PROBABILITY AND STATISTICS

LAB ASSIGNMENT - 1

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Q1) Create a vector c = [5,10,15,20,25,30] and write a program which returns the maximum and minimum of this v.

```
vec<-c(5,10,15,20,25,30,35)
print(max(vec))
print(min(vec))
print("given vector")
print(vec)
print(paste("Max value of given vector is",max(vec)))
print(paste("Min value of given vector is",min(vec)))
```

```
> vec<-c(5,10,15,20,25,30,35)
> print(max(vec))
[1] 35
> print(min(vec))
[1] 5
> print("given vector")
[1] "given vector"
> print(vec)
[1]  5 10 15 20 25 30 35
> print(paste("Max value of given vector is",max(vec)))
[1] "Max value of given vector is 35"
> print(paste("Min value of given vector is",min(vec)))
[1] "Min value of given vector is 5"
```

Q2) Write a program in R to find factorial of a number by taking input from user. Please print error message if the input number is negative.

```
factorial(5)
#or
n<-as.integer(readline(prompt = "enter n = "))
if(n < 0)
{
  print("Negative number entered")
```

```
}else{
  fact<-1
  for( i in 1:n )
  {
    fact<-fact*i
  }
  print(paste("factorial = ",fact))
}
```

```
> factorial(5)
[1] 120
> #or
> n<-as.integer(readline(prompt = "enter n = "))
enter n = 5
> if(n < 0)
+ {
+   print("Negative number entered")
+ }else{
+   fact<-1
+   for( i in 1:n )
+   {
+     fact<-fact*i
+   }
+   print(paste("factorial = ",fact))
+ }
[1] "factorial =  120"
```

Q3) Write a program to write first n terms of a Fibonacci sequence. You may take n as an input from the user.

```
n<-as.integer(readline(prompt = "enter n = "))
a<-1
b<-1

fibo<-function(n)
{
  for(i in 1:n)
  {
    print(a)
    temp<-a
    a<-b
    b<-temp+b
  }
}

fibo(n)
```

```
> fibo(n)
[1] 1
[1] 1
[1] 2
[1] 3
[1] 5
```

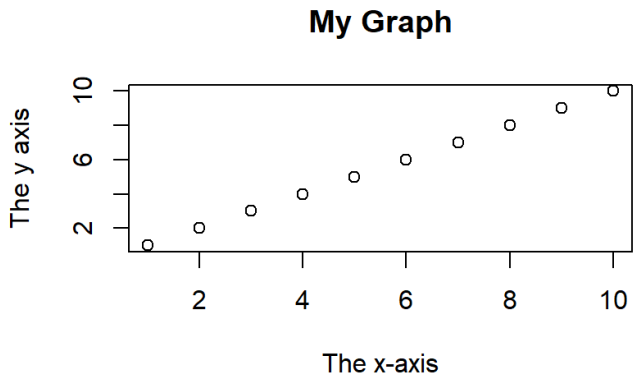
Q4) Write an R program to make a simple calculator which can add, subtract, multiply and divide.

```
add <- function(x, y) {
  return(x + y)
}
subtract <- function(x, y) {
  return(x - y)
}
multiply <- function(x, y) {
  return(x * y)
}
divide <- function(x, y) {
  return(x / y)
}
# take input from the user
print("Select operation.")
print("1.Add")
print("2.Subtract")
print("3.Multiply")
print("4.Divide")
choice = as.integer(readline(prompt="Enter choice[1/2/3/4]: "))
num1 = as.integer(readline(prompt="Enter first number: "))
num2 = as.integer(readline(prompt="Enter second number: "))
operator <- switch(choice,"+","-","*","/")
result <- switch(choice, add(num1, num2), subtract(num1, num2), multiply(num1, num2), divi
de(num1, num2))
print(paste(num1, operator, num2, "=", result))
```

```
Enter choice[1/2/3/4]: 3
> num1 = as.integer(readline(prompt="Enter first number: ")
Enter first number: 5
> num2 = as.integer(readline(prompt="Enter second number:
 "))
Enter second number: 7
> operator <- switch(choice,"+","-","*","/")
> result <- switch(choice, add(num1, num2), subtract(num1,
um2), multiply(num1, num2), divide(num1, num2))
> print(paste(num1, operator, num2, "=", result))
[1] "5 * 7 = 35"
```

Q5) Explore plot, pie, barplot etc. (the plotting options) which are built-in functions in R.

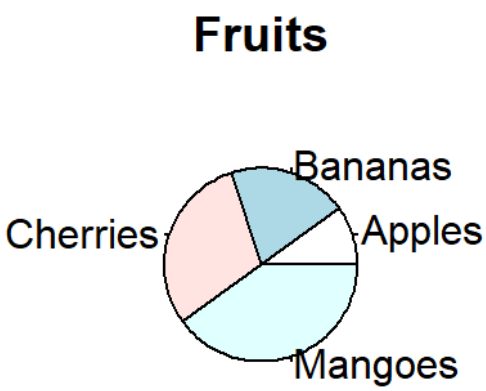
```
plot(1:10, main="My Graph", xlab="The x-axis", ylab="The y axis")
```




```
# Create a vector of pies
x <- c(10,20,30,40)

# Create a vector of labels
mylabel <- c("Apples", "Bananas", "Cherries", "Mangoes")

# Display the pie chart with labels
pie(x, label = mylabel, main = "Fruits")
```




```
# x-axis values
x <- c("A", "B", "C", "D")

# y-axis values
```

```
y <- c(2, 4, 6, 8)

barplot(y, names.arg = x)
```