Package 'tinyoperations'

July 9, 2023

Title Infix operators and some functions to help in your coding etiquette

Version 0.0.0.9

Description The 'tinyoperations' R-package adds some infix operators, and a few functions.
It primarily focuses on 4 things.
(1) Decimal numbers (``double'') truth testing.
(2) Reducing repetitive code.
(3) Extending the string manipulation capabilities of the 'stringi' R package.
(4) A new package and module import system, that combines the benefits of aliasing a package with the benefits of attaching a package.
The 'tinyoperations' R-package has only one dependency, namely 'stringi'.
However, it does allows multi-threading of some of the string-related functions (when appropriate) via the suggested 'stringfish' R-package.
Most functions in this R-package are fully vectorized and have been optimized for optimal speed and performance.

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Encoding UTF-8

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Suggests rlang,
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VignetteBuilder knitr

Depends R (>= 4.1.0)

Imports stringi (>= 1.7.12)

URL https://github.com/tony-aw/tinyoperations

BugReports https://github.com/tony-aw/tinyoperations/issues

R topics documented:

`decimal` *Safer decimal number (in)equality operators*

Description

The `%d==%`, `%d!=%` `%d<%`, `%d>%`, `%d<=%`, `%d>=%` (in)equality operator perform decimal number truth testing. They are virtually equivalent to the regular (in)equality operators,
`==`, `!=`, `<`, `>`, `<=`, `>=`,
except for one aspect. The decimal number truth testing operators assume that if the absolute difference between `x` and `y` is smaller than the Machine tolerance, `sqrt(.Machine$double.eps)`, then `x` and `y` ought to be consider to be equal.
Thus these provide safer decimal number truth testing.
For example: `0.1*7 == 0.7` returns `FALSE`, even though they are equal, due to the way decimal numbers are stored in programming languages like R. But `0.1*7` `%d==%` `0.7` returns `TRUE`.

There are also the `x %d{}% bnd` and `x %d!{}% bnd` operators, where `bnd` is a vector of length 2, or a 2-column matrix (`nrow(bnd)==length(x)` or `nrow(bnd)==1`).
The `x %d{}% bnd` operator checks if `x` is within the closed interval with bounds defined by `bnd`.
The `x %d!{}% bnd` operator checks if `x` is outside the closed interval with bounds defined by `bnd`.

Usage

```
x %d==% y

x %d!=% y

x %d<% y
```

```
x %d>% y

x %d<=% y

x %d>=% y

x %d{}% bnd

x %d!{}% bnd

tinyoperations_decimal_truth()
```

Arguments

x, y	numeric vectors, matrices, or arrays, though these operators were specifically designed for decimal numbers (class "double").
bnd	either a vector of length 2, or a matrix with 2 columns and 1 row, or else a matrix with 2 columns where `nrow(bnd)==length(x)`. The first element/column of bnd gives the lower bound of the closed interval; The second element/column of bnd gives the upper bound of the closed interval;

See Also

tinyoperations_help

Examples

```
x <- c(0.3, 0.6, 0.7)
y <- c(0.1*3, 0.1*6, 0.1*7)
print(x); print(y)
x == y # gives FALSE, but should be TRUE
x!= y # gives TRUE, should be FALSE
x > y # not wrong
x < y # gives TRUE, should be FALSE
x %d==% y # here it's done correctly
x %d!=% y # correct
x %d<% y # correct
x %d>% y # correct
x %d<=% y # correct
x %d>=% y # correct

x <- c(0.3, 0.6, 0.7)
bnd <- matrix(c(0.29, 0.59, 0.69, 0.31, 0.61, 0.71), ncol=2)
x %d{}% bnd
x %d!{}% bnd

# These operators still work for non-decimal number numerics also:
x <- 1:5
y <- 1:5
x %d==% y
x %d!=% y
x %d<% y
x %d>% y
```

```
x %d<=% y
x %d>=% y

x <- 1:5
y <- x+1
x %d==% y
x %d!=% y
x %d<% y
x %d>% y
x %d<=% y
x %d>=% y

x <- 1:5
y <- x-1
x %d==% y
x %d!=% y
x %d<% y
x %d>% y
x %d<=% y
x %d>=% y
```

`import_as` *Load main package + its foreign exports + its dependencies + its enhances + its extensions under one alias*

Description

The `import_as()` function imports the namespace of an R package, and optionally also its dependencies, enhances, and extensions, under the same alias. The specified alias will be placed in the current environment (like the global environment, or the environment within a function).

Usage

```
import_as(
  alias,
  main_package,
  foreign_exports = TRUE,
  dependencies = NULL,
  enhances = NULL,
  extensions = NULL,
  lib.loc = .libPaths(),
  loadorder = c("dependencies", "main_package", "enhances", "extensions")
)
```

Arguments

`alias` a syntactically valid non-hidden variable name (unquoted), giving the alias object where the package(s) are to be loaded into.

NOTE: To keep aliases easily distinguished from other objects that can also be subset with the `$` operator, I recommend ending (not starting!) the names of all alias names with a dot (`.`) or underscore (`_`).

`main_package` a single string, giving the name of the main package to load under the given alias.

`foreign_exports`
logical; some R packages export functions that are not defined in their own package, but in their direct dependencies; "foreign exports", if you will.
This argument determines what the `import_as` function will do with the foreign exports of the `main_package`:

- If `TRUE` the foreign exports from the `main_package` are added to the alias, even if `dependencies = NULL`. This is the default, as it is analogous to the behaviour of base R's :: operator.
- If `FALSE`, these foreign exports are not added, and the user must specify the appropriate packages in argument `dependencies`.

`dependencies` an optional character vector, giving the names of the dependencies of the `main_package` to be loaded also under the alias.
Defaults to `NULL`, which means no dependencies are loaded.
See pkg_get_deps to quickly get dependencies from a package.

`enhances` an optional character vector, giving the names of the packages enhanced by the `main_package` to be loaded also under the alias.
Defaults to `NULL`, which means no enhances are loaded.

`extensions` an optional character vector, giving the names of the extensions of the `main_package` to be loaded also under the alias.
Defaults to `NULL`, which means no extensions are loaded.

`lib.loc` character vector specifying library search path (the location of R library trees to search through).
This is usually `.libPaths()`.
See also loadNamespace.

`loadorder` the character vector
`c("dependencies", "main_package", "enhances", "extensions")`,
or some re-ordering of this character vector, giving the relative load order of the groups of packages.

