Package 'wrapr'

March 12, 2018

Type Package

Title Wrap R Tools for Debugging and Parametric Programming

Version 1.3.0

Date 2018-03-12

URL https://github.com/WinVector/wrapr,
http://winvector.github.io/wrapr/

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BugReports https://github.com/WinVector/wrapr/issues

Description Tools for writing and debugging R code. Provides: 'let()' which converts non-standard evaluation interfaces to parametric standard evaluation interface, 'qc()' quoting concatenate, 'DebugFnW()' to capture function context on error for debugging, dot-pipe, ':=' named map builder, and lambda-abstraction.

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

Suggests testthat, knitr, rmarkdown

VignetteBuilder knitr

ByteCompile true

NeedsCompilation no

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Repository CRAN

Date/Publication 2018-03-12 19:27:01 UTC

R topics documented:

add_name_column *Add list name as a column to a list of data.frames.*

Description

Add list name as a column to a list of data.frames.

Usage

```
add_name_column(dlist, destinationColumn)
```

Arguments

dlist	named list of data.frames
destinationColumn	character, name of new column to add

Value

list of data frames, each of which as the new destinationColumn.

Examples

```
dlist <- list(a = data.frame(x = 1), b = data.frame(x = 2))
add_name_column(dlist, 'name')
```

buildNameCallback *Build a custom writeback function that writes state into a user named variable.*

Description

Build a custom writeback function that writes state into a user named variable.

Usage

```
buildNameCallback(varName)
```

Arguments

varName	character where to write captured state

Value

writeback function for use with functions such as DebugFnW

Examples

```
# user function
f <- function(i) { (1:10)[[i]] }
# capture last error in variable called "lastError"
writeBack <- buildNameCallback('lastError')
# wrap function with writeBack
df <- DebugFnW(writeBack,f)
# capture error (Note: tryCatch not needed for user code!)
tryCatch(
  df(12),
   error = function(e) { print(e) })
# examine error
str(lastError)
# redo call, perhaps debugging
tryCatch(
 do.call(lastError$fn_name, lastError$args),
   error = function(e) { print(e) })
```

`build_frame` *Build a (non-empty) data.frame.*

Description

A convenient way to build a data.frame in legible transposed form. Position of first "|" (or other infix operator) determines number of columns (all other infix operators are aliases for ","). Names are de-referenced.

Usage

```
build_frame(..., cf_eval_environment = parent.frame())
```

Arguments

`...`	cell names, first infix operator denotes end of header row of column names.
`cf_eval_environment`	environment to evaluate names in.

Value

character data.frame

See Also

`draw_frame`, `qchar_frame`

Examples

```
tc_name <- "training"
x <- build_frame(
   "measure",                  tc_name, "validation" |
   "minus binary cross entropy",      5, -7           |
   "accuracy",                      0.8, 0.6          )
print(x)
str(x)
cat(draw_frame(x))

build_frame(
  "x" |
  -1  |
  2   )
```

DebugFn *Capture arguments of exception throwing function call for later debugging.*

Description

Run fn, save arguments on failure. Please see: `vignette("DebugFnW", package="wrapr")`.

Usage

```
DebugFn(saveDest, fn, ...)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call
...	arguments for fn

Value

fn(...) normally, but if fn(...) throws an exception save to saveDest RDS of list r such that do.call(rfn,rargs) repeats the call to fn with args.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
# correct run
DebugFn(saveDest, f, 5)
# now re-run
# capture error on incorrect run
tryCatch(
   DebugFn(saveDest, f, 12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn_name,situation$args)
# clean up
file.remove(saveDest)
```

DebugFnE *Capture arguments and environment of exception throwing function call for later debugging.*

Description

Run fn, save arguments, and environment on failure. Please see: `vignette("DebugFnW", package="wrapr")`.

