

Package ‘common’

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Type Package

Title Solutions for Common Problems in Base R

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Description Contains functions for solving commonly encountered problems while programming in R. This package is intended to provide a lightweight supplement to Base R, and will be useful for almost any R user.

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Encoding UTF-8

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Imports this.path, utils

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common

common: A set of useful functions

Description

The **common** package is set of useful functions that enhance base R. These functions make up for some deficiencies in the **base** package. For example, there are functions to sort a data frame by multiple columns, and manipulate data frame labels. These are common activities, and can be used in almost any R program.

Functions Included

The functions included in the **common** package are as follows:

- `v`: A generalized NSE quoting function.
- `sort.data.frame`: An overload of the sort function for data frames.
- `labels.data.frame`: An overload of the labels function for data frames.
- `%p%`: An infix operator for `paste0()`.
- `%eq%`: An enhanced equality infix operator.
- `roundup`: A rounding function that matches SAS® software.
- `Sys.path`: A function to return the path of the current program.
- `file.find`: A function to search for a file on the file system.
- `dir.find`: A function to search for directories on the file system.
- `find.names`: A function to search for variable names on a data frame.
- `copy.attributes`: A function to copy column attributes from one data frame to another.
- `supsc`: A function to get UTF-8 superscript characters.
- `subsc`: A function to get UTF-8 subscript characters.

copy.attributes	<i>Copy attributes between two data frames</i>
-----------------	--

Description

A function to copy column attributes from one data frame to another. The function will copy all attributes attached to each column. The column order does not matter, and the data frames do not need identical structures. The matching occurs by column name, not position. Any existing attributes on the target data frame that do not match the source data frame will be retained unaltered.

Usage

```
copy.attributes(source, target)
```

Arguments

source	A data frame to copy attributes from.
target	A data frame to copy attributes to.

Value

The data frame in the `target` parameter, with updated attributes from `source`.

See Also

Other overrides: [labels.data.frame\(\)](#), [sort.data.frame\(\)](#)

Examples

```
# Prepare data
dat1 <- mtcars
dat2 <- mtcars

# Set labels for dat1
labels(dat1) <- list(mpg = "Miles Per Gallon",
                   cyl = "Cylinders",
                   disp = "Displacement")

# Copy labels from dat1 to dat2
dat2 <- copy.attributes(dat1, dat2)

# View results
labels(dat2)
# $mpg
# [1] "Miles Per Gallon"
#
# $cyl
# [1] "Cylinders"
#
```

```
# $disp
# [1] "Displacement"
```

dir.find *Search for directories*

Description

A function to find directories on the file system. The function starts from the directory specified in the `path` parameter, and searches outward in a radiating pattern for the ending directory name in the `pattern` parameter. The `up` and `down` parameters define the scope of the search. Results are returned as a vector of full paths in the order encountered. This function has an advantage over `list.dirs` in that it can search both up and down the file system, and limit the scope of the search.

Usage

```
dir.find(path = ".", pattern = NULL, up = 5, down = 2)
```

Arguments

<code>path</code>	The directory to start searching from. Default is the current working directory.
<code>pattern</code>	A full or partial name of the directory to find. If partial, use the question mark (?) or asterisk (*) characters to indicate the missing piece. Default is <code>NULL</code> , which will return all directories.
<code>up</code>	The number of levels above the base path to search. A value of zero (0) means that you do not want to search up. A value of -1 means you do not want to include the base directory in the search results. Default is 5 levels up.
<code>down</code>	The number of levels below the base path to search. A value of zero (0) means that you do not want to search down. A value of -1 means you do not want to include the base directory in the search results. Default is 2 levels down.

Details

The `dir.find` function attempts to find a directory based on a full or partial directory name. The directory name is passed on the `pattern` parameter. The `pattern` accepts both the single character question mark wild card (?), and the asterisk, multi-character wild card (*). Searches are case-insensitive.

Starting from the base path specified in the `path` parameter, the function searches both above and below the base path in an alternating pattern. The function will first search the base path, then up one level, then down one level, and so on. The boundaries of the search can be controlled by the `up` and `down` parameters.

You can control whether or not you want the base directory included in the results. To include this directory, ensure both `up` and `down` parameters are zero or greater. If either of these parameters is set to -1, the base path will be excluded. For example, `up = 3, down = 1` will search up three levels, and down one level. `up = 3, down = 0` will search up three levels and not search down, but will include the base directory. `up = 3, down = -1` will search up three levels, not search down, and not include the base directory in the results.

