

# Package ‘wyz.code.offensiveProgramming’

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**Type** Package

**Title** Wizardry Code Offensive Programming

**Version** 1.1.24

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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

**License** GPL-3

**Depends** R (>= 4.0)

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

**Suggests** testthat, knitr, rmarkdown

**RoxygenNote** 6.1.1

**VignetteBuilder** knitr

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---

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)**

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

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

**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)**

Fabien Gelineau <neonira@gmail.com>

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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)**

Fabien Gelineau <neonira@gmail.com>

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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Maintainer: Fabien Gelineau <neonira@gmail.com>

**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 <a href="#">getObjectFunctionNames</a> 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)

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

### 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  
}
```

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

---

getObjectNameNames

*Retrieve Function Names From Object*

---

### Description

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

### Usage

```
getObjectNameNames(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](mailto:neonira@gmail.com)>

Maintainer: Fabien Gelineau <[neonira@gmail.com](mailto: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

name	the object name
category	the category of the object describe by function name. Could be CLASS, FUNCTION or DATA.
nature	either INTERNAL or EXPORTED.
stratum	the stratum the object belongs to. Values are CORE, LAYER_1, LAYER_2, LAYER_3.
phasing	main usage phase of the object. Values are DESIGN, BUILD, TEST, RUN, MAINTAIN, EVOLVE and TRANSVERSAL.
intent	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)

Fabien Gelineau <neonira@gmail.com>

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)

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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/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)

Fabien Gelineau <neonira@gmail.com>

Maintainer: Fabien Gelineau <neonira@gmail.com>

## Examples

```
# take too much time on Windows apparently to pass CRAN package acceptance tests  
if (.Platform$OS.type == "unix")  
  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 <a href="#">verifyObjectNames</a> function
another list	as returned by the <a href="#">verifyFunctionReturnTypesDefinition</a> 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 <a href="#">EvaluationMode</a>

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

**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)**

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**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)**

Fabien Gelineau <neonira@gmail.com>  
 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	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. When FALSE, allowed character set is [A-Za-z0-9_]+. Classic R class naming applies.

**Value**

TRUE when name complies with policy, FALSE otherwise.

**Author(s)**

Fabien Gelineau <neonira@gmail.com>  
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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**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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**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))
```

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