Base R Cheat Sheet

Getting Help

Accessing the help files

?mean

Get help of a particular function.

help.search('weighted mean')
Search the help files for a word or phrase.

help (package = 'dplyr')
Find help for a package.

More about an object

str(iris)

Get a summary of an object's structure.

class(iris)

Find the class an object belongs to.

Using Packages

install.packages ('dplyr')
Download and install a package from CRAN.

library(dplyr)

Load the package into the session, making all its functions available to use.

dplvr::select

Use a particular function from a package.

data (iris)

Working Directory

getwd()

Find the current working directory (where inputs are found and outputs are sent).

setwd('C://file/path')

Change the current working directory.

Use projects in RStudio to set the working directory to the folder you are working in.

Vectors

Creating Vectors

Vectors Functions

sort(x) rev(x)

Return x sorted. Return x reversed.

table(x) unique(x)

See counts of values. See unique values.

Selecting Vector Elements

By Position

 \times [4] The fourth element.

 $\times [-4]$ All but the fourth.

 $\times [2:4]$ Elements two to four.

 $\times [-(2:4)]$ All elements except two to four.

x[c(1, 5)] Elements one and five.

By Value

x[x == 10] Element which are equal to 10.

x [which (x==10)] Element which are equal to 10.

x[x < 0] All elements less than zero.

 $x[x %in% c(1,2, Elements in the set 5)] {1,2,5}.$

Named Vectors

x['apple']

Element with name 'apple'.

Programming

For Loop

```
for (variable in sequence) {
    Do something
}
```

Example

```
for (i in 1:4) {
    j <- i + 10
    print(j)
}</pre>
```

While Loop

```
while (condition) {
   Do something
}
```

Example

```
while (i < 5) {
    print(i)
    i <- i + 1
}</pre>
```

If Statement

```
if (condition) {
    Do something
} else {
    Do something
}
```

Example

```
if (i > 3) {
    printf('Yes')
} else {
    printf('No')
}
```

Functions

```
funct_name <- function(var) {
   Do something
   return(new_variable)
}</pre>
```

Example

```
square <- function(x) {
    squared <- x*x
    return(squared)
}</pre>
```

Reading and Writing Data

Also see the **readr** package.

Input	Output	Description
<pre>df <-read.table('file</pre>	<pre>write.table(df, 'file .txt')</pre>	Read and write a delimited text file.
df <-read.csv('file. csv')	write.csv(df, 'file. csv')	Read and write a comma separated value file. This is a special case of read.table/write.table.
load('file.RData')	<pre>save(df, file = 'file .RData')</pre>	Read and write a n R data file, a file type special for R.



a == b	Are equal	a > b	Greater than	a >= b	Greater than or equal to	is.na(a)	Is missing
a !=b	Not equal	a < b	Less than	a <= b	Less than or equal to	is.null(a)	Is null

Types

Converting between common data types in R. Can always go from a higher value in the table to a lower value.

TRUE, FALSE, TRUE	Boolean va
1, 0, 1	Integer or f
1, 0, 1	Inte
'1', '0', '1'	Characte Generally fac
'1', '0', '1' levels: '1', '0'	Character preset levels some statis
	TRUE 1, 0, 1 1, 0, 1 '1', '0', '1'

Boolean values (TRUE or FALSE)

nteger or floating point numbers

Integers

Character strings.
Generally preferred to factors

Character strings with preset levels. Needed for some statistical models

Maths Functions

log(x)	Natural log.	sum(x)	Sum.
exp(x)	Exponential.	mean(x)	Mean.
max(x)	Largest element.	median(x)	Median.
min(x)	Smallest element.	quantile(x)	Percentage quantiles.
(x, n)	Round to n deci- mal places.	rank(x)	Rank of elements.
(x, n)	Round to n signif- icant figures.	var(x)	The variance.
(x, y)	Correlation.	sd(x)	The standard deviation.

Variable Assignment

```
> a <- 'apple'
> a
[1] 'apple'
```

The Environment

ls ()	List all variables in the environment.
rm(x)	Remove x from the environment.
rm (list = ls ())	Remove all variables from the envi- ronment.

You can use the environment panel in RStudio to browse variables in your environment.

Lists

1 < -1ist(x = 1:5, y = c('a', 'b'))

A list is a collection of elements which can be of different types.

1 [[2]]
Second

element of I.

1 [1] New list with

only the first

element.

1\$x Elemer

Element named x.

l['y']
New list with
only element

named v.

Miscellaneous

Arithmetics

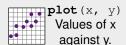
16 = 3 * 5 + 1

16%/%3 16%%3 Quotient (result 5). Remainder (result 1).

Permutations

Memo

Also see the **ggplot2** package.



hist (x) Histogram of x.

Also see the **stringr** package.

toupper(x) Convert to uppercase.

tolower(x) Convert to lowercase.

Factors

factor (x)
Turn a vector into a factor.
Can set the levels of the factor and the order.

Strings

cut (x, breaks = 4)
Turn a numeric vector into
 a factor by 'cutting' into
 sections.

Statistics

lm(y∼x, data=df) Linear model.

glm(y ~ x, data=df) Generalized linear model.

summary Or fivenum
Get more detailed information
out a model.

Plotting

plot(x)

Values of x

in order.

t.test(x, y)
Perform a t-test for
difference between
means.

pairwise.t.test
Perform a t-test for
paired data.

prop.test
Test for a
difference
between
proportions.

t-test aov t-test for Analysis of variance.

Distributions

	Random Variates	Density Function	Cumulative Distribution	Quantile
Normal	rnorm	dnorm	pnorm	qnorm
Poisson	rpois	dpois	ppois	qpois
Binomial	rbinom	dbinom	pbinom	qbinom
Uniform	runif	dunif	punif	qunif