Exercises for the meeting of Apr 26 2019

The reading material for this exercise is the second part of "Introduction to R" (ch 7-12), found from the R home page or `https://cran.r-project.org/doc/manuals/r-release/R-intro.html`

Upload your answer to the LearnWeb assigned as a zip file with two files in it: (i) an R markdown file and (ii) an html file that resulted from knitting the R markdown file. (If this is problematic, use pdf or something else.)

1. create a file called `test.csv`. The file should have two named columns called `width` and `length`, and have four data pairs: 10 15, 12 27, 11 20 and 13 22 (first value refers to width, second to length). Read this file into an R object called `test`.

2. create the same object directly with function `data.frame`.

3. carry out a linear regression of `width` (y) against `length` (x), and interpret the results.

4. add a `factor` variable `f` to `test`, with levels `a a b b`, and run a linear regression of `width` (y) against `length` and `f` (x), and interpret the results.

5. create a data vector with 500 random values, drawn from a t distribution with 5 degrees of freedom (and zero non-centrality).

6. plot this vector with `qqnorm`, add the reference line with `qqline` and interpret the resulting distribution in the context of the normal distribution.

7. write a function called `plot_t` that combines these steps: it should accept two parameters, `n` (with default value 500) and `df` (with default value 5), and create the `qqnorm` plot with the added line. Demonstrate the function with default parameter values, and with parameter values 1000 and 10.

8. run this function, while trying to capture the output in a png file with size 800 pixels x 800 pixels.