The default setting (which is highly recommended) is the character vector
`c("dependencies", "main_package", "enhances", "extensions")`,
which results in the following load order:

1. The dependencies, in the order specified by the `depenencies` argument.
2. The main_package (see argument `main_package`), including foreign exports (if `foreign_exports=TRUE`).
3. The enhances, in the order specified by the `enhances` argument.
4. The extensions, in the order specified by the `extensions` argument.

Details

On the `dependencies`**,** `enhances` **and** `extensions` **arguments**

- `dependencies`: "Dependencies" here are defined as any package appearing in the "Depends", "Imports", or "LinkingTo" fields of the Description file of the `main_package`. So no recursive dependencies.
- `enhances`: Enhances are defined as packages appearing in the "Enhances" field of the Description file of the `main_package`.
- `extensions`: "Extensions" here are defined as reverse-depends or reverse-imports. It does not matter if these are CRAN or non-CRAN packages. However, the intended meaning of an extension is not merely being a reverse dependency, but a package that actually extends the functionality of the `main_package`.

As implied in the description of the `loadorder` argument, the order of the character vectors given in the `dependencies`, `enhances`, and `extensions` arguments matter:
If multiple packages share objects with the same name, the objects of the package named last will overwrite those of the earlier named packages.

Additional details
The `import_as()` function does not allow importing base/core R under an alias, so don't try.

For a more detailed description of the import system introduced by the `tinyoperations` R package, please refer to the Read Me file on the GitHub main page:
https://github.com/tony-aw/tinyoperations

Value

The variable named in the `alias` argument will be created in the current environment (like the global environment, or the environment within a function). The alias object will contain the following:

- The (merged) package environment, containing the exported functions from the packages.
- The attributes of the alias object will contain the package names.

See Also

tinyoperations_import, source_module, pkgs

Examples

```
## Not run:
import_as( # this creates the 'dr.' object
dr., "dplyr",, extensions = "powerjoin"
)
dr.$mutate

## End(Not run)
```

`import_data` *Assign data-set from a package directly to a variable*

Description

The `import_data()` function gets a specified data set from a package.
Unlike `utils::data()`, the `import_data()` function returns the data set directly, and allows assigning the data set like so:
`mydata <- import_data(...)`.

Usage

```
import_data(dataname, package, lib.loc = .libPaths())
```

Arguments

`dataname`	a single string, giving the name of the data set.
`package`	the quoted package name.
`lib.loc`	character vector specifying library search path (the location of R library trees to search through). This is usually `.libPaths()`. See also loadNamespace.

Details

For a more detailed description of the import system introduced by the `tinyoperations` R package, please refer to the Read Me file on the GitHub main page:
https://github.com/tony-aw/tinyoperations

Value

Returns the data directly. Thus, one can assign the data like so: `mydata <- import_data(...)`.

See Also

tinyoperations_import, source_module, pkgs

Examples

```
## Not run:
d <- import_data("chicago", "gamair")
head(d)

## End(Not run)
```

`import_inops` *Expose infix operators to the current environment*

Description

The `import_inops()` function exposes the infix operators of the specified packages to the current environment (like the global environment, or the environment within a function).
To ensure the user can still verify which operator function came from which package, a "package" attribute is added to each exposed operator.
Naturally, the namespace attribute of each of the operators remains intact.
If you wish to globally attach infix operators, instead of just placing them in the current environment, see pkg_lsf.

Usage

```
import_inops(
  pkgs,
  lib.loc = .libPaths(),
  exclude,
  include.only,
  overwrite = TRUE,
  inherits = FALSE
)
```

Arguments

`pkgs`	a single string, or character vector, with the package name(s). NOTES: 1. The order of the character vector matters! If multiple packages share infix operators with the same name, the conflicting operators of the package named last will overwrite those of the earlier named packages. 2. The `import_inops` function performs a basic check that the packages are mostly (reverse) dependencies of each other. If not, it will give an error.
`lib.loc`	character vector specifying library search path (the location of R library trees to search through). This is usually `.libPaths()`. See also loadNamespace.
`exclude`	a character vector, giving the infix operators NOT to expose to the current environment. This can be handy to prevent overwriting any (user defined) infix operators already present in the current environment. NOTE: You cannot specify both the `exclude` and `include.only` arguments. Only one or the other, or neither.
`include.only`	a character vector, giving the infix operators to expose to the current environment, and the rest of the operators will not be exposed.

This can be handy to prevent overwriting any (user defined) infix operators already present in the current environment.

NOTE: You cannot specify both the `exclude` and `include.only` arguments. Only one or the other, or neither.

`overwrite` logical, indicating if it is allowed to overwrite existing infix operators.

- If `TRUE` (default), a warning is given when operators existing in the current environment are being overwritten, but the function continuous nonetheless.
- If `FALSE`, an error is produced when the to be exposed operators already exist in the current environment, and the function is halted.

`inherits` logical; when `overwrite=FALSE`, should enclosed environments, especially package namespaces, also be taken into account?
Defaults to `FALSE`.
See also exists.

Details

The `import_inops()` function does not support overloading base/core R operators, so don't try.

For a more detailed description of the import system introduced by the `tinyoperations` R package, please refer to the Read Me file on the GitHub main page:
https://github.com/tony-aw/tinyoperations

Value

For `import_inops()`:
The infix operators from the specified packages will be placed in the current environment (like the Global environment, or the environment within a function).

See Also

tinyoperations_import, source_module, pkgs

Examples

```
## Not run:
import_inops("data.table")

## End(Not run)
```

inplace *Generalized in-place (mathematical) modifier*

Description

Generalized in-place (mathematical) modifier.

The `x %:=% f` operator allows performing in-place modification of some object `x` with a function `f`.

For example this:
`object[object > 0] <- object[object > 0] + 1`
Can now be re-written as:
`object[object > 0] %:=% \(x) x + 1`

This function-based method is used, instead of the more traditional in-place mathematical modification like `+=`, to prevent precedence issues (functions come before mathematical arithmetic in `R`).

Usage

```
x %:=% f
```

Arguments

`x`	an object, with properties such that function `f` can be use on it. For example, when function `f` is mathematical, `x` should be a number or numeric (or 'number-like') vector, matrix, or array.
`f`	a (possibly anonymous) function to be applied in-place on `x`. The function must take one argument only.

Value

This operator does not return any value:
it is an in-place modifiers, and thus modifies `x` directly.

Examples

```
set.seed(1)
object <- matrix(rpois(10, 10), ncol=2)
print(object)
y <- 3
object %:=% \(x) x+y # same as object <- object + y
print(object)
```

`inplace_str_arithmetic` *In place modifying string arithmetic*

Description

In-place modifier versions of string arithmetic:

`x %s+ =% y` is the same as `x <- x %s+% y`

`x %s- =% p` is the same as `x <- x %s-% p`

`x %s* =% n` is the same as `x <- x %s*% n`

`x %s/ =% p` is the same as `x <- x %s/% p`

See also the documentation on string arithmetic: string arithmetic.

