Package 'runner'

January 31, 2026

Title Running Operations for Vectors

Type Package

Version 0.4.6

Depends R (>= 3.0)

Language en-US

Encoding UTF-8

Maintainer Dawid Kałędkowski <dawid.kaledkowski@gmail.com>

Description Lightweight library for rolling windows operations. Package enables full control over the window length, window lag and a time indices. With a runner one can apply any R function on a rolling windows. The package eases work with equally and unequally spaced time series.

License GPL (>= 2)

BugReports https://github.com/gogonzo/runner/issues

LinkingTo Rcpp

Imports methods, parallel, Rcpp

Suggests knitr, rmarkdown, tinytest

RoxygenNote 7.3.3

VignetteBuilder knitr

NeedsCompilation yes

Author Dawid Kałędkowski [aut, cre] (ORCID: <https://orcid.org/0000-0001-9533-457X>)

Repository CRAN

Date/Publication 2026-01-31 07:40:02 UTC

Contents

`fill_run` *Fill NA with previous non-NA element*

Description

Fill `NA` with last non-NA element.

Usage

```
fill_run(x, run_for_first = FALSE, only_within = FALSE)
```

Arguments

`x`	(`vector`, `data.frame`, `matrix`, `xts`, `grouped_df`) Input in runner custom function `f`.
`run_for_first`	If first elements are filled with `NA`, `run_for_first = TRUE` allows to fill all initial `NA` with nearest non-NA value. By default `run_for_first = TRUE`
`only_within`	`NA` are replaced only if previous and next non-NA values are the same. By default `only_within = TRUE`

Value

vector - `x` containing all `x` elements with `NA` replaced with previous non-NA element.

Examples

```
fill_run(c(NA, NA,1:10, NA, NA), run_for_first = TRUE)
fill_run(c(NA, NA,1:10, NA, NA), run_for_first = TRUE)
fill_run(c(NA, NA,1:10, NA, NA), run_for_first = FALSE)
fill_run(c(NA, NA, 1, 2, NA, NA, 2, 2, NA, NA, 1, NA, NA), run_for_first = TRUE, only_within = TRUE)
```

lag_run *Lag dependent on variable*

Description

Vector of input lagged along integer vector

Usage

```
lag_run(x, lag = 1L, idx = integer(0), nearest = FALSE)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
nearest	logical single value. Applied when idx is used, then nearest = FALSE returns observation lagged exactly by the specified number of "periods". When nearest = TRUE function returns latest observation within lag window.

Examples

```
lag_run(1:10, lag = 3)
lag_run(letters[1:10], lag = -2, idx = c(1, 1, 1, 2, 3, 4, 6, 7, 8, 10))
lag_run(letters[1:10], lag = 2, idx = c(1, 1, 1, 2, 3, 4, 6, 7, 8, 10), nearest = TRUE)
```

length_run *Length of running windows*

Description

Number of elements in k-long window calculated on idx vector. If idx is an as.integer(date) vector, then k=number of days in window - then the result is number of observations within k days window.

Usage

```
length_run(k = integer(1), lag = integer(1), idx = integer(0))
```

Arguments

k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.

Examples

```
length_run(k = 3, idx = c(1, 2, 2, 4, 5, 5, 5, 5, 5, 5))
```

---

max_run *Running maximum*

Description

min_run calculates running max on given x numeric vector, specified k window size.

Usage

```
max_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

max (numeric) vector of length equals length of x.

Examples

```
set.seed(11)
x1 <- sample( c(1,2,3), 15, replace=TRUE)
x2 <- sample( c(NA,1,2,3), 15, replace=TRUE)
k  <- sample( 1:4, 15, replace=TRUE)
max_run(x1) # simple cumulative maximum
max_run(x2, na_rm = TRUE) # cumulative maximum with removing NA.
max_run(x2, na_rm = TRUE, k=4) # maximum in 4-element window
max_run(x2, na_rm = FALSE, k=k) # maximum in varying k window size
```

mean_run *Running mean*

Description

Running mean in specified window of numeric vector.

