

Package ‘assertive.matrices’

November 20, 2018

Type Package

Title Assertions to Check Properties of Matrices

Version 0.0-2

Date 2018-11-20

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Description A set of predicates and assertions for checking the properties of matrices. This is mainly for use by other package developers who want to include run-time testing features in their own packages. End-users will usually want to use assertive directly.

URL <https://bitbucket.org/richierocks/assertive.matrices>

BugReports <https://bitbucket.org/richierocks/assertive.matrices/issues>

Depends R (>= 3.0.0)

Imports assertive.base (>= 0.0-2)

Suggests testthat

License GPL (>= 3)

LazyLoad yes

LazyData yes

Acknowledgments Development of this package was partially funded by the Proteomics Core at Weill Cornell Medical College in Qatar <<http://qatar-weill.cornell.edu>>. The Core is supported by 'Biomedical Research Program' funds, a program funded by Qatar Foundation.

Collate 'imports.R' 'assert-is-matrix.R' 'is-matrix.R'

RoxygenNote 6.1.0

NeedsCompilation no

Repository CRAN

Date/Publication 2018-11-20 18:10:03 UTC

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assert_is_diagonal_matrix
Is the input a diagonal matrix?

Description

Checks that the input is a diagonal matrix.

Usage

```
assert_is_diagonal_matrix(x, tol = 100 * .Machine$double.eps,
  severity = getOption("assertive.severity", "stop"))
```

```
is_diagonal_matrix(x, tol = 100 * .Machine$double.eps,
  .xname = get_name_in_parent(x))
```

Arguments

x	Input to check.
tol	Absolute values smaller than tol are not considered.
severity	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
.xname	Not intended to be used directly.

Value

TRUE if the input is all zeroes (after coercion to be a matrix).

Examples

```
x <- diag(3)
is_diagonal_matrix(x)
x[1, 2] <- 100 * .Machine$double.eps
is_diagonal_matrix(x)
x[2, 3] <- 101 * .Machine$double.eps
is_diagonal_matrix(x)
```

```
assert_is_identity_matrix
```

Is the matrix an identity matrix?

Description

Checks that the input is an identity matrix.

Usage

```
assert_is_identity_matrix(x, tol = 100 * .Machine$double.eps,  
  severity = getOption("assertive.severity", "stop"))  
  
is_identity_matrix(x, tol = 100 * .Machine$double.eps,  
  .xname = get_name_in_parent(x))
```

Arguments

x	Input to check.
tol	Absolute deviations from the expected values smaller than tol are not considered.
severity	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
.xname	Not intended to be used directly.

Value

TRUE if the input is all zeroes (after coercion to be a matrix).

Examples

```
x <- diag(3)  
is_identity_matrix(x)  
x[1, 2] <- 100 * .Machine$double.eps  
is_identity_matrix(x)  
x[2, 3] <- 101 * .Machine$double.eps  
is_identity_matrix(x)
```

```
assert_is_lower_triangular_matrix
```

Is the matrix upper/lower triangular?

Description

Checks that the input is an upper or lower triangular matrix.

Usage

```
assert_is_lower_triangular_matrix(x, strictly = FALSE, tol = 100 *
  .Machine$double.eps, severity = getOption("assertive.severity",
  "stop"))
```

```
assert_is_upper_triangular_matrix(x, strictly = FALSE, tol = 100 *
  .Machine$double.eps, severity = getOption("assertive.severity",
  "stop"))
```

```
is_lower_triangular_matrix(x, strictly = FALSE, tol = 100 *
  .Machine$double.eps, .xname = get_name_in_parent(x))
```

```
is_upper_triangular_matrix(x, strictly = FALSE, tol = 100 *
  .Machine$double.eps, .xname = get_name_in_parent(x))
```

Arguments

x	Input to check.
strictly	Logical. If TRUE, the diagonal must consist of zeroes.
tol	Absolute deviations from the expected values smaller than tol are not considered.
severity	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
.xname	Not intended to be used directly.

Value

TRUE if the input is all zeroes (after coercion to be a matrix).

Examples

```
x <- matrix(c(1, 2, 3, 0, 5, 6, 0, 0, 9), nrow = 3)
is_lower_triangular_matrix(x)
is_lower_triangular_matrix(x, strictly = TRUE)
is_upper_triangular_matrix(t(x))
is_upper_triangular_matrix(t(x), strictly = TRUE)
x[1, 2] <- 100 * .Machine$double.eps
is_lower_triangular_matrix(x)
```

```
x[2, 3] <- 101 * .Machine$double.eps  
is_lower_triangular_matrix(x)
```

```
assert_is_square_matrix
```

Is the matrix a square matrix?

Description

Checks that the input is a square matrix.

Usage

```
assert_is_square_matrix(x, severity = getOption("assertive.severity",  
"stop"))
```

```
is_square_matrix(x, .xname = get_name_in_parent(x))
```

Arguments

x	Input to check.
severity	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
.xname	Not intended to be used directly.

Value

TRUE if the input is all zeroes (after coercion to be a matrix).

Examples

```
is_square_matrix(matrix(1:9, nrow = 3))  
is_square_matrix(matrix(1:12, nrow = 3))
```

```
assert_is_symmetric_matrix
```

Is the input a symmetric matrix?

Description

Checks that the input is a symmetric matrix.

Usage

```
assert_is_symmetric_matrix(x, tol = 100 * .Machine$double.eps, ...,
  severity = getOption("assertive.severity", "stop"))

is_symmetric_matrix(x, tol = 100 * .Machine$double.eps,
  .xname = get_name_in_parent(x), ...)
```

Arguments

x	Input to check.
tol	Differences smaller than tol are not considered.
...	Passed to all.equal.
severity	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
.xname	Not intended to be used directly.

Value

TRUE if the input is symmetric (after coercion to be a matrix).

Examples

```
m <- diag(3); m[3, 1] <- 1e-100
assert_is_symmetric_matrix(m)
#These examples should fail.
assertive.base::dont_stop(assert_is_symmetric_matrix(m, tol = 0))
```

assert_is_zero_matrix *Is the input a zero matrix*

Description

Checks that the input is a matrix of zeroes.

Usage

```
assert_is_zero_matrix(x, tol = 100 * .Machine$double.eps,
  severity = getOption("assertive.severity", "stop"))

is_zero_matrix(x, tol = 100 * .Machine$double.eps,
  .xname = get_name_in_parent(x))
```

Arguments

<code>x</code>	Input to check.
<code>tol</code>	Absolute values smaller than <code>tol</code> are not considered.
<code>severity</code>	How severe should the consequences of the assertion be? Either "stop", "warning", "message", or "none".
<code>.xname</code>	Not intended to be used directly.

Value

TRUE if the input is all zeroes (after coercion to be a matrix).

Examples

```
x <- matrix(numeric(9), 3)
is_zero_matrix(x)
x[1, 1] <- 100 * .Machine$double.eps
is_zero_matrix(x)
x[2, 2] <- 101 * .Machine$double.eps
is_zero_matrix(x)
```

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