SESSION 14: GETTING STARTED WITH R

Assignment 1

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1. Introduction

This assignment will help you understand the concepts learnt in the session.

2. Objective

To understand the concepts in R.

3. Prerequisites

Not applicable.

4. Associated Data Files

N/A

5. Problem Statement

1. Create the vectors

       (a) (2, 3, ... , 29, 30)

       (b) (30, 29, ... , 2)

       (c) (1, 2, 3, ... , 29, 30, 29, 28, , 2, 1)

       (d) (4, 6, 3) and assign it to the name dev.

For parts (e), (f) and (g)

       e) (5, 6, 7, 5, 6, 7, , 5, 6, 7) where there are 10 occurrences of 5.

       (f) (5, 6, 7, 5, 6, 7, , 5, 6, 7, 5) where there are 11 occurrences of 5, 10 occurrences of 6 and 10 occurrences of 7.

       (g) (4, 4, , 4, 6, 6, , 6, 3, 3, , 3) where there are 10 occurrences of 4, 20 occurrences of 6 and 30 occurrences of 3.

2. Create a vector of the values of $e^x \sin(x)$ at $x = 3, 3.1, 3.2, , 6$.

3. Execute the following lines which create two vectors of random integers which are chosen with

replacement from the integers 0, 1, : : : , 999. Both vectors have length 250.

set.seed(100)

x <- Sample (0:999, 250, replace=T)

y <- Sample (0:999, 250, replace=T)

       a)   Identify out the values in y which are > 500.

       b)   Identify the index positions in y of the values which are > 700?

c) What are the values in x which are in Same index position to the values in y which are > 400?

d) How many values in y are within 200 of the maximum value of the terms in y?

e) How many numbers in x are divisible by 2?

f) Sort the numbers in the vector x in the order of increasing values in y.

g) Create the vector $(x_1 + 2x_2 - x3; x_2 + 2x_3 -x_4 ,, x_{n-2} + 2x_{n-1} - x_n)$.

h) Calculate:

$$\sum_{i=1}^{n-1} (e^{-xi+10} / x_i + 10)$$

6. Expected Output

N/A

7. Approximate Time to Complete Task