Usage

```
mean_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

x	numeric vector which running function is calculated on
k	(integer`` vector or single value)\cr Denoting size of the running window. If kis a singl == length(x)‘ different window size for each element.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at.
na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

mean (numeric) vector of length equals length of x.

Examples

```
set.seed(11)
x1 <- rnorm(15)
x2 <- sample(c(rep(NA,5), rnorm(15)), 15, replace = TRUE)
k <- sample(1:15, 15, replace = TRUE)
mean_run(x1)
mean_run(x2, na_rm = TRUE)
mean_run(x2, na_rm = FALSE )
mean_run(x2, na_rm = TRUE, k=4)
```

---

minmax_run *Running min/max*

Description

min_run calculates running minimum-maximum on given x numeric vector, specified k window size.

Usage

```
minmax_run(x, metric = "min", na_rm = TRUE)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
metric	character what to return, minimum or maximum
na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.

Value

list.

---

min_run *Running minimum*

Description

min_run calculates running min on given x numeric vector, specified k window size.

Usage

```
min_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

min (numeric) vector of length equals length of x.

Examples

```
set.seed(11)
x1 <- sample(c(1, 2, 3), 15, replace = TRUE)
x2 <- sample(c(NA, 1, 2, 3), 15, replace = TRUE)
k  <- sample(1:4, 15, replace = TRUE)
min_run(x1)
min_run(x2, na_rm = TRUE)
min_run(x2, na_rm = TRUE, k = 4)
min_run(x2, na_rm = FALSE, k = k)
```

---

runner *Apply running function*

Description

Applies custom function on running windows.

Usage

```
runner(
  x,
  f = function(x) x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_pad = FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)

## Default S3 method:
runner(
  x,
  f = function(x) x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_pad = FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)

## S3 method for class 'data.frame'
```

```
runner(
  x,
  f = function(x) x,
  k = attr(x, "k"),
  lag = if (!is.null(attr(x, "lag"))) attr(x, "lag") else integer(1),
  idx = attr(x, "idx"),
  at = attr(x, "at"),
  na_pad = if (!is.null(attr(x, "na_pad"))) attr(x, "na_pad") else FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)

## S3 method for class 'grouped_df'
runner(
  x,
  f = function(x) x,
  k = attr(x, "k"),
  lag = if (!is.null(attr(x, "lag"))) attr(x, "lag") else integer(1),
  idx = attr(x, "idx"),
  at = attr(x, "at"),
  na_pad = if (!is.null(attr(x, "na_pad"))) attr(x, "na_pad") else FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)

## S3 method for class 'matrix'
runner(
  x,
  f = function(x) x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_pad = FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)

## S3 method for class 'xts'
runner(
  x,
  f = function(x) x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
```

```
  at = integer(0),
  na_pad = FALSE,
  simplify = TRUE,
  cl = NULL,
  ...
)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
f	(function) Applied on windows created from x. This function is meant to summarize windows and create single element for each window, but one can also specify function which return multiple elements (runner output will be a list). By default runner returns windows as is (f = function(x)).
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.
simplify	(logical or character value) should the result be simplified to a vector, matrix or higher dimensional array if possible. The default value, simplify = TRUE, returns a vector or matrix if appropriate, whereas if simplify = "array" the result may be an array of "rank" (=length(dim(.))) one higher than the result of output from the function f for each window. Consequences of simplify in runner are identical to sapply.

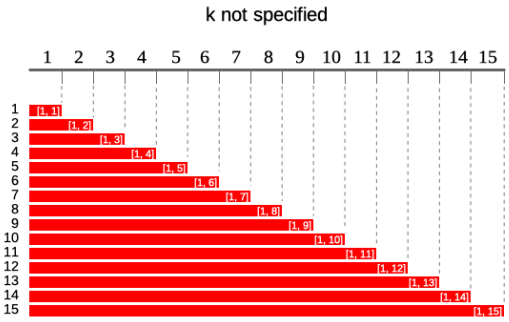
`cl` (`cluster`) *experimental*
Create and pass the cluster to the `runner` function to run each window calculation in parallel. See `parallel::makeCluster()` in details.

`...` (optional)
other arguments passed to the function `f`.

