R exercise for lecture 2 - Sok- 3020

1. **Simple calculations**: Use R to calculate the following:
   a) 34+25
   b) 54×79
   c) 698/52
   d) 4^2
   e) $(^1/_2)^3$
   f) $9^{(1/3)}$
   g) $\sqrt{16}$
   h) $\ln(3)$
   i) $\ln(e)$, where $e \approx 2.718282$

2. Assign the value of 24 to x
   Assign the value of 30 to y
   Make z the value of x+y, and display the value in the console
   Make k the value of $2\times x - 3 \times y$, and display the value in the console

3. **Working with vectors**
   - Create a vector called *a* containing the numbers 12,8,10,15, and 20. Find the length of the vector a, and the minimum and maximum value of a.
   - Use [lower]: [upper] notation to make a second vector called *b* containing the numbers 10 to 14.
   - Add vector *a* and *b* and look at the result.
   - Create a vector called *p* containing the elements of vector *a* & *b.*
   - Use *seq ()* to make a vector 100 values starting at 2 and increasing by 3 each time and store it in a new variable called *q*
   - Extract the values at positions 5,10,15 and 20 in the vector of 100 values you made.
   - Extract the values at positions 10 to 30 in the vector of 100 values you made, assign this extracted vector as vector x
   - Then, find/calculate:
     - Find the sum of elements of the vector x
     - Length of the vector x
     - Mean of x
     - Deviation from mean of x, and sum of deviation from mean of x
     - Sum of square of deviations from mean of x
     - Variance of x
     - Standard deviation of x
     - Generate a vector t <- x+2*x, and then calculate covariance and correlation between x and t.
     - Plot t against x

4. **Lists and data frames**
   - Enter the following in a vector with the name "*stname*". Remember to surround each piece of text with quotes.

     Alex
     Tomas
     John
     James
     Evan

   - Display the 2nd element in the vector (Tomas) in the console
   - Enter the following into a vector with the name *mark*:

     75
     90
     99
     85
     100
   - Join the 2 vectors together using the *data.frame* function to make a data frame named *mark.info* with 2 columns and 5 rows. Display the data frame in the console
   - Change the first Colum of the vector to *student* and the second one to *point.* Display the data frame in the console
   - Display just row 3 in the console
   - Display just column 1 in the console
   - Display the item of data in row 4, column 1.
   - Replace the item of data in row 4, column 1 to 98

5. **Reading in data from a file (R**ead/import in data from the page **http://www.principlesofeconometrics.com/poe5/poe5data.html)**

   a)

   - Use the function called "*load (url(" "))* " to read in the file " *andy.rdata* ".
   - View the dataset using the "*view()"* function to check that you imported the data correctly.
   - Use *hist* to draw a histogram for sales. Make a scatter plot of sales on the x-axis, and price on the y-axis. Use *plot()* function. Use *main* or *title* to add a tittle to the plot.

   b)

   - Read the file "andy.csv". This is a comma-delimited file so use *read.csv().*
   - View the dataset using the "*view()"* function to check that you imported the data correctly