

tester package

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Introduction

The tester package provide a set of easy to read tests that return logical vector. The test can be used in conjunction with other testing packages to develop very powerful, yet easy to read tests. For example to test if a function return a floating point number less than zero one would need an expression like

```
number = -0.56

(number < 0 && is.numeric(number) )
```

```
## [1] TRUE
```

With tester the test is much more readable and friendly code.

```
library(tester)

number = -0.56

is_negative_decimal(number)
```

```
## [1] TRUE
```

The package also allows you to easily write tests that look for a single condition across a group of items. For example if I have a vector of numerics and I want check if any are infinite values. rather than test each element individually and checking to see if any test have failed, I can do one test and get a single logical result.

```
library(tester)

n<-c(rnorm(10),1/0)

n

## [1] 0.83048169 -0.08585711 0.88551183 0.32392977 -2.10751973
## [6] -0.66239998 -1.13859913 -0.59092037 0.32985184 0.49708113
## [11] Inf
```

```
has_infinite(n)
```

```
## [1] TRUE
```

You can also test for attributes of an object such as dimensions, dimnames, and missing values. For example if you needed to test whether an object was a numeric matrix with dimension names you could construct the following test.

```
m<-matrix(1:16,nrow=4,ncol=4)
dimnames(m)<-list(rep("row",4),rep("col",4))

is_numeric_matrix(m) & has_dimnames(m)
```

```
## [1] TRUE
```

Catalog of Tests

As of version 0.1.7 the tester package has over 100 tests. The tests all have the form ‘type of comparison’_‘comparison’ such as in the example above, `is_numeric()`.

There are 5 different comparison types and many different comparisons and combinations of comparisons.

Comparison Types

is
has
different
lacks
same

These are the ‘is’ type tests with numeric comparisons.

| test | Description |
|----------------------------------|----------------------|
| <code>is_even</code> | Is even |
| <code>is_not_even</code> | Is not even |
| <code>is_odd</code> | Is odd |
| <code>is_not_odd</code> | Is not odd |
| <code>is_positive</code> | Is positive |
| <code>is_not_positive</code> | Is not positive |
| <code>is_negative</code> | Is negative |
| <code>is_not_negative</code> | Is not negative |
| <code>is_decimal</code> | Is decimal |
| <code>is_not_decimal</code> | Is not decimal |
| <code>is_integer</code> | Is integer |
| <code>is_not_integer</code> | Is not integer |
| <code>is_natural</code> | Is natural |
| <code>is_not_natural</code> | Is not natural |
| <code>is_positive_decimal</code> | Is positive decimal |
| <code>is_negative_decimal</code> | Is negative decimal |
| <code>is_positive_integer</code> | Is positive integer |
| <code>is_negative_integer</code> | Is negative integer |
| <code>is_positive_scalar</code> | Is positive scalar |
| <code>is_negative_scalar</code> | Is negative scalar |
| <code>is_multiple</code> | Is x a multiple of y |

These tests are for object class and dimensions.

| test | Description |
|---------------------------|-----------------|
| <code>is_class</code> | x is of class y |
| <code>is_dataframe</code> | Is a data.frame |

| test | Description |
|----------------------|-------------------------------------|
| is_not_dataframe | Is not data.frame |
| is_factor_dataframe | Is a data.frame of factors |
| is_string | Is string |
| is_not_string | Is not string |
| is_string_tabular | Is string tabular |
| is_string_vector | Is string vector |
| is_string_dataframe | Is string data.frame |
| is_tabular | Is tabular |
| is_not_tabular | Is not tabular |
| is_numeric_dataframe | Is numeric data.frame |
| is_numeric_tabular | Is numeric tabular |
| is_numeric_vector | Is numeric vector |
| is_vector | Is vector |
| is_not_vector | Is not vector |
| is_scalar | Is scalar |
| is_not_scalar | Is not scalar |
| is_one_dim | Test if an object has one-dimension |

These are all of the tests related to matrix objects.

| test | Description |
|------------------------------|------------------------------|
| is_matrix | Is matrix |
| is_not_matrix | Is not matrix |
| is_numeric_matrix | Is numeric matrix |
| is_string_matrix | Is string matrix |
| is_square_matrix | Is square matrix |
| is_not_square_matrix | Is not square matrix |
| is_square_numeric_matrix | Is square numeric matrix |
| is_not_square_numeric_matrix | Is not square numeric matrix |
| is_diagonal | Is diagonal matrix |
| is_not_diagonal | Is not diagonal matrix |
| is_triangular_matrix | Is triangular matrix |
| is_lower_triangular | Is triangular matrix |
| is_upper_triangular | Is triangular matrix |

These are the logical tests.

| test | Description |
|-------------------|---|
| is_TRUE | Is TRUE |
| is_true | Is TRUE |
| is_FALSE | Is FALSE |
| is_false | Is FALSE |
| is_logical_matrix | Is matrix of logicals |
| is_logical_vector | Is vector of logicals |
| true_or_false | whether TRUE or FALSE, False for non logicals |

These is a series of tests rthat test the the object has a single value ao different types and attributes.

| test | Description |
|----------------------------|----------------------------|
| is_single | Is single |
| is_single_decimal | Is single decimal |
| is_single_even | Is single even |
| is_single_false | Is single false |
| is_single_logical | Is single logical |
| is_single_negative | Is single negative number |
| is_single_negative_decimal | Is single negative decimal |
| is_single_negative_integer | Is single negative integer |
| is_single_number | Is single number |
| is_single_odd | Is single odd |
| is_single_positive | Is single positive number |
| is_single_positive_decimal | Is single positive decimal |
| is_single_positive_integer | Is single positive integer |
| is_single_string | Is single string |
| is_single_true | Is single true |

The ‘has’ test test for various object attributes and missing or non-numeric values.

| test | Description |
|------------------|-----------------------------|
| has_colnames | Has column names |
| has_rownames | Has row names |
| has_dim | Has dimension |
| has_dimension | Has dimension |
| has_dimnames | Has dimension names |
| has_factors | Has factors |
| has_Inf | Has Inf or -Inf values |
| has_infinite | Has Inf or -Inf values |
| has_missing | Has NA values |
| has_NA | Has NA values |
| has_names | Has names |
| has_NaN | Has NaN values |
| has_not_a_number | Has NaN values |
| has_nas | Has any NA, NaN, Inf values |

The following test compare objects. These are of the form test(x,y)

```
different_length(rep(1,4),rep(1,3))
```

```
## [1] TRUE
```

| test | Description |
|------------------|---------------------|
| same_class | Same Class |
| different_class | Different Class |
| same_dim | Same Dimension |
| different_dim | Different Dimension |
| same_length | Same Length |
| different_length | Different Length |
| same_mode | Same Mode |

| test | Description |
|----------------|-----------------------------|
| different_mode | Different Mode |
| same_ncol | Same Number of Columns |
| different_ncol | Different Number of Columns |
| same_nrow | Same Number of Rows |
| different_nrow | Different Number of Rows |
| same_type | Same Type |
| different_type | Different Type |