Batch: C1-2 **Roll No.: 16010123036**

Experiment / assignment / tutorial No. 2

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of the Staff In-charge with date

TITLE: a. Write a program to accept 3 numbers from the user and find the largest of the 3 numbers using
If - else if-else
Ternary operator
b. Write a C program to find the grade of a student using switch case statements.

AIM: a. Write a program to accept 3 numbers from the user and find the largest of the 3 numbers using
If - else if-else
Ternary operator
b. Write a C program to find the grade of a student using switch case statements.
The below table shows the grading system.

Score in subject	Grade
>=90	A
80-89	B
70-79	C
60-69	D
50-59	E
<50	F

Expected OUTCOME of Experiment:
Apply basic concepts of C programming for problem solving.(CO1 and CO2).

Books/ Journals/ Websites referred:

1. Programming in C, second edition, Pradeep Dey and Manas Ghosh, Oxford University Press.
2. Programming in ANSI C, fifth edition, E Balagurusamy, Tata McGraw Hill.
3. Introduction to programming and problem solving , G. Michael Schneider ,Wiley India edition.
4. http://cse.iitkgp.ac.in/~rkumar/pds-vlab/

Problem Definition:

1. Ask user to input three numbers. Compare three numbers to find the largest of them using
    a. Nested if else statement
    b. Using ternary operator
2. Write a C program to find the grade of a student using switch case statements. The below table shows the grading system.

Score in subject	Grade
>=90	A
80-89	B
70-79	C
60-69	D
50-59	E
<50	F

Algorithm:

Q1):

1. Start
2. Declare a , b , c .
3. Ask the user to enter three integer values.
4. Read the three integer values in a, b and c (integer variables).
5. Declare max.
6. Check if a is greater than b.
7. **If true**, then check if a is greater than c.

1. **If true**, then store a as max.
2. **If false**, then store b as max.

8. **If false**, then check if b is greater than c.
    1. **If true**, then store b as max.
    2. **If false**, then store c as max.
9. Print max.
10. End.

Q2) :

1. Start
2. Declare a variable 'marks'.
3. Ask the user to enter the marks between 0 to 100.
4. Read and store the entered marks in the variable 'marks'.
5. Check if marks are greater than 100.

a. If true, then

1. Print "Please enter valid marks within the range 1-100".

b. If false, then

1. Use a switch case based on the value of 'marks / 10'.

i. **Case** for scores 10 and 9:

1. Print "Your Grade is: A".

ii. **Case** for score 8:

1. Print "Your Grade is: B".

iii. **Case** for score 7:

1. Print "Your Grade is: C".

iv. **Case** for score 6:

1. Print "Your Grade is: D".

v. **Case** for score 5:

1. Print "Your Grade is: E".

vi. **Default case**:

1. Print "Your Grade is: F or Fail".

6. End.

Implementation Details:
Q1)

Using Nested if else if

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("Name: Amandeep Singh\nRoll No: 16010123036\n");
    printf("Enter Three Integers:\n");
    scanf("%d %d %d",&a,&b,&c);
    int max=0;
    if(a>b)
    {
        if(a>c)
        max=a;
        else
        max=c;
    }
    else
    {
        if(b>c)
        max=b;
        else
        max=c;
    }
    printf("The maximum value is (using If -Else if-Else): %d\n",max);
}
```

Using Ternary Operator:

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("Name: Amandeep Singh\nRoll No: 16010123036\n");
    printf("Enter Three Integers: ");
    scanf("%d %d %d",&a,&b,&c);
    int max=(a>b)?((a>c)?a:c):((b>c)?b:c);
    printf("The maximum value is (using Ternary): %d\n",max);

}
```

Q2)

```c
#include<stdio.h>
#include<stdlib.h>
int main()
{
   printf("Name: Amandeep Singh\nRoll No: 16010123036\n");
   int marks;
   printf("Enter The Marks Between 0 To 100:");
   printf("\nEnter The Mark: ");
   scanf("%d", &marks);
   if(marks>100)
   {
    printf("Please enter valid marks within the range 1-100");
   }
   else
   {
   switch(marks/10)
   {
       case 10 :
       case 9 :
           printf("Your Grade is: A");
           break;
       case 8 :
           printf("Your Grade is: B" );
           break;
       case 7 :
           printf("Your Grade is: C" );
           break;
       case 6 :
           printf("Your Grade is: D" );
           break;
       case 5 :
           printf("Your Grade is: E" );
           break;
       default :
           printf("You Grade is: F or Fail\n");
   }
 }
   return 0;
}

