**EXERCISE 1. DATA MANIPULATION**

#################################################

# 1. USING R AS A CALCULATOR

################################################

# add numbers

2 + 2

# multiply numbers

2 \* 2

# raise a number to a power

2 ^ 2

# add two numbers and then multiply them by 2

2 \* ( 2 + 2 )

#################################################

# 2. CREATE NEW OBJECTS & MANIPULATE VECTORS

################################################

# create vector, assign it to an object called "d"

d <- c(1,2,3,4,5,6)

# see what "d" contains

d

# create new object which has 1 added to every element of vector d

d2 <- d + 1

d2

# join the two vectors to create a dataframe with 2 columns

cbind(d,d2)

# join the two vectors into a single vector called d3

d3 <- c(d,d2)

# rearrange d3 to create a matrix with 3 rows and 4 columns

matrix(d3,nrow=3,ncol=4)

# generate a vector of 10 random numbers between 0 and 1

runif(10,0,1)

# Extract elements

d[6]

d[2:4]

d[c(2,4)]

length(d) # how many elements are in the vector?

# reverse order of vector

rev(d)

######################################

# 3. DATAFRAME MANIPULATION

######################################

d4 <- cbind(d,d2)

# add column names

colnames(d4) <- c("richness","abundance")

d4

# get summary stats

summary(d4)

# extract a subset of the dataframe

subset(d4, d4[,2] >5)