SVKM's NMIMS University

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COURSE Probability and Statistics

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LAB1

Exercise 1

Write a R program to create three vectors numeric data, character data and logical data. Display the content of the vectors and their type.

```
#lab1 Aryan Srivastava
#1
v1=c(1,2,3)
v1
class(v1)

v2=c("a","b","c")
v2
class(v2)

```

108:1 (Top Level)

R 4.4.2 · /cloud/project/

```
> v1=c(1,2,3)
> v1
[1] 1 2 3
> typeof(v1)
[1] "double"
> class(v1)
[1] "numeric"
> v1=c(1,2,3)
> v1
[1] 1 2 3
> class(v1)
[1] "numeric"
>
> v2=c("a","b","c")
> v2
[1] "a" "b" "c"
> class(v2)
[1] "character"
>
> v3=c(T,F,T)
> v3
[1]  TRUE FALSE  TRUE
> class(v3)
[1] "logical"
>
```

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

```
#2
m1=matrix(1:20,nrow = 4,ncol = 5,byrow = T)
m1

m2=matrix(1:6,nrow = 3,ncol = 2,byrow = T)
m2

m3=matrix(1:4,nrow = 2,ncol = 2)
m2
```

112:1 (Top Level)

R 4.4.2 · /cloud/project/

```
[1]  TRUE FALSE  TRUE
> class(v3)
[1] "logical"
> m1=matrix(1:20,nrow = 4,ncol = 5,byrow = T)
> m1
     [,1] [,2] [,3] [,4] [,5]
[1,]    1    2    3    4    5
[2,]    6    7    8    9   10
[3,]   11   12   13   14   15
[4,]   16   17   18   19   20
>
> m2=matrix(1:6,nrow = 3,ncol = 2,byrow = T)
> m2
     [,1] [,2]
[1,]    1    2
[2,]    3    4
[3,]    5    6
>
> m3=matrix(1:4,nrow = 2,ncol = 2)
> m2
     [,1] [,2]
[1,]    1    2
[2,]    3    4
[3,]    5    6
>
```

Write a R program to compute sum, mean and product of a given vector elements.

```
#3
v1=c(1,2,3,4)
v1
mean(v1)
sum(v1)
prod(v1)
```

131:3 (Top Level)

R 4.4.2 · /cloud/project/

```
[1] 1 2 3 4
> mean(v1)
[1] 2.5
> sum(v1)
[1] 10
> prod(v1)
[1] 24
>
```

List all the observations of “iris” dataset.

```
136
137  #4
138  data("iris")
139  head(iris)
140
141
```

141:1 (Top Level)

R 4.4.2 · /cloud/project/

```
> data("iris")
> head(iris)
  Sepal.Length Sepal.Width Petal.Length Petal.Width Species
1          5.1         3.5          1.4         0.2  setosa
2          4.9         3.0          1.4         0.2  setosa
3          4.7         3.2          1.3         0.2  setosa
4          4.6         3.1          1.5         0.2  setosa
5          5.0         3.6          1.4         0.2  setosa
6          5.4         3.9          1.7         0.4  setosa
>
```

Write a R program to create a list containing a vector, a matrix and a list; and give names to the elements in the list. Access the second element of the list.

```
141  #5
142  mat1=matrix(1:6,nrow = 2,ncol = 3)
143  mat1
144
145  mat2=matrix(1:6,nrow = 2,ncol = 3,byrow = T)
146  mat2
147
148  mat1+mat2
149
150  mat1-mat2
151
```

145:40 (Top Level)

R 4.4.2 · /cloud/project/

```
6          5.4          3.9          1.7         0.4  setosa
> mat1=matrix(1:6,nrow = 2,ncol = 3)
> mat1
     [,1] [,2] [,3]
[1,]    1    3    5
[2,]    2    4    6
>
> mat2=matrix(1:6,nrow = 2,ncol = 3,byrow = T)
> mat2
     [,1] [,2] [,3]
[1,]    1    2    3
[2,]    4    5    6
>
> mat1+mat2
     [,1] [,2] [,3]
[1,]    2    5    8
[2,]    6    9   12
>
> mat1-mat2
     [,1] [,2] [,3]
[1,]    0    1    2
[2,]   -2   -1    0
>
```

Write a R program to compute addition and subtraction of two matrices of dimension n x (n+1).

```
#6
mat2=matrix(1:6,nrow = 2,ncol = 3,byrow = T)

lis0=list(0,2,4)

lis1=list(c(1,2,3,4),mat2,lis0)
lis1

names(lis1)=c("first","second","third")
lis1[2]

```

157:32 (Top Level)

R 4.4.2 · /cloud/project/

```
> mat2=matrix(1:6,nrow = 2,ncol = 3,byrow = T)
>
> lis0=list(0,2,4)
>
> lis1=list(c(1,2,3,4),mat2,lis0)
> lis1
[[1]]
[1] 1 2 3 4

[[2]]
     [,1] [,2] [,3]
[1,]    1    2    3
[2,]    4    5    6

[[3]]
[[3]][[1]]
[1] 0

[[3]][[2]]
[1] 2

[[3]][[3]]
[1] 4


>
> names(lis1)=c("first","second","third")
> lis1[2]
$second
     [,1] [,2] [,3]
[1,]    1    2    3
[2,]    4    5    6

>
```