```

Output(s):

Q1) a)

```
Name: Amandeep Singh
Roll No: 16010123036
Enter Three Integers:
15 64 32
The maximum value is (using If -Else if-Else): 64
```

b)

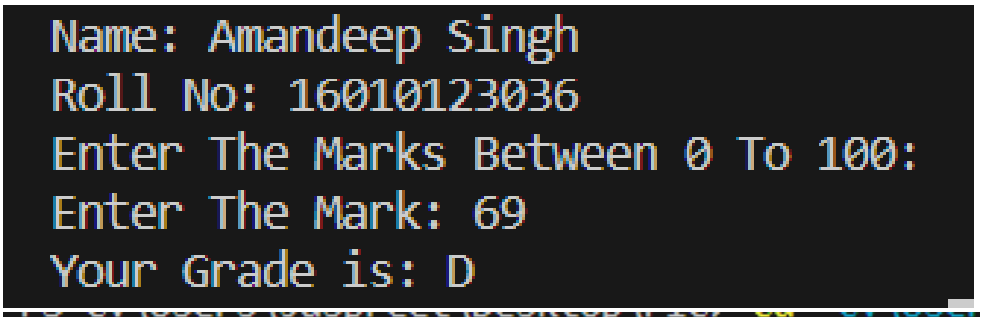
```
Name: Amandeep Singh
Roll No: 16010123036
Enter Three Integers: 39 45 13
The maximum value is (using Ternary): 45
```

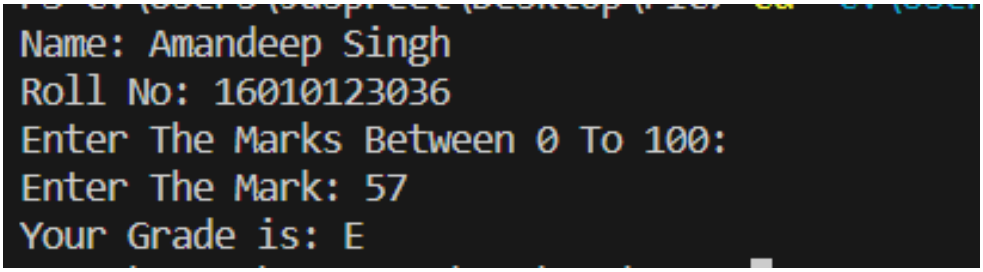
Q2)

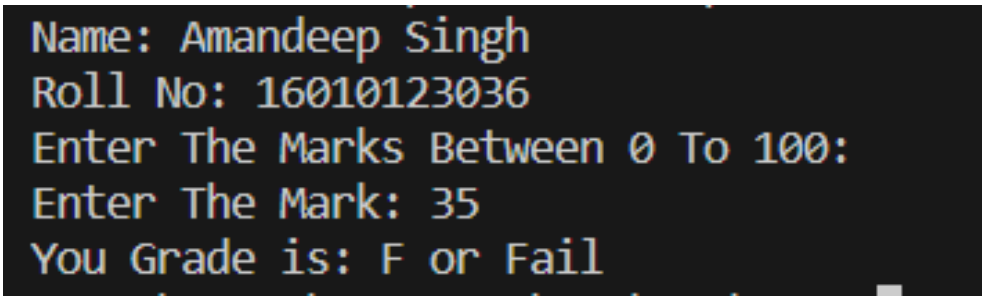
```
Name: Amandeep Singh
Roll No: 16010123036
Enter The Marks Between 0 To 100:
Enter The Mark: 98
Your Grade is: A
```

```
Name: Amandeep Singh
Roll No: 16010123036
Enter The Marks Between 0 To 100:
Enter The Mark: 85
Your Grade is: B
```

```
Name: Amandeep Singh
Roll No: 16010123036
Enter The Marks Between 0 To 100:
Enter The Mark: 75
Your Grade is: C
```