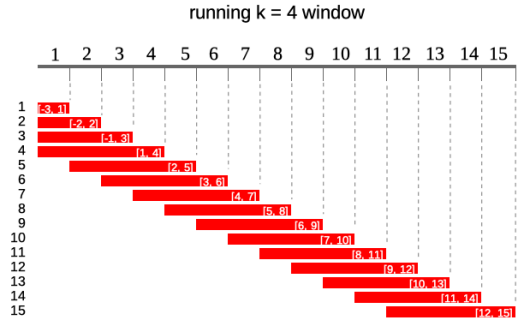
Details

Function can apply any R function on running windows defined by `x`, `k`, `lag`, `idx` and `at`. Running window can be calculated on several ways:

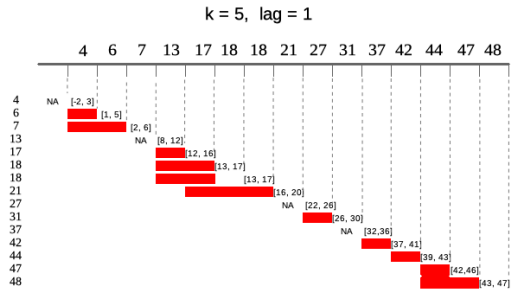
- **Cumulative windows**
  applied when user doesn't specify `k` argument or specify `k = length(x)`, this would mean that `k` is equal to number of available elements



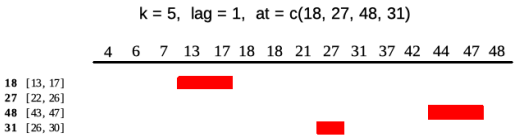
- **Constant sliding windows** applied when user specify `k` as constant value keeping `idx` and `at` unspecified. `lag` argument shifts windows left (`lag > 0`) or right (`lag < 0`).



- **Windows depending on date**
  If one specifies `idx` this would mean that output windows size might change in size because of unequally spaced indexes. Fox example 5-period window is different than 5-element window, because 5-period window might contain any number of observation (7-day mean is not the same as 7-element mean)



- **Window at specific indices**
  `runner` by default returns vector of the same size as `x` unless one specifies `at` argument. Each element of `at` is an index on which runner calculates function - which means that output of the runner is now of length equal to `at`. Note that one can change index of `x` by specifying `idx`. Illustration below shows output of `runner` for `at = c(18, 27, 45, 31)` which gives windows in ranges enclosed in square brackets. Range for `at = 27` is `[22, 26]` which is not available in current indices.



Specifying time-intervals:

`at` can also be specified as interval of the output defined by `at = "<increment>"` which results in indices sequence defined by `seq.POSIXt(min(idx), max(idx), by = "<increment>")`. Increment of sequence is the same as in `base::seq.POSIXt()` function. It's worth noting that increment interval can't be more frequent than interval of `idx` - for `Date` the most frequent time-unit is a `"day"`, for `POSIXt` a `sec`.

`k` and `lag` can also be specified as using time sequence increment. Available time units are `"sec"`, `"min"`, `"hour"`, `"day"`, `"DSTday"`, `"week"`, `"month"`, `"quarter"` or `"year"`. To increment by number of units one can also specify `<number> <unit>s` for example `lag = "-2 days"`, `k = "5 weeks"`.

Setting `k` and `lag` as a sequence increment can be also a vector can be a vector which allows to stretch and lag/lead each window freely on in time (on indices).

Parallel computing:

Beware that executing R call in parallel not always have the edge over single-thread even if the `cl <- registerCluster(detectCores())` was specified before.
Parallel windows are executed in the independent environment, which means that objects other than function arguments needs to be copied to the parallel environment using `parallel::clusterExport()`. For example using `f = function(x) x + y + z` will result in error as `clusterExport(cl, varlist = c("y", "z"))` needs to be called before.

Value

vector with aggregated values for each window. Length of output is the same as `length(x)` or `length(at)` if specified. Type of the output depends on the output from a function `f`.

