Homework 1

1. Create a new Rmarkdown file, and save it with the name YourLastNameHW1.Rmd. Save it in an appropriate directory you have created and make sure that your R session in RStudio is in the same directory where the Rmarkdown file is located. Not done here.

a) In the header of the Rmarkdown file, write your name instead of "null" (currently, it says: **author: "null"**).

b) Check your working directory by using the function that we saw in the lecture.

2. Calculate the square root of 50 and round it up.

3. Create a new vector with numbers from 1 to 80 and find out which class the object belongs to.

4. Create a new vector with numbers from 0 to 100 in a step size of ten (0,10,20,.. etc) and find out its length.

5. Create a new vector named **food** containing the name of any three dishes or types of food.

6. Create a vector containing the numbers 80 to 1 (so, 80, 79,. . . ,1).

7. What is the difference between installing a package and loading the package using the function `library`?

Installing a package means that you install a particular package on your computer; this is done only once, on the command line or using the menu. Loading a package is done within an R script or Rmarkdown document using the library function; one has to load the package whenever one needs the functionality of that package in the script/Rmarkdown document being prepared.

8. Create a vector with numbers from 30 to 100 and a) compute the mean and the standard deviation, b) subset the elements in the position 1, 10, and 100; c) Why do you get NA (not available) with position 100?

9. Compute the log of the previous vector, and store the result in a new vector named "vector_log".

10. Now exponentiate the new vector.

11. Create a vector by repeating the integers ranging from 1 to 5 three times. So, what you want is 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5.

12. Create a vector by repeating the numbers 1 to 5 three times EACH. So, here, what you want is 1 1 1 2 2 2 3 3 3 4 4 4 5 5 5.

13. Now create a new vector that contains a) the numbers 1 to 10 two times, and b) the numbers 1 to 10 two times each (tip: Use the "c" function).

14. Create a vector that contains a) a sequence of numbers from 0 to 100 by 20 (i.e., 0, 20, 40. . .) and b) the numbers 0 to 5 repeated 3 times.

15. Take the mean of the previous vector and round it to 2 decimals.

16. Create a vector with numbers 1 to 5 as CHARACTER. Check the class and length of the object. Then transform the vector of class character to class numeric.

17. Create two numerical vectors of length 4. Then multiply these two vectors.

18. Create a vector that contains a sequence going from -10 to 0.

19. Create a vector of length 20 and subset the elements in positions 1,3,5,8, 9.

20. Create a vector of length 10 and subset

a) all elements except the last one
b) all elements except the first one
c) all elements except the elements in positions 2,4,6