PRACTICAL NO:1

AIM: Write a program to find sum,mean and product of a vector ignore NA or NULL.

CODE:

> x<-c(10,11,12,13,14)

> print(x)

[1] 10 11 12 13 14

> sum(x)

[1] 60

> mean(x)

[1] 12

> prod(x)

[1] 240240

> x<-c(1,2,NA,5,6,NA)

> print(x)

[1] 1 2 NA 5 6 NA

> sum(x)

[1] NA

> sum(x,na.rm=TRUE)

[1] 14

> mean(x,na.rm=TRUE)

[1] 3.5

> prod(x,na.rm=TRUE)

[1] 60

>

PRACTICAL NO:2

AIM:Write a program to create a vector using colon(:) operator and sequence () functions.

CODE:

> x<-c(1:15)

> print(x)

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

> y=seq(1,5,by=0.5)

> print(y)

[1] 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

> z=seq(1,5,length.out=5)

> print(z)

[1] 1 2 3 4 5

> a=seq(20,5,from=6)

> print(a)

[1] 6 11 16

> b=seq(1,3,to=15)

> print(b)

[1] 1 4 7 10 13

> c=seq(from=5,to=13)

> print(c)

[1] 5 6 7 8 9 10 11 12 13

PRACTICAL NO:5

AIM: Write a R program to create an ordered factor from data consisting of names of months.

CODE:

> months=c("March","April","January","September","October","April","December","July")

> months

[1] "March" "April" "January" "September" "October" "April" "December" "July"

> #CREATING A FACTOR

> f=factor(months)

> f

[1] March April January September October April December July

Levels: April December January July March October September

> #CREATING ORDERED FACTOR

> nf=factor(f,levels=c("January","March","April","July","September","October","November","December"))

> nf

[1] March April January September October April December July

Levels: January March April July September October November December

> table(nf)

nf

January March April July September October November December

1 1 2 1 1 1 0 1

>

PRACTICAL NO:6

AIM: Write a program to create a data frame from four vectors.

CODE:

>df1=data.frame(emp\_id=c(1,2,3,4,5),emp\_name=c("Akash","Vikas","Raj","Alok","Ajay"),emp\_location=c("Andheri","Dadar","Virar","Sion","Vasai"),emp\_contact=c(12345,21333,98765,34567,56784))

> print(df1)

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

PRACTICAL NO:7

AIM: Write a program to extract 3rd and 5th row with 1st and 3rd column from a given data frame.

CODE:

>df1=data.frame(emp\_id=c(1,2,3,4,5),emp\_name=c("Akash","Vikas","Raj","Alok","Ajay"),emp\_location=c("Andheri","Dadar","Virar","Sion","Vasai"),emp\_contact=c(12345,21333,98765,34567,56784))

> print(df1)

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

> new=df1[c(3,5),c(1,3)]

> print(new)

emp\_id emp\_location

3 3 Virar

5 5 Vasai

>

PRACTICAL NO:8

AIM: Write a R program to drop row/column by number from a given data frame.

CODE:

**DROP A COLUMN**

> df1=data.frame(emp\_id=c(1,2,3,4,5),emp\_name=c("Akash","Vikas","Raj","Alok","Ajay"),emp\_location=c("Andheri","Dadar","Virar","Sion","Vasai"),emp\_contact=c(12345,21333,98765,34567,56784))

> print(df1)

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

> cat("Drop a column")

Drop a column>

> df1[2]<-NULL

> print(df1)

emp\_id emp\_location emp\_contact

1 1 Andheri 12345

2 2 Dadar 21333

3 3 Virar 98765

4 4 Sion 34567

5 5 Vasai 56784

>

**DROP A ROW**

> df1[-3,]

emp\_id emp\_location emp\_contact

1 1 Andheri 12345

2 2 Dadar 21333

4 4 Sion 34567

5 5 Vasai 56784

>

PRACTICAL NO:9

AIM:Write a program to create inner,outer,left,right join image from given two data frame.

CODE:

> df1=data.frame(Student\_Id=c(1:6),languages=c("Java","C","C++","Python","Ruby","JavaScript"))

> df2=data.frame(Student\_Id=c(2,1,4,3,7,9),Career=c("System Programmer","Backend Developer","Data Scientist","Game Developer","Network Engineer","App Developer"))

> df1

Student\_Id languages

1 1 Java

2 2 C

3 3 C++

4 4 Python

5 5 Ruby

6 6 JavaScript

> df2

Student\_Id Career

1 2 System Programmer

2 1 Backend Developer

3 4 Data Scientist

4 3 Game Developer

5 7 Network Engineer

6 9 App Developer

> #INNER JOIN

> innerJoin=merge(df1,df2,all=FALSE)

> innerJoin

Student\_Id languages Career

1 1 Java Backend Developer

2 2 C System Programmer

3 3 C++ Game Developer

4 4 Python Data Scientist

> #OUTER JOIN

> outerJoin=merge(df1,df2,all=TRUE)

