

Package ‘turner’

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Title Turn vectors and lists of vectors into indexed structures

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Description Package designed for working with vectors and lists of vectors,
mainly for turning them into other indexed data structures.

URL <http://www.gastonsanchez.com>

Depends R (>= 3.0)

Imports tester

Suggests testthat, knitr

VignetteBuilder knitr

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Collate 'df_to_blocks.r' 'dummy_to_list.r' 'factor_to_dummy.r'
'from_to.r' 'funlist.r' 'indexify.r' 'lengths.r' 'list_ones.r'
'list_to_dummy.r' 'list_to_matrix.r' 'listify.r' 'listsize.r'
'matrix_to_blocks.r' 'vector_to_dummy.r' 'turner-package.r'

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Description

Turn vectors and lists of vectors into indexed structures

Author(s)

Gaston Sanchez <gaston.stat@gmail.com>

df_to_blocks	<i>Split a data frame into blocks</i>
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Description

Split a data frame into a list of blocks (either by rows or by columns)

Usage

```
df_to_blocks(DataFrame, blocks, byrow = TRUE)
```

Arguments

DataFrame	a data frame to split
blocks	either a list or a vector indicating the blocks. If blocks is a list of vectors, then the length of each vector defines the size of the blocks. If blocks is a vector, then each element represents the size of the blocks.
byrow	logical. If TRUE (the default) the data frame is split by rows, otherwise the data frame is split by columns

Value

A list of data frames

Author(s)

Gaston Sanchez

See Also

[matrix_to_blocks](#)

Examples

```
# say you have a data frame
iris_df = iris[c(1:3,51:53,101:103),]

# list defining the blocks
row_blocks = list(1:3, 4:6, 7:9)
col_blocks = c(2, 2, 1)

# split data into list of blocks (by rows)
df_to_blocks(iris_df, row_blocks)

# split data into list of blocks (by columns)
df_to_blocks(iris_df, col_blocks, byrow=FALSE)
```

dummy_to_list

Create an indexed list from a dummy matrix

Description

Create an indexed list from the columns of a dummy (or semi-dummy) matrix

Usage

```
dummy_to_list(Dummy)
```

Arguments

Dummy matrix (dummy by columns)

Value

A list of indexed vectors

Author(s)

Gaston Sanchez

See Also

[list_to_dummy](#), [listify](#)

Examples

```
# let's say you have a list like this
some_list = list(1:3, 1:2, 1:4)

# first create a dummy matrix based on some_list
some_dummy = list_to_dummy(some_list)

# now apply 'dummy_to_list'
dummy_to_list(some_dummy)

# a semi-dummy matrix
semi_dummy = some_dummy
semi_dummy[semi_dummy != 0] = rnorm(listsize(some_list))
dummy_to_list(semi_dummy)
```

factor_to_dummy

Create a dummy matrix from the elements in a factor

Description

Create a dummy matrix based on the elements of a factor. Each column in the produced matrix is a dummy indicator.

Usage

```
factor_to_dummy(afactor)
```

Arguments

afactor a factor (preferably of vectors)

Value

A matrix of dummy variables

Author(s)

Gaston Sanchez

See Also

[vector_to_dummy](#), [list_to_dummy](#)

Examples

```
# let's say you have a list like this
some_factor = iris$Species[c(1:3,51:53,101:103)]

# get dummy matrix
factor_to_dummy(some_factor)
```

from_to	<i>Starting and ending positions</i>
---------	--------------------------------------

Description

Get the starting position 'from' and the ending position 'to' of the elements contained in a vector (or a list of vectors)

Usage

```
from_to(x, ...)
```

Arguments

x	a numeric vector or a list of vectors
...	further arguments are ignored

Value

A list with two vectors: 'from' and 'to'. 'from' contains the indices with starting positions. 'to' contains the indices with ending positions.

