# ITA0464 R Programming (Day 2)

1. Write a R program to get the unique elements of a given string and unique numbers of vector

```
> str1 = "The Man Is The Going To The Shop"
> print(unique(tolower(str1)))
[1] "the man is the going to the shop"
> nums = c(1, 2, 2, 3, 4, 4, 5, 6)
> print(unique(nums))
[1] 1 2 3 4 5 6
>
```

2. Write a R program to create three vectors a,b,c with 3 integers. Combine the three vectors to become a 3×3 matrix where each column represents a vector. Print the content of the matrix.

```
> a<-c(1,2,3)
> b<-c(4,5,6)
> c<-c(7,8,9)
> m<-cbind(a,b,c)
> print(m)
     a b c
[1,] 1 4 7
[2,] 2 5 8
[3,] 3 6 9
>
```

3.Write a R program to create a list of random numbers in normal distribution and count occurrences of each value.

```
> n = floor(rnorm(100, 5, 10))
> print('List of random numbers in normal distribution:')
[1] "List of random numbers in normal distribution:"
> print(n)
  [1]  29   9  -4  13   6  -9  -1   8   9  19   3 -12 -10  12  17  10  -6   5   7   3  25  12   4   0   0   7  13   7  -9  -6   6   1   6  -6  12  -4   9  12  18  11   0   3  21  -6  22
 [46]  24   2   7  -5   4  -5  -6   6 -16   7   0  13  -3   6   3   0   3   0  -2   7   5  -6   9   6  14  -8   7   0   6  21  21   6  -7  -7  11  11  -1  -3  13  23  -5  -4   3 -18   3
 [91]  13  20   7   7  21   9  10  15   1 -16
> t = table(n)
> print("Count occurrences of each value:")
[1] "Count occurrences of each value:"
> print(t)
n
-18 -16 -12 -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  17  18  19  20  21  22  23  24  25  29
  1   2   1   1   2   1   2   6   3   3   2   1   2   7   2   1   7   2   1   7   2   2   8   9   1   5   2   3   4   5   1   1   1   1   4   1   1   1   1
>
```

4.Write a R program to read the .csv file and display the content
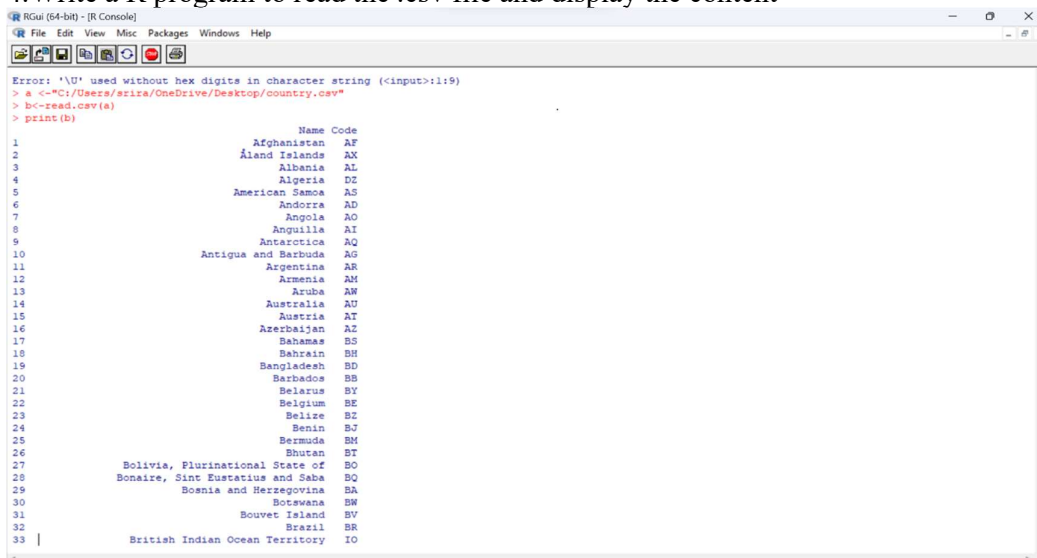
5.Write a R program to create three vectors numeric data, character data and logical data. Display the content of the vectors and their type

```
> a = c(1, 2, 5, 3, 4, 0, -1, -3)
> b = c("Red", "Green", "White")
> c = c(TRUE, TRUE, TRUE, FALSE, TRUE, FALSE)
> print(a)
[1]  1  2  5  3  4  0 -1 -3
> print(typeof(a))
[1] "double"
> print(b)
[1] "Red"   "Green" "White"
> print(typeof(b))
[1] "character"
> print(c)
[1]  TRUE  TRUE  TRUE FALSE  TRUE FALSE
> print(typeof(c))
[1] "logical"
```

