DAY 2 – LAB EXERCISES

1. Demonstrate Vector Recycling in R.

v1=c(1,2,3,4,5)

v2=c(1,2)

print(v1+v2)

output:-

> source('~/.active-rstudio-document')

[1] 2 4 4 6 6

2. Demonstrate the usage of apply function in R

print("matrix :")

r=c(1,2,3,4)

mat=matrix(r1,ncol = 2)

print(mat)

print("Applying sum into the columns of matrix :")

print(apply(arr,2,sum))

output:-

[1] "matrix :"

[,1] [,2]

[1,] 1 3

[2,] 2 4

[1] "Applying sum into the columns of matrix :"

[1] 3 7

3. Demonstrate the usage of lapply function in R

data <- data.frame(a = c(1, 2, 3),b = c(1, 2, 3),c = c(1, 2, 3))

print(data)

print(lapply(data,sum))

output:-

> source('~/.active-rstudio-document')

a b c

1 1 1 1

2 2 2 2

3 3 3 3

$a

[1] 6

$b

[1] 6

$c

[1] 6

>

4. Demonstrate the usage of sapply function in R

data <- data.frame(a = c(1, 2, 3),b = c(1, 2, 3),c = c(1, 2, 3))

print(data)

print(sapply(data,sum))

output:-

a b c

1 1 1 1

2 2 2 2

3 3 3 3

a b c

6 6 6

>

6. Demonstrate the usage of mapply function in R

v1 <- c(1, 2, 3, 4, 5)

v2 <- c(3, 4, 5, 6,7)

print(mapply(max, v1, v2))

output:-

[1] 3 4 5 6 7

7. Sum of Natural Numbers using Recursion

n=as.integer(readline(prompt = "Enter number of natural numbers :"))

sum=0

for(i in 1:n){

sum=sum+i

}

print(paste("Sum of ",n," natural numbers :",sum))

output:-

Enter number of natural numbers :4

[1] "Sum of 4 natural numbers : 10"

8. Write a program to generate Fibonacci sequence using Recursion in R

fibo<- function(n) {

if(n<= 1) {

return(n)

} else {

return(fibo(n-1) + fibo(n-2))

}

}

n = as.integer(readline(prompt = "Enter number of digits in series :"))

print("Fibonacci sequence:")

for(i in 0:(n-1)) {

print(fibo(i))

}

Output:-

Enter number of digits in series :5

[1] "Fibonacci sequence:"

[1] 0

[1] 1

[1] 1

[1] 2

[1] 3

>

9. Write a program to find factorial of a number in R using recursion.

recur\_factorial <- function(n) {

if(n <= 1) {

return(1)

} else {

return(n \* recur\_factorial(n-1))

}

}

Output:-

> recur\_factorial(5)

[1] 120