Value

A vector of one or more full directory paths that met the search criteria. The paths in the vector are returned in the order of matches, according to the search algorithm. That means the first directory found will be in position one, and the last directory found will be at the end of the vector. A NULL is returned if no directories met the search criteria.

See Also

Other fileops: [Sys.path\(\)](#), [file.find\(\)](#)

Examples

```
# Search for a directory named "prod"
file.find(pattern = "prod")

# Search for a directory that starts with "dat"
file.find(pattern = "dat*")

# Search for a directory up only
file.find(pattern = "dat*", up = 3, down = 0)

# Search for directories up only, skipping the current working directory
file.find(pattern = "dat*", up = 3, down = -1)
```

file.find

Search for files

Description

A function to find files on the file system. The function starts from the directory specified in the path parameter, and searches outward in a radiating pattern for the file name in the pattern parameter. Results are returned as a vector of full paths in the order encountered. The up and down parameters define the scope of the search. This function has an advantage over `list.files` in that it can search both up and down the file system, and limit the scope of the search.

Usage

```
file.find(path = ".", pattern = NULL, up = 3, down = 1)
```

Arguments

path	The directory to start searching from. Default is the current working directory.
pattern	A full or partial name of the file to find. If partial, use the question mark (?) or asterisk (*) characters to indicate the missing piece. Default is NULL, which will return all files.

up	The number of levels above the base path to search. A value of zero (0) means that you do not want to search up. A value of -1 means you do not want to include the base directory in the search results. Default is 3 levels up.
down	The number of levels below the base path to search. A value of zero (0) means that you do not want to search down. A value of -1 means you do not want to include the base directory in the search results. Default is 1 level down.

Details

The `file.find` function attempts to find a file based on a full or partial file name. The file name is passed on the `pattern` parameter. The `pattern` accepts both the single character question mark wild card (?), and the asterisk multi-character wild card (*). Searches are case-insensitive.

Starting from the base path specified in the `path` parameter, the function searches both above and below the base path in an alternating pattern. The function will first search the base path, then up one level, then down one level, and so on. The boundaries of the search can be controlled by the `up` and `down` parameters.

You can control whether or not you want files from the base directory included in the results. To include these files, ensure both `up` and `down` parameters are zero or greater. If either of these parameters is set to -1, the base path will be excluded. For example, `up = 3, down = 1` will search up three levels, and down one level. `up = 3, down = 0` will search up three levels and not search down, but will include the base directory. `up = 3, down = -1` will search up three levels, not search down, and not include the base directory in the results.

Value

A vector of one or more full file paths that met the search criteria. The paths in the vector are returned in the order of matches, according to the search algorithm. That means the first file found will be in position one, and the last file found will be at the end of the vector. A NULL is returned if no files met the search criteria.

See Also

Other fileops: [Sys.path\(\)](#), [dir.find\(\)](#)

Examples

```
# Search for a file named "globals.R"
file.find(getwd(), "globals.R")

# Search for Rdata files
file.find(getwd(), "*.Rdata")

# Search for Rdata files up only
file.find(getwd(), "*.Rdata", up = 3, down = 0)

# Search for Rdata files up only, skipping the current working directory
file.find(getwd(), "*.Rdata", up = 3, down = -1)
```

find.names	<i>Search for names</i>
------------	-------------------------

Description

A function to search for variable names in a data.frame or tibble. The function features wild card pattern matching, start and end boundaries, and names to exclude.

Usage

```
find.names(  
  x,  
  pattern = NULL,  
  exclude = NULL,  
  start = NULL,  
  end = NULL,  
  ignore.case = TRUE  
)
```

Arguments

x	A data frame or tibble whose names to search. Parameter also accepts a character vector of names.
pattern	A vector of patterns to search for. The asterisk (*) and question mark (?) characters may be used to indicate partial matches.
exclude	A vector of patterns to exclude from the search results. The asterisk (*) and question mark (?) characters may be used to indicate partial matches.
start	A variable name or position to start the search. Default is 1.
end	A variable name or position to end the search. Default is the length of the name vector.
ignore.case	Whether to perform a case sensitive or insensitive search. Valid values are TRUE and FALSE. Default is TRUE.

Value

A vector of variable names that met the search criteria.

