Introduction: **Rstudio interface**

1. Open Rstudio software
2. Locate the four areas of the interface
3. Note how to:
    a. open a new R script
    b. write a comment into the R script
    c. write an instruction into the R script
    d. run the instruction
    e. identify the input(s) and output(s) of the instruction
    f. import a new dataset
    g. identify where is the plot view and how save it
    h. get the history

Exercise 1: **Objects**

1. Create an integer i (value between 0 and 10)
2. Use the function help() or the bottom right area of Rstudio to read the documentation of the following pre-implemented functions : typeof, as.character, print, nchar
3. Convert the variable i (created question 1) to a character variable, save the output in a new variable and visualize/print it in the console
4. Assign the string “hello” to a new variable and count the number of characters of the variable using R
5. Create the vectors v1 and v2 from 1 to 5 (with 2 ways)
6. Create a categorical variable using the as.factor function
7. Create the list l containing i, v1, v2, and the word "hello"
8. Create two matrices m1 and m2 with 5 columns and 2 lines, with the numbers from 1 to 10. m1 is filled by columns, and m2 by rows.
9. Create the data frame d with columns ID, SEX, AGE and SMOKING for 5 samples:
    a. sample one is called id1, is a female of 24 years old who doesn't smoke
    b. sample two is called id2, is a male of 32 years old who doesn't smoke
    c. sample three is called id3, is a female of 61 years old who smoke
10. Pre-implemented functions:
    a. Apply the following functions to v1: length, sum, mean
    b. Apply the function levels to the categorical variable created question 6
    c. Use the functions table and summary on v1 and the categorical variable
11. In R, a dataset named iris is pre-defined, use the help function to get familiar with the dataset
12. Retrieve the dimensions of the iris data frame
13. Retrieve the names of the columns of the iris data frame
14. Save the data frame in a “.txt” and then in the “.csv” file
15. Load the data saved in the “.txt” and “.csv” files in R, not manually

Exercise 2: **Accessors and operators**

1. Retrieve the third element of the Petal.Length column in the iris data frame
2. Create a vector v3, which contains the same elements as v1, except the 3rd which is 2 times higher.
3. Operators:

    a. How many elements of v3 are lower than 5?
    b. How many elements of v3 are higher or equal to 1?
    c. How many elements of v3 are equal to 4?
    d. How many elements of v3 are different from 2?
4. Extract the rows of the iris data frame that have a sepal length below the averaged sepal length
5. Retrieve the third element of the Petal.Length column in the iris data frame using the which function
6. Vectorized operations: add 1 to each elements of v1 and 2 to each element of m1