

Lab Manual

1. Check if a number is positive, negative or zero

```
num = as.double(readline(prompt="Enter a number: "))
if(num > 0) {
    print("Positive number")
} else {
    if(num == 0) {
        print("Zero")
    } else {
        print("Negative number")
    }
}
```

2. Creating vector and matrices using R program.

Vectors

```
sno<-c(1:5)
name<-c("a","b","c","d","e")
gender<-c("m","f","m","f","f")
bg<-c("o+","B+","B+","B+","A-")
per<-c(75,65,56,89,78)
print(name)
print(gender)
print(bg)
print(per)
```

Matrices

```
a<-c(1:4)
```

```
b<-c(1:4)
```

```
mat1<-matrix(a,nrow=2,ncol=2,byrow=TRUE)
```

```
print(mat1)
```

```
mat2<-matrix(b,nrow=2,ncol=2,byrow=TRUE)
```

```
print(mat2)
```

3. Import and visualize data using scatter plots.

Create new excel sheet enter data and save it as csv for read the file in R

```
datalist<-read.csv("E:/datas.csv")
```

```
pers<-datalist$gender
```

```
print(pers)
```

```
plot(pers,type="o")
```

4. Create datasets using data frames and plot a graph

```
sno<-c(1:5)
```

```
name<-c("a","b","c","d","e")
```

```
gender<-c("m","f","m","f","f")
```

```
bg<-c("o+","B+","B+","B+","A-")
```

```
per<-c(75,65,56,89,78)
```

```
datalist<-data.frame(sno,name,gender,per,bg)
```

```
pers<-datalist$per
```

```
print(pers)
```

```
plot(pers,type="o")
```

5. Create factors and plot a graph

```
sno<-c(1:5)
name<-c("a","b","c","d","e")
gender<-c("m","f","m","f","f")
bg<-c("o+","B+","B+","B+","A-")
per<-c(75,65,56,89,78)
datalist<-data.frame(sno,name,gender,per,bg)
genders<-datalist$gender
print(genders)
plot(genders,type="o")
```

6. Find addition, subtraction, multiplication and division of given data using R.

```
a=as.numeric(readline(prompt="Enter A value"))
```

```
b=as.numeric(readline(prompt="Enter B value"))
```

```
c=a+b
```

```
d=a-b
```

```
e=a*b
```

```
f=a/b
```

```
print(a)
```

```
print(b)
```

```
print(c)
```

```
print(d)
```

```
print(e)
```

```
print(f)
```

7. Write program to calculate multiplication matrix using R

```
a<-c(1:4)
```

```
b<-c(1:4)
```

```
mat1<-matrix(a,nrow=2,ncol=2,byrow=TRUE)
```

```
print(mat1)
```

```
mat2<-matrix(b,nrow=2,ncol=2,byrow=TRUE)
```

```
print(mat2)
```

```
print(mat1 % *% mat2)
```

8. Find mean, median and mode using R.

Mean

Create a vector.

```
x <- c(12,7,3,4.2,18,2,54,-21,8,-5)
```

Find Mean.

```
result.mean <- mean(x)
```

```
print(result.mean)
```

Median

Create the vector.

```
x <- c(12,7,3,4.2,18,2,54,-21,8,-5)
```

Find the median.

```
median.result <- median(x)
```

```
print(median.result)
```

Mode

Create the function.

```
getmode <- function(v) {
```

```
  uniqv <- unique(v)
```

```
  uniqv[which.max(tabulate(match(v, uniqv)))]
```



```
}
```

```
# Create the vector with numbers.
```

```
v <- c(2,1,2,3,1,2,3,4,1,5,5,3,2,3)
```

```
# Calculate the mode using the user function.
```

```
result <- getmode(v)
```

```
print(result)
```

```
# Create the vector with characters.
```

```
charv <- c("o","it","the","it","it")
```

```
# Calculate the mode using the user function.
```

```
result <- getmode(charv)
```

```
print(result)
```

9. Find Standard deviation and variance using R.

```
a <- c(179,160,136,227)
```

```
print(sd(a))
```

```
print(var(a))
```

10. Find factorial of a number using R.

```
# take input from the user
```

```
num = as.integer(readline(prompt="Enter a number: "))
```

```
factorial = 1
```

```
# check is the number is negative, positive or zero
```

```
if(num < 0) {
```

```
    print("Sorry, factorial does not exist for negative  
numbers")
```

```
} else if(num == 0) {
```

```
    print("The factorial of 0 is 1")
```

```
} else {
```

```
    for(i in 1:num) {
```

```
        factorial = factorial * i
```

```
    }
```

```
    print(paste("The factorial of", num ,"is",factorial))
```

```
}
```