Some of the internal code of these operators was inspired by the `roperators` R package.

Usage

```
x %s+ =% y

x %s- =% p

x %s* =% n

x %s/ =% p
```

Arguments

`x, y, p, n`	see string arithmetic and s_pattern.

Value

These operators do not return any value: they are in-place modifiers, and thus modify `x` directly.

References

Wiseman B, Nydick S, Jones J (2022). roperators: Additional Operators to Help you Write Cleaner R Code. https://CRAN.R-project.org/package=roperators

Examples

```
y <- "a"
p <- "a|e|i|o|u"
n <- c(2, 3)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
```

```
print(x)
x %s+ =% y # same as x <- x %s+% y
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s- =% p # same as x <- x %s-% p
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s* =% n # same as x <- x %s\*% n
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s/ =% p # same as x <- x %s/% p
print(x)


################################################################################


y <- "a"
# pattern with ignore.case=TRUE:
p <- s_pattern(regex = "A|E|I|O|U", ignore.case=TRUE)
n <- c(3, 2)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s+ =% y # same as x <- x %s+% y
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s- =% p # same as x <- x %s-% p
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s* =% n # same as x <- x %s\*% n
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %s/ =% p # same as x <- x %s/% p
print(x)
```

`inplace_str_subset` *In place modifying string subsetting*

Description

In-place modifier versions of string subsetting:

`x %sget =% ss` is the same as `x <- x %sget% ss`

`x %strim =% ss` is the same as `x <- x %strim% ss`

See also the documentation on string subsetting (string subset).
Note that there is no in-place modifier versions of `%ss%`.

Some of the internal code of these operators was inspired by the `roperators` R package.

Usage

```
x %sget =% ss

x %strim =% ss
```

Arguments

`x, ss`	see string subset.

Value

These operators do not return any value: they are in-place modifiers, and thus modify `x` directly.

References

Wiseman B, Nydick S, Jones J (2022). roperators: Additional Operators to Help you Write Cleaner R Code. https://CRAN.R-project.org/package=roperators

Examples

```
ss <- c(2,2)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %sget =% ss # same as x <- x %sget% ss
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %strim =% ss # same as x <- x %strim% ss
print(x)


################################################################################


ss <- c(2,2)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
x %sget =% ss # same as x <- x %sget% ss
print(x)

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
```

```
print(x)
x %strim =% ss # same as x <- x %strim% ss
print(x)
```

`logic_ops` *Logic operators*

Description

Additional logic operators:

The `x %xor% y` operator is the "exclusive-or" operator, the same as `xor(x, y)`.

The `x %n&% ` operator is the "not-and" operator, the same as `(!x) & (!y)`.

The `x %out% y` operator is the same as `!x %in% y`.

The `x %?=% y` operator checks if `x` and `y` are **both** unreal or unknown (i.e. NA, NaN, Inf, -Inf).

The `n %=numtype% numtype` operator is a vectorized operator that checks for every value of numeric vector `n` if it can be considered a number belonging to type `numtype`. See arguments for details.

The `s %=strtype% strtype` operator is a vectorized operator that checks for every value of character vector `s`
if it can seen as a certain `strtype`. See arguments for details.

The `s %sgrep% p` operator is a vectorized operator that checks for every value of character vector `s` if it has pattern `p`.

Usage

```
x %xor% y

x %n&% y

x %out% y

x %?=% y

s %sgrep% p

n %=numtype% numtype

s %=strtype% strtype
```

Arguments

`x, y`	see Logic.
`s`	a character vector.

p — the result from s_pattern, or else a character vector of the same length as s with regular expressions.

n — a numeric vector.

numtype — a single string giving the type if numeric to be checked. The following options are supported:

- "~0": zero, or else a number whose absolute value is smaller than the Machine tolerance (sqrt(.Machine$double.eps)).
- "B": binary numbers (exactly 0 or exactly 1);
- "prop": proportions - numbers between 0 and 1 (exactly 0 or 1 is also allowed);
- "I": Integers;
- "odd": odd integers;
- "even": even integers;
- "R": Real numbers;
- "unreal": infinity, NA, or NaN;

strtype — a single string giving the type of string to be checked. The following options are supported:

- "empty": checks if the string only consists of empty spaces.
- "unreal": checks if the string is NA, or if it has literal string "NA", "NaN" or "Inf", regardless if it has leading or trailing spaces.
- "numeric": checks if the string can be converted to a number, disregarding leading and trailing spaces. I.e. the string "5.0" can be converted to the the actual number 5.0.
- "special": checks if the string consists of only special characters.

Examples

```
x <- c(TRUE, FALSE, TRUE, FALSE, NA, NaN, Inf, -Inf, TRUE, FALSE)
y <- c(FALSE, TRUE, TRUE, FALSE, rep(NA, 6))
outcome <- data.frame(
  x=x, y=y,
  "x %xor% y"=x %xor% y, "x %n&% y" = x %n&% y, "x %?=% y" = x %?=% y,
  check.names = FALSE
)
print(outcome)
```

```
1:3 %out% 1:10
1:10 %out% 1:3


n <- c(0:5, 0:-5, 0.1, -0.1, 0, 1, Inf, -Inf, NA, NaN)
1e-20 %=numtype% "~0"
n[n %=numtype% "B"]
n[n %=numtype% "prop"]
n[n %=numtype% "I"]
n[n %=numtype% "odd"]
n[n %=numtype% "even"]
n[n %=numtype% "R"]
n[n %=numtype% "unreal"]

s <- c(" AbcZ123 ", " abc ", " 1.3 ", " !#$%^&*() ", "  ", "  NA  ", "  NaN  ", " Inf ")
s[s %=strtype% "empty"]
s[s %=strtype% "unreal"]
s[s %=strtype% "numeric"]
s[s %=strtype% "special"]


s <- c("Hello world", "Goodbye world")
p <- s_pattern(regex = c("Hello", "Hello"))
s %sgrep% p
```

`matrix_ops` *Infix operators for row- and column-wise re-ordering of matrices*

Description

Infix operators for custom row- and column-wise re-ordering of matrices

The `x %row~% mat` operator re-orders the elements of every row of matrix `x` according to the ordering ranks given in matrix `mat`.

The `x %col~% mat` operator re-orders the elements of every column of matrix `x` according to the ordering ranks given in matrix `mat`.

Usage

```
x %row~% mat

x %col~% mat
```

Arguments

`x`	a matrix
`mat`	a matrix with the same dimensions as `x`, giving the ordering ranks of every element of matrix `x`.