> outerJoin

Student\_Id languages Career

1 1 Java Backend Developer

2 2 C System Programmer

3 3 C++ Game Developer

4 4 Python Data Scientist

5 5 Ruby <NA>

6 6 JavaScript <NA>

7 7 <NA> Network Engineer

8 9 <NA> App Developer

> #LEFT JOIN

> leftJoin=merge(df1,df2,all.x=T)

> leftJoin

Student\_Id languages Career

1 1 Java Backend Developer

2 2 C System Programmer

3 3 C++ Game Developer

4 4 Python Data Scientist

5 5 Ruby <NA>

6 6 JavaScript <NA>

> #RIGHT JOIN

> RightJoin=merge(df1,df2,all.d2=TRUE)

> RightJoin

Student\_Id languages Career

1 1 Java Backend Developer

2 2 C System Programmer

3 3 C++ Game Developer

4 4 Python Data Scientist

>

PRACTICAL NO:10

AIM: Write a R program to create a data frame using two given vectors and display the duplicated elements and unique rows of a data frame.

CODE:

**DUPLICATED ELEMENTS**

> df1=data.frame(emp\_id=c(1,2,3,4,5),emp\_name=c("Akash","Vikas","Raj","Alok","Ajay"),emp\_location=c("Andheri","Dadar","Virar","Sion","Vasai"),emp\_contact=c(12345,21333,98765,34567,56784))

> print(df1)

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

> print(duplicated (df1))

[1] FALSE FALSE FALSE FALSE FALSE

**UNIQUE ELEMENTS**

> df1=data.frame(emp\_id=c(1,2,3,4,5),emp\_name=c("Akash","Vikas","Raj","Alok","Ajay"),emp\_location=c("Andheri","Dadar","Virar","Sion","Vasai"),emp\_contact=c(12345,21333,98765,34567,56784))

> print(df1)

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

> print(unique(df1))

emp\_id emp\_name emp\_location emp\_contact

1 1 Akash Andheri 12345

2 2 Vikas Dadar 21333

3 3 Raj Virar 98765

4 4 Alok Sion 34567

5 5 Ajay Vasai 56784

>

PRACTICAL NO:11

AIM: Implement matrices addition,subtraction,multiplication and division.

CODE:

**Addition of Matrix**

> M1=matrix(c(15,76,23,45,78,98,34,54,67),nrow=3)

> print(M1)

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

[1,] 15 45 34

[2,] 76 78 54

[3,] 23 98 67

> M2=matrix(c(56,90,98,12,43,69,92,47,47),nrow=3)

> print(M2)

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

[1,] 56 12 92

[2,] 90 43 47

[3,] 98 69 47

> result=M1+M2

> cat("Addition of Matrix")

Addition of Matrix>

> print(result)

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

[1,] 71 57 126

[2,] 166 121 101

[3,] 121 167 114

>

**Subtraction of Matrix**

> M1=matrix(c(15,76,23,45,78,98,34,54,67),nrow=3)

> print(M1)

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

[1,] 15 45 34

[2,] 76 78 54

[3,] 23 98 67

> M2=matrix(c(56,90,98,12,43,69,92,47,47),nrow=3)

> print(M2)

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

[1,] 56 12 92

[2,] 90 43 47

[3,] 98 69 47

> cat("Subtraction of Matrix")

Subtraction of Matrix>

> result=M1-M2

> print(result)

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

[1,] -41 33 -58

[2,] -14 35 7

[3,] -75 29 20

>

**Multiplication of Matrix**

> M1=matrix(c(15,76,23,45,78,98,34,54,67),nrow=3)

> print(M1)

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

[1,] 15 45 34

[2,] 76 78 54

[3,] 23 98 67

> M2=matrix(c(56,90,98,12,43,69,92,47,47),nrow=3)

> print(M2)

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

[1,] 56 12 92

[2,] 90 43 47

[3,] 98 69 47

> cat("Multiplication of Matrix")

Multiplication of Matrix>

> result=M1\*M2

> print(result)

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

[1,] 840 540 3128

[2,] 6840 3354 2538

[3,] 2254 6762 3149

>

**Division of Matrix**

> M1=matrix(c(15,76,23,45,78,98,34,54,67),nrow=3)

> print(M1)

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

[1,] 15 45 34

[2,] 76 78 54

[3,] 23 98 67

> M2=matrix(c(56,90,98,12,43,69,92,47,47),nrow=3)

> print(M2)

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

[1,] 56 12 92

[2,] 90 43 47

[3,] 98 69 47

> result=M1/M2

> print(result)

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

[1,] 0.2678571 3.750000 0.3695652

[2,] 0.8444444 1.813953 1.1489362

[3,] 0.2346939 1.420290 1.4255319

>