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LAB MANUAL 1

1.Write The Commands To Perform Basic Arithmetic In R.

> a <-c(1,2,3,4,5)

> b <-c(2,4,5,6,7)

> a+b

[1] 3 6 8 10 12

> a-b

[1] -1 -2 -2 -2 -2

> a\*b

[1] 2 8 15 24 35

> a/b

[1] 0.5000000 0.5000000 0.6000000 0.6666667 0.7142857

>

2.Display a String on R Console

> print("hi aswini")

[1] "hi aswini"

>

3. Declare Variables In R And Also Write The Commands For Retrieving The Value Of The Stored Variables In R Console.

string <-("aswini logaraja")

> print(string)

[1] "aswini logaraja"

>

4. Write R script to calculate the area of Rectangle

> length<-5

> breadth<-6

> length\*breadth

[1] 30

> cat("area of the rectangle is ",length\*breadth, "/n")

area of the rectangle is 30 /n>

5.Write Commands In R Console To Determine The Type Of Variable

> x<-1:10

> typeof(x)

[1] "integer"

>

6.Enumerate The Process To Check Whether A Given Input Is Numeric , Integer , Double, Complex in R.

> y <-c(1.2,2.2,3.4)

> typeof(y)

[1] "double"

>

7. Illustration of Vector Arithmetic.

> a <-c(1,2,3,4,5)

> b <-c(2,4,5,6,7)

> a+b

[1] 3 6 8 10 12

> a-b

[1] -1 -2 -2 -2 -2

> a\*b

[1] 2 8 15 24 35

> a/b

[1] 0.5000000 0.5000000 0.6000000 0.6666667 0.7142857

>

EXERCISE

1) Perform Matrix Addition & Subtraction in R

> MatrixA <- matrix(data = 1:9, nrow = 3, ncol = 3)

> MatrixA

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

[1,] 1 4 7

[2,] 2 5 8

[3,] 3 6 9

> a+b

[1] 3 6 8 10 12

> a-b

[1] -1 -2 -2 -2 -2

> a\*b

[1] 2 8 15 24 35

> a/b

[1] 0.5000000 0.5000000 0.6000000 0.6666667 0.7142857

>

2) Perform Scalar multiplication and matrix multiplication in R

> m <- matrix(1:8, nrow=2)

> print(m)

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

[1,] 1 3 5 7

[2,] 2 4 6 8

> m <- matrix(1:8, nrow=2)

> m <- 2\*m

> print(m)

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

[1,] 2 6 10 14

[2,] 4 8 12 16

> m <- matrix(1:8, nrow=2)

> n <- matrix(8:15, nrow=2)

> print(m\*n)

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

[1,] 8 30 60 98

[2,] 18 44 78 120

>

4) Perform the operation of combining matrices in R using cbind() and rbind() functions.

> x <- 2:7

> y <- c(2, 5)

>

> rbind(x, y)

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

x 2 3 4 5 6 7

y 2 5 2 5 2 5

> cbind(x,y)

x y

[1,] 2 2

[2,] 3 5

[3,] 4 2

[4,] 5 5

[5,] 6 2

[6,] 7 5

>

5) Deconstruct a matrix in R

> matrix=matrix(1:12,nrow=4,ncol=3)

> print(matrix)

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

[1,] 1 5 9

[2,] 2 6 10

[3,] 3 7 11

[4,] 4 8 12

>

7) Perform calculations across array elements in an array using the apply() function.

> vector1 <- c(1, 2, 3)

> vector2 <- c(4, 6, 8, 0, 2, 4)

> array1 <- array(c(vector1, vector2), dim = c(3, 3, 2))

> print(result)

Error in print(result) : object 'result' not found

> vector3 <- c(3, 2, 1)

> vector4 <- c(2, 4, 6, 8, 3, 5)

> array2 <- array(c(vector3, vector4), dim = c(3, 3, 2))

>

> matrix1 <- array1[,,2]

> matrix2 <- array2[,,2]

> result <- matrix1 + matrix2

> print(result)

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

[1,] 4 6 8

[2,] 4 10 5

[3,] 4 14 9

>

8) Demonstrate Factor data structure in R.

> data <-c("aswini","aishu","anjana",srija","deva")

Error: unexpected string constant in "data <-c("aswini","aishu","anjana",srija",""

> data <-c("aswini","aishu","anjana","srija","deva")

> print(data)

[1] "aswini" "aishu" "anjana" "srija" "deva"

> print(is.factor(data))

[1] FALSE

> factor\_dats<-factor(data)

> factor\_data<-factor(data)

> print(factor\_data)

[1] aswini aishu anjana srija deva

Levels: aishu anjana aswini deva srija

>

9) Create a data frame and print the structure of the data frame in R.

> df1 = data.frame(id = c(1 ,2 , 3), name = c("karthik" , "nikhil" ,"sravan"))

> print(df1)

id name

1 1 karthik

2 2 nikhil

3 3 sravan

> df2 = data.frame(sid = c(1, 2, 3),

+ sname = c("karthik" , "nikhil" , "sravan"),

+ Branch = c("IT" , "CSE" , "IT"))

> df2

sid sname Branch

1 1 karthik IT

2 2 nikhil CSE

3 3 sravan IT

>

10) x<-c("female", "male", "male", "female")

>

> print(x)

[1] "female" "male" "male" "female"

> x<-c("female", "male", "male", "female")

> class(x)<-append(class(x), "Gender")

> class(x)

[1] "character" "Gender"

>

12) Demonstrate the creation of Reference class in R by defining a class called students with fields – Name, Age , GPA. Also illustrate how the fields of the object can be accessed using the $ operator. Modify the Name field by reassigning the name to Paul