Usage

```
DebugFnE(saveDest, fn, ...)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call
...	arguments for fn

Value

fn(...) normally, but if fn(...) throws an exception save to saveDest RDS of list r such that do.call(rfn,rargs) repeats the call to fn with args.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
# correct run
DebugFnE(saveDest, f, 5)
# now re-run
# capture error on incorrect run
tryCatch(
   DebugFnE(saveDest, f, 12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn, situation$args, envir=situation$env)
# clean up
file.remove(saveDest)
```

DebugFnW *Wrap a function for debugging.*

Description

Wrap fn, so it will save arguments on failure.

Usage

```
DebugFnW(saveDest, fn)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call

Value

wrapped function that saves state on error.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE Operator idea from: https://gist.github.com/nassimhaddad/c9c327d10a91dcf9a3370d30dff8ac3d . Please see: vignette("DebugFnW", package="wrapr").

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
df <- DebugFnW(saveDest,f)
# correct run
df(5)
# now re-run
# capture error on incorrect run
tryCatch(
   df(12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn,situation$args)
# clean up
file.remove(saveDest)


f <- function(i) { (1:10)[[i]] }
curEnv <- environment()
writeBack <- function(sit) {
   assign('lastError', sit, envir=curEnv)
}
attr(writeBack,'name') <- 'writeBack'
df <- DebugFnW(writeBack,f)
tryCatch(
   df(12),
   error = function(e) { print(e) })
str(lastError)
```

`DebugFnWE` *Wrap function to capture arguments and environment of exception throwing function call for later debugging.*

Description

Wrap fn, so it will save arguments and environment on failure. Please see: `vignette("DebugFnW", package="wrapr")`.

Usage

```
DebugFnWE(saveDest, fn, ...)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call
...	arguments for fn

Value

wrapped function that captures state on error.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE

Idea from: https://gist.github.com/nassimhaddad/c9c327d10a91dcf9a3370d30dff8ac3d

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
df <- DebugFnWE(saveDest, f)
# correct run
df(5)
# now re-run
# capture error on incorrect run
tryCatch(
   df(12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn, situation$args, envir=situation$env)
# clean up
file.remove(saveDest)
```

DebugPrintFn *Capture arguments of exception throwing function call for later debugging.*

Description

Run fn and print result, save arguments on failure. Use on systems like ggplot() where some calculation is delayed until print(). Please see: vignette("DebugFnW", package="wrapr").

Usage

```
DebugPrintFn(saveDest, fn, ...)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call
...	arguments for fn

Value

fn(...) normally, but if fn(...) throws an exception save to saveDest RDS of list r such that do.call(rfn,rargs) repeats the call to fn with args.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
# correct run
DebugPrintFn(saveDest, f, 5)
# now re-run
# capture error on incorrect run
tryCatch(
   DebugPrintFn(saveDest, f, 12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn,situation$args)
# clean up
file.remove(saveDest)
```

DebugPrintFnE — *Capture arguments and environment of exception throwing function call for later debugging.*

Description

Run fn and print result, save arguments and environment on failure. Use on systems like ggplot() where some calculation is delayed until print(). Please see: `vignette("DebugFnW", package="wrapr")`.

Usage

```
DebugPrintFnE(saveDest, fn, ...)
```

Arguments

saveDest	where to write captured state (determined by type): NULL random temp file, character temp file, name globalenv() variable, and function triggers callback.
fn	function to call
...	arguments for fn

Value

fn(...) normally, but if fn(...) throws an exception save to saveDest RDS of list r such that do.call(rfn,rargs) repeats the call to fn with args.

See Also

dump.frames, DebugFn, DebugFnW, DebugFnWE, DebugPrintFn, DebugFnE, DebugPrintFnE

Examples

```
saveDest <- paste0(tempfile('debug'),'.RDS')
f <- function(i) { (1:10)[[i]] }
# correct run
DebugPrintFnE(saveDest, f, 5)
# now re-run
# capture error on incorrect run
tryCatch(
   DebugPrintFnE(saveDest, f, 12),
   error = function(e) { print(e) })
# examine details
situation <- readRDS(saveDest)
str(situation)
# fix and re-run
situation$args[[1]] <- 6
do.call(situation$fn, situation$args, envir=situation$env)
# clean up
file.remove(saveDest)
```

---

defineLambda *Define lambda function building function.*

Description

Use this to place a copy of the lambda-symbol function builder in your workspace.

