R Cheatsheet

Object assignment
Assign to an object with `<-` or `=`. For example, `x <- 5`.
View an object by typing its name into the console.

Common classes and conversion: Use the function `class(object)` to check the class of an object.

Class	Example	Conversion
`numeric`	`3,3.6`	`as.numeric()`
`character`	`"yahoo","attgcttnnntta"`	`as.character()`
`factor`	`"year1"/1,"year2"/2`	`as.factor()`

Types of data containers

Container	Type of element	Dimensionality	Constructor function	Indexing
Vector	all one type	one dimension	`c()`	`x[number]`, `x["name"]`
Matrix	all one type	two-dimensional	`matrix(values, nrow, ncol)`	`x[row number, col number]`, `x["row name", "col name"]`
Array	all one type	multi-dimensional	`array(values, dim)`	as for matrices
Data frame	variable	two-dimensional	`data.frame()`	`x[row number, col number]`,`x[["name"]]`
List	variable	variable	`list()`	`x[[element number]]`, `x[["element name"]]`

Summarizing data containers

Function	Purpose
`head()`	shows first few elements
`summary()`	summarizes elements of container
`str()`	shows structure of container
`nrow(),ncol(),dim(),length()`	dimensionality of container

Logical evaluation

Operator	Meaning	Example
`==`	Equal to	`x==1`
`!=`	Not equal to	`x!="Sally"
`>,<`	Greater than, less than	`x > 5`
`>=,<=`	Greater/less than or equal to	`x >= 5`
`|`	Or	`x > 5 | x < 100`
`&`	And	`x > 5 & y=="Year 1"`
`is.na()`	Is missing value	`is.na(x)`
`!`	Negation	`!is.na(NA)`
`all(container operator condition)`	All elements of container meet condition	`all(x>5)`
`any(container operator condition)`	Any elements of container meet condition	`any(x==5)`
`which(container operator condition)`	Which elements of container meet condition	`which(x==5)`

Help

Command	Purpose	Example
`?function_name`	shows help page for function (the package must be loaded)	`?lm`
`??function_name`	searches for function across installed packages	`??glm.nb`
`apropos("string")`	lists names of functions which contain string	`apropos("plot")`
`findFn("keywords")`	in package `sos`, search CRAN for functions associated with keywords	`findFn("beta regression")`
`RSiteSearch("keywords")`	searches R listserv and help pages for keywords	`RSiteSearch("mixed effects model")`

R Cheatsheet (cont.)

Loops and flow control

Loop syntax:

```
for( interator in vector ) {
  ## commands go here
}
```

If/else syntax:

```
if( condition ) {
  # do something
} else if ( another condition ) {
  # do something else
} else {
  # do another thing
}
```

While syntax:

```
while ( condition ) {
  # keep on doing stuff
}
```

Function construction

Syntax for running a function and saving the result as an object:

```
function_result <- function_name(function_argument_one, function_argument_two, etc.)
```

Syntax for constructing a function:

```
myFunction <- function(argument1, argument2, etc.){
  # do stuff with arguments here
}
```

To view the source code of a function just type its name and press enter.

Packages

- Install packages with `install.packages("package_name")`, ie. `install.packages("lme4")`
- Load packages with `library(package_name)`, ie. `library(lme4)`
- Detach packages with `detach("package:package_name")`, ie. `detach("package:lme4")`