

Practice in R

1. Create 02 vectors in R and perform the following operations with the vectors:

- a) Sum
- b) Subtraction
- c) Division
- d) Multiplication
- e) Exponential

2. The "swirl" package is an interactive teaching tool that lets you learn R directly within the R environment.

- a) Install and load the "swirl" package
- b) Choose, start and complete a "swirl course" (your preference)

3. Create a matrix containing 5 rows and 5 columns filled with random numbers belonging to the set of rational numbers in the range 1 to 10. Display the result of the matrix.

4. Identify the difference between the functions for creating random numbers: `runif()` and `sample()`.

- a) Generate 5 random numbers between 0 and 1
- b) Randomly sample 3 values from a vector

5. Create a data frame containing 10 observations and 4 columns: The columns must contain the following elements:

#Column 1: a numerical sequence from 1 to 10 incrementing by 1;

#Column 2: a sequence of capital letters from A to J;

#Column 3: 10 factors where the first 5 are equal to 1 and the last 5 equal to 2;

#Column 4: a logical vector where the first five are equal to FALSE and the last five are equal to TRUE.

#Name the columns as you wish. Present the result obtained.

6. In R, you can calculate summary statistics for a dataset using various functions and packages. Calculate the mean, median, mode, variance and standard deviation.

Sample data:

```
data <- c(12, 18, 14, 20, 15, 18, 22, 19, 25, 12)
```

7. Using the "ggplot2" package, plot the data from the "PlantGrowth" dataset. Make sure to visualize plant growth under different treatments.

8. The "agridat" package is an R package that contains datasets related to agriculture and agricultural research. Install the package, choose and load a specific dataset. Then obtain the summary and statistical summary of the chosen dataset.

9. Create two matrices:

3x3 matrix with values from 1 to 9

3x3 matrix with values from 9 to 1

#a) Check the transpose the matrices

#b) Check the determinant and say if matrices have inverses

10. Create a dataset with two variables, "X" and "Y", then create the scatter plot. Check the relationship between the variables. #Remember to name the x, y axes and a title for the graph.