Usage

```
defineLambda(envir = parent.frame(), name = NULL)
```

Arguments

envir	environment to work in.
name	character, name to assign to (defaults to Greek lambda).

Examples

```
defineLambda()
# ls()
```

---

draw_frame *Render a data.frame in draw_frame form.*

Description

Render a data.frame in draw_frame form.

Usage

```
draw_frame(x, ..., time_format = "%Y-%m-%d %H:%M:%S",
  formatC_options = list())
```

Arguments

x	data.frame (atomic types, with at least 1 row and 1 column).
...	not used for values, forces later arguments to bind by name.
time_format	character, format for "POSIXt" classes.
formatC_options	named list, options for formatC()- used on numerics.

Value

chracter

See Also

build_frame, qchar_frame

Examples

```
tc_name <- "training"
x <- build_frame(
  "measure"                  , tc_name, "validation", "idx" |
  "minus binary cross entropy", 5      , 7           , 1L    |
  "accuracy"                 , 0.8    , 0.6         , 2L    )
print(x)
cat(draw_frame(x))
```

`grepdf` *Grep for column names from a* `data.frame`

Description

Grep for column names from a `data.frame`

Usage

```
grepdf(pattern, x, ..., ignore.case = FALSE, perl = FALSE, value = FALSE,
  fixed = FALSE, useBytes = FALSE, invert = FALSE)
```

Arguments

`pattern`	passed to `grep`
`x`	data.frame to work with
`...`	force later arguments to be passed by name
`ignore.case`	passed to `grep`
`perl`	passed to `grep`
`value`	passed to `grep`
`fixed`	passed to `grep`
`useBytes`	passed to `grep`
`invert`	passed to `grep`

Value

column names of x matching grep condition.

Examples

```
d <- data.frame(xa=1, yb=2)

# starts with
grepdf('^x', d)

# ends with
grepdf('b$', d)
```

`invert_perm` *Invert a permuation.*

Description

For a permutation p build q such that p[q] == q[p] == seq_len(length(p)). See http://www.win-vector.com/blog/2017/05/on-indexing-operators-and-composition/.

Usage

```
invert_perm(p)
```

Arguments

p	vector of lenth n containing each of seq_len(n) exactly once.

Value

vector q such that p[q] == q[p] == seq_len(length(p))

Examples

```
p <- c(4, 5, 7, 8, 9, 6, 1, 3, 2, 10)
q <- invert_perm(p)
p[q]
all.equal(p[q], seq_len(length(p)))
q[p]
all.equal(q[p], seq_len(length(p)))
```

lambda *Build an anonymous function.*

Description

Mostly just a place-holder so lambda-symbol form has somewhere safe to hang its help entry.

Usage

```
lambda(..., env = parent.frame())
```

Arguments

...	formal parameters of function, unbound names, followed by function body (code/language).
env	environment to work in

Value

user defined function.

Examples

```
#lambda-syntax: lambda(arg [, arg]*, body [, env=env])
# also works with lambda character as function name
# print(intToUtf8(0x03BB))

# example: square numbers
sapply(1:4, lambda(x, x^2))

# example more than one argumnet
f <- lambda(x, y, x+y)
f(2,4)

# formula interface syntax: [~arg|arg(~arg)+] := body
f <- x~y := x + 3 * y
f(5, 47)
```

let *Execute expr with name substitutions specified in alias.*

Description

`let` implements a mapping from desired names (names used directly in the expr code) to names used in the data. Mnemonic: "expr code symbols are on the left, external data and function argument names are on the right."

