

Basic Math

<code>exp(x)</code>	Exponential	<code>sum(x)</code>	Sum
<code>log(x)</code>	Natural log	<code>cumsum(x)</code>	Cumulative Sum
<code>max(x)</code>	Largest element	<code>ceil(x)</code>	Round up
<code>min(x)</code>	Smallest element	<code>floor(x)</code>	Round down
<code>mean(x)</code>	Mean	<code>median(x)</code>	Median
<code>var(x)</code>	Variance	<code>quantile(x)</code>	Percentage quantiles
<code>x %% y</code>	Modulo		

I/O

<code>write(data, "mydata.dat")</code>	Write data as binary.
<code>scan("mydata.dat")</code>	Read binary data.

Plotting

<code>plot(data)</code>	Plot quick overview.
<code>barplot(x, main="Title", xlab="x label")</code>	Annotated barplot of absolute frequencies
<code>plot.ecdf(data)</code>	Plot ECDF.
<code>hist(data, prob=TRUE, breaks=30)</code>	Histogram of relative frequencies (30 bins).
<code>rug(data)</code>	1D-plot
<code>abline(a, b, col="red")</code>	Add a red line with intercept a and slope b to the plot.

Vectors

Creating Vectors

<code>c(2, 4, 6)</code>	Join elements into a vector
<code>2:6</code>	An integer sequence (end inclusive!)
<code>seq(2, 3, by=0.5)</code>	Complex sequence (s. <code>np.linspace</code>)
<code>rep(1:2, 3)</code>	Repeat vector
<code>rep(1:2, 3:4)</code>	Repeat each element

Functions

<code>sort(x)</code>	Return x sorted.
<code>rev(x)</code>	Return x reversed.
<code>unique(x)</code>	See unique values.
<code>length(x)</code>	Length of x.

Tables

<code>table(x)</code>	Generate absolute frequency table
<code>as.numeric(names(tab)); as.vector(tab)</code>	Access values and frequencies of the table

Selecting Vector Elements

By Position

<code>x[4]</code>	The fourth element
<code>x[-4]</code>	All but the fourth.
<code>x[2:4]</code>	Elements two to four
<code>x[-(2:4)]</code>	All elements except 2 to four
<code>x[c(1, 5)]</code>	Elements one and five.

By Value

<code>x[x == 10]</code>	All elements equal to 10
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By **BarplotNorm**

cheatography.com/barplotnorm/

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Vectors (cont)

`x[x < 10]` All elements less than 10.

`x[x %in% c(1, 2, 5)]` Elements in the given set.

Named Vectors

`x['apple']` Element with name 'apple'.

Control Flow

`for (variable in sequence) {...}` for-loop. If the loop body contains only a single line, the curly brackets can be omitted.

`while (condition) {...}` while-loop

`if (i > 5) {`
`...`
`else {`
`...`
`}` if-else-block

`foo = function(arg1, arg2, ...) {` function
`...`
`return (var)`
`}`

Runs Test of Randomness

`rle(x)` Compute the lengths and values of runs of equal values in a vector .

`rle(x) $lengths` Vector containing the length of each run.

`rle(x) $values` Vector of the same length as lengths with the corresponding values.

Help

`?sqrt` Display documentation of the command `sqrt`

`?'%%'` use quotation marks for special characters

Miscellaneous

Printing

`print(" Text")` Default print

`sprintf("Formatted %s: %.3f", object, mean)` Formatted print

`(x=3)` enclose an R command with brackets to directly print the result

Random Numbers

`sample (1: 3,prob =c(1/6 ,1/ 3,1 /2) ,replac e= TRUE,20)` Draw 20 balls, labeled from 1 to 3, from box with replacement.

`r<d istr. ID>(n, params)` Draw n numbers from distribution <distr. ID> with parameters params



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