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Probability and Statistics (UCS410)

Experiment 1: Basics of R programming

Q.1

```
>
> vec=c(5,10,30,25,15,20)
> q1_a=max(vec)
> print(q1_a)
[1] 30
> q1_b=min(vec)
> print(q1_b)
[1] 5
>
```

Q.2

```
>
>
> fact=factorial(5)
> print(fact)
[1] 120
> fact_5=factorial(-5)
Warning message:
In gamma(x + 1) : NaNs produced
> print(fact_5)
[1] NaN
> y=as.integer(readline("Enter The Value of y:"))
Enter The Value of y:6
> fact_ans=1
> if (y<0){
+   print("Negative Number Error")
+ } else if(y==0){
+   print("factorial is 1")
+ } else{
+   for(i in 1:y){
+     fact_ans=fact_ans*i
+   }
+   print(paste("factorial of ",y,"=",fact_ans))
+ }
[1] "factorial of  6 = 720"
>
>
```

Q.3

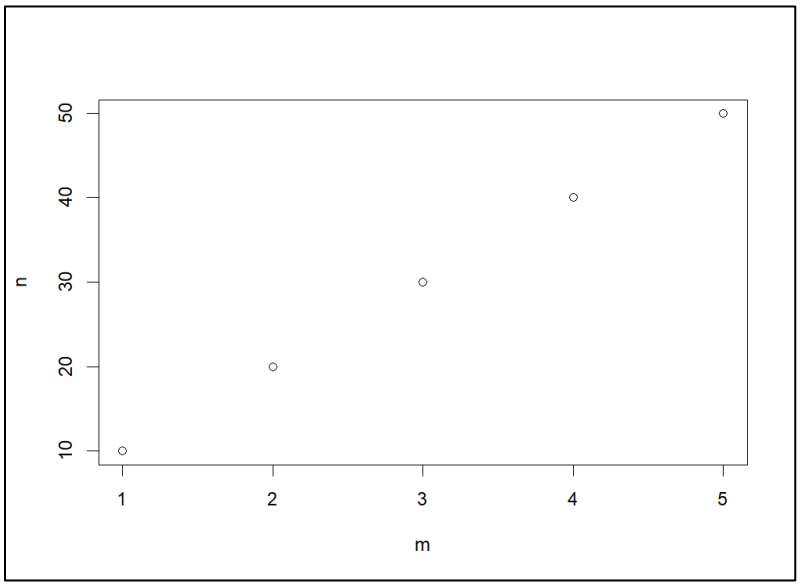
```
>
> # Fibonacci sequence
> n <- as.integer(readline("Enter the number of terms: "))
Enter the number of terms: 5
> if (n <= 0) {
+   print("Please enter a positive integer.")
+ } else {
+   a <- 0
+   b <- 1
+
+   print("Fibonacci sequence:-")
+
+   for (i in 1:n) {
+     if (i == 1) {
+       print(a)
+     } else if (i == 2) {
+       print(b)
+     } else {
+     fib <- a + b
+     print(fib)
+     a <- b
+     b <- fib
+     }
+   }
+ }
[1] "Fibonacci sequence:-"
[1] 0
[1] 1
[1] 1
[1] 2
[1] 3
>
```