6.Write a R program to create a 5 x 4 matrix, 3 x 3 matrix with labels and fill the matrix by rows and 2 × 2 matrix with labels and fill the matrix by columns.

```
> m1 = matrix(1:20, nrow=5, ncol=4)
> print("5 × 4 matrix:")
[1] "5 × 4 matrix:"
> print(m1)
     [,1] [,2] [,3] [,4]
[1,]    1    6   11   16
[2,]    2    7   12   17
[3,]    3    8   13   18
[4,]    4    9   14   19
[5,]    5   10   15   20
> cells = c(1,3,5,7,8,9,11,12,14)
> rnames = c("Row1", "Row2", "Row3")
> cnames = c("Col1", "Col2", "Col3")
> m2 = matrix(cells, nrow=3, ncol=3, byrow=TRUE, dimnames=list(rnames, cnames))
> print("3 × 3 matrix with labels, filled by rows: ")
[1] "3 × 3 matrix with labels, filled by rows: "
> print(m2)
     Col1 Col2 Col3
Row1    1    3    5
Row2    7    8    9
Row3   11   12   14
> print("3 × 3 matrix with labels, filled by columns: ")
[1] "3 × 3 matrix with labels, filled by columns: "
> m3 = matrix(cells, nrow=3, ncol=3, byrow=FALSE, dimnames=list(rnames, cnames))
> print(m3)
     Col1 Col2 Col3
Row1    1    7   11
Row2    3    8   12
Row3    5    9   14
>
```

7.Write a R program to create an array, passing in a vector of values and a vector of dimensions. Also provide names for each dimension

```
> a = array(6:30, dim = c(4, 3, 2),dimnames = list(c("Col1", "Col2", "Col3", "Col4"),c("Row1", "Row2", "Row3"),c("Part1", "Part2")))
> print(a)
, , Part1

     Row1 Row2 Row3
Col1    6   10   14
Col2    7   11   15
Col3    8   12   16
Col4    9   13   17

, , Part2

     Row1 Row2 Row3
Col1   18   22   26
Col2   19   23   27
Col3   20   24   28
Col4   21   25   29
```

8.Write a R program to create an array with three columns, three rows, and two "tables", taking two vectors as input to the array. Print the array.

```
> v1 = c(1, 3, 5, 7)
> v2 = c(2, 4, 6, 8, 10)
> arra1 = array(c(v1, v2),dim = c(3,3,2))
> print(arra1)
, , 1

     [,1] [,2] [,3]
[1,]    1    7    6
[2,]    3    2    8
[3,]    5    4   10

, , 2

     [,1] [,2] [,3]
[1,]    1    7    6
[2,]    3    2    8
[3,]    5    4   10
```

9.Write a R program to create a list of elements using vectors, matrices and a function. Print the content of the list

```
> l = list(c(1, 2, 2, 5, 7, 12),month.abb,matrix(c(3, -8, 1, -3), nrow = 2),asin)
> print("Content of the list:")
[1] "Content of the list:"
> print(l)
[[1]]
[1]  1  2  2  5  7 12

[[2]]
 [1] "Jan" "Feb" "Mar" "Apr" "May" "Jun" "Jul" "Aug" "Sep" "Oct" "Nov" "Dec"

[[3]]
     [,1] [,2]
[1,]    3    1
[2,]   -8   -3

[[4]]
function (x)  .Primitive("asin")
```

10.Write a R program to draw an empty plot and an empty plot specify the axes limits of the graphic

```
> plot.new()
> plot(1, xlim=c(0, 20), ylim=c(0, 20))
>
```