Probability and Statistics (UCS410)

Experiment 1: Basics of R programming

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

c = seq(from=5, to=30, by=5)

c

max(c)

min(c)

(2) 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.

```
# num = as.integer(readline(prompt = "enter number: "))

num = 4

factorial = 1

if(num < 0){

   print("fact doesnt exist")

}else if(num == 0){

   print("fact of 0 is 1")

}else{

   for(i in 1:num){

      factorial = factorial * i

   }

   print("factorial: ", factorial)

}
```

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

```
len = 10

fib = c(length=len)

fib[1] = 0

fib[2] = 1

for(i in 3:len){
```

```
    fib[i] = fib[i-1] + fib[i-2]

}

print(fib)
```

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

```
num1 = 2

num2 = 3


addition <- num1 + num2

print(paste("addn:", addition))


subtraction <- num1 - num2

print(paste("sub:", subtraction))


multiplication <- num1 * num2

print(paste("mul:", multiplication))


if (num2 != 0){

  division <- num1 / num2

  print(paste("divn:", division))

}else{

  print("Error: Division by zero")

}
```

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

```
x <- 0:10

y <- 5:15

plot(x, y, type = "p") # points

plot(x, y, type = "l") # line

plot(x, y, type = "b") # both

---

x <- 0:10

pie(x, labels = names(x))
```

```
---

height <- 0:10

barplot(height, names.arg = NULL)

---

x <- 0:10

hist(x, breaks = "Sturges")

---

x <- 0:10

y <- 5:15

qqplot(x, y)

---
```