Examples

```
# runner returns windows as is by default
runner(1:10)

# mean on k = 3 elements windows
runner(1:10, f = mean, k = 3)

# mean on k = 3 elements windows with different specification
runner(1:10, k = 3, f = function(x) mean(x, na.rm = TRUE))

# concatenate two columns
runner(
  data.frame(
    a = letters[1:10],
    b = 1:10
  ),
  f = function(x) paste(paste0(x$a, x$b), collapse = "+")
)

# concatenate two columns with additional argument
runner(
  data.frame(
    a = letters[1:10],
    b = 1:10
  ),
  f = function(x, xxx) {
    paste(paste0(x$a, xxx, x$b), collapse = " + ")
  },
  xxx = "..."
)

# number of unique values in each window (varying window size)
runner(letters[1:10],
  k = c(1, 2, 2, 4, 5, 5, 5, 5, 5, 5),
  f = function(x) length(unique(x))
)

# concatenate only on selected windows index
runner(letters[1:10],
  f = function(x) paste(x, collapse = "-"),
  at = c(1, 5, 8)
)

# 5 days mean
idx <- c(4, 6, 7, 13, 17, 18, 18, 21, 27, 31, 37, 42, 44, 47, 48)
runner::runner(
  x = idx,
```

```
  k = "5 days",
  lag = 1,
  idx = Sys.Date() + idx,
  f = function(x) mean(x)
)

# 5 days mean at 4-indices
runner::runner(
  x = 1:15,
  k = 5,
  lag = 1,
  idx = idx,
  at = c(18, 27, 48, 31),
  f = mean
)

# runner with data.frame
df <- data.frame(
  a = 1:13,
  b = 1:13 + rnorm(13, sd = 5),
  idx = seq(as.Date("2022-02-22"), as.Date("2023-02-22"), by = "1 month")
)
runner(
  x = df,
  idx = "idx",
  at = "6 months",
  f = function(x) {
    cor(x$a, x$b)
  }
)

# parallel computing
library(parallel)
data <- data.frame(
  a = runif(100),
  b = runif(100),
  idx = cumsum(sample(rpois(100, 5)))
)
const <- 0
cl <- makeCluster(1)
clusterExport(cl, "const", envir = environment())

runner(
  x = data,
  k = 10,
  f = function(x) {
    cor(x$a, x$b) + const
  },
  idx = "idx",
  cl = cl
)
stopCluster(cl)
```

```
# runner with matrix
data <- matrix(data = runif(100, 0, 1), nrow = 20, ncol = 5)
runner(
  x = data,
  f = function(x) {
    tryCatch(
      cor(x),
      error = function(e) NA
    )
  }
)
```

---

run_by *Set window parameters*

Description

Set window parameters for runner(). This function sets the attributes to x (only data.frame) object and saves user effort to specify window parameters in further multiple runner() calls.

Usage

```
run_by(x, idx, k, lag, na_pad, at)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

at (integer, Date, POSIXt, character vector)
Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.

Value

x object which runner() can be executed on.

Examples

```
## Not run:
library(dplyr)

data <- data.frame(
  index = c(2, 3, 3, 4, 5, 8, 10, 10, 13, 15),
  a = rep(c("a", "b"), each = 5),
  b = 1:10
)

data %>%
  group_by(a) %>%
  run_by(idx = "index", k = 5) %>%
  mutate(
    c = runner(
      x = .,
      f = function(x) {
        paste(x$b, collapse = ">")
      }
    ),
    d = runner(
      x = .,
      f = function(x) {
        sum(x$b)
      }
    )
  )

## End(Not run)
```

---

streak_run *Running streak length*

Description

Calculates running series of consecutive elements

Usage

```
streak_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

x	any type vector which running function is calculated on
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

streak numeric vector of length equals length of x containing number of consecutive occurrences.

Examples

```
set.seed(11)
x1 <- sample(c("a","b"), 15, replace = TRUE)
x2 <- sample(c(NA_character_, "a", "b"), 15, replace = TRUE)
k <- sample(1:4, 15, replace = TRUE)
streak_run(x1) # simple streak run
streak_run(x1, k = 2) # streak run within 2-element window
streak_run(x2, na_pad = TRUE, k = 3) # streak run within k=3 with padding NA
streak_run(x1, k = k) # streak run within varying window size specified by vector k
```

`sum_run` *Running sum*

Description

Running sum in specified window of numeric vector.

