 31
- verifyFunctionName, 6, 15, 32, 36
- verifyFunctionReturnTypesDefinition,
 23, 25, 33
- verifyObjectNames, 5, 6, 23, 25, 35
- verifyTestCaseDefinitions, 36