Simulation Lab(MC503)
Assignment 2

Solve all the problems.

Problem 1. $A = \begin{pmatrix} -4 & 5 & 7 \\ 12 & -17 & 8 \end{pmatrix}$ and $B = \begin{pmatrix} 41 & 15 \\ -27 & -24 \\ 5 & 91 \end{pmatrix}$

(i) Find matrix-matrix multiplication (AB)
(ii) Find $(AB)^t$ and $(AB)^{-1}$
(iii) Find the mean, standard deviation for each column and row for the matrices $A, B, AB, (AB)^t, (AB)^{-1}$.
(iv) Find the row sum and column sum of both matrices A & B without use any inbuilt function.

Description: Here you are not supposed to use R packages. It means that for the calculation of matrix-matrix multiplication you cannot use % * % . Here you can use only *,+,-, /. So, write your own code for these computations and verify these with the solution of assignment 1 (question number 4). Better if you provide a "function" program for that.

Problem 2. Write a "function" program in R to find $n!$. Hence find $13!, 32!$. Do not name the function by "factorial". You can initialize that $0! = 1$ and $1! = 1$.

Problem 3. Write a "function" program in R to find maximum and minimum from a set of numbers. Do not name the function by "max" or "min". As an input you take $(-4, 44.7, -2, 40, 54, 1, -3, 4)$

Problem 4. Write a "function" program in R to check whether a number prime or composite. Do not use any default function.

Problem 5. Write a "function" program in R to find the mean, median, mode of some dataset. Don't use the default function. You can take input vector as $(5, 10, 6, 8, 12, 16, 20, 10, 16, 15)$.

Problem 6. Write a "function" program to find the first 10 Fibonacci sequence in R.

Problem 7. Write a "function" program to check whether a vector contain a particular element or not. Say, for example, check the vector $X = c(4, 8, 10, 5, 6, 12)$ contain 5 or not.

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