Usage

```
let(alias, expr, ..., envir = parent.frame(), subsMethod = "langsubs",
  strict = TRUE, eval = TRUE, debugPrint = FALSE)
```

Arguments

alias	mapping from free names in expr to target names to use (mapping have both unique names and unique values).
expr	block to prepare for execution.
...	force later arguments to be bound by name.
envir	environment to work in.
subsMethod	character substitution method, one of 'langsubs' (preferred), 'subsubs', or 'stringsubs'.
strict	logical if TRUE names and values must be valid un-quoted names, and not dot.
eval	logical if TRUE execute the re-mapped expression (else return it).
debugPrint	logical if TRUE print debugging information when in stringsubs mode.

Details

Please see the `wrapr vignette` for some discussion of let and crossing function call boundaries: `vignette('wrapr','wrapr')`. Transformation is performed by substitution, so please be wary of name collisions or aliasing.

Something like `let` is only useful to get control of a function that is parameterized (in the sense it take column names) but non-standard (in that it takes column names from non-standard evaluation argument name capture, and not as simple variables or parameters). So `wrapr:let` is not useful for non-parameterized functions (functions that work only over values such as `base::sum`), and not useful for functions take parameters in straightforward way (such as `base::merge`'s `"by"` argument). `dplyr::mutate` is an example where we can use a `let` helper. `dplyr::mutate` is parameterized (in the sense it can work over user supplied columns and expressions), but column names are captured through non-standard evaluation (and it rapidly becomes unwieldy to use complex formulas with the standard evaluation equivalent `dplyr::mutate_`). `alias` can not include the symbol `"."`.

The intent from is from the user perspective to have (if `a <- 1; b <- 2`): `let(c(z = 'a'), z+b)` to behave a lot like `eval(substitute(z+b, c(z=quote(a))))`.

`let` deliberately checks that it is mapping only to legal `R` names; this is to discourage the use of `let` to make names to arbitrary values, as that is the more properly left to `R`'s environment systems. `let` is intended to transform "tame" variable and column names to "tame" variable and column names. Substitution outcomes that are not valid simple `R` variable names (produced with out use of backticks) are forbidden. It is suggested that substitution targets be written `ALL_CAPS` style to make them stand out.

Value

result of expr executed in calling environment (or expression if eval==FALSE).

Examples

```
d <- data.frame(Sepal_Length=c(5.8,5.7),
                Sepal_Width=c(4.0,4.4),
                Species='setosa',
                rank=c(1,2))

RANKCOLUMN <- NULL # optional, make sure macro target does not look like unbound variable.
GROUPCOLUMN <- NULL # optional, make sure macro target does not look like unbound variable.
mapping = c(RANKCOLUMN= 'rank', GROUPCOLUMN= 'Species')
let(alias = mapping,
    expr = {
       # Notice code here can be written in terms of known or concrete
       # names "RANKCOLUMN" and "GROUPCOLUMN", but executes as if we
       # had written mapping specified columns "rank" and "Species".

       # restart ranks at zero.
       dres <- d
       dres$RANKCOLUMN <- dres$RANKCOLUMN - 1 # notice, using $ not [[]]

       # confirm set of groups.
       groups <- unique(d$GROUPCOLUMN)
    },
    debugPrint = TRUE
    )
print(groups)
print(length(groups))
print(dres)
```

`makeFunction_se` *Build an anonymous function.*

Description

Developed from: http://www.win-vector.com/blog/2016/12/the-case-for-using-in-r/comment-page-1/#comment-66399, https://github.com/klmr/functional#a-concise-lambda-syntax, https://github.com/klmr/functional/blob/master/lambda.r Called from := operator.

Usage

```
makeFunction_se(params, body, env = parent.frame())
```

Arguments

params	formal parameters of function, unbound names.
body	subsituted body of function to map arguments into (braces required for ":=" notation).
env	environment to work in.

Value

user defined function.