Examples

```
# Show all names for reference  
names(mtcars)  
# [1] "mpg" "cyl" "disp" "hp" "drat" "wt" "qsec" "vs" "am" "gear" "carb"  
  
# Names that start with "c"  
find.names(mtcars, "c*")  
# [1] "cyl" "carb"
```

```

# Names that start with "c" or "d"
find.names(mtcars, c("c*", "d*"))
# [1] "cyl" "carb" "disp" "drat"

# Names between "disp" and "qsec"
find.names(mtcars, start = "disp", end = "qsec")
# [1] "disp" "hp" "drat" "wt" "qsec"

# Names that start with "c" or "d" after position 5
find.names(mtcars, c("c*", "d*"), start = 5)
# [1] "carb" "drat"

# Names between "disp" and "qsec" excluding "wt"
find.names(mtcars, start = "disp", end = "qsec", exclude = "wt")
# [1] "disp" "hp" "drat" "qsec"

```

labels.data.frame *Get or set labels for a data frame*

Description

The labels function extracts all assigned labels from a data frame, and returns them in a named list. The function also assigns labels from a named list. This function is a data frame-specific implementation of the Base R [labels](#) function.

Usage

```

## S3 method for class 'data.frame'
labels(object, ...)

labels(x) <- value

```

Arguments

object	A data frame or tibble.
...	Follow-on parameters. Required for generic function.
x	A data frame or tibble
value	A named list of labels. The labels must be quoted strings.

Details

If labels are assigned to the "label" attributes of the data frame columns, the labels function will extract those labels. The function will return the labels in a named list, where the names correspond to the name of the column that the label was assigned to. If a column does not have a label attribute assigned, that column will not be included in the list.

When used on the receiving side of an assignment, the function will assign labels to a data frame. The labels should be in a named list, where each name corresponds to the data frame column to assign the label to.

Finally, if you wish to clear out the label attributes, assign a NULL value to the labels function.

Value

A named list of labels. The labels must be quoted strings.

See Also

Other overrides: `copy.attributes()`, `sort.data.frame()`

Examples

```
# Take subset of data
df1 <- mtcars[1:10, c("mpg", "cyl")]

# Assign labels
labels(df1) <- list(mpg = "Mile Per Gallon", cyl = "Cylinders")

# Examine attributes
str(df1)
# 'data.frame': 10 obs. of  2 variables:
# $ mpg: num  21 21 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2
# ..- attr(*, "label")= chr "Mile Per Gallon"
# $ cyl: num  6 6 4 6 8 6 8 4 4 6
# ..- attr(*, "label")= chr "Cylinders"

# View assigned labels
labels(df1)
# $mpg
# [1] "Mile Per Gallon"
#
# $cyl
# [1] "Cylinders"

# Clear labels
labels(df1) <- NULL

# Display Cleared Labels
labels(df1)
# list()
```

Description

A function that rounds positive numbers up when the last digit is a 5. For negative numbers ending in 5, the function actually rounds down. "Round away from zero" is the most accurate description of this function.

Usage

```
roundup(x, digits = 0)
```

Arguments

`x` A vector of values to round.
`digits` A number of decimal places to round to. Default is zero.

Value

The rounded data vector.

Examples

```
# Round to even  
round(2.4) # 2  
round(2.5) # 2  
round(-2.5) # -2  
round(2.6) # 3  
  
# Round up  
roundup(2.4) # 2  
roundup(2.5) # 3  
roundup(-2.5) # -3  
roundup(2.6) # 3
```

sort.data.frame

Sorts a data frame

Description

An overload to the Base R `sort` function for data frames. Allows multiple columns to be sorted easily. Also allows you to control the sort direction for each column independently.

Usage

```
## S3 method for class 'data.frame'  
sort(  
  x,  
  decreasing = FALSE,  
  ...,
```

```

    by = NULL,
    ascending = TRUE,
    na.last = TRUE,
    index.return = FALSE
  )

```

Arguments

x	The input data frame to sort.
decreasing	This parameter was added to conform to the S3 generic method signature of the sort function, and will be ignored here. Please use the ascending parameter.
...	This parameter is required for the generic method signature. Anything passed on it will be ignored.
by	A vector of column names to sort by. If this parameter is not supplied, the function will sort by all columns in order from left to right.
ascending	A vector of TRUE or FALSE values corresponding to the variables on the by parameter. These values will determine the direction to sort each column. Ascending is TRUE, and descending is FALSE. The vector will be recycled if it is short, and truncated if it is long. By default, all variables will be sorted ascending.
na.last	Whether to put NA values first or last in the sort. If TRUE, NA values will sort to the bottom. If FALSE, NA values will sort to the top. The default is TRUE.
index.return	Whether to return the sorted data frame or a vector of sorted index values. If this parameter is TRUE, the function will return sorted index values. By default, the parameter is FALSE, and will return the sorted data frame.