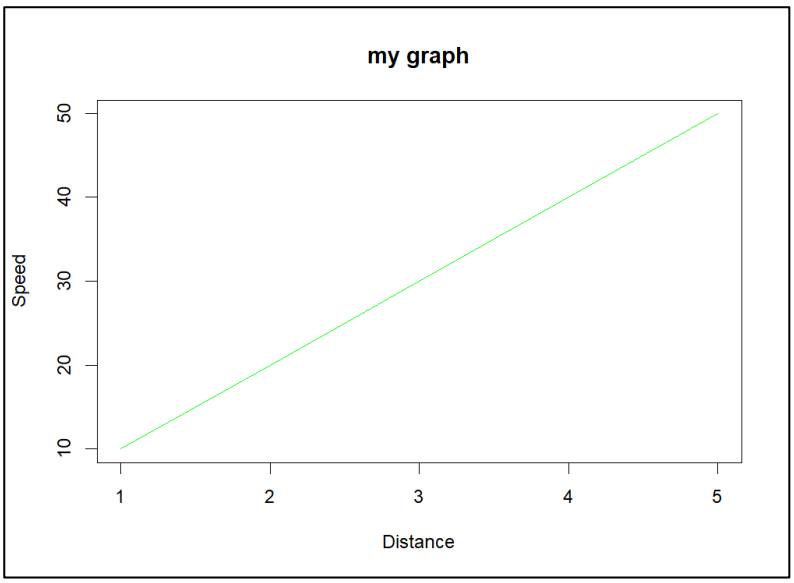
Q.4

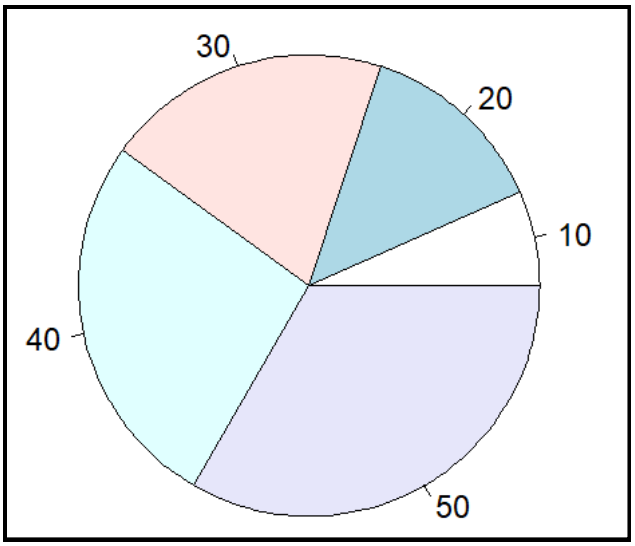
```
>
> num1 <- as.numeric(readline("Enter the first number: "))
Enter the first number: 5
> num2 <- as.numeric(readline("Enter the second number: "))
Enter the second number: 2
> operator <- readline("Enter the operator (+, -, *, /): ")
Enter the operator (+, -, *, /): /
> if (operator == "+") {
+   result <- num1 + num2
+   print(paste("Result:", result))
+ } else if (operator == "-") {
+   result <- num1 - num2
+   print(paste("Result:", result))
+ } else if (operator == "*") {
+   result <- num1 * num2
+   print(paste("Result:", result))
+ } else if (operator == "/") {
+   if (num2 != 0) {
+     result <- num1 / num2
+     print(paste("Result:", result))
+   } else {
+     print("Error: Division by zero is not allowed.")
+   }
+ } else {
+   print("Invalid operator! Please use +, -, *, or /.")
+ }
[1] "Result: 2.5"
>
```

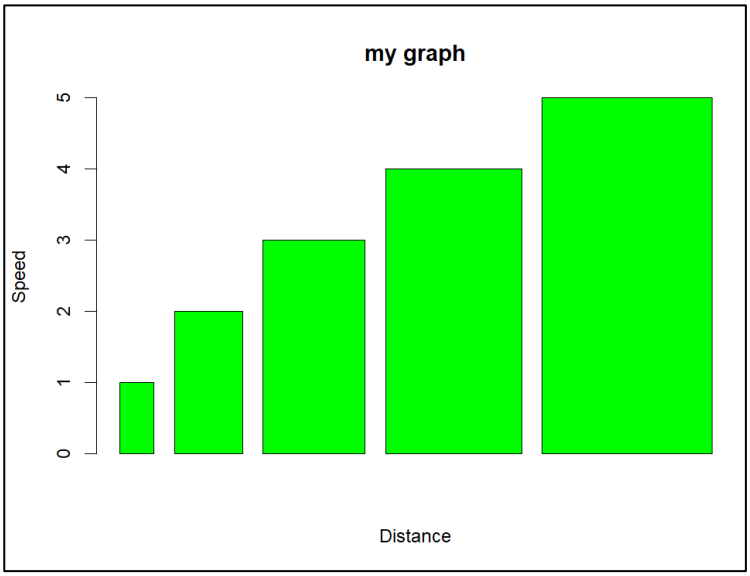
Q.5

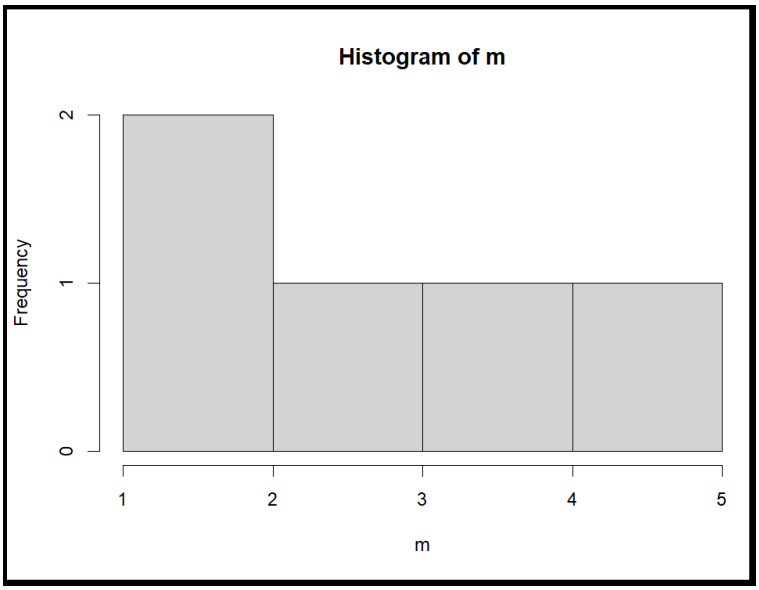
```
> m=c(1,2,3,4,5)
> n=c(10,20,30,40,50)
> plot(m,n)
> plot(m,n,type="l",main = "my graph",xlab = "Distance", ylab = "Speed", col="green")
> pie(m,n)
> barplot(m,n,type="l",main = "my graph",xlab = "Distance", ylab = "Speed", col="green")
Warning messages:
1: In plot.window(xlim, ylim, log = log, ...) :
  graphical parameter "type" is obsolete
2: In title(main = main, sub = sub, xlab = xlab, ylab = ylab, ...) :
  graphical parameter "type" is obsolete
3: In axis(if (horiz) 1 else 2, cex.axis = cex.axis, ...) :
  graphical parameter "type" is obsolete
> hist(m)
Warning messages:
1: In doTryCatch(return(expr), name, parentenv, handler) :
  graphical parameter "type" is obsolete
```






30
20
10
40
50


my graph
Speed
0
1
2
3
4
5
Distance


Histogram of m
Frequency
0
1
2
1
2
3
4
5
m