R Data Types

**Everything** in R is an object.

* Vectors
* Lists
* Matrices
* Arrays
* Factors
* Data Frames

class() - what kind of object is it (high-level)?

typeof() - what is the object’s data type (low-level)?

length() - how long is it? What about two dimensional objects?

attributes() - does it have any metadata?

Vectors

A vector is a collection of elements.

There are six data types of these atomic vectors, also termed as six classes of vectors.

* Character--🡪 'a' , '"good", "TRUE", '23.4'
* numeric (real or decimal)--🡪 12.3, 5, 999
* integer--🡪 2L, 34L, 0L
* logical--🡪 TRUE, FALSE
* complex-🡪 3 + 2i
* raw-🡪 "Hello" is stored as 48 65 6c 6c 6f---🡪v🡨charToRaw(“hello”)

vector()

logical(0)

vector("character", length = 5)

character(5)

numeric(5)

logical(5)

vectors can create directly specifying their content. R will then guess the appropriate mode of storage for the vector

x <- c(1, 2, 3)

x1 <- c(1L, 2L, 3L)

y <- c(**TRUE**, **TRUE**, **FALSE**, **FALSE**)

z <- c("lokesh", "python", "r")

typeof(z)

length(z)

class(z)

str(z)

z <- c(z, "datascience")

z <- c("django", z)

Missing Data

R supports missing data in vectors. They are represented as NA (Not Available) and can be used for all the vector types covered in this lesson:

x <- c(0.5, **NA**, 0.7)

x <- c(**TRUE**, **FALSE**, **NA**)

x <- c("a", **NA**, "c", "d", "e")

x <- c(1+5i, 2-3i, **NA**)

The function is.na() indicates the elements of the vectors that represent missing data, and the function anyNA()returns TRUE if the vector contains any missing values:

x <- c("a", **NA**, "c", "d", **NA**)

y <- c("a", "b", "c", "d", "e")

is.na(x)

[1] FALSE TRUE FALSE FALSE TRUE

is.na(y)

[1] FALSE FALSE FALSE FALSE FALSE

anyNA(x)

[1] TRUE

anyNA(y)

[1] FALSE

### Other Special Values

Inf is infinity. You can have either positive or negative infinity.

1/0

[1] Inf

NaN means Not a Number. It’s an undefined value.

0/0

[1] NaN