Usage

```
sum_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

`x`	`numeric` vector which running function is calculated on
`k`	(`integer`` vector or single value)\cr Denoting size of the running window. If kis a singl == length(x)‘ different window size for each element.
`lag`	(`integer` vector or single value) Denoting window lag. If `lag` is a single value then window lag is constant for all elements, otherwise if `length(lag) == length(x)` different window size for each element. Negative value shifts window forward.
`idx`	(`integer`, `Date`, `POSIXt`) Optional integer vector containing sorted (ascending) index of observation. By default `idx` is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then `k` and `lag` are depending on `idx`. Length of `idx` have to be equal of length `x`.
`at`	(`integer`, `Date`, `POSIXt`, `character` vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at.

na_rm	logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

sum code vector of length equals length of x.

Examples

```
set.seed(11)
x1 <- rnorm(15)
x2 <- sample(c(rep(NA, 5),rnorm(15)), 15, replace = TRUE)
k <- sample(1:15, 15, replace = TRUE)
sum_run(x1)
sum_run(x2, na_rm = TRUE)
sum_run(x2, na_rm = FALSE)
sum_run(x2, na_rm = TRUE, k = 4)
```

---

which_run *Running which*

Description

min_run calculates running which - returns index of element where x == TRUE.

Usage

```
which_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  which = "last",
  na_rm = TRUE,
  na_pad = FALSE
)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.

k — (integer vector or single value)
Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.

lag — (integer vector or single value)
Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.

idx — (integer, Date, POSIXt)
Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.

at — (integer, Date, POSIXt, character vector)
Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.

which — character value "first" or "last" denoting if the first or last TRUE index is returned from the window.

na_rm — logical single value (default na_rm = TRUE) - if TRUE sum is calculating excluding NA.

na_pad — (logical single value)
Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

integer vector of indexes of the same length as x.

Examples

```
set.seed(11)
x1 <- sample(c(1, 2, 3), 15, replace = TRUE)
x2 <- sample(c(NA, 1, 2, 3), 15, replace = TRUE)
k  <- sample(1:4, 15, replace = TRUE)
which_run(x1)
which_run(x2, na_rm = TRUE)
which_run(x2, na_rm = TRUE, k = 4)
which_run(x2, na_rm = FALSE, k = k)
```

window_run *List of running windows*

Description

Creates list of windows with given arguments settings. Length of output list is equal

Usage

```
window_run(
  x,
  k = integer(0),
  lag = integer(1),
  idx = integer(0),
  at = integer(0),
  na_pad = FALSE
)
```

Arguments

x	(vector, data.frame, matrix, xts, grouped_df) Input in runner custom function f.
k	(integer vector or single value) Denoting size of the running window. If k is a single value then window size is constant for all elements, otherwise if length(k) == length(x) different window size for each element. One can also specify k in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
lag	(integer vector or single value) Denoting window lag. If lag is a single value then window lag is constant for all elements, otherwise if length(lag) == length(x) different window size for each element. Negative value shifts window forward. One can also specify lag in the same way as by argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
idx	(integer, Date, POSIXt) Optional integer vector containing sorted (ascending) index of observation. By default idx is index incremented by one. User can provide index with varying increment and with duplicated values. If specified then k and lag are depending on idx. Length of idx have to be equal of length x.
at	(integer, Date, POSIXt, character vector) Vector of any size and any value defining output data points. Values of the vector defines the indexes which data is computed at. Can be also POSIXt sequence increment used in at argument in base::seq.POSIXt(). See 'Specifying time-intervals' in details section.
na_pad	(logical single value) Whether incomplete window should return NA (if na_pad = TRUE) Incomplete window is when some parts of the window are out of range.

Value

list of vectors (windows). Length of list is the same as `length(x)` or `length(at)` if specified, and length of each window is defined by `k` (unless window is out of range).

Examples

```
window_run(1:10, k = 3, lag = -1)
window_run(letters[1:10], k = c(1, 2, 2, 4, 5, 5, 5, 5, 5, 5))
```

Index