Examples

```
f <- makeFunction_se(as.name('x'), substitute({x*x}))
f(7)

f <- x := { x*x }
f(7)

g <- makeFunction_se(c(as.name('x'), as.name('y')), substitute({ x + 3*y }))
g(1,100)

g <- c(x,y) := { x + 3*y }
g(1,100)
```

`mapsyms` *Map symbol names to referenced values if those values are string scalars (else throw).*

Description

Map symbol names to referenced values if those values are string scalars (else throw).

Usage

```
mapsyms(...)
```

Arguments

`...`	symbol names mapping to string scalars

Value

map from original symbol names to new names (names found in the current environment)

See Also

`let`

Examples

```
x <- 'a'
y <- 'b'
print(mapsyms(x, y))
d <- data.frame(a = 1, b = 2)
let(mapsyms(x, y), d$x + d$y)
```

`map_to_char` *format a map.*

Description

format a map.

Usage

```
map_to_char(mp, sep = " ", assignment = "=", quote_fn = base::shQuote)
```

Arguments

`mp`	named vector or list
`sep`	separator suffix, what to put after commas
`assignment`	assignment string
`quote_fn`	string quoting function

Value

character formatted representation

Examples

```
cat(map_to_char(c('a':='b', 'c':='d')))
```

map_upper — *Map up-cased symbol names to referenced values if those values are string scalars (else throw).*

Description

Map up-cased symbol names to referenced values if those values are string scalars (else throw).

Usage

```
map_upper(...)
```

Arguments

...	symbol names mapping to string scalars

Value

map from original symbol names to new names (names found in the current environment)

See Also

let

Examples

```
x <- 'a'
print(map_upper(x))
d <- data.frame(a = "a_val")
let(map_upper(x), paste(d$X, x))
```

match_order — *Match one order to another.*

Description

Build a pemutation p such that ids1[p] == ids2. See http://www.win-vector.com/blog/2017/09/permutation-theory-in-action/.

Usage

```
match_order(ids1, ids2)
```

Arguments

ids1	unique vector of ids.
ids2	unique vector of ids with sort(ids1)==sort(ids2).

Value

p integers such that ids1[p] == ids2

Examples

```
ids1 <- c(4, 5, 7, 8, 9, 6, 1, 3, 2, 10)
ids2 <- c(3, 6, 4, 8, 5, 7, 1, 9,10, 2)
p <- match_order(ids1, ids2)
ids1[p]
all.equal(ids1[p], ids2)
```

---

mk_tmp_name_source *Produce a temp name generator with a given prefix.*

Description

Returns a function f where: f() returns a new temporary name, f(remove=vector) removes names in vector and returns what was removed, f(dumpList=TRUE) returns the list of names generated and clears the list, f(peek=TRUE) returns the list without altering anything.

Usage

```
mk_tmp_name_source(prefix = "tmpnam", ..., alphabet = as.character(0:9),
  size = 20, sep = "_")
```

Arguments

prefix	character, string to prefix temp names with.
...	force later argument to be bound by name.
alphabet	character, characters to choose from in building ids.
size	character, number of characters to build id portion of names from.
sep	character, separator between temp name fields.

Value

name generator function.

Examples

```
f <- mk_tmp_name_source('ex')
print(f())
nm2 <- f()
print(nm2)
f(remove=nm2)
print(f(dumpList=TRUE))
```

`named_map_builder` *Named map builder.*

Description

Set names of right-argument to be left-argument, and return right argument. Has a special case for length-1 name sets. Called from `:=` operator.

Usage

```
named_map_builder(names, values)

":="(names, values)
```

Arguments

`names`	names to set.
`values`	values to assign names to (and return).

Value

values with names set.

