Subject:	**R Programming Lab. (ITL804)**		
Class:	**BE IT / Semester – VIII (Rev-2016) / Academic year: 2019-20**		
Name of Student:	**Kazi Jawwad A Rahim**		
Roll No:	**28**	**Date of performance (DOP) :**	
Assignment/Experiment No:	**03**	**Date of checking (DOC) :**	
Title: Program to demonstrate flow control instructions and functions			
Marks:		**Teacher's Signature:**	

1. Aim: To understand the use of various flow control instructions and functions in R.

2. Prerequisites:

1. Basics of R programming, various data structures used in R etc.

3. Hardware Requirements:

1. PC with minimum 2GB RAM

4. Software Requirements:

1. Windows / Linux OS.
2. R version 3.6 or higher

5. Learning Objectives:

1. To understand decision and loop control instructions.
2. To understand function definition and calling to it.

6. Learning Objectives Applicable: LO 1

7. Program Outcomes Applicable: PO 1, PO 2

8. Program Education Objectives Applicable: PEO 2

OUTPUT:

IF ELSE Example:

```
age=as.numeric(readline("Enter age"))
gender=readline("Enter Gender")
if(age>=60 && gender=="M"){
  print("Available for Concession")
}else if(age>=45 && gender=="F"){
  print("Available for Concession");
}else{
  print("Noot avaialable for Concession")
}
```

OUTPUT:

```
> source('D:/JK/If Else.R')
Enter age60
Enter GenderM
[1] "Available for Concession"
```

SWITCH:

```
day=as.numeric(readline("Enter Day Number\n"))
y=switch(day,"Monday","Tuesday","Wednesday","Thursday","Friday","Saturday","Sunday")
print(y)
```

OUTPUT:

```
> source('D:/JK/Switch.R')
Enter Day Number
5
[1] "Friday"
```

For:

```
for(i in 1:10){
  print(i)
}
```

OUTPUT:

```
> source('D:/JK/For.R')
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
[1] 6
[1] 7
[1] 8
[1] 9
[1] 10
```

While:

```
i=1
while(i<=5){
  print(i)
  i=i+1
}
```

OUTPUT:

```
> source('D:/JK/While.R')
[1] 1
[1] 2
```

```
[1] 3
[1] 4
[1] 5
```

Repeat:

```
i=1
repeat{
  print(i)
  i=i+1
  if(i>5){
    break
  }
}
```

OUTPUT:

```
> source('D:/JK/Repeat.R')
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
```

Function:

```
area = function(l,w){
  a=l*w
  return(a)
}
print(area(3,5))
```

OUTPUT:

```
> source('D:/JK/Function.R')
[1] 15
```

Double Function:

```
volume=function(r,l){
  area=function(r){
    a=r*r
    return(a)
  }
  v=area(l)*3.14*r*l
  return(v)
}
print(volume(3,5))
```

OUTPUT:

```
> source('D:/JK/Double Function.R')
[1] 1177.5
```

Learning Outcomes Achieved:

1. We understood decision and loop control instructions.
2. We understood function definition and calling to it.

Conclusion:

We have successfully demonstrated the loop instructions like If-Else, Switch, For, While, Repeat and functions and double functions.

13. Experiment/Assignment Evaluation

Experiment/Assignment Evaluation:				
Sr. No.	**Parameters**		**Marks obtained**	**Out of**
1	Technical Understanding (Assessment may be done based on Q & A **or** any other relevant method.) Teacher should mention the other method used -			6
2	Neatness/presentation			2
3	Punctuality			2
Date of performance (DOP)		**Total marks obtained**		**10**
Date of checking (DOC)		**Signature of teacher**		

References:

1. URL: https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf (Online Resources)
2. R Cookbook Paperback – 2011 by Teetor Paul O Reilly Publications
3. Beginning R: The Statistical Programming Language by Dr. Mark Gardener, Wiley Publications
4. R Programming For Dummies by Joris Meys Andrie de Vries, Wiley Publications

Viva Questions

1. What are decision control instructions ?
2. What are loop control instructions ?
3. Compare flow control instructions in R with flow control instructions in Python ?
4. How to define function in R?
5. Can I shuffle arguments of the functions while calling it?