Batch:C1_1 **Roll No.: 16010123012**

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/**

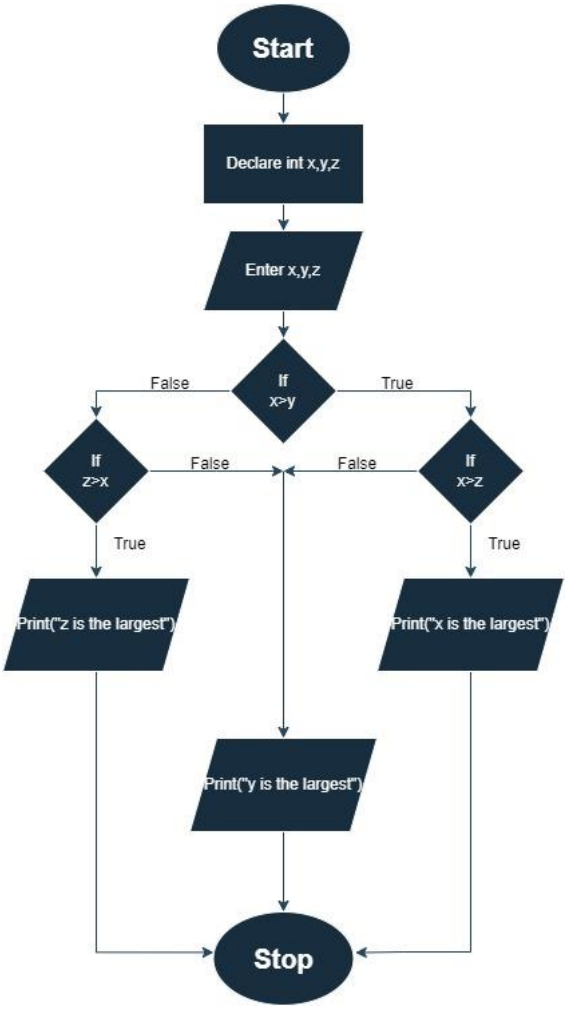
Problem Definition:

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.

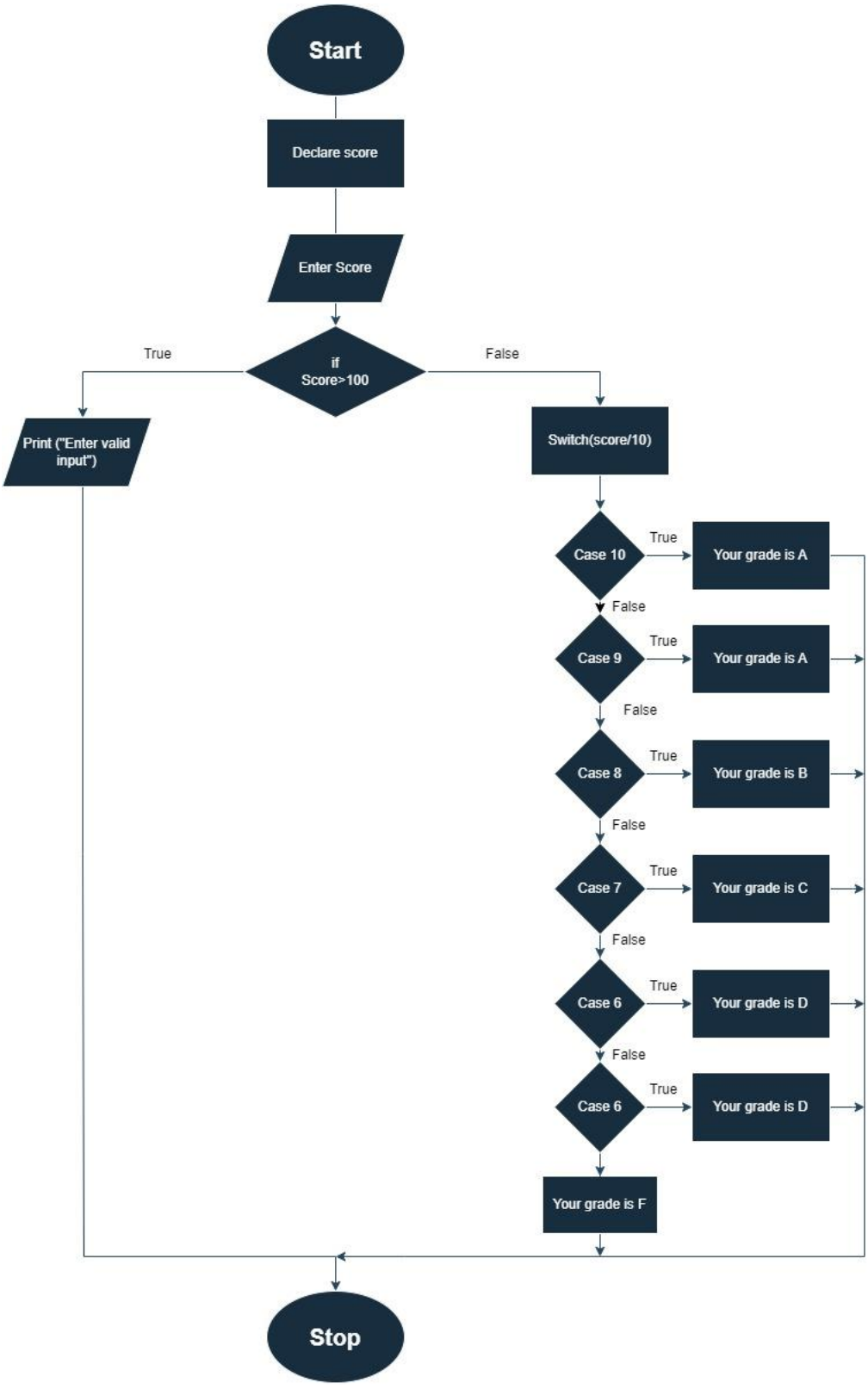
Score in subject	Grade
>=90	A
80-89	B
70-79	C
60-69	D
50-59	E
<50	F