Value

The function returns either a sorted data frame or a sorted vector of row index values, depending on the value of the `index.return` parameter. If `index.return` is FALSE, the function will return the sorted data frame. If the `index.return` parameter is TRUE, it will return a vector of row indices.

See Also

Other overrides: [copy.attributes\(\)](#), [labels.data.frame\(\)](#)

Examples

```

# Prepare unsorted sample data
dt <- mtcars[1:10, 1:3]
dt
#           mpg cyl  disp
# Mazda RX4      21.0   6 160.0
# Mazda RX4 Wag  21.0   6 160.0
# Datsun 710      22.8   4 108.0
# Hornet 4 Drive  21.4   6 258.0
# Hornet Sportabout 18.7   8 360.0
# Valiant        18.1   6 225.0

```

```
# Duster 360      14.3  8 360.0
# Merc 240D      24.4  4 146.7
# Merc 230      22.8  4 140.8
# Merc 280      19.2  6 167.6

# Sort by mpg ascending
dt1 <- sort(dt, by = "mpg")
dt1
#           mpg cyl  disp
# Duster 360  14.3  8 360.0
# Valiant    18.1  6 225.0
# Hornet Sportabout 18.7  8 360.0
# Merc 280   19.2  6 167.6
# Mazda RX4  21.0  6 160.0
# Mazda RX4 Wag 21.0  6 160.0
# Hornet 4 Drive 21.4  6 258.0
# Datsun 710  22.8  4 108.0
# Merc 230   22.8  4 140.8
# Merc 240D  24.4  4 146.7

# Sort by mpg descending
dt1 <- sort(dt, by = "mpg", ascending = FALSE)
dt1
#           mpg cyl  disp
# Merc 240D  24.4  4 146.7
# Datsun 710  22.8  4 108.0
# Merc 230   22.8  4 140.8
# Hornet 4 Drive 21.4  6 258.0
# Mazda RX4  21.0  6 160.0
# Mazda RX4 Wag 21.0  6 160.0
# Merc 280   19.2  6 167.6
# Hornet Sportabout 18.7  8 360.0
# Valiant    18.1  6 225.0
# Duster 360  14.3  8 360.0

# Sort by cyl then mpg
dt1 <- sort(dt, by = c("cyl", "mpg"))
dt1
#           mpg cyl  disp
# Datsun 710  22.8  4 108.0
# Merc 230   22.8  4 140.8
# Merc 240D  24.4  4 146.7
# Valiant    18.1  6 225.0
# Merc 280   19.2  6 167.6
# Mazda RX4  21.0  6 160.0
# Mazda RX4 Wag 21.0  6 160.0
# Hornet 4 Drive 21.4  6 258.0
# Duster 360  14.3  8 360.0
# Hornet Sportabout 18.7  8 360.0

# Sort by cyl descending then mpg ascending
dt1 <- sort(dt, by = c("cyl", "mpg"),
            ascending = c(FALSE, TRUE))
```

```

dt1
#               mpg cyl  disp
# Duster 360    14.3   8 360.0
# Hornet Sportabout 18.7   8 360.0
# Valiant      18.1   6 225.0
# Merc 280     19.2   6 167.6
# Mazda RX4   21.0   6 160.0
# Mazda RX4 Wag 21.0   6 160.0
# Hornet 4 Drive 21.4   6 258.0
# Datsun 710   22.8   4 108.0
# Merc 230    22.8   4 140.8
# Merc 240D   24.4   4 146.7

```

subsc	<i>Converts a string to UTF-8 subscript</i>
-------	---

Description

The `subsc` function translates a normal character to a UTF-8 subscript character. The function can be used to generate subscripts for many common characters. All numeric characters and some lower case letters have UTF-8 subscripts. There are no upper case subscript letters. This function is useful because it saves you from having to look up the subscript character code, or copy and paste from the internet. If a corresponding subscript character code does not exist, a question mark will be returned for that character.

Usage

```
subsc(x)
```

Arguments

`x` A string to be converted to subscript.

Value

The subscript version of the string passed to the function, if one exists. Otherwise, a question mark will be returned.

See Also

The [supsc](#) function to get superscripts.

Examples

```

# Date string
paste0("December 5", subsc("th"))

# Chemistry
paste0("H", subsc("2"), "SO", subsc("4"))

```

`supsc`*Converts a string to UTF-8 superscript*

Description

The `supsc` function translates a normal character to a UTF-8 superscript character. The function can be used to generate superscripts for many common characters. Most alphabetic and numeric characters have UTF-8 superscripts. This function is useful because it saves you from having to look up the superscript character code, or copy and pasting from the internet. If a corresponding superscript character code does not exist, a question mark will be returned for that character.

