R Reference Card
MA331 - University of Essex

Dr. Osama Mahmoud (*www.osmahmoud.com*)
E-mail: *o.mahmoud@essex.ac.uk*

This is part of the **MA331: Programming and text analytics with R** module.

Getting help

`help.start()` show the help system
`help("fun.name")` a function documentation
`?fun.name` a function documentation
`help.search("phrase")` search for a phrase

Arithmetic operations

`+`, `-`, `*`, `/` basic arithmetic operations
`**`, $\wedge$ power signs
`pi` the number π
`Inf`, `-Inf` $\pm\infty$
`%/%` integer division
`%%` modulo (remainder from the division)
`NA` not available (missing value)
`NaN` not a number
`NULL` empty object

Logical operators

`==`, `!=` is it equal, not equal?
`!` not (negation operator)
`>`, `>=` greater than, greater than or equal to
`<`, `<=` smaller than, smaller than or equal to
`&`, `&&` logical and
`|`, `||` logical or
`xor` exclusive or
`TRUE` or `T` true
`FALSE` or `F` false
`any()` is at least one element true?
`all()` are all elements true?
`which()` indices of true elements

Simple functions

`exp()` exponential
`log()`, `log10()` and `log2()`
logarithm base e, base 10 and base 2
`max()`, `min()` extreme values
`abs()` absolute value
`sqrt()` square root
`sum(, na.rm=T)` sum excluding missing values
`prod(, na.rm=T)`
product excluding missing values
`round()`, `floor()`, `ceiling()`
round (down/up)
`sin()`, `asin()`, `cos()`, `acos()`, `tan()`, `atan()`
trigonometric functions

Vectors and matrices

`c()` create a vector
`length()` length of a vector
`matrix()` create a matrix
`t()` matrix transpose
`dim()` dimension of a matrix
`%*%` matrices multiplication
`factor()` or `as.factor()`
create a factor (Categorical data)

Characteristics of data objects

`objects()`, `ls()` show a list of defined objects
`typeof()` data type of an object
`mode()` mode of an object
`class()` class of an object
`str()` structure of an object

Working with data structures

`data.frame()` create a data frame
`list()` create a list
`is.numeric()`, `is.character()`, ...
Is a vector numeric/character/ ... ?
`as.numeric()`, `as.character()`, ...
convert data type
`is.na(x)` Does x contain `NA` elements?
`is.null(x)` Is x an empty object?

Handling data

`head(M)`, `tail(M)`
show first/last part of an object M
`sort(x)` sort a vector x
`rep(x, times=, each=)` replicate x
`seq(from=, to=, by=)` create a sequence
`sample(x, size=, replace=)`
draw a random sample from x
`na.omit()`, `na.exclude()`
remove missing values
`x[a]`, `x[-a]`
select elements from a vector x by their indices
`M[a,]`, `M[,b]`
select elements of row a/ column b from M
`rbind()` Concatenating data by row
`cbind()` Concatenating data by column
`merge()`
merge data by common columns or rows
`rownames(M) <- c()` set row names for M
`colnames(M) <- c()` set column names for M