Algorithm:

Q1


Start
Declare int x,y,z
Enter x,y,z
If x>y
False
True
If z>x
False
False
If x>z
True
True
Print("z is the largest")
Print("x is the largest")
Print("y is the largest")
Stop

Q2


Start
Declare score
Enter Score
if Score>100
True
False
Print ("Enter valid input")
Switch(score/10)
Case 10
True
Your grade is A
False
Case 9
True
Your grade is A
False
Case 8
True
Your grade is B
False
Case 7
True
Your grade is C
False
Case 6
True
Your grade is D
False
Case 6
True
Your grade is D
Your grade is F
Stop

Implementation Details:

Using Nested if else if

```
#include <stdio.h>
int main()
{
printf("Aaryan Sharma\n");
printf("16010123012\n");

int x,y,z;
printf("Enter 1st number : ");
scanf("%d",&x);
printf("Enter 2nd number : ");
scanf("%d",&y);
printf("Enter 3rd number : ");
scanf("%d",&z);

if(x>y)
{
      if (x>z)
      {
           printf("%d is Largest",x);
      }
      else
      {
        printf("%d is Largest",z);
      }
}
else
      {
        if (y>z)
      {
      printf("%d is Largest",y);
      }
       else
      {
      printf("%d is Largest",z);

      }
}

return 0;
}
```

Using Ternary Operator

```
#include<stdio.h>

int main()

{

printf("Aaryan Sharma\n");

printf("16010123012\n");


int x,y,z,largest;

printf("Enter 1st number : ");

scanf("%d",&x);

printf("Enter 2nd number : ");

scanf("%d",&y);

printf("Enter 3rd number : ");

scanf("%d",&z);


 largest = (x>y && x>z) ? (x) : ( (y>z)?(y):(z) );

 printf("Largest number among the three is :%d",largest);

}
```

Q2

```
#include <stdio.h>
int main()
{
    printf("Aaryan Sharma\n");
    printf("16010123012\n");
    int score;
    printf("Your score is:");
    scanf("%d", &score);

    if (score>100)
    {
        printf("Enter valid input");
    }
    else
    {
        switch (score/10)

    {
        case 10:
        printf("Your grade is A");
        break;
        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("Your grade is F");
            break;
        }
        return 0;
        }
}
```

Output(s):

