# Exercise 1, 31.10.2024

Ex 1.1:

a. Check whether the string "Data Science" is equal to "data science" in R. Convert both to lowercase and compare again. Provide the code and explain the output.
b. Create a logical variable "logic_var" and a numeric variable "num_var". Convert "logic_var" to numeric and "num_var" to logical. Display the results and explain the behavior.
c. Create a numeric variable, "num_var," and a character variable, "char_var." Convert "num_var" to a character type and "char_var" to a numeric type. Display the results and observe any changes.

Ex 1.2. Load the mtcars dataset using data(mtcars) and view it using head(mtcars). Create two subsets: one where cars have more than 4 gears and another where cars have more than 4 cylinders. Compare the average horsepower (hp) between these groups using summary().

Ex1.3.

a) Create a vector of random integers between 1 and 100 using sample(), and then sort it in ascending order. Print and observe the sorted output.
b) Create a random vector using the runif() function and round it to two decimal places using round(). Display the output and observe the rounded values.

Ex 1.4. Install and load the "stringr" package using install.packages() and library(). Use the str_length() function to calculate the length of a character vector with 3 different strings.

Ex 1.5. Load the "CO2" dataset with data(CO2) and explore its structure using str(CO2). Divide the data into two subsets based on the "Treatment" variable. Then, calculate the mean and standard deviation of the uptake variable for each subset to compare the two treatment groups.