Details

If matrix `x` is a numeric matrix, and one wants to sort the elements of every row or column numerically, `x %row~% x` or `x %col~% x` would suffice, respectively.

If matrix `x` is not numeric, sorting the elements using `x %row~% x` and `x %col~% x` is still possible, but probably not the best option. In the non-numeric case, providing a matrix of ordering ranks for `mat` would be faster and give more accurate ordering. See the examples section.

If `mat` is a matrix of non-repeating random integers, i.e.
`mat <- sample(1:length(x), replace=FALSE) |> matrix(ncol=ncol(x))`
then the code
`x %row~% mat`
will randomly shuffle the elements of every row, where the shuffling order of every row is independent of the other rows.
Similarly,
`x %col~% mat`
will randomly shuffle the elements of every column, where the shuffling order of every column is independent of the other columns.

These operators are faster than re-ordering matrices using loops or apply-like functions.

Value

A modified matrix.

Examples

```
# numeric matrix ====

x <- matrix(sample(1:25), nrow=5)
print(x)
x %row~% x # sort elements of every row
x %row~% -x # reverse-sort elements of every row
x %col~% x # sort elements of every column
x %col~% -x # reverse-sort elements of every column

x <- matrix(sample(1:25), nrow=5)
print(x)
mat <- sample(1:length(x)) |> matrix(ncol=ncol(x)) # matrix of non-repeating random integers
x %row~% mat # randomly shuffle every row independently
x %col~% mat # randomize shuffle every column independently

# character matrix ====

x <- matrix(sample(letters, 25), nrow=5)
print(x)
mat <- stringi::stri_rank(as.vector(x)) |> matrix(ncol=ncol(x))
x %row~% mat # sort elements of every row
x %row~% -mat # reverse-sort elements of every row
x %col~% mat # sort elements of every column
x %col~% -mat # reverse-sort elements of every column

x <- matrix(sample(letters, 25), nrow=5)
print(x)
```

```
mat <- sample(1:length(x)) |> matrix(ncol=ncol(x)) # matrix of non-repeating random integers
x %row~% mat # randomly shuffle every row independently
x %col~% mat # randomize shuffle every column independently
```

---

misc *Miscellaneous functions to help your coding etiquette*

Description

The `stricter_TrueFalse()` function re-assigns the `T` and `F` values to `NULL`, and locks them, forcing the user to use `TRUE` and `FALSE`. Removing the created `T` and `F` objects will restore their default behaviour.

The `X %<-c% A` operator creates a `CONSTANT` `X` and assigns `A` to it.
Constants cannot be changed, only accessed or removed. So if you have a piece of code that absolutely requires some `CONSTANT`, use this operator to create said `CONSTANT`.
Removing object `X` also removes its binding lock. Thus to change a `CONSTANT`, simply remove it and re-create it.

Usage

```
stricter_TrueFalse()

X %<-c% A
```

Arguments

`X`	a syntactically valid unquoted name of the object to be created.
`A`	any kind of object to be assigned to `X`.

Value

For `stricter_TrueFalse()`:
Two objects, namely `T` and `F`, both set to `NULL`. Removing the created `T` and `F` objects will restore their default behaviour.

For `X %<-c% A`:
The object `X` containing `A` is created in the current environment, and this object cannot be changed. It can only be accessed or removed.

Examples

```
stricter_TrueFalse()
X %<-c% data.frame(x=3, y=2) # this data.frame cannot be changed. Only accessed or removed.
X[1, ,drop=FALSE]
```

pkgs *Miscellaneous package functions*

Description

The pkgs %installed in% lib.loc operator checks if one or more package(s) pkgs exist(s) in library location lib.loc, and does so WITHOUT attaching or even loading the package(s).
Moreover, this operator forces the user to make it syntactically explicit where one is looking for installed R package(s).

The pkg_get_deps() function gets the dependencies of a package from the Description file. It works on non-CRAN packages also.

The help.import() function finds the help file for exposed infix operators and functions in an alias object.

The pkg_lsf(package, ...) function gets a list of exported functions/operators from a package.
One handy use for this function is to, for example, globally attach all infix operators from a function using library, like so:
library(packagename, include.only = pkg_lsf("packagename", type="inops"))

Usage

```
pkg_get_deps(
  package,
  lib.loc = .libPaths(),
  deps_type = c("LinkingTo", "Depends", "Imports"),
  base = FALSE,
  recom = FALSE,
  rstudioapi = FALSE
)

pkgs %installed in% lib.loc

help.import(..., i, alias)

pkg_lsf(package, type, lib.loc = .libPaths())
```

Arguments

package	a single string giving the package name.
lib.loc	character vector specifying library search path (the location of R library trees to search through). This is usually .libPaths(). See also loadNamespace.
deps_type	a character vector, giving the dependency types to be used. Defaults to c("LinkingTo", "Depends", "Imports"). The order of the character vector given in deps_type affects the order of the returned character vector; see Details sections.

base	logical, indicating whether base/core R should be included (TRUE), or not included (FALSE; the default).
recom	logical, indicating whether the pre-installed "recommended" R packages should be included (TRUE), or not included (FALSE; the default). Note that only the recommended R packages actually installed in your system are taken into consideration.
rstudioapi	logical, indicating whether the rstudioapi R package should be included (TRUE), or not included (FALSE; the default).
pkgs	a single string, or character vector, with the package name(s).
...	further arguments to be passed to help.
i	either one of the following: • a function (use back-ticks when the function is an infix operator). Examples: myfun , `%operator%` , myalias.$some_function . • a string giving the function name or topic (i.e. "myfun", "thistopic"). If a string, argument alias must be specified also.
alias	the alias object as created by the import_as function. Only needs to be specified if argument i is a string, otherwise it is ignored.
type	The type of functions to list. Possibilities: • "inops" or "operators": Only infix operators. • "regfuns": Only regular functions (thus excluding infix operators). • "all": All functions, both regular functions and infix operators.

Details

For help.import(...):
do not use the topic / package and i / alias arguments together. It's either one set or the other.

For pkg_get_deps():
If using the pkgs_get_deps() function to fill in the dependencies argument of the import_as function, one may want to know the how character vector returned by pkgs_get_deps() is ordered.
The order is determined as follows.
For each string in argument deps_type, the package names in the corresponding field of the Description file are extracted, in the order as they appear in that field.
The order given in argument deps_type also affects the order of the returned character vector:
The default,
c("LinkingTo", "Depends", "Imports"),
means the package names are extracted from the fields in the following order:

1. "LinkingTo";
2. "Depends";
3. "Imports".

