VIT Vidyalankar Institute of Technology ACCREDITED A+ BY NAAC	Department of Information Technology

Semester	**S.E. Semester III – INFT**
Subject	**Computer programming Paradigms Lab**
Laboratory Teacher:	**Shruti Agrawal**
Laboratory	**-**

Student Name	**Soham Sahare**	
Roll Number	**18101B0010**	
Grade and Subject Teacher's Signature		

Experiment Number	**1**	
Experiment Title	**To understand basic datatypes and function in R**	
Problem Statement	**Write an R program to print Fibonacci series of n numbers.**	
Resources / Apparatus Required	**Hardware: Desktop/Laptop**	**Software: RStudio**
Code:		

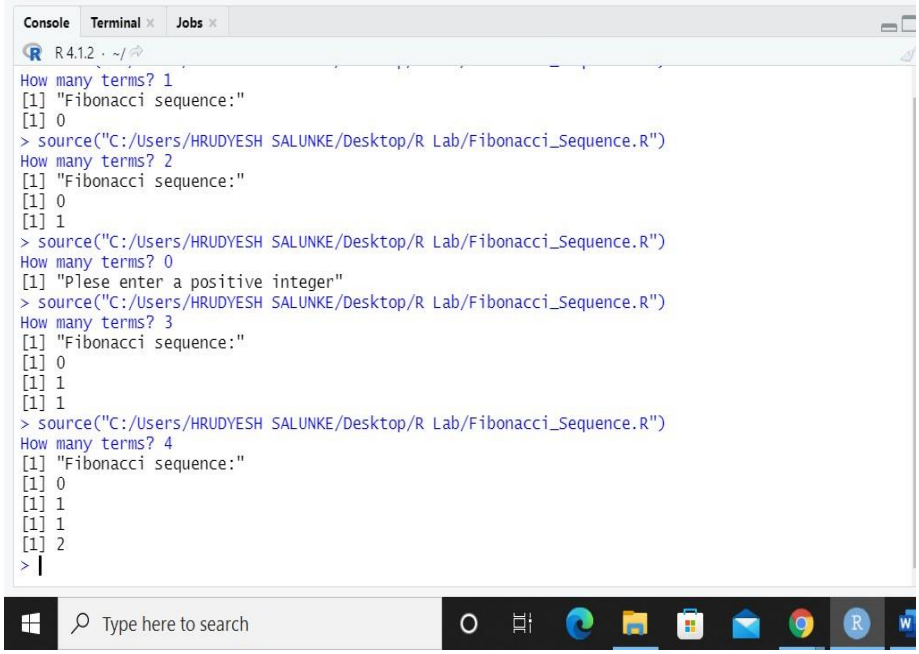
```
nterms = as.integer(readline(prompt="How many terms? "))

n1 = 0
n2 = 1
count = 2

if(nterms <= 0) {
```

```
  print("Plese enter a positive integer")
} else {
  if(nterms == 1) {
    print("Fibonacci sequence:")
    print(n1)
  } else {
    print("Fibonacci sequence:")
    print(n1)
    print(n2)
    while(count<nterms){
      nth = n1 + n2
      print(nth)
      n1 = n2
      n2 = nth
      count = count + 1
    }
  }
}
```

Output:



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Experiment Number	**2**	
Experiment Title	**To understand recursion in R**	
Problem Statement	**Write a R program to find the factorial of any number n (using recursion and without using recursion as well).**	
Resources / Apparatus Required	**Hardware: Desktop/Laptop**	**Software: R Studio**
Code:	**1.With Recursion:** **fact <- function(n){** **if(n <= 1){** **return(1)** **}** **else {** **return(n * fact(n-1))** **}** **}**	

