# Vectors

Creation

* Using :
  + 1:5
* Concatenation of elements or vectors
  + c(1, 2, 3, 4, 5)
* Creating a sequence of numbers
  + seq(0, 10, by = 2)
* Repeating a pattern several times
  + rep(1:5, times = 3)
* Repeating each element of a pattern several times
  + rep(1:5, each = 3)

Subsetting

* vector\_name[3]
* vector\_name[[c(1, 3, 5)]
* vector\_name[-4]

Useful Functions

* sum(vector\_name)
* mean(vector\_name\_
* length(vector\_name)
* rev(vector\_name)
* unique(vector\_name)
* table(vector\_name)
* sort(vector\_name)
* names(vector\_name) <- c(element1name, element2name,element3name)

Logical Tests

* ==
* !=
* <
* >
* <=
* %in%

# Data Frames

Creation

* data.frame(a = 1:3, b = c(“a”, “b”, “c”)

Subsetting

* dataframe\_name[1, ]
* dataframe\_name[ , 1]
* dataframe\_name[1, 1]

# Lists

Creation

* list(“a”, 1, TRUE, c(3, 6, 9))
* list(first\_element = “x”, second\_element = 1:10, third\_element = TRUE)
* as.list(1:5)

Subsetting

* list\_name[[list\_element]]
* list\_name[sub\_list]
* list\_name$list\_element
* list\_name$sub\_list$sub\_list\_element

# Matrices

Creation

* matrix[1:4, nrow = 2, ncol = 2] (columnwise)
* matrix[1:4, nrow = 2, ncol = 2, byrow = TRUE) (rowwise)

Subsetting

* matrix\_name[1, ]
* matrix\_name[ , 1]
* matrix\_name[1, 1]

Useful Functions

* nrow(matrix\_name)
* ncol(matrix\_name)
* dim(matrix\_name)
* rowSums(matrix\_name)
* colSums(matrix\_name)
* rowMeans(matrix\_name)
* colMeans(matrix\_name)