The unique (thus non-repeating) package names are then returned to the user.

Value

For pkgs %installed in% lib.loc:
Returns a logical vector, where TRUE indicates a package is installed, and FALSE indicates a package is not installed.

For pkg_get_deps():
A character vector of unique dependencies.

For pkg_lsf():
Returns a character vector of function and/or operator names.

For help.import():
Opens the appropriate help page.

References

https://stackoverflow.com/questions/30223957/elegantly-extract-r-package-dependencies-of-a-package-not-listed-on-cran

See Also

tinyoperations_import

Examples

```
## Not run:
pkgs <- c(unlist(tools::package_dependencies("devtools")), "devtools")
pkgs %installed in% .libPaths()
pkg_lsf("devtools", "all")
import_as(m., "magrittr")
import_inops("magrittr")
help.import(i=m.$add)
help.import(i=`%>%`)
help.import(i="add", alias=m.)

## End(Not run)
```

---

source_module *Additional module import management*

Description

The alias %@source% list(file=...) operator imports all objects from a source-able script file under an alias.

The source_inops() function exposes the infix operators defined in a source-able script file to the current environment (like the global environment, or the environment within a function).

Note that the alias %@source% list(file=...) operator and the source_inops() function do

NOT suppress output (i.e. plots, prints, messages) from the sourced module file.

Usage

```
alias %@source% lst

source_inops(...)
```

Arguments

`alias`	a variable name (unquoted), giving the (not yet existing) object where the sourced objects from the module are to be assigned to. Syntactically invalid names are not allowed for the alias name.
`lst`	a named list, giving the arguments to be passed to the source function. For example: `alias %@source% list(file="mydir/myscript.R")` The `local` argument should not be included in the list.
`...`	arguments to be passed to the source function, such as the `file` argument. The `local` argument should not be included.

Value

For the `alias %@source% list(file=...)` operator:
The variable named as the `alias` will be created (if it did not already exist) in the current environment (like the Global environment, or the environment within a function), and will contain all objects from the sourced script.

For `source_inops()`:
The infix operators from the specified module will be placed in the current environment (like the Global environment, or the environment within a function).

See Also

tinyoperations_import, `base::source()`

Examples

```
## Not run:
alias %@source% list(file="mydir/mymodule.R")
source_inops(file="mydir/mymodule.R")

## End(Not run)

exprs <- expression({
helloworld = function()print("helloworld")
goodbyeworld <- function() print("goodbye world")
`%s+test%` <- function(x,y) stringi::`%s+%`(x,y)
`%s*test%` <- function(x,y) stringi::`%s*%`(x,y)
})

myalias. %@source% list(exprs=exprs)
```

```
myalias.$helloworld()

temp.fun <- function(){
  source_inops(exprs=exprs) # places the function inside the function environment
  ls() # list all objects residing within the function definition
}
temp.fun()
```

`stri_join_mat` *Concatenate Character Matrix Row-wise or Column-wise*

Description

The `stri_join_mat()` function (and their aliases `stri_c_mat` and `stri_paste_mat`) perform row-wise (`margin=1`; the default) or column-wise (`margin=2`) joining of a matrix of strings, thereby transforming a matrix of strings into a vector of strings.

Usage

```
stri_join_mat(mat, margin = 1, sep = "", collapse = NULL)

stri_c_mat(mat, margin = 1, sep = "", collapse = NULL)

stri_paste_mat(mat, margin = 1, sep = "", collapse = NULL)
```

Arguments

`mat`	a matrix of strings
`margin`	the margin over which the strings must be joined. • If `margin=1`, the elements in each row of matrix `mat` are joined into a single string. Thus if the matrix has 10 rows, it returns a vector of 10 strings. • If `margin=2`, the elements in each column of matrix `mat` are joined into a single string. Thus if the matrix has 10 columns, it returns a vector of 10 strings.
`sep, collapse`	as in stri_join.

Details

The examples section show the uses of the `stri_join_mat()` function.

Value

The `stri_join_mat()` function, and its aliases, return a vector of strings.

Examples

```
# re-ordering characters in strings ====

x <- c("Hello world", "Goodbye world")
print(x)
mat <- stringi::stri_split_boundaries(x, simplify = TRUE, type="character")
rank <- stringi::stri_rank(as.vector(mat)) |>  matrix(ncol=ncol(mat))
sorted <- mat %row~% rank
print(sorted)
stri_join_mat(sorted, margin=1)
stri_join_mat(sorted, margin=2)

################################################################################

# re-ordering words ====

x <- c("Hello everyone", "Goodbye everyone")
print(x)
mat <- stringi::stri_split_boundaries(x, simplify = TRUE, type="word")
rank <- stringi::stri_rank(as.vector(mat)) |> matrix(ncol=ncol(mat))
sorted <- mat %row~% rank
print(sorted)
stri_c_mat(sorted, margin=1) # <- alias for stri_join_mat
stri_c_mat(sorted, margin=2)

################################################################################

# re-ordering sentences ====

x <- c("Hello, who are you? Oh, really?! Cool!", "I don't care. But I really don't.")
print(x)
mat <- stringi::stri_split_boundaries(x, simplify = TRUE, type="sentence")
rank <- stringi::stri_rank(as.vector(mat)) |> matrix(ncol=ncol(mat))
sorted <- mat %row~% rank
print(sorted)
stri_paste_mat(sorted, margin=1) # <- another alias for stri_join_mat
stri_paste_mat(sorted, margin=2)
```

`stri_locate_ith` *Locate iˆth Pattern Occurrence*

Description

The `stri_locate_ith` function locates the i^{th} occurrence of a pattern in each string of some character vector.

Usage

```
stri_locate_ith(str, i, ..., regex, fixed, coll, charclass)
```

Arguments

`str`	a string or character vector.
`i`	a number, or a numeric vector of the same length as `str`. This gives the i^{th} instance to be replaced. Positive numbers are counting from the left. Negative numbers are counting from the right. I.e.: • `stri_locate_ith(str, i=1, ...)` gives the position (range) of the first occurrence of a pattern. • `stri_locate_ith(str, i=-1, ...)` gives the position (range) of the last occurrence of a pattern. • `stri_locate_ith(str, i=2, ...)` gives the position (range) of the second occurrence of a pattern. • `stri_locate_ith(str, i=-2, ...)` gives the position (range) of the second-last occurrence of a pattern. If `abs(i)` is larger than the number of instances, the first (if `i < 0`) or last (if `i > 0`) instance will be given. For example: suppose a string has `3` instances of some pattern; then if `i >= 3` the third instance will be located, and if `i <= -3` the first instance will be located.
`...`	more arguments to be supplied to stri_locate and stri_count. Do not supply the arguments `omit_no_match`, `get_length`, or `pattern`, as they are already specified internally. Supplying these arguments anyway will result in an error.
`regex, fixed, coll, charclass`	a character vector of search patterns, as in stri_locate.