Q1

```
Aaryan Sharma
16010123012
Enter 1st number : 34
Enter 2nd number : 2
Enter 3rd number : 54
54 is Largest
Process returned 0 (0x0)   execution time : 9.903 s
```

```
Aaryan Sharma
16010123012
Enter 1st number : 1
Enter 2nd number : 2
Enter 3rd number : 3
3 is Largest
Process returned 0 (0x0)   execution time : 2.632 s
```

```
Aaryan Sharma
16010123012
Enter 1st number : 1
Enter 2nd number : 876
Enter 3rd number : 43
876 is Largest
Process returned 0 (0x0)   execution time : 8.817 s
```

```
Aaryan Sharma
16010123012
Enter 1st number : 33
Enter 2nd number : 546
Enter 3rd number : 2876543
Largest number among the three is :2876543
Process returned 0 (0x0)   execution time : 5.553 s
```

```
Aaryan Sharma
16010123012
Enter 1st number : 3
Enter 2nd number : 4
Enter 3rd number : 5
Largest number among the three is :5
Process returned 0 (0x0)   execution time : 3.821 s
```

Q2

```
Aaryan Sharma
16010123012
Your score is:100
Your grade is A
Process returned 0 (0x0)   execution time : 3.061 s
Press any key to continue.
```

```
C:\Users\Admin\Desktop\EXP2\main.exe
Aaryan Sharma
16010123012
Your score is:90
Your grade is A
Process returned 0 (0x0)   execution time : 1.708 s
```

```
Aaryan Sharma
16010123012
Your score is:85
Your grade is B
Process returned 0 (0x0)   execution time : 2.803 s
```

```
Aaryan Sharma
16010123012
Your score is:74
Your grade is C
Process returned 0 (0x0)   execution time : 3.291 s
```

```
Aaryan Sharma
16010123012
Your score is:69
Your grade is D
Process returned 0 (0x0)   execution time : 2.977 s
```

```
Aaryan Sharma
16010123012
Your score is:51
Your grade is E
Process returned 0 (0x0)   execution time : 3.043 s
```

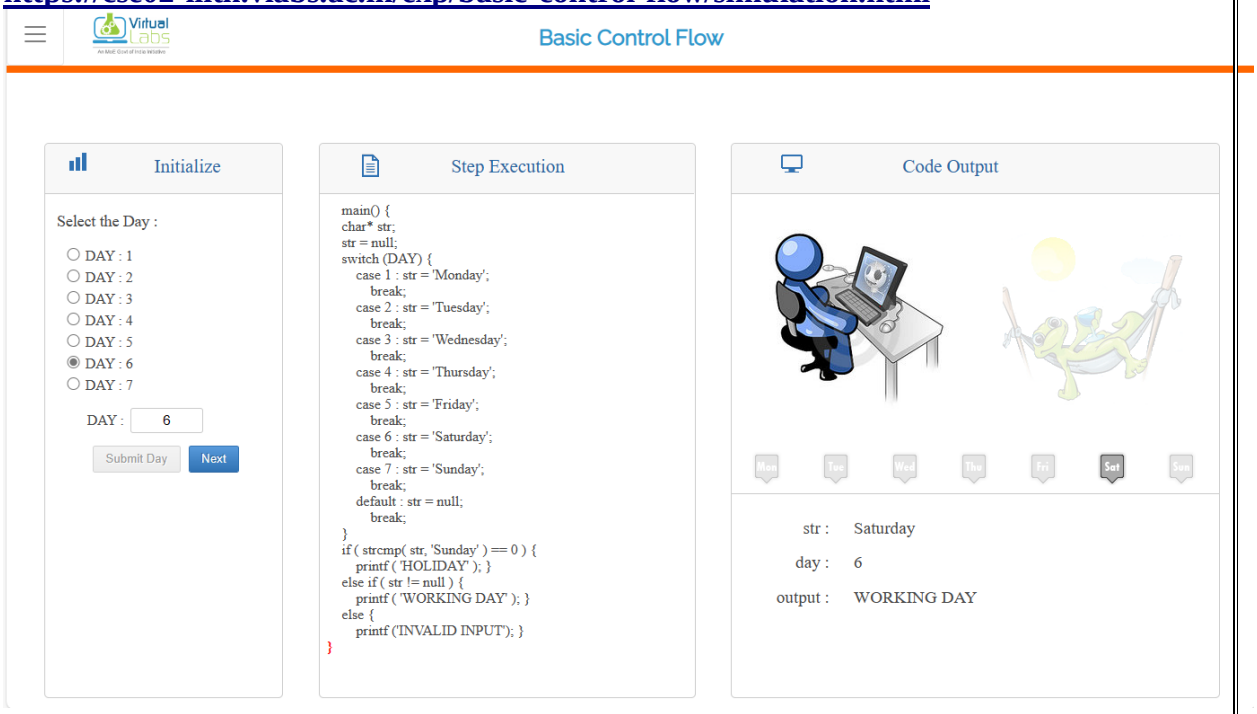
```
Aaryan Sharma
16010123012
Your score is:39
Your grade is F
Process returned 0 (0x0)   execution time : 3.036 s
```