Examples

```
c('a' := '4', 'b' := '5')
# equivalent to: c(a = '4', b = '5')

c('a', 'b') := c('1', '2')
# equivalent to: c(a = '1', b = '2')

# the important example
name <- 'a'
name := '5'
# equivalent to: c('a' = '5')

# fn version:
```

```
#  applied when right side is {}
#  or when left side is of class formula.

g <- x~y := { x + 3*y }
g(1,100)

f <- ~x := x^2
f(7)

f <- x := { sqrt(x) }
f(7)
```

`pipe_step` *Pipe step operator*

Description

Pipe step operator

Usage

```
pipe_step(pipe_left_arg, pipe_right_arg, pipe_environment, pipe_name = NULL)
```

Arguments

`pipe_left_arg`	left argument.
`pipe_right_arg`	substitute(pipe_right_arg) argument.
`pipe_environment`	environment to evaluate in.
`pipe_name`	character, name of pipe operator.

Value

result

`pipe_step.default` *Pipe step operator*

Description

Pipe step operator

Usage

```
## Default S3 method:
pipe_step(pipe_left_arg, pipe_right_arg, pipe_environment,
  pipe_name = NULL)
```

Arguments

pipe_left_arg	left argument
pipe_right_arg	substitute(pipe_right_arg) argument
pipe_environment	environment to evaluate in
pipe_name	character, name of pipe operator.

Value

result

---

qae *Quote assignment expressions (name = expr, and name := expr).*

Description

Accepts arbitrary un-parsed expressions as assignments to allow forms such as "Sepal_Long := Sepal.Length >= 2 * Sepal.Width". (without the quotes). Terms are expressions of the form "lhs := rhs" or "lhs = rhs".

Usage

```
qae(...)
```

Arguments

...	assignment expressions.

Value

array of quoted assignment expressions.

See Also

qc, qe

Examples

```
exprs <- qae(Sepal_Long := Sepal.Length >= ratio * Sepal.Width,
             Petal_Short = Petal.Length <= 3.5)
print(exprs)
#ratio <- 2
#datasets::iris %.>%
#  seplyr::mutate_se(., exprs) %.>%
#  summary(.)
```

---

qc *Quoting version of c() array concatinator.*

Description

Quoting version of c() array concatinator.

Usage

```
qc(...)
```

Arguments

...	items to place into an array

Value

quoted array of character items

See Also

qe, qae

Examples

```
qc(a, qc(b, c))
qc(x=a, qc(y=b, z=c))
qc('x'='a', qc('y'='b', 'z'='c'))
```

qchar_frame *Build a (non-empty) quoted data.frame.*

Description

A convenient way to build a character data.frame in legible transposed form. Position of first "|" (or other infix operator) determines number of columns (all other infic operators are aliases for ","). Names are treated as character types.

Usage

```
qchar_frame(...)
```

Arguments

...	cell names, first infix operator denotes end of header row of column names.

Value

character data.frame

See Also

draw_frame, build_frame

Examples

```
x <- qchar_frame(
   measure,                     training, validation |
   "minus binary cross entropy", loss,     val_loss   |
   accuracy,                    acc,      val_acc    )
print(x)
str(x)
cat(draw_frame(x))

qchar_frame(
  x |
  1 |
  2 )
```

qe *Quote expressions.*

Description

Accepts arbitrary un-parsed expressions as to allow forms such as "Sepal.Length >= 2 * Sepal.Width". (without the quotes).

Usage

```
qe(...)
```

Arguments

...	assignment expressions.

Value

array of quoted assignment expressions.

See Also

qc, qae

Examples

```
exprs <- qe(Sepal.Length >= ratio * Sepal.Width,
            Petal.Length <= 3.5)
print(exprs)
```

qs *Quote a string.*

Description

Quote a string.

Usage

```
qs(s)
```

Arguments

s	expression to be quoted as a string.