Value

The `stri_locate_ith()` function returns an integer matrix with two columns, giving the start and end positions of the i^{th} matches, and two `NA`s if no matches are found.

Examples

```
# simple pattern ====

x <- rep(paste0(1:10, collapse=""), 10)
print(x)
out <- stri_locate_ith(x, 1:10, regex = as.character(1:10))
cbind(1:10, out)


x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
p <- rep("a|e|i|o|u",2)
```

```
out <- stri_locate_ith(x, c(-1, 1), regex=p)
print(out)
substr(x, out[,1], out[,2])


################################################################################

# ignore case pattern ====


x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
p <- rep("A|E|I|O|U", 2)
out <- stri_locate_ith(x, c(1, -1), regex=p, case_insensitive=TRUE)
substr(x, out[,1], out[,2])


################################################################################

# multi-character pattern ====

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
# multi-character pattern:
p <- rep("AB", 2)
out <- stri_locate_ith(x, c(1, -1), regex=p, case_insensitive=TRUE)
print(out)
substr(x, out[,1], out[,2])



################################################################################

# Replacement transformation using stringi ====

x <- c("hello world", "goodbye world")
loc <- stri_locate_ith(x, c(1, -1), regex="a|e|i|o|u")
extr <- stringi::stri_sub(x, from=loc)
repl <- chartr(extr, old = "a-zA-Z", new = "A-Za-z")
stringi::stri_sub_replace(x, loc, replacement=repl)
```

`str_arithmetic` *String arithmetic*

Description

String arithmetic operators.

The `x %s+% y` operator is equivalent to `stringi::stri_c(x,y)`.

The `x %s-% p` operator removes character/pattern defined in `p` from `x`.

The x %s*% n operator repeats every element of x for n times, and glues them together.

The x %s/% p operator counts how often regular expression or character pattern p occurs in each element of x.

Usage

```
x %s+% y

x %s-% p

x %s*% n

x %s/% p
```

Arguments

x	a string or character vector.
y	a string, or a character vector of the same length as x.
p	the result from s_pattern, or else a character vector of the same length as x with regular expressions.
n	a number, or a numeric vector of the same length as x.

Details

These operators and functions serve as a way to provide straight-forward string arithmetic, missing from base R.

Value

The %s+%, %s-%, and %s*% operators return a character vector of the same length as x.
The %s/% returns a integer vector of the same length as x.

Examples

```
x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
y <- c("a", "b")
p <- rep("a|e|i|o|u", 2) # same as p <- s_pattern(regex=rep("a|e|i|o|u", 2))
n <- c(3, 2)

x %s+% y # =paste0(x,y)
x %s-% p # remove all vowels from x
x %s*% n
x %s/% p # count how often vowels appear in each string of vector x.


##############################################################################
```

```
x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
y <- "a"
# pattern that ignores case:
p <- s_pattern(regex=rep("A|E|I|O|U", 2), ignore.case=TRUE)
n <- c(2, 3)

x %s+% y # =paste0(x,y)
x %s-% p # remove all vowels from x
x %s*% n
x %s/% p # count how often vowels appears in each string of vector x.
```

`str_subset_ops` *String subsetting operators*

Description

String subsetting operators.

The `x %ss% s` operator allows indexing a single string as-if it is an iterable object.

The `x %sget% ss` operator gives a certain number of the first and last characters of character vector `x`.

The `x %strim% ss` operator removes a certain number of the first and last characters of character vector `x`.

Usage

```
x %ss% s

x %sget% ss

x %strim% ss
```

Arguments

`x`	a string or character vector.
`s`	a numeric vector giving the subset indices.
`ss`	a vector of length 2, or a matrix with 2 columns with `nrow(ss)==length(x)`. The object `ss` should consist entirely of non-negative integers (thus 0, 1, 2, etc. are valid, but -1, -2, -3 etc are not valid). The first element/column of `ss` gives the number of characters counting from the left side to be extracted/removed from `x`. The second element/column of `ss` gives the number of characters counting from the right side to be extracted/removed from `x`.

Details

These operators serve as a way to provide straight-forward string sub-setting.

Value

The `x %sget% ss` operator gives a certain number of the first and last characters of character vector `x`.

The `x %strim% ss` operator removes a certain number of the first and last characters of character vector `x`.

The `%ss%` operator always returns a vector or matrix, where each element is a single character.

Examples

```
x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
ss <- c(2,3)
x %sget% ss

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
ss <- c(1,0)
x %sget% ss

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
ss <- c(2,3)
x %strim% ss

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
ss <- c(1,0)
x %strim% ss

"hello" %ss% 5:1
```

Description

Fully vectorized sub-string functions.
These functions extract, replace, add-in, transform, or re-arrange, the i^{th} pattern occurrence or position range.

The `substr_repl(x, rp, ...)` function replaces a position (range) with string `rp`.

The `substr_chartr(x, old, new, ...)` function transforms the sub-string at a position (range) using `chartr(old, new)`.

The `substr_addin(x, addition, side, ...)` function adds the additional string `addition` at the side (specified by argument `side`) of a position.

The `substr_extract(x, type, ...)` function extracts the string at, before, or after some position.

The `substr_arrange(x, arr, ...)` function sorts (alphabetically or reverse-alphabetically) or reverses the sub-string at a position (range).

Usage

```
substr_repl(x, rp, ..., loc = NULL, start = NULL, end = NULL, fish = FALSE)

substr_chartr(
  x,
  old = "a-zA-Z",
  new = "A-Za-z",
  ...,
  loc = NULL,
  start = NULL,
  end = NULL,
  fish = FALSE
)

substr_addin(
  x,
  addition,
  side = "after",
  ...,
  loc = NULL,
  at = NULL,
  fish = FALSE
)

substr_extract(
  x,
  type = "at",
  ...,
  loc = NULL,
  start = NULL,
  end = NULL,
```

```
  fish = FALSE
)

substr_arrange(
  x,
  arr = "incr",
  ...,
  loc = NULL,
  start = NULL,
  end = NULL,
  opts_collator = NULL,
  fish = FALSE
)
```