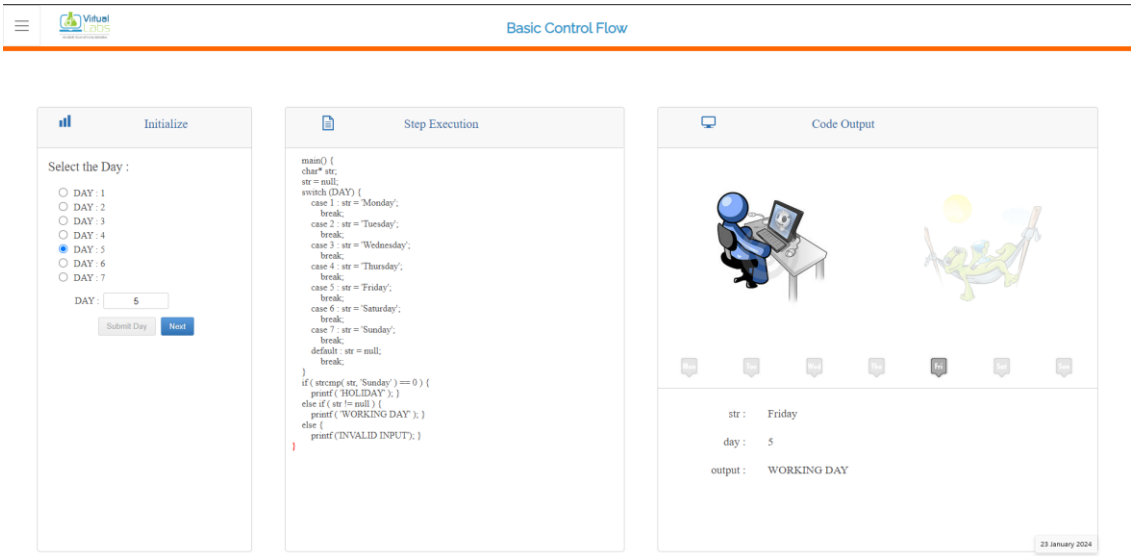


Conclusion:

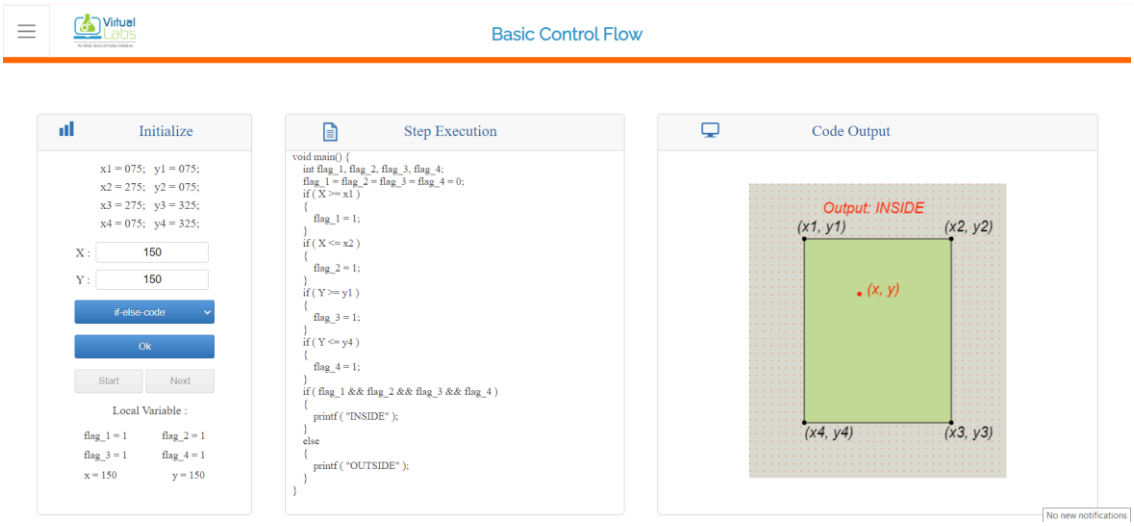
This experiment aimed to reinforce basic C programming concepts, focusing on conditional statements and control structures. By implementing programs to find the largest of three numbers and determine a student's grade using switch case statements, students practiced essential skills in problem-solving (CO1 and CO2). The experiment provided practical experience in applying fundamental programming constructs, preparing students for more complex challenges in future coursework and applications.

Post Lab Descriptive Questions

1. **Virtual lab for switch statement**
   https://cse02-iiith.vlabs.ac.in/exp/basic-control-flow/simulation.html



2. Virtual lab for if statement
   https://cse02-iiith.vlabs.ac.in/exp/basic-control-flow/simulation.html



Date: _____ **Signature of faculty in-charge**