Value

character

Examples

```
qs(a == "x")
```

`restrictToNameAssignments` *Restrict an alias mapping list to things that look like name assignments*

Description

Restrict an alias mapping list to things that look like name assignments

Usage

```
restrictToNameAssignments(alias, restrictToAllCaps = FALSE)
```

Arguments

`alias`	mapping list
`restrictToAllCaps`	logical, if true only use all-capitalized keys

Value

string to string mapping

Examples

```
alias <- list(region= 'east', str= "'seven'")
aliasR <- restrictToNameAssignments(alias)
print(aliasR)
```

`sel_columns` *Pick a sequence of columns.*

Description

Only works on in-memory data.frames. Part piping with base R series: http://www.win-vector.com/blog/tag/piping-with-base-r/.

Usage

```
sel_columns(x, columns)
```

Arguments

`x`	data.frame to work with
`columns`	character, names of columns

Value

data.frame that is the specified subset of the columns of x.

Examples

```
head(sel_columns(mtcars, c("mpg", "cyl", "disp")))
```

`sel_rows` *Pick a selection of rows (can be used to order).*

Description

Only works on in-memory data.frames. Part piping with base R series: http://www.win-vector.com/blog/tag/piping-with-base-r/.

Usage

```
sel_rows(x, rows)
```

Arguments

`x`	data.frame to work with
`rows`	numeric, row indexes.

Value

data.frame that is the specified row selection.

Examples

```
d <- data.frame(x = c('b', 'a', 'c'))
sel_rows(d, d$x)
```

`stop_if_dot_args` *Stop with message if dot_args is a non-trivial list.*

Description

Generate a stop with a good error message if the dots argument was a non-trivial list. Useful in writing functions that force named arguments.

Usage

```
stop_if_dot_args(dot_args, msg = "")
```

Arguments

`dot_args`	substitute(list(...)) from another function.
`msg`	character, optional message to prepend.

Value

NULL or stop()

Examples

```
f <- function(x, ..., inc = 1) {
   stop_if_dot_args(substitute(list(...)), "f")
   x + inc
}
f(7)
f(7, inc = 2)
tryCatch(
  f(7, 2),
  error = function(e) { print(e) }
)
```

subset_rows *Pick a subset of rows, evaluating the subset expression as if the columns of x were in the evaluation environment.*

Description

References can be forced to the environment with a .e$ prefix and forced to the data frame with a .d$ prefix (failure to lookup returns null). Only works on in-memory data.frames. Part piping with base R series: http://www.win-vector.com/blog/tag/piping-with-base-r/. See also http://www.win-vector.com/blog/2018/02/is-r-basesubset-really-that-bad/.

Usage

```
subset_rows(x, subset, env = parent.frame())
```

Arguments

x	data.frame to work with
subset	logical expression to compute per-row
env	environment to work in

Value

data.frame that is the specified subset of the rows of x.

See Also

subset

Examples

```
Temp <- 90
Ozone_bound <- 100
subset_rows(airquality,
            (.d$Temp > .e$Temp) &
              (!is.na(Ozone)) & (Ozone < Ozone_bound))
```

`transform_columns` *Evaluate an expression with a data frame acting as the inner environment and assigning back to the data.frame. Statements are executed sequentially.*

Description

References can be forced to the environment with a .e$ prefix and forced to the data frame with a .d$ prefix (failure to lookup returns null). Only works on in-memory data.frames. Part piping with base R series: http://www.win-vector.com/blog/tag/piping-with-base-r/.

Usage

```
transform_columns(transform_columns_data_frame, ...,
  transform_columns_env = parent.frame())
```

Arguments

`transform_columns_data_frame`
: data.frame to work with

`...`
: named exprssions to add to data frame

`transform_columns_env`
: environment to work in

Value

data frame with additional or altered columns

See Also

`transform`, `within`

Examples

```
d <- data.frame(x = c(1,2))
transform_columns(d, y = x*x, d = 0, z = x + y, d = 1, q = x + d)
```

`with_eval` *Evaluate an expression with a data frame acting as the inner environment.*

Description

References can be forced to the environment with a .e$ prefix and forced to the data frame with a .d$ prefix (failure to lookup returns null). Only works on in-memory data.frames. Part piping with base R series: http://www.win-vector.com/blog/tag/piping-with-base-r/.