Arguments

x	a string or character vector.
rp	a string, or a character vector of the same length as x, giving the replacing strings.
...	only applicable if fish=TRUE; other arguments to be passed to the stringfish functions.
loc	The result from the stri_locate_ith function. NOTE: you cannot fill in both loc and start,end, or both loc and at. Choose one or the other.
start, end	integers, or integer vectors of the same length as x, giving the start and end position of the range to be modified.
fish	although tinyoperations has no dependencies other than stringi, it does allow the internal functions to use the multi-threadable stringfish functions. To do so, set fish=TRUE; this requires stringfish to be installed.
old, new	see chartr. Defaults to old="a-zA-Z", new="A-Za-z", which means upper case characters will be transformed to lower case characters, and vice-versa.
addition	a string, or a character vector of the same length as x, giving the string(s) to add-in.
side	which side of the position to add in the string. Either "before" or "after".
at	an integer, or integer vector of the same length as x, giving the position after or before which the string is to be added.
type	a single string, giving the part of the string to extract. 3 options available: • type = "at": extracts the string part at the position range. • type = "before": extracts the string part before the position range. • type = "after": extracts the string part after the position range.
arr	a single string, giving how the sub-string should be arranged. 3 options available: • arr = "incr": sort the sub-string alphabetically. • arr = "decr": sort the sub-string reverse alphabetically. • arr = "rev": reverse the sub-string. • arr = "rand": randomly shuffles the sub-string.
opts_collator	as in stri_rank. Only used when arr = "incr" or arr = "decr".

Value

A modified character vector. If no match is found in a certain string of character vector x, the unmodified string is returned. The exception is for the substr_extract() function: in this function, non-matches return NA.

Examples

```
# numerical substr ====

x <- rep("12345678910", 2)
start=c(1, 2); end=c(3,4)
substr_extract(x, start=start, end=end)
substr_extract(x, type="before", start=start, end=end)
substr_extract(x, type="after", start=start, end=end)
substr_repl(x, c("??", "!!"), start=start, end=end)
substr_chartr(x, start=start, end=end)
substr_addin(x, c(" ", "~"), "after", at=end)
substr_addin(x, c(" ", "~"), "before", at=start)
substr_arrange(x, start=start, end=end)
substr_arrange(x, "decr", start=start, end=end)
substr_arrange(x, "rev", start=start, end=end)
substr_arrange(x, "rand", start=start, end=end)

start=10; end=11
substr_extract(x, start=start, end=end)
substr_extract(x, type="before", start=start, end=end)
substr_extract(x, type="after", start=start, end=end)
substr_repl(x, "??", start=start, end=end)
substr_chartr(x, start=start, end=end)
substr_addin(x, " ", "after", at=end)
substr_addin(x, " ", "before", at=start)

start=5; end=6
substr_extract(x, start=start, end=end)
substr_extract(x, type="before", start=start, end=end)
substr_extract(x, type="after", start=start, end=end)
substr_repl(x, "??", start=start, end=end)
substr_chartr(x, start=start, end=end)
substr_addin(x, " ", "after", at=end)
substr_addin(x, " ", "before", at=start)


################################################################################

# simple pattern ====

x <- c("goodGOODGoodgOOd", "goodGOODGoodgOOd", paste0(letters[1:13], collapse=""))
print(x)
loc <- stri_locate_ith(
  # locate second-last occurrence of "good" of each string in x:
  x, -2, regex="good", case_insensitive=TRUE
)
substr_extract(x, loc=loc) # extract second-last "good"
substr_repl(x, c("??", "!!", " "), loc=loc) # replace second-last "good"
substr_chartr(x, loc=loc) # switch upper/lower case of second-last "good"
substr_addin(x, c(" ", "~", " "), "after", loc=loc) # add white space after second-last "good"
```

```
substr_addin(x, c(" ", "~", " "), "before", loc=loc) # add white space before second-last "good"
substr_arrange(x, loc=loc) # sort second-last "good"
substr_arrange(x, "decr", loc=loc) # reverse-sort second-last "good"
substr_arrange(x, "rev", loc=loc) # reverse second-last "good"
substr_arrange(x, "rand", loc=loc) # randomly shuffles "good"
```

`s_pattern` *Pattern attribute assignment*

Description

The `%s-%` and `%s/%` operators, their in-place equivalents, as well as the `%sgrep%` operator, all perform pattern matching for some purpose. By default the pattern matching is interpreted as case-sensitive `regex` patterns from `stringi`.

The `s_pattern` function allows the user to specify exactly how the pattern should be interpreted. To use more refined pattern definition, simply replace the right-hand-side expression `p` in the relevant operators with a call from the `s_pattern()` function.

The `s_pattern()` function uses the exact same argument convention as `stringi`. For example:

- `s_pattern(regex=p, case_insensitive=FALSE, ...)`
- `s_pattern(fixed=p, ...)`
- `s_pattern(coll=p, ...)`
- `s_pattern(charclass=p, ...)`

All arguments in `s_pattern()` are simply passed to the appropriate functions in `stringi`.
For example:
`x %s/% p` counts how often regular expression p occurs in x,
whereas `x %s/% s_pattern(fixed=p, case_insensitive=TRUE)` will do the same, except it uses fixed (i.e. literal) expression, and it does not distinguish between upper case and lower case characters.
For consistency with base R, one can also fill in `ignore.case=TRUE` or `ignore_case=TRUE` instead of `case_insensitive=TRUE`, and `s_pattern` will still understand that.

Usage

```
s_pattern(...)
```

Arguments

`...`	pass `stringi` arguments here. I.e. `regex=p`, `coll=p`, `charclass=p`, `case_insensitive=FALSE`, etc. See the documentation in the `stringi` R package.

Details

The `s_pattern()` function only works in combination with the functions and operators in this package. It does not affect functions from base R or functions from other packages.

Value

The `s_pattern(...)` call returns a list with arguments that will be passed to the appropriate functions in `stringi`.

Examples

```
x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
p <- rep("a|e|i|o|u", 2) # same as p <- s_pattern(regex=rep("a|e|i|o|u", 2))
x %s/% p # count how often vowels appear in each string of vector x.

x <- c(paste0(letters[1:13], collapse=""), paste0(letters[14:26], collapse=""))
print(x)
p <- s_pattern(regex=rep("A|E|I|O|U", 2), case_insensitive=TRUE)
x %s/% p # count how often vowels appear in each string of vector x.
```

`tinyoperations_dry` *The tinyoperations "DRY" functionality*

Description

"Dont't Repeat Yourself", sometimes abbreviated as "DRY", is the coding principle not to write unnecessarily repetitive code. To help you in that effort, the `tinyoperations` R package introduces a few functions:

- Infix operators for in-place modifying string arithmetic.
- Infix operators for in-place modifying string sub-setting.
- The transform_if function, and some related operators.
- The generalized in-place (mathematical) modification operator.