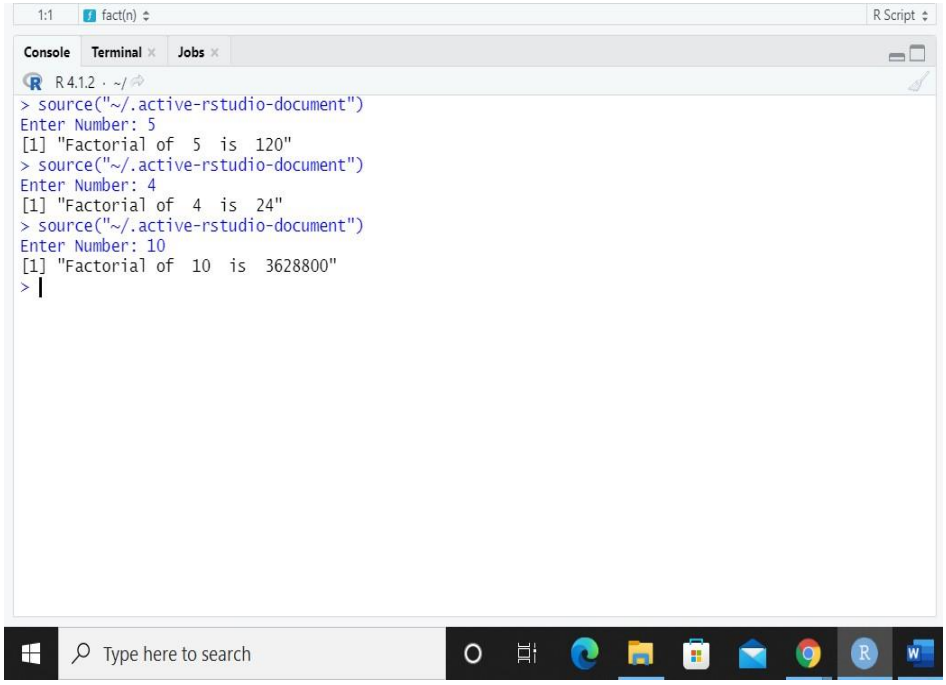
```
n = as.integer(readline(prompt = "Enter Number: "))
f = fact(n)
print(paste("Factorial of ", n, " is ", f))
```

2.Without Recursion :

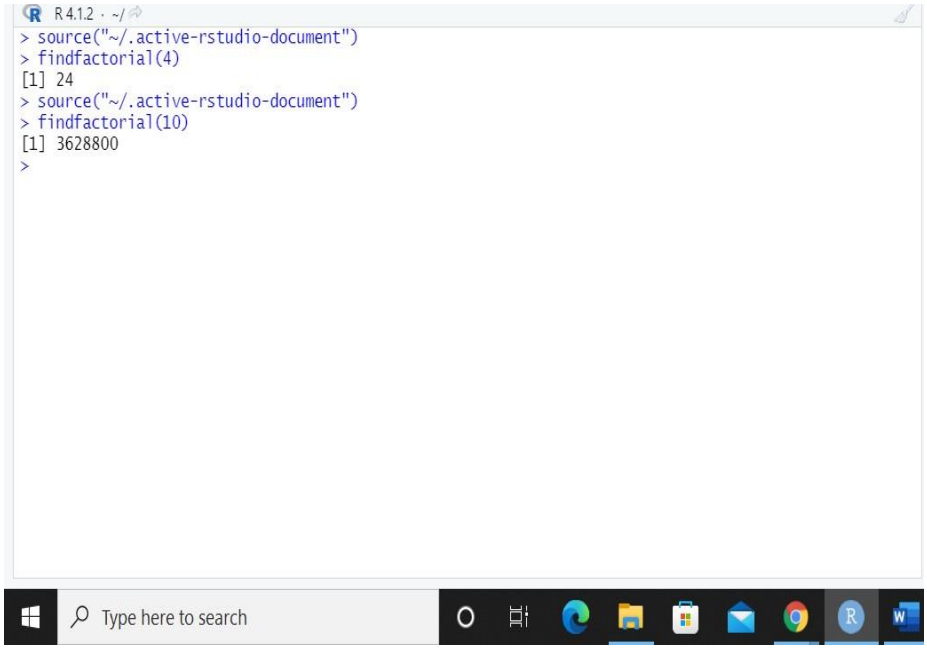
```
findfactorial <- function(n){

 factorial <- 1

 if ((n==0)|(n==1))
  factorial <- 1

 else{
  for( i in 1:n)
    factorial <- factorial * i
 }
 return (factorial)
```

Output:

1.With Recursion



2.Without Recursion



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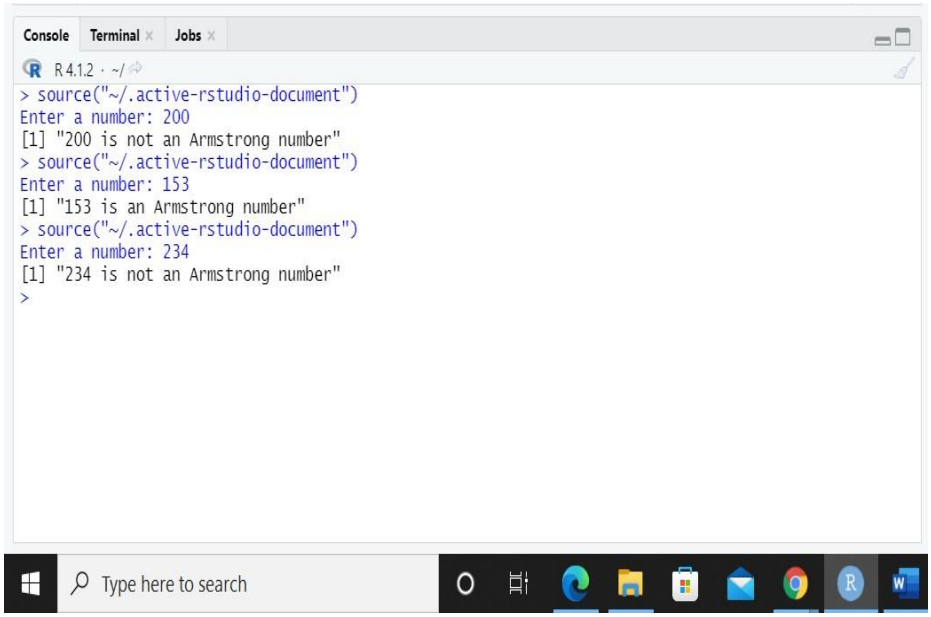
Experiment Number	**3**	
Experiment Title	**To understand conditional execution in R**	
Problem Statement	**Write a R program to check if the given number is Armstrong or not.**	
Resources / Apparatus Required	**Hardware: Desktop/Laptop**	**Software: RStudio**
Code:	**num = as.integer(readline(prompt="Enter a number: "))** **sum = 0** **temp = num** **while(temp > 0) {** **digit = temp %% 10** **sum = sum + (digit ^ 3)** **temp = floor(temp / 10)** **}**	

```
if(num == sum) {
  print(paste(num, "is an Armstrong number"))
} else {
  print(paste(num, "is not an Armstrong number"))
}
```

Output:



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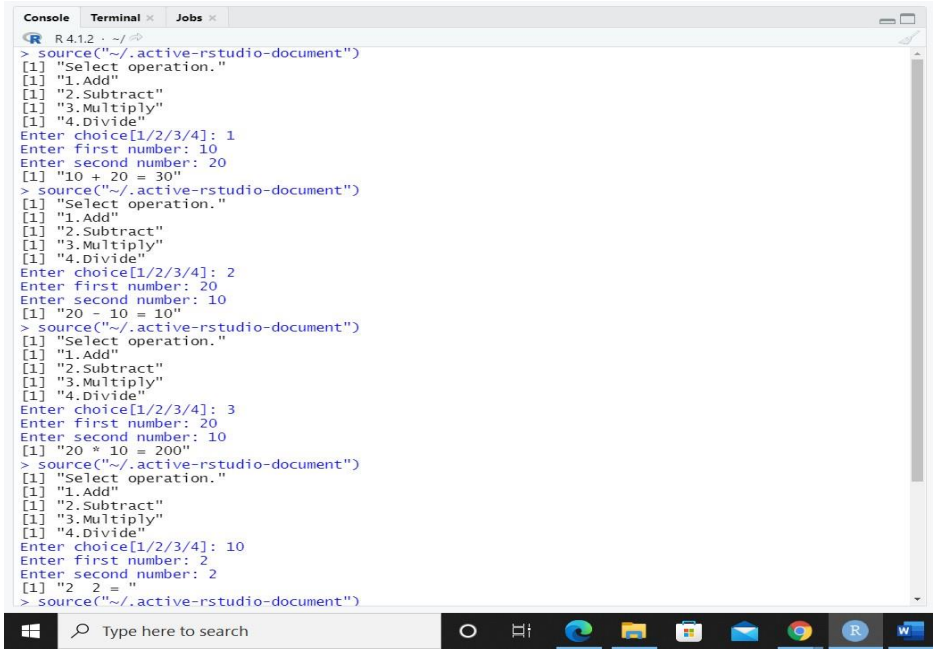
Experiment Number	**4**	
Experiment Title	**To understand conditional execution in R**	
Problem Statement	**Write a menu driven R program to demonstrate a calculator**	
Resources / Apparatus Required	**Hardware: Desktop/Laptop**	**Software: R Studio**
Code:		