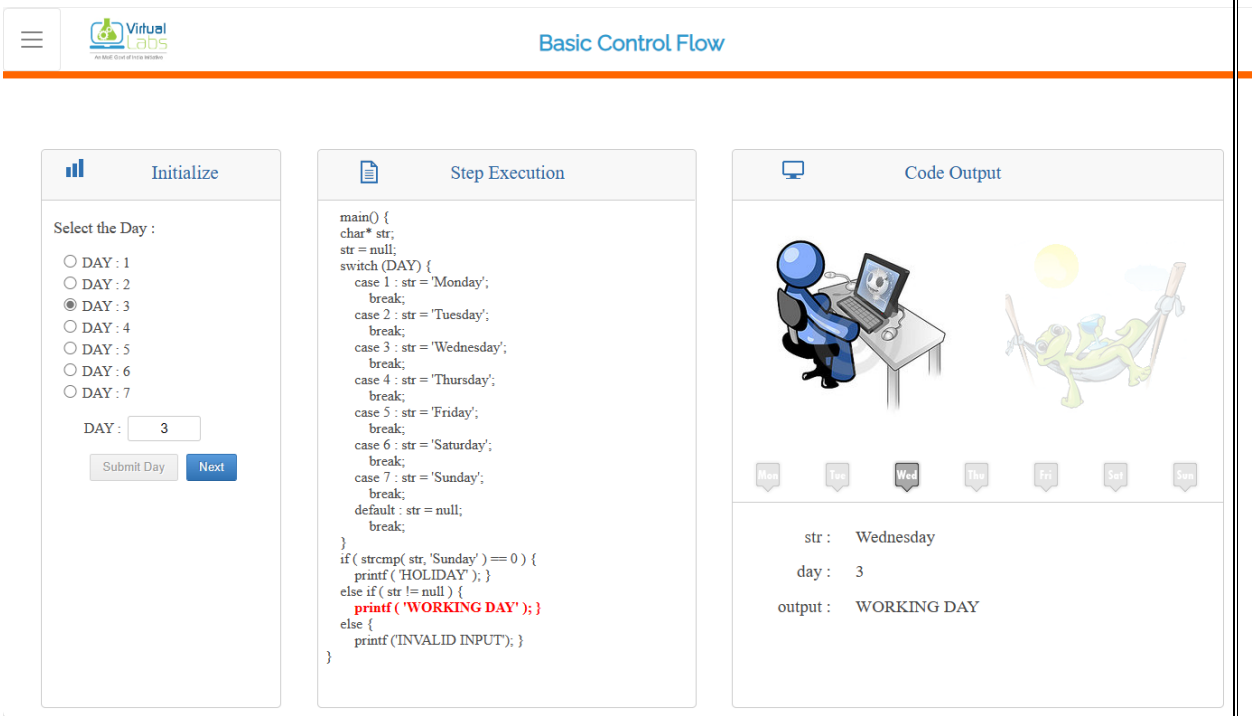
Conclusion:

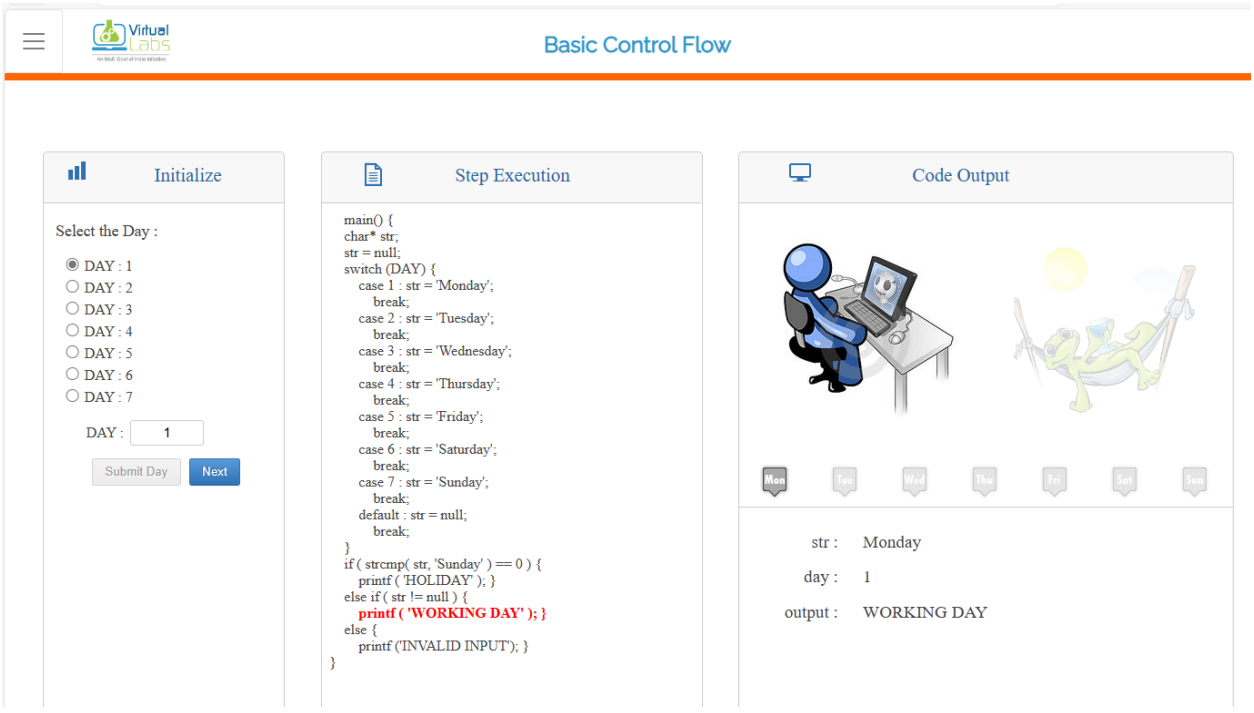
Learned about various control structures in C and how to use these various Control structures in c programming.

Post Lab Descriptive Questions

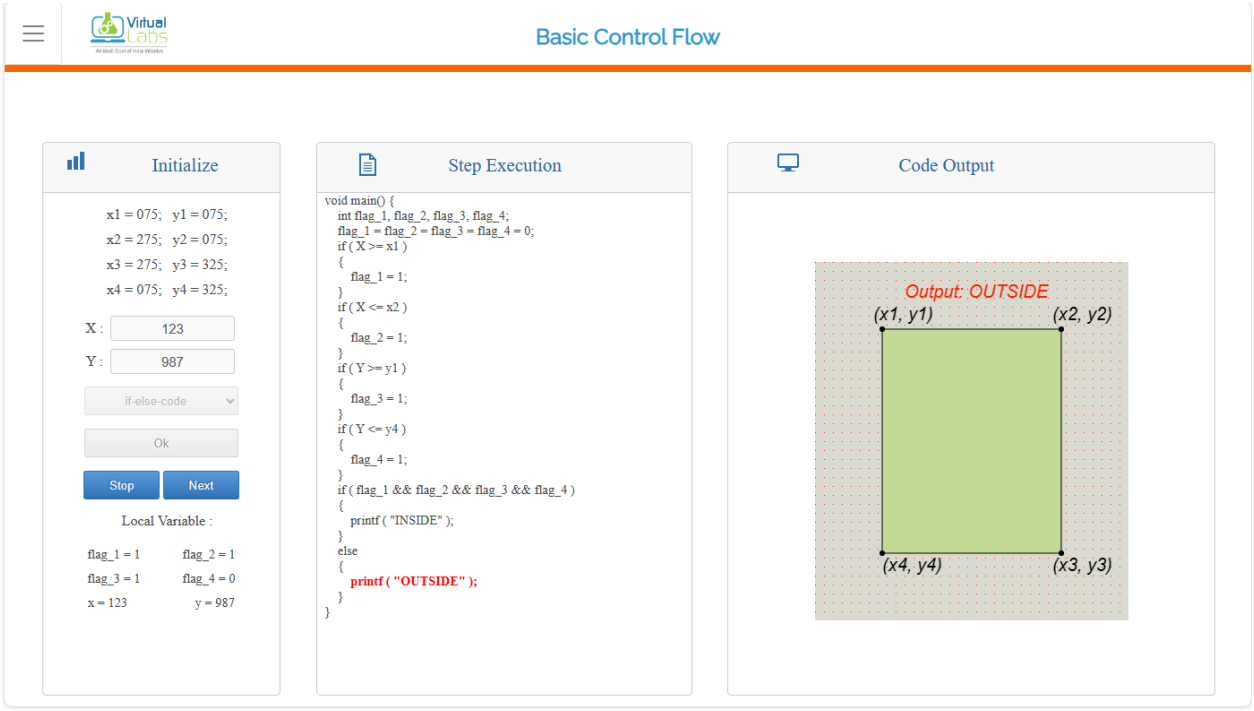
1. **Virtual lab for switch statement**
   https://cse02-iiith.vlabs.ac.in/exp/basic-control-flow/simulation.html