Usage

```
with_eval(x, expr, env = parent.frame())
```

Arguments

`x`	data.frame to work with
`expr`	logical expression to compute per-row
`env`	environment to work in

Value

evaluated result

See Also

`with`, `within`

Examples

```
Temp <- 90
Ozone_bound <- 100
summary(with_eval(airquality,
            (.d$Temp > .e$Temp) &
              (!is.na(Ozone)) & (Ozone < Ozone_bound)))
```

wrapr *wrapr: Wrap R Functions for Debugging and Parametric Programming*

Description

Provides DebugFnW() to capture function context on error for debugging, and let() which converts non-standard evaluation interfaces to parametric standard evaluation interfaces. DebugFnW() captures the calling function and arguments prior to the call causing the exception, while the classic options(error=dump.frames) form captures at the moment of the exception itself (thus function arguments may not be at their starting values). let() rebinds (possibly unbound) names to names.

Details

For more information:

- vignette('DebugFnW', package='wrapr')
- vignette('let', package='wrapr')
- vignette(package='wrapr')
- Website: https://github.com/WinVector/wrapr
- let video: https://youtu.be/iKLGxzzm9Hk?list=PLAKBwakacHbQp_Z66asDnjn-0qttTO-o9
- Debug wrapper video: https://youtu.be/zFEC9-1XSN8?list=PLAKBwakacHbQT51nPHex1on3YNCCmggZA.

wrapr_function *Wrapr function.*

Description

S3 dispatch on tyhpe of pipe_right_argument.

Usage

```
wrapr_function(pipe_left_arg, pipe_right_arg, pipe_environment,
  pipe_name = NULL)
```

Arguments

pipe_left_arg	left argument.
pipe_right_arg	right argument.
pipe_environment	environment to evaluate in.
pipe_name	character, name of pipe operator.

Value

result

wrapr_function.default *Wrapr function.*

Description

S3 dispatch on tyhpe of pipe_right_argument.

Usage

```
## Default S3 method:
wrapr_function(pipe_left_arg, pipe_right_arg,
  pipe_environment, pipe_name = NULL)
```

Arguments

pipe_left_arg	left argument.
pipe_right_arg	right argument.
pipe_environment	environment to evaluate in.
pipe_name	character, name of pipe operator.

Value

result

%.>% *Pipe operator ("dot arrow").*

Description

Defined as roughly : `a %>.% b ~ { . <- a; b };` (with visible .-side effects).

Usage

```
pipe_left_arg %.>% pipe_right_arg
```

Arguments

pipe_left_arg	left argument expression (substituted into .)
pipe_right_arg	right argument expession (presumably including .)

Details

The pipe operator has a couple of special cases. First: if the right hand side is a name, then we try to de-reference it and apply it as a function or surrogate function.

Value

eval({ . <- pipe_left_arg; pipe_right_arg };)

Examples

```
# both should be equal:
cos(exp(sin(4)))
4 %.>% sin(.) %.>% exp(.) %.>% cos(.)
```

%>.% *Pipe operator ("to dot").*

Description

Defined as roughly : `a %>.% b ~ { . <- a; b };` (with visible .-side effects).

Usage

```
pipe_left_arg %>.% pipe_right_arg
```

Arguments

`pipe_left_arg`	left argument expression (substituted into .)
`pipe_right_arg`	right argument expession (presumably including .)

Details

The pipe operator has a couple of special cases. First: if the right hand side is a name, then we try to de-reference it and apply it as a function or surrogate function.

For some discussion, please see http://www.win-vector.com/blog/2017/07/in-praise-of-syntactic-sugar/. `%>.%` and `%.>%` are synonyms.

Value

eval({ . <- pipe_left_arg; pipe_right_arg };)

Examples

```
# both should be equal:
cos(exp(sin(4)))
4 %>.% sin(.) %>.% exp(.) %>.% cos(.)
```

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