Author(s)

Gaston Sanchez

See Also

[lengths](#), [listsize](#)

Examples

```
# let's say you have a numeric vector like this
num_vec = c(2, 3, 1, 4)

# get 'from' and 'to' indices
start_end = from_to(num_vec)
from = start_end$from
to = start_end$to

#' let's say you have a list like this
```

```
str_list = list(c("a","b","c"), c("d", "e"), c("f","g","h"))

# get 'from' and 'to' indices
start_end = from_to(str_list)
from = start_end$from
to = start_end$to
```

funlist

Apply a function to all elements in a list

Description

Applies a function to the unlisted elements of a list

Usage

```
funlist(alist, f, ...)
```

Arguments

alist	a list
f	a function to be applied
...	further arguments passed on to f

Value

value

Author(s)

Gaston Sanchez

See Also

[lapply](#), [sapply](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the sum of all elements in list1
funlist(list1, sum)

# get the maximum element in list1
funlist(list1, max)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))
```

```
# get the sum removing NAs
funlist(list2, sum, na.rm=TRUE)
```

indexify	<i>Create indices for elements in a vector or list</i>
----------	--

Description

Create indexed components for the elements of a list.

Usage

```
indexify(x, out)
```

Arguments

x	a numeric vector or list of vectors
out	string indicating the output format ("vector" or "list")

Value

A vector (or list) of indexed numbers

Author(s)

Gaston Sanchez

See Also

[listify](#)

Examples

```
# let's say you have a numeric vector like this
num_vec = c(2, 3, 1, 4)

# get indices in vector format
indexify(num_vec)

# let's say you have a list like this
str_list = list(c("a","b","c"), c("d", "e"), c("f","g","h"))

# get indices in vector format
indexify(str_list)

# get indices in list format
indexify(str_list, "list")
```

lengths	<i>Length of each element within a list</i>
---------	---

Description

Get the length of the elements contained in a list.

Usage

```
lengths(alist, out = "vector")
```

Arguments

alist	a list
out	string indicating the format of the output ("vector" or "list")

Value

A vector (or list) with the lengths of the elements in alist

Author(s)

Gaston Sanchez

See Also

[length](#), [funlist](#)

Examples

```
# say you have some list
some_list = list(1:3, 4:5, 6:9)

# length of each vector (output in vector format)
lengths(some_list)

# length of each vector (output in list format)
lengths(some_list, out = 'list')

# compare to 'length()'
length(some_list)
```

listify	<i>Create a list from a vector of integers</i>
---------	--

Description

Given a vector of integers, create a list of indexed vectors.

Usage

```
listify(indices)
```

Arguments

indices a vector of integers indicating the length of each vector in the produced list

Value

A list of index vectors

Author(s)

Gaston Sanchez

See Also

[indexify](#)

Examples

```
# let's say you have a vector of indices list like this
number_elements = c(3, 1, 5)

# get list of index vectors based on 'number_elements'
listify(number_elements)
```

listsize	<i>Size: total number of elements in a list</i>
----------	---

Description

Get the total number of elements in a list.

Usage

```
listsize(alist)
```

Arguments

alist a list

Value

number of elements in alist.

Author(s)

Gaston Sanchez

See Also

[lengths](#)

Examples

```
some_list = list(1:3, 4:5, 6:9)

# number of elems in 'some_list'
listsize(some_list)
```

list_ones

List with vectors of ones

Description

Create a list with vectors of ones from a numeric vector

Usage

```
list_ones(x)
```

Arguments

x a numeric vector

Value

A list of vectors with ones

Author(s)

Gaston Sanchez

See Also

[listify](#)

Examples

```
# let's say you have a numeric vector like this
num_vec = c(2, 3, 1, 4)

# get indices in vector format
list_ones(num_vec)
```

list_to_dummy	<i>Create a dummy matrix from the elements in a list</i>
---------------	--

Description

Create a dummy matrix based on the elements of a list. Each column in the produced matrix is a dummy indicator.

Usage

```
list_to_dummy(alist)
```

Arguments

alist a list of vectors

Value

A matrix of dummy variables

Author(s)

Gaston Sanchez

See Also

[dummy_to_list](#), [listify](#)

Examples

```
# let's say you have a list like this
num_list = list(1:3, 4:5, 6:9)

# get dummy matrix
list_to_dummy(num_list)

# try with a list of strings
str_list = list(c("a","b","c"), c("d", "e"), c("f","g","h"))
list_to_dummy(str_list)
```

list_to_matrix	<i>Design-type matrix from the elements in a list</i>
----------------	---

Description

Create a design-type matrix based on the elements of a list. Each column in the produced matrix is linked to the vectors in the list. See example.

Usage

```
list_to_matrix(alist)
```

Arguments

alist a list of numeric vectors

Value

A design-type matrix

Author(s)

Gaston Sanchez

See Also

[list_to_dummy](#), [indexify](#)

Examples

```
# let's say you have a list like this
num_list = list(1:3, 4:5, 6:9)