Usage

```
supsc(x)
```

Arguments

`x` A string to be converted to superscript.

Value

The superscript version of the string passed to the function, if one exists. Otherwise, a question mark will be returned.

See Also

The `subsc` function to get subscripts.

Examples

```
# Single letter
paste0(supsc("a"), "Footnote")

# Single number
paste0(supsc("1"), "Footnote")

# Character string
paste0("December 5", supsc("th"))

# Formula
paste0("x", supsc("(a+1)"))
```

Sys.path	Returns the path of the current program
----------	---

Description

A function that gets the full path of the currently running program. If the function fails to retrieve the path for some reason, it will return a NULL. The function takes no parameters.

Credit for this function goes to Andrew Simmons and the [this.path](#) package.

Usage

```
Sys.path()
```

Value

The full path of the currently running program, or a NULL.

See Also

Other fileops: [dir.find\(\)](#), [file.find\(\)](#)

Examples

```
# Get current path
pth <- Sys.path()
pth
# [1] "C:/programs/myprogram.R"
```

v	Combine unquoted values
---	-------------------------

Description

A function to quote and combine unquoted values. The function will return a vector of quoted values. This function allows you to use non-standard evaluation for any parameter that accepts a string or vector of strings.

Usage

```
v(...)
```

Arguments

... One or more unquoted values.

Value

A vector of quoted values.

Examples

```
# Combine unquoted values
v(var1, var2, var3)
# [1] "var1" "var2" "var3"

# Data frame subset
dat <- mtcars[1:5, v(mpg, cyl, disp)]
dat
#           mpg cyl disp
# Mazda RX4      21.0  6  160
# Mazda RX4 Wag  21.0  6  160
# Datsun 710     22.8  4  108
# Hornet 4 Drive  21.4  6  258
# Hornet Sportabout 18.7  8  360

# Data frame sort
dat2 <- sort(dat, by = v(cyl, mpg))
dat2
#           mpg cyl disp
# Datsun 710     22.8  4  108
# Mazda RX4      21.0  6  160
# Mazda RX4 Wag  21.0  6  160
# Hornet 4 Drive  21.4  6  258
# Hornet Sportabout 18.7  8  360
```

%eq%

Check equality of two objects

Description

The goal of the %eq% operator is to return a TRUE or FALSE value when any two objects are compared. The function provides a simple, reliable equality check that allows comparing of NULLs, NA values, and atomic data types without error.

The function also allows comparing of data frames. It will return TRUE if all values in the data frames are equal, and ignores differences in attributes.

Usage

```
x1 %eq% x2
```

Arguments

x1	The first object to compare
x2	The second object to compare

Value

A single TRUE or FALSE value depending on whether the objects are equal.

Examples

```
# Comparing of NULLs and NA
NULL %eq% NULL      # TRUE
NULL %eq% NA        # FALSE
NA %eq% NA          # TRUE
1 %eq% NULL         # FALSE
1 %eq% NA           # FALSE

# Comparing of atomic values
1 %eq% 1             # TRUE
"one" %eq% "one"    # TRUE
1 %eq% "one"        # FALSE
1 %eq% Sys.Date()  # FALSE

# Comparing of vectors
v1 <- c("A", "B", "C")
v2 <- c("A", "B", "D")
v1 %eq% v1          # TRUE
v1 %eq% v2          # FALSE

# Comparing of data frames
mtcars %eq% mtcars  # TRUE
mtcars %eq% iris    # FALSE
iris %eq% iris[1:50,] # FALSE

# Mixing it up
mtcars %eq% NULL    # FALSE
v1 %eq% NA          # FALSE
1 %eq% v1           # FALSE
```

%p%

An infix operator for paste0()

Description

This function provides an infix operator for the [paste0](#) function to concatenate strings. The operator will concatenate a vector of one or more values. The functionality is identical to `paste0()`, but more convenient to use in some situations.

Usage

```
x %p% y
```

Arguments

x	A value for the left side of the paste infix operator.
y	A value for the right side of the paste infix operator.

Value

The concatenated or pasted value. No spaces will be inserted in between the values to paste. If a vector of values is supplied, a vector of pasted values will be returned.

Examples

```
# Paste together two strings
str <- "Hello" %p% "World"
str
# [1] "HelloWorld"

# Paste together number and string
str <- 100 %p% " Kittens"
str
# [1] "100 Kittens"

# Paste together two vectors
v1 <- c("A", "B", "C")
v2 <- c(1, 2, 3)
str <- v1 %p% v2
str
# [1] "A1" "B2" "C3"
```

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