TEB2164 Introduction to Data Science
Lab 4a- Factors, matrices, array

Learning Outcomes

At the end of the session, you will be able to:

- Write, run, and explain the difference of factors, matrices, and array in R

Activity

```
age = c(55,57,56,52,51,59,58,53,59,55,60,60,60,60,52,55,56,51,60,
52,54,56,52,57,54,56,58,53,53,50,55,51,57,60,57,55,51,50,57,58)
```

1. Vector above stores a record of retirement age of staff in Company A. Find the levels of factor of the vector. Divide the levels of factor in 5 ranges. What can you conclude/insight from the finding?

   Sample expected outcome:

Staff Age	Total number of staff
50	?
51	?
52	?
53	?
54	?
55	?
56	?
57	?
58	?
59	?
60	?

Age Range	Total number of staff
50-52	?
52-54	?
54-56	?
56-58	?
58-60	?

```
V1 = c(2,3,1,5,4,6,8,7,9)
```

2. Write a R program to create two 3x3 matrix (Matrix-1) using values from vector V1. Transpose Matrix-1 to create Matrix-2. Rename the column and row accordingly. Add, subtract, multiply and divide the matrixes.

3. Write a R program to create two arrays of 4 columns, 2 rows, 3 tables and 2 columns, 3 rows, 5 tables. Print the second row of the second matrix of the first array and the element in the 3rd row and 3rd column of the first matrix of the second array.

Sample expected outcome

```
Array1
, , 1
     [,1] [,2] [,3] [,4]
[1,]    1    3    5    7
[2,]    2    4    6    8

, , 2
     [,1] [,2] [,3] [,4]
[1,]    9   11   13   15
[2,]   10   12   14   16
```

```
, , 3
     [,1] [,2] [,3] [,4]
[1,]   17   19   21   23
[2,]   18   20   22   24

Array2
, , 1
     [,1] [,2]
[1,]   25   28
[2,]   26   29
[3,]   27   30

, , 2
     [,1] [,2]
[1,]   31   34
[2,]   32   35
[3,]   33   36

, , 3
     [,1] [,2]
[1,]   37   40
[2,]   38   41
[3,]   39   42

, , 4
     [,1] [,2]
[1,]   43   46
[2,]   44   47
[3,]   45   48

, , 5
     [,1] [,2]
[1,]   49   52
[2,]   50   53
[3,]   51   54

"The second row of the second matrix of the array:"
10 12 14 16
"The element in the 3rd row and 3rd column of the 1st matrix:"
30
```

Submission

- Submit to your GA.