# get design-type matrix
list_to_matrix(num_list)
```

matrix_to_blocks	<i>Split a matrix into blocks</i>
------------------	-----------------------------------

Description

Split a matrix into a list of blocks (either by rows or by columns)

Usage

```
matrix_to_blocks(Matrix, blocks, byrow = TRUE)
```

Arguments

Matrix	a matrix to split
blocks	either a list or a vector indicating the blocks. If blocks is a list of vectors, then the length of each vector defines the size of the blocks. If blocks is a vector, then each element represents the size of the blocks.
byrow	logical. If TRUE (the default) the matrix is split by rows, otherwise the matrix is split by columns

Value

A list of matrices

Author(s)

Gaston Sanchez

See Also

[lengths](#), [listsize](#)

Examples

```
# matrix with 10 rows and 7 columns
M = matrix(rnorm(70), 10, 7)

# row blocks
row_sets = list(1:3, 4:5, 6:10)

# split matrix by rows
matrix_to_blocks(M, row_sets)

# column blocks
col_sets = c(3, 4)

# split matrix by rows
matrix_to_blocks(M, col_sets, byrow=FALSE)
```

maxlist

Maximum of all elements in a list

Description

This is just a wrapper of funlist using max

Usage

```
maxlist(alist, na.rm = FALSE)
```

Arguments

alist a list
na.rm logical indicating whether missing values should be removed

Value

the maximum

Author(s)

Gaston Sanchez

See Also

[funlist](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the max of all elements in list1
maxlist(list1)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))

# get the max of all elements in list2 removing NAs
maxlist(list2, na.rm=TRUE)
```

meanlist

Mean of all elements in a list

Description

This is just a wrapper of funlist using mean

Usage

```
meanlist(alist, na.rm = FALSE)
```

Arguments

alist a list
na.rm logical indicating whether missing values should be removed

Value

the mean

Author(s)

Gaston Sanchez

See Also

[funlist](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the mean of all elements in list1
meanlist(list1)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))

# get the mean of all elements in list2 removing NAs
meanlist(list2, na.rm=TRUE)
```

minlist

Minimum of all elements in a list

Description

This is just a wrapper of funlist using min

Usage

```
minlist(alist, na.rm = FALSE)
```

Arguments

alist	a list
na.rm	logical indicating whether missing values should be removed

Value

the minimum

Author(s)

Gaston Sanchez

See Also

[funlist](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the min of all elements in list1
minlist(list1)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))

# get the min of all elements in list2 removing NAs
minlist(list2, na.rm=TRUE)
```

prodlist

Product of all elements in a list

Description

This is just a wrapper of `funlist` using `prod`

Usage

```
prodlist(alist, na.rm = FALSE)
```

Arguments

<code>alist</code>	a list
<code>na.rm</code>	logical indicating whether missing values should be removed

Value

the product

Author(s)

Gaston Sanchez

See Also

[funlist](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the product of all elements in list1
prodlist(list1)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))

# get the prod of all elements in list2 removing NAs
prodlist(list2, na.rm=TRUE)
```

sumlist	<i>Sum of all elements in a list</i>
---------	--------------------------------------

Description

This is just a wrapper of `funlist` using `sum`

Usage

```
sumlist(alist, na.rm = FALSE)
```

Arguments

<code>alist</code>	a list
<code>na.rm</code>	logical indicating whether missing values should be removed

Value

the sum

Author(s)

Gaston Sanchez

See Also

[funlist](#)

Examples

```
# say you have some list
list1 = list(1:5, runif(3), rnorm(4))

# get the sum of all elements in list1
sumlist(list1)

# say you have missing data
list2 = list(c(1:4, NA), runif(3), rnorm(4))

# get the sum of all elements in list2 removing NAs
sumlist(list2, na.rm=TRUE)
```

vector_to_dummy	<i>Create a dummy matrix from the elements in a vector</i>
-----------------	--

Description

Create a dummy matrix based on the elements of a vector. Each column in the produced matrix is a dummy indicator.

Usage

```
vector_to_dummy(avector)
```

Arguments

avector a numeric vector

Value

A matrix of dummy variables

Author(s)

Gaston Sanchez

See Also

[list_to_dummy](#), [factor_to_dummy](#)

Examples

```
# let's say you have a list like this
num_vec = c(2, 3, 1, 4)

# get dummy matrix
vector_to_dummy(num_vec)
```

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