Please refer to the Read-Me file on the GitHub main page of this page for more information.
See: `https://github.com/tony-aw/tinyoperations`.

Usage

```
tinyoperations_dry()
```

See Also

`tinyoperations_help()`

tinyoperations_help *The tinyoperations help page*

Description

Welcome to the tinyoperations help page!

The tinyoperations R-package adds some infix operators, and a few functions.
It primarily focuses on 4 things:

(1) Decimal numbers ("double") truth testing; see tinyoperations_decimal_truth.
(2) Reducing repetitive code; see tinyoperations_dry.
(3) Extending the string manipulation capabilities of the stringi R package, see tinyoperations_stringi.
(4) A new package and module import system, that combines the benefits of aliasing a package with the benefits of attaching a package, see tinyoperations_import

And some miscellaneous functionality; see tinyoperations_misc.

The tinyoperations R-package has only one dependency, namely stringi, though it does allows multi-threading of some of the string-related functions (when appropriate) via the suggested stringfish R-package.
Most functions in this R-package are fully vectorized and have been optimized for optimal speed and performance.

Please also have a look at the Read-Me file on the GitHub main page before using this package:
https://github.com/tony-aw/tinyoperations

Usage

```
tinyoperations_help()
```

tinyoperations_import *The tinyoperations import system*

Description

The tinyoperations R package introduces a new package import system. This system attempts to combine the benefits of aliasing a package, with the benefits of attaching a package.

The main part of the import system is implemented in the 3 import_ - functions:

- import_as: Allow a main package + its foreign exports + its dependencies + its enhances + its extensions to be loaded under a single alias.
- import_inops: Allow exposing infix operators to the current environment.
- import_data: Allow assigning a data set from a package directly to a variable.

The above functionality is also extended to work on sourced modules, see source_module.

There are also some additional helper functions for the package import system, see pkgs.

Please refer to the Read-Me file on the GitHub main page of this page for more information.
See: https://github.com/tony-aw/tinyoperations.

Usage

```
tinyoperations_import()
```

See Also

tinyoperations_help

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tinyoperations_misc *The tinyoperations miscellaneous functionality*

Description

Some additional functions provided by the tinyoperations R package:

- Infix logical operators for exclusive-or, not-and, not-in, number-type, and string-type.
- restrict usage of "T" and "F".
- create unchangeable CONSTANT.
- Infix operators for row- and column-wise re-ordering of matrices.

Please refer to the Read-Me file on the GitHub main page of this page for more information.
See: https://github.com/tony-aw/tinyoperations.

Usage

```
tinyoperations_misc()
```

See Also

tinyoperations_help()

`tinyoperations_stringi` *The tinyoperations expansion of the 'stringi' R package*

Description

The `tinyoperations` R package adds some functions and operators to extend the functionality of the `stringi` R package:

- Infix operators for string arithmetic.
- Infix operators for string sub-setting.
- The s_pattern helper function for string infix operators.
- Infix operators for row- and column-wise re-ordering of matrices.
- The `tinyoperations` package adds additional `stringi` functions, namely stri_locate_ith and stri_join_mat (and aliases). These functions use the same naming and argument convention as the rest of the `stringi` functions, thus keeping your code consistent.
- The fully vectorized sub-string functions, that extract, replace, add-in, transform, or re-arrange, the i^{th} pattern occurrence or location.
- Most `stringi` pattern expressions options are available for the string-pattern-related functions, when appropriate.
- This R package has only one dependency: `stringi`. No other dependencies, as to avoid `"dependency hell"`.
- Although this package has no other dependencies, it allows multi-threading of the sub-string functions through the `stringfish` R package.
- Infix operators for In-place modifying string arithmetic.
- Infix operators for In-place modifying string sub-setting.

Please also have a look at the Read-Me file on the GitHub main page before using this package: https://github.com/tony-aw/tinyoperations

Usage

```
tinyoperations_stringi()
```

See Also

`tinyoperations_help()`

transform_if *The transform_if function and the subset_if operators*

Description

Consider the following code:
`ifelse(cond(x), f(x), g(x))`
Here a conditional subset of the object `x` is transformed, where the condition is using a function referring to `x` itself. Consequently, reference to `x` is written four times!
The `tinyoperations` package therefore adds the `transform_if()` function which will tiny this up.

The `tinyoperations` package also adds 2 "subset_if" operators:
The `x %[if]% cond` operator selects elements from vector/matrix/array `x`, for which the result of `cond(x)` returns `TRUE`.
The `x %[!if]% cond` operator selects elements from vector/matrix/array `x`, for which the result of `cond(x)` returns `FALSE`.

The `tinyoperations` package also adds the `x %unreal =% repl` operator:
`x %unreal =% repl` is the same as `x[is.na(x)|is.nan(x)|is.infinite(x)] <- repl`

Usage

```
transform_if(x, cond, trans_T = function(x) x, trans_F = function(x) x)

x %[if]% cond

x %[!if]% cond

x %unreal =% repl
```

Arguments

`x`	a vector, matrix, or array.
`cond`	a (possibly anonymous) function that returns a binary logic (`TRUE`,`FALSE`) vector of the same length/dimensions as `x`. For example: `is.na`.
`trans_T`	the (possibly anonymous) transformation function to use when `cond(x)==TRUE`. For example: `log`. If this is not specified, `trans_T` defaults to `function(x)x`.
`trans_F`	the (possibly anonymous) transformation function to use when `cond(x)==FALSE`. For example: `log`. If this is not specified, `trans_F` defaults to `function(x)x`.
`repl`	the replacement value.

Details

The `transform_if(x, cond, trans)` function does not rely on any explicit or implicit loops, nor any third-party functions.

Value

For `transform_if()`:
Similar to ifelse. However, unlike `ifelse()`, the transformations are evaluated as `trans_T(x[cond(x)])` and `trans_F(x[!cond(x)])`, ensuring no unnecessary warnings or errors occur.

The subset_if - operators all return a vector with the selected elements.

The `x %unreal =% repl` operator does not return any value:
It is an in-place modifiers, and thus modifies `x` directly. The object `x` is modified such that all `NA`, `NaN` and `Inf` elements are replaced with `repl`.

Examples

```
object_with_very_long_name <- matrix(-10:9, ncol=2)
print(object_with_very_long_name)
object_with_very_long_name |> transform_if(\(x)x>0, log, \(x)x^2)
object_with_very_long_name %[if]% \(x)x %in% 1:10
object_with_very_long_name %[!if]% \(x)x %in% 1:10

x <- c(1:9, NA, NaN, Inf)
print(x)
x %unreal =% 0 # same as x[is.na(x)|is.nan(x)|is.infinite(x)] <- 0
print(x)
```

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