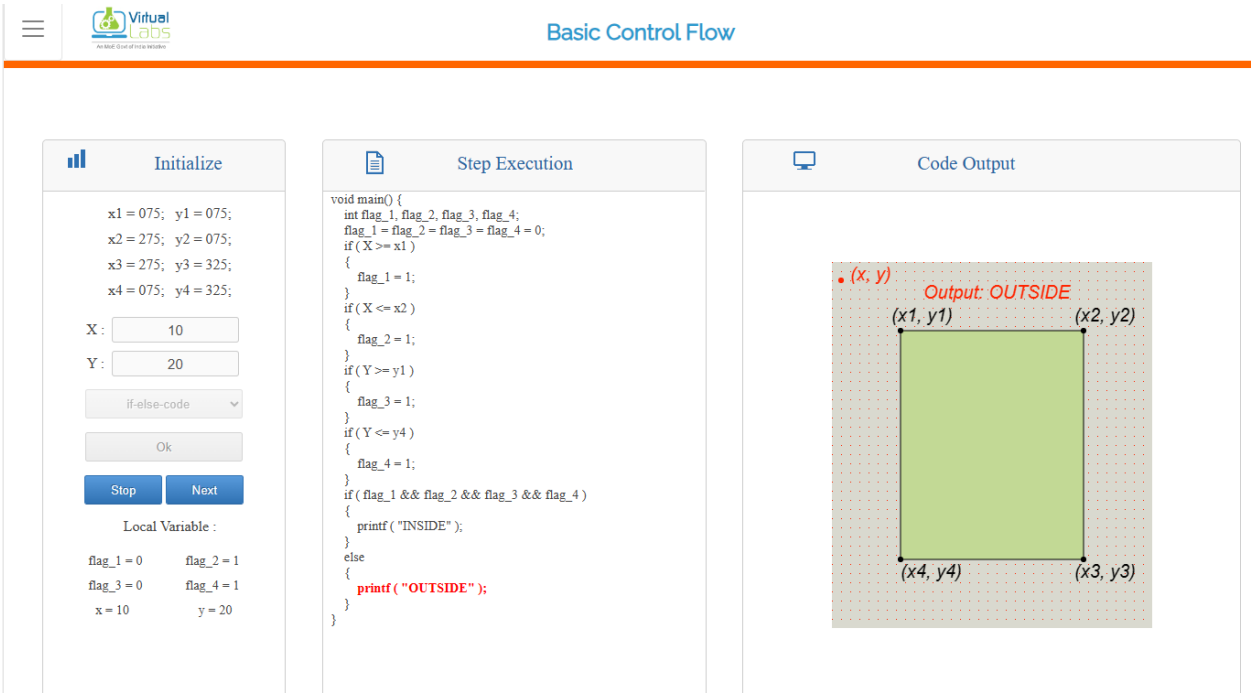


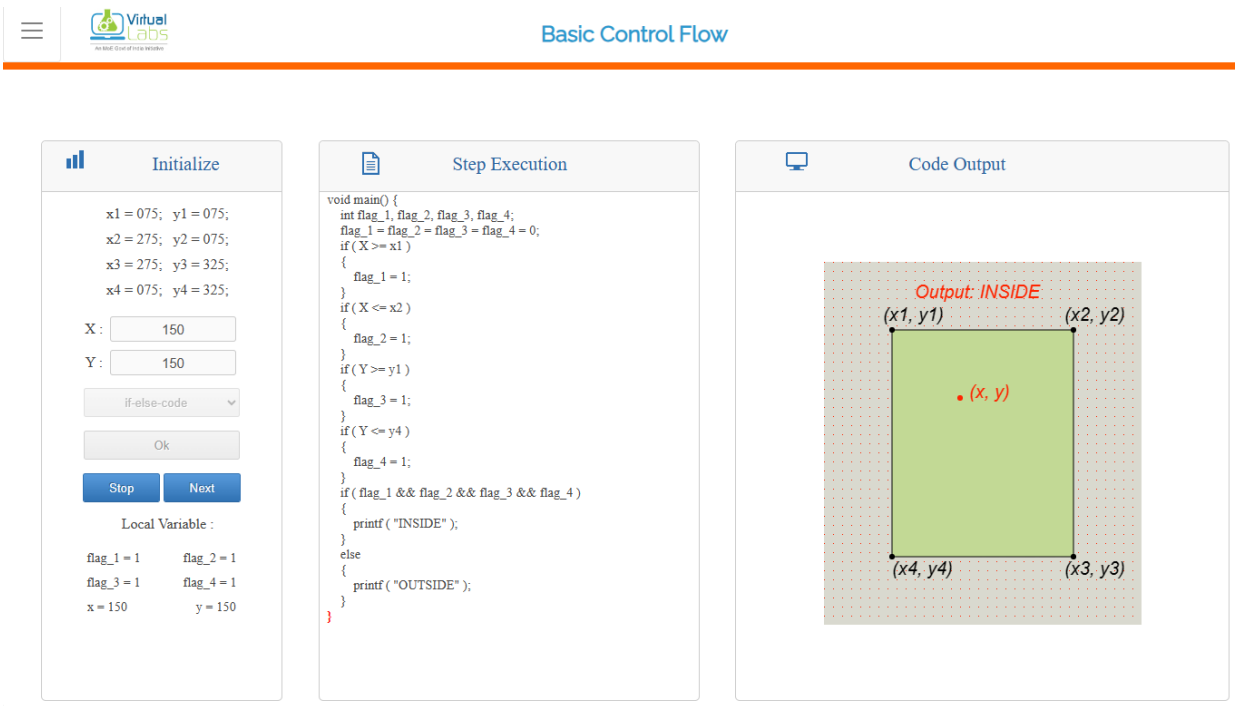




2. Virtual lab for if statement
   https://cse02-iiith.vlabs.ac.in/exp/basic-control-flow/simulation.html


Basic Control Flow
Initialize
x1 = 075; y1 = 075;
x2 = 275; y2 = 075;
x3 = 275; y3 = 325;
x4 = 075; y4 = 325;
X : 123
Y : 987
if-else-code
Ok
Stop
Next
Local Variable :
flag_1 = 1
flag_2 = 1
flag_3 = 1
flag_4 = 0
x = 123
y = 987
Step Execution
void main() {
int flag_1, flag_2, flag_3, flag_4;
flag_1 = flag_2 = flag_3 = flag_4 = 0;
if (X >= x1)
{
flag_1 = 1;
}
if (X <= x2)
{
flag_2 = 1;
}
if (Y >= y1)
{
flag_3 = 1;
}
if (Y <= y4)
{
flag_4 = 1;
}
if (flag_1 && flag_2 && flag_3 && flag_4)
{
printf ("INSIDE");
}
else
{
printf ("OUTSIDE");
}
}
Code Output
Output: OUTSIDE
(x1, y1)
(x2, y2)
(x4, y4)
(x3, y3)


Basic Control Flow
Initialize
x1 = 075; y1 = 075;
x2 = 275; y2 = 075;
x3 = 275; y3 = 325;
x4 = 075; y4 = 325;
X : 10
Y : 20
if-else-code
Ok
Stop
Next
Local Variable :
flag_1 = 0
flag_2 = 1
flag_3 = 0
flag_4 = 1
x = 10
y = 20
Step Execution
void main() {
int flag_1, flag_2, flag_3, flag_4;
flag_1 = flag_2 = flag_3 = flag_4 = 0;
if (X >= x1)
{
flag_1 = 1;
}
if (X <= x2)
{
flag_2 = 1;
}
if (Y >= y1)
{
flag_3 = 1;
}
if (Y <= y4)
{
flag_4 = 1;
}
if (flag_1 && flag_2 && flag_3 && flag_4)
{
printf ("INSIDE");
}
else
{
printf ("OUTSIDE");
}
}
Code Output
(x, y)
Output: OUTSIDE
(x1, y1)
(x2, y2)
(x4, y4)
(x3, y3)



Date:18/01/24
Signature of faculty in-charge _____