**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**

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| --- | --- |
| **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 |
| apropros("string") | lists names of functions which contain string | apropros("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")