**Assignment No: - 2**

**Assignment Name: - Write program for creating and manipulating R objects in R-Vectors, Matrices, Array, Data frames, List.**

**Name: -**

**Roll No: -**

**Atomic Vector: -**

**Numeric vector: -**

num\_vec<-c (10.1, 10.2, 33.2)

num\_vec

**Integer vector: -**

num<-c(2L,6L,4L,9L)

num

**Character vector: -**

fruits<-c("Mango","apple","papaya")

print(fruits)

**Logical vector: -**

a<-as.integer(20)

b<-as.integer(10)

log\_vec<-c(a<b,b<a,a>b,b>a)

log\_vec

**Operations on Vector: -**

1)combining vectors:

data\_vec<-c(names,num)

data\_vec

**2)Arithmetic operations:**

a<-c(1,3,5,7)

b<-c(2,4,6,8)

a+b

a-b

a\*b

a/b

**3)Logical Index vector:**

z<-c(1,2,3,4,5,6)

z[c(TRUE,FALSE,TRUE,TRUE,FALSE,TRUE)]

**4)Numeric Index: -**

q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")

q[2]

q[-4]

q[15]

**5)Duplicate Index: -**

q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")

q[c(2,4,4,3)]

**6)Range Indexes: -**

q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")

b<-q[2:5]

b

**7)out-of-order Indexes: -**

q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")

q[c(2,1,3,4,5,6)]

**8)Named vectors members: -**

z=c("Roshani","Kawale")

z

names(z)=c("FirstName","LastName")

z

z["FirstName"]

**#creation of matrix:-**

P <- matrix(c(5:16), nrow = 4, byrow = TRUE)

print(P)

Q <- matrix(c(3:14), nrow = 4, byrow = FALSE)

print(Q)

**#operations on Matrix:-**

**#1)Addition:-**

sum<-P+Q

print(sum)

**#2)Subtraction:-**

sub<-P-Q

print(sub)

**#3)Multiplication(\*):-**

mult<-P\*Q

print(mult)

**#4)Multiplication(by constant):-**

mult<-P\*5

print(mult)

**#5)Division:-**

div<-P/Q

div

**#creation of Arrays:-**

vec1 <-c(1,3,5)

vec2 <-c(10,11,12,13,14,15)

res <- array(c(vec1,vec2),dim=c(3,3,2))

print(res)

**#Naming Of Arrays**

col\_names <- c("Col1","Col2","Col3")

row\_names <- c("Row1","Row2","Row3")

matrix\_names <- c("Matrix1","Matrix2")

res <- array(c(vec1,vec2),dim=c(3,3,2),dimnames=list(row\_names,col\_names,matrix\_names))

print(res)

**#Creation Of DataFrame**

stud.data<- data.frame(

student\_id = c (1:5),

student\_name = c("Shubham","Arpita","Nishka","Gunjan","Sumit"),

class = c("MBA","MCA","MBA","IMCA","MCA"),

roll\_no=c(20,45,78,12,50)

)

print(stud.data)

**#Operations on DataFrame:-**

**1)Extracting specific columns from a data frame**

final <- data.frame(stud.data$student\_id,stud.data$class)

print(final)

**2)Modification of DataFrame:**

**#Adding row in the data frame**

x <- list(6,"Vaishali","IMCA",15)

rbind(stud.data,x)

**#Adding column in the data frame**

y <- c("Moradabad","Lucknow","Etah","Sambhal","Khurja")

cbind(stud.data,city=y)

**#Delete rows from data frame**

stud.data<-stud.data[-1,]

print(stud.data)

**#Delete column from the data frame**

stud.data$roll\_no<-NULL

print(stud.data)

**#creation of List:-**

list\_1<-list("Shubham","Arpita","Vaishali")

list\_1

list\_data<-list("Shubham","Arpita",c(1,2,3,4,5),TRUE,FALSE,22.5,12L)

print(list\_data)

**#Operation on lists:-**

**1)Giving name to list:-**

list\_data <- list(c("Shubham","Nishka","Gunjan"), matrix(c(40,80,60,70,90,80), nrow = 2),

list("BCA","MCA","B.tech"))

names(list\_data) <- c("Students", "Marks", "Course")

list\_data

**2)Accessing elements using index:-**

print(list\_data[1])

**3)Accessing elements using names:-**

print(list\_data["Students"])

print(list\_data$Marks)

**4)Merging Lists:-**

Even\_list <- list(2,4,6)

Odd\_list <- list(1,3,5)

# Merging the two lists.

merged.list <- list(Even\_list,Odd\_list)

print(merged.list)

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**#Loops**

**#for loop**

**week<-c("Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday","Sunday")**

**for(day in week)**

**{**

**print(day)**

**}**

**#while loop**

**val = 1**

**while(val <= 5)**

**{**

**print(val)**

**val = val + 1**

**}**

**#repeat loop**

**val = 1**

**repeat**

**{**

**print(val)**

**val = val + 1**

**if(val > 5)**

**{**

**break**

**}**

**}**

#Import

getwd()

path <- "C:/Users/Lenovo/Desktop/ImpCSV.csv"

content <- read.csv(path)

print(content)

path <- "C:/Users/Lenovo/Desktop/ImpCSV.csv"

content <- read.csv2(path)

print(content)

x <- read.table("C:/Users/Lenovo/Desktop/ImpTxt.txt")

print(x)

#Export

df <- data.frame(

"Name" = c("Vrushabh","Jayesh","Harshal","Bhushan"),

"Course" = c("MCA","MBA","MBA","BCOM"),

"Age" = c(21,22,23,24)

)

write.table(df,

file = "demo.txt",

sep = "\t",

row.names = TRUE,

col.names = NA)

library(readr)

df2 <- data.frame(

"Name" = c("Vrushabh","Jayesh","Harshal","Bhushan"),

"Course" = c("MCA","MBA","MBA","BCOM"),

"Age" = c(21,22,23,24)

)

write.csv(df2,file = "Demo1.csv")

write.csv2(df2,file = "Demo2.csv")

write\_tsv(df2,file = "Demo3.txt")