

Package ‘refset’

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Type Package

Title Subsets with Reference Semantics

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URL <http://github.com/hughjonesd/refset>

Description Provides subsets with reference semantics, i.e. subsets which automatically reflect changes in the original object, and which optionally update the original object when they are changed.

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NeedsCompilation no

VignetteBuilder knitr

Suggests knitr, rmarkdown, testthat

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refset-package	<i>Subsets with Reference Semantics</i>
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Description

Subsets with Reference Semantics

Details

Refset provides subsets with reference semantics, i.e. subsets which automatically reflect changes in the original object, and which also update the original object when they are changed.

For more info see `vignette('refset')`.

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contents	<i>Returns or changes parcel contents</i>
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Description

`contents` returns the value of the parcel contents by evaluating the expression in the parcel. `contents<-` attempts to assign to the expression, which will only work if the expression is appropriate, e.g. a `refset`.

Usage

```
contents(parcel)
```

```
contents(parcel) <- value
```

Arguments

<code>parcel</code>	an object of class 'parcel'
<code>value</code>	a value to assign

Value

The result of evaluating the expression stored in the parcel. For `contents<-`, the parcel itself. `contents<-` will only work if the expression wrapped in the parcel can accept assignments.

See Also

Other wrapping functions: [is.parcel](#), [unwrap_as](#), [wrapset](#), [wrap](#)

Examples

```
pcl <- wrap(x^2)
x <- 2
contents(pcl)
x <- 3
contents(pcl)
## Not run:
contents(pcl) <- 4 # fails

## End(Not run)
p2 <- wrap(names(x))
contents(p2) <- "named"
x
```

is.parcel*Checks whether an object is a parcel*

Description

Checks whether an object is a parcel

Usage

```
is.parcel(x)
```

Arguments

x an object to examine

Value

TRUE or FALSE.

See Also

Other wrapping functions: [contents](#), [unwrap_as](#), [wrapset](#), [wrap](#)

refset

Create a reference to a subset of an object

Description

Create a refset - a reference to a subset of an object. When the object changes, the contents of the refset change, and when the refset is changed, the object is changed too.

Usage

```
refset(x, data, ..., drop = TRUE, dyn.idx = TRUE, read.only = FALSE,
      eval.env = parent.frame(), assign.env = parent.frame())
```

```
x %r% data
```

Arguments

x	name of the refset to create, as a bare name or character string
data	the object to refer to
...	indices to subset with
drop	passed to Extract
dyn.idx	update indices dynamically
read.only	create a read-only refset which throws an error if assigned to
eval.env	environment in which data and indices will be evaluated
assign.env	environment in which the variable named by x will be created

Details

There are two ways to call refset. The two-argument form, e.g. `refset(myref, mydata[rows, "column"])`, creates a reference to the subset of mydata passed in the second argument.

The three-or-more argument form acts like the [subset](#) function: the indices in ... are applied to data. If data is a data.frame, then the indices are interpreted within it, so you can refer to columns directly: `refset(myref, mydata, a>1 & b<a, )`. Bare column names must be quoted, however.

Empty arguments in ... are allowed and are treated as indexing the whole dimension, just as in [Extract](#).

By default, the indices in subset are updated dynamically. For example, if you call `refset(myref, mydata, x >= 3, )` and then set `mydata$x <- 3`, the number of rows in myref will probably increase. To turn this behaviour off and make a reference to a "fixed" subset of your object, use `dyn.idx=FALSE`.

`%r%` is an infix version of the two-argument form.

Value

refset returns NULL, but the x argument will be assigned to in the calling environment (or in env, if it is specified). x will have an attribute `".refset."`.

See Also

Refsets are implemented using `makeActiveBinding`.

Examples

```
dfr <- data.frame(a=1:4, b=1:4)
ss <- dfr[1:2,]
refset(rs, dfr[1:2,])
dfr$a <- 4:1
ss # 1:2
rs # 4:3

# same:
refset(rs, dfr, 1:2, )

# same:
rs %% dfr[1:2,]

vec <- 1:10
refset(middle, vec[4:6])
vec[4:6] <- NA
middle
middle <- 4:6 + 100
vec

# dynamic versus static indices:
dfr <- data.frame(a=rnorm(100), b=rnorm(100))
refset(ss, dfr, a>1,)
refset(ss.static, dfr, a>1,, dyn.idx=FALSE)
nrow(ss) == nrow(ss.static)
dfr$a <- dfr$a + 2 * dfr$b

precious.data <- rnorm(100)
refset(big, precious.data, precious.data>1, read.only=TRUE)
big
## Not run:
big <- big * 2 # throws an error

## End(Not run)

# Using refset with other functions:
# dynamically updated calculated column
dfr <- data.frame(a=rnorm(10), b=rnorm(10))
refset(rs, transform(dfr, x=a+2*b+rnorm(10)))
rs
rs # different

# Non-readonly refset with other functions. Works but gives a warning:
## Not run:
vec <- 1:5
refset(ssv, names(vec), read.only=FALSE)
```

```
ssv <- LETTERS[1:5]
vec

## End(Not run)
```

unwrap_as

Unwrap contents of a parcel into a new variable

Description

unwrap_as creates a new variable which, when evaluated, calls [contents](#) to return the parcel contents.

Usage

```
unwrap_as(x, parcel, env = parent.frame())
```

Arguments

x	name of the variable to bind to
parcel	an object of class 'parcel'
env	environment to assign the variable into

See Also

Other wrapping functions: [contents](#), [is.parcel](#), [wrapset](#), [wrap](#)

Examples

```
vec <- 1:10
parcel <- wrapset(vec, vec > 3)
unwrap_as(y, parcel)
y
```

wrap

Wrap an expression and its environment into a parcel.

Description

Refsets (and other active bindings) cannot be passed as function arguments, since doing so makes a copy. wrap allows you to pass arbitrary expressions between functions and records where they are ultimately evaluated.

Usage

```
wrap(expr, env = parent.frame())
```

Arguments

expr an R expression
 env environment in which expr is to be evaluated

Value

An object of class 'parcel', with components expr and env.

See Also

Other wrapping functions: [contents](#), [is.parcel](#), [unwrap_as](#), [wrapset](#)

Examples

```
dfr <- data.frame(a=1:4, b=1:4)
rs %r% dfr[1:2,]
parcel <- wrap(rs)
f <- function (parcel) contents(parcel) <- contents(parcel)*2
f(parcel)
contents(parcel)
dfr

parcel <- wrap(x^2) # non-refset use
x <- 3
f <- function(parcel) {x <- 10; contents(parcel)}
f(parcel)
```

wrapset

Convenience function to create a parcel containing a refset.

Description

wrapset calls [refset](#) on its arguments and returns the resulting active binding in a parcel object for passing around.

Usage

```
wrapset(data, ..., env = parent.frame())
```

Arguments

data, ... passed to [refset](#)
 env passed to [refset](#) as argument eval.env

Value

A parcel object.

See Also

Other wrapping functions: [contents](#), [is.parcel](#), [unwrap_as](#), [wrap](#)

Examples

```
dfr <- data.frame(a=1:5, b=1:5)
parcel <- wrapset(dfr, a<3, , drop=FALSE)
contents(parcel)
```

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