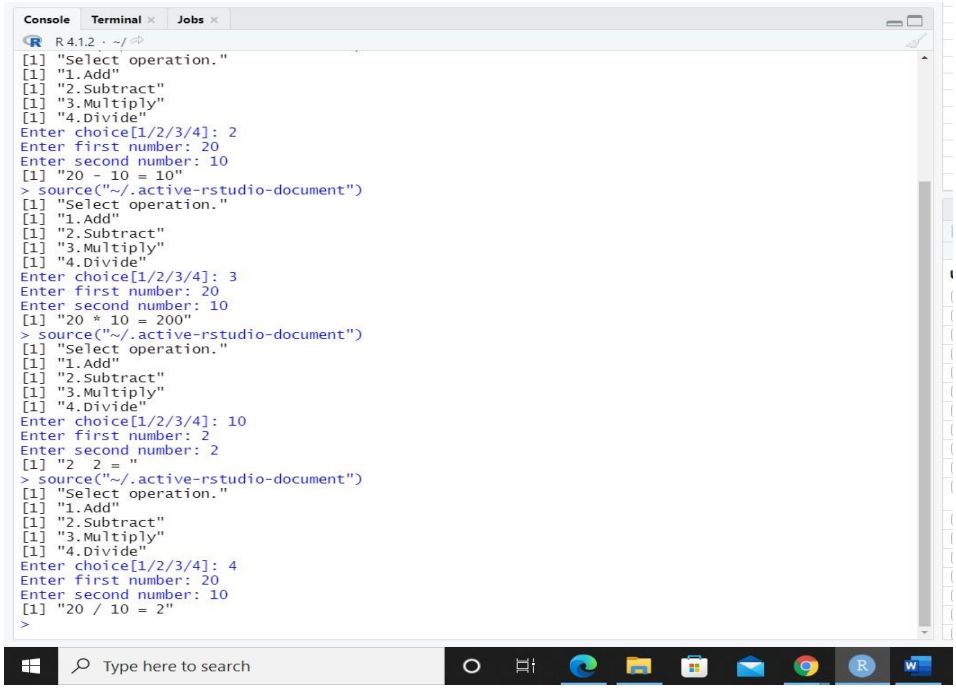
```
add <- function(x, y) {
  return(x + y)
}
subtract <- function(x, y) {
  return(x - y)
}
multiply <- function(x, y) {
  return(x * y)
}
```

```
divide <- function(x, y) {
  return(x / y)
}


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), divide(num1, num2))
print(paste(num1, operator, num2, "=", result))
```

Output:




Console
Terminal
Jobs
R 4.1.2 · ~/
[1] "Select operation."
[1] "1.Add"
[1] "2.Subtract"
[1] "3.Multiply"
[1] "4.Divide"
Enter choice[1/2/3/4]: 2
Enter first number: 20
Enter second number: 10
[1] "20 - 10 = 10"
> source("~/.active-rstudio-document")
[1] "Select operation."
[1] "1.Add"
[1] "2.Subtract"
[1] "3.Multiply"
[1] "4.Divide"
Enter choice[1/2/3/4]: 3
Enter first number: 20
Enter second number: 10
[1] "20 * 10 = 200"
> source("~/.active-rstudio-document")
[1] "Select operation."
[1] "1.Add"
[1] "2.Subtract"
[1] "3.Multiply"
[1] "4.Divide"
Enter choice[1/2/3/4]: 10
Enter first number: 2
Enter second number: 2
[1] "2 2 = "
> source("~/.active-rstudio-document")
[1] "Select operation."
[1] "1.Add"
[1] "2.Subtract"
[1] "3.Multiply"
[1] "4.Divide"
Enter choice[1/2/3/4]: 4
Enter first number: 20
Enter second number: 10
[1] "20 / 10 = 2"
>
Type here to search