Assignment I - Due Feb 21, 2017

January 31, 2017

The homework has 100pt, and each exercise are 50pt. Please submit a single pdf file. You can paste your code with result into pdf file. Please add comments in your code explaining what the code does. 10pt will be deduced if there is no comment.

Code style reference: `https://google.github.io/styleguide/Rguide.xml`.

1 Exercise I

- Define a vector A with 2 elements, your first name and last name.
- Define a vector B with 1 string which is "is working on FE513 homework".
- Split B by space and make it to vector C. Show the length of vector C (should be 5).
- Add a period to as the 6th element of vector C.
- Transfer vector C into a matrix D with 2 columns and 3 rows.
- rbind A and D into a matrix E. If you read it row by row, it should be a regular sentence.
- Define a 5 by 5 square matrix F from 25 random number (use rnorm()).
- Get mean and sd of the values in matrix F.
- Get transposed matrix G from F.
- Do dot product and multiplication on matrices G and F.
- Convert F into a data frame H.
- Display rows which satisfy the conditions: 1) the first column is larger than 0; AND 2) the second column is less than 0.

2 Exercise II

- Download 1-year daily stock price data from yahoo finance or google finance or Bloomberg or any other data source into csv file.
- Set your work directory to the place you saved your csv file.
- Read the csv file into R, and show the number of rows, number of columns and column names.
- Calculate log daily stock return based on adjusted close price. You CANNOT use loop for this. You need to use vector(s) to calculate it directly. After calculation, check how many NA value or Inf value inside the log return vector. (If you do not know how to calculate log return, you can search it on Google. There are lots of examples.)
- Define a function to calculate 10-day simple moving average on daily return (if you have n days data on close price, you should get n - 9 numbers for moving average because you do not have value in the first 9 days). Assume the daily log return vector is ordered by date (ascending). The return value of the function should be a vector. (Hint: you can use for loop on row 10 to nrow()) If you do not know how to calculate, google "how to calculate simple moving average" to see what it is.
- Use the log return vector from first question as input variable into the defined function.