C-Programming Lab Sheet
I Year / I Part
Faculty: Computer/Electrical
Labsheet#2

Objectives:
1. If Statement & Relational Operator
2. If-else Statement
3. Nested if–else Statement
4. If-else Ladder
5. Logical Operator
6. Conditional Operator
7. Switch Statement

Objective#1: if statement and relational operator

Evaluate f(x) where

$$f(x) = \begin{cases} 1 \ for \ x > 0 \\ 0 \ for \ x = 0 \\ -1 \ for \ x = -1 \end{cases}$$

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
  int x,y;
  clrscr();
  printf("Enter the value of x");
  scanf("%d",&x);
  if(x>0)
      y = 1;
  if(x == 0)
      y = 0;
  if(x < 0)
      y = -1;
  printf("%d",y);
  getch();
}
```

Assignment:

1.1 WAP to enter two numbers and check whether they are exactly equals otherwise nothing.

1.2 Write algorithm, flowchart & program to find all possible roots of a quadratic equation $ax^2 + bx + c=0$. (Check answer: $m^2-4m+4=0$; =>2,2 $m^2+m-2=0$; =>1,-2 $m^2+4m+5=0$ =>-2±1i)

Objective#2: if-else statement
Input two values a, b and compare them.

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
int a,b;
clrscr();
printf("Enter the value of a,b");
scanf("%d%d",&a,&b);
if(a>b)
printf("a is greater than b");
else
printf("b is greater than b");
getch();
}
```

Assignment:

2.1 Write a program to input a number and test whether the given number is even or odd.
2.2 WAP to entered a year and check whether it is leap year or not.
2.3 WAP to check whether a given character is vowel or not.

Objective#3: Nested if-else statement
WAP to entered three no. and display the largest one using nested if else.

```
#include<stdio.h>
#include<conio.h>
void main(){
int a,b,c;
printf("Enter the value for a,b and c");
scanf("%d%d%d",&a,&b,&c);
        if(a>b){
                if(a>c){
                        printf("a is the largest number");
                }else{
                        printf("c is the largest number");
                }
        }else if(b>c){
                printf("b is the largest number");
        }else{
                printf("c is the largest one");
        }
}
```

Assignment:

3.1 Modify the above program to show that all three variables are equal to each other.
3.2 WAP that checks whether the number entered is exactly divisible by 5 but not by 11.
3.4 WAP that checks whether the number entered is exactly divisible by 3 but not by 7.

Objective#4: if-else ladder

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
int i,j,r=10 ;
clrscr();
printf("enter the value for i");
scanf("%d",&i);
printf("enter the value for j");
scanf("%d",&j);
if(i= =j)
        printf("the variable i is equal to variable j");
else if(i= =r)
        printf("the variable i is equal to variable r");
else if(r= =j)
        printf("the variable r is equal to variable j");
else
        printf("the three variables are not equal to each other");
getch();
}
```

Assignment:

4.1 Modify the above program to show that all three variables are equal to each other.

4.2 Any character is entered through the keyboard. WAP to determine whether the character entered is capital letter, a small case letter, a digits or special symbols.

Objective#5: Logical Operators

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
  int marks;
  printf("enter the marks of a student");
  scanf("%d",&marks);
  if(marks<32)
        printf("Fail");
  else if (marks>=32 && marks<45)
          printf("Third division");
  else if(marks>=45 && marks <60)
          printf("second division");
  else
          printf("First division");
  getch();
}
```

Assignment:

5.1 In the above problem find out whether the student is a second division or not, using logical OR operator.Hint: if(marks<45 || marks>=60) print not a second division otherwise print second division.

5.2 In the above problem find out whether the student is Pass or Not, using a logical NOT operator.

Objective#6: Conditional Statement
```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
 int a,m;
 clrscr();
 printf("Enter the value for a");
 scanf("%d",&a);
 m=(a>4)?(4*a+a):(5*a-4*a);
 printf("the output is %d",m);
 getch();
}
```

Assignment: Evaluate the expression
Y=1.5x   for x<=2
    2x+5   for x>2 using conditional operator.

Objective#7: Switch statement
```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
 int choice, quantity, tcost;
 clrscr();
 printf("Here is the menu\n");
 printf("1—Momo\n2—Chopsy\n3—chowmin\nenter choice no");
 scanf("%d",&choice);
 switch(choice){
  case 1:
        printf("enter the quantity");
        scanf("%d",&quantity);
        tcost=25*quantity;
        printf("item \t unitcost \t quantity \t total cost \n ");
        printf("momo\t\t25\t\t%d\t\t%d\n",quantity, tcost);
        break;

  case 2:
        printf("enter the quantity");
        scanf("%d",&quantity);
        tcost=30*quantity;
        printf("item \t unitcost \t quantity \t total cost \n ");
        printf("chopsy\t\t30\t\t%d\t\t%d\n",quantity, tcost);
        break;

  case 3:
        printf("enter the quantity");
        scanf("%d",&quantity);
        tcost=30*quantity;
```

```
        printf("item \t unitcost \t quantity \t total cost \n ");
        printf("chowmin\t\t30\t\t%d\t\t%d\n",quantity, tcost);
        break;

default:
        printf("\n incorrect choice");
}
getch();
}
```

Assignment

7.1 WAP to perform addition, subtraction, multiplication and division as per user choice.

7.2 WAP to determine the roots of a quadratic equation by using switch statement.