**Data Structures in R Assignment**

**Problem Statement:**

Sam’s next exam is on ‘Data Structures’. The questions will be based on what you’ve learnt in the respective module.

Questions:

1. Create these vectors:

a. A character vector named ‘fruits’ with these values: ‘Apple’, ‘Guava’, ‘Banana’, ‘Mango’

> fruits <- c("Apple","Gauva","Banana","Mango")

> class(fruits)

[1] "character"

> fruits

[1] "Apple" "Gauva" "Banana" "Mango"

b. A numeric vector named ‘hundred’ comprising of the first 100 natural numbers

> hundred <- c(1:100)

> hundred

[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

[29] 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56

[57] 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

[85] 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

> class(hundred)

[1] "integer"

c. A logical vector named ‘logic\_game’ with these values: ‘TRUE’,’TRUE’,’FALSE’,’FALSE’

> logic\_name <- c(TRUE,TRUE,FALSE,FALSE)

> logic\_name

[1] TRUE TRUE FALSE FALSE

> class(logic\_name)

[1] "logical"

2. Create a list named ‘jumbo’ which comprises of:

> jubmo <- list(alphabets, numbers, logic\_n)

> class(jubmo)

[1] "list"

> jubmo

[[1]]

[1] "A" "B" "C" "D"

[[2]]

[1] 55 56 57 58 59 60

[[3]]

[1] TRUE FALSE

a. A character vector comprising of alphabets from A to D

> alphabets = c('A','B','C','D')

> alphabets

[1] "A" "B" "C" "D"

b. A numeric vector comprising of numbers from 55 to 60

> numbers = c(55:60)

> numbers

[1] 55 56 57 58 59 60

c. A logical vector comprising of just these two values: True, False

> logic\_n <- c(TRUE, FALSE)

> logic\_n

[1] TRUE FALSE

i. Now, access the third value from the first element of the list

> jubmo[[1]][3]

[1] "C"

ii. Access the 2nd value from the 2nd element of the list

> jubmo[[2]][2]

[1] 56

iii. Access the 1st value from the 3rd element of the list

> jubmo[[3]][1]

[1] TRUE

3. Create a matrix named ‘four\_trouble’, with the numbers 1 to 16. The matrix should have 4 rows & 4 columns

a. Arrange the elements by row

> numbers = c(1:16)

> numbers

[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

> four\_trouble <- matrix(data = numbers, nrow = 4, ncol = 4)

> four\_trouble

[,1] [,2] [,3] [,4]

[1,] 1 5 9 13

[2,] 2 6 10 14

[3,] 3 7 11 15

[4,] 4 8 12 16

4. Create an array named ‘sky\_maze’ with the numbers 1 to 32. The array should comprise of two 4\*4 matrices

> num = c(1:32)

> num

[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

> sky\_maze <- array(data = num, dim = c(4,4,2))

> sky\_maze

, , 1

[,1] [,2] [,3] [,4]

[1,] 1 5 9 13

[2,] 2 6 10 14

[3,] 3 7 11 15

[4,] 4 8 12 16

, , 2

[,1] [,2] [,3] [,4]

[1,] 17 21 25 29

[2,] 18 22 26 30

[3,] 19 23 27 31

[4,] 20 24 28 32