Batch:C1_2   Roll No.:16010123032

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:

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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:

1>

(i) Step 1: Take input of 3 int numbers and store them in variables a,b,c respectively.

   Step 2: Use nested if condition.

   Step 3: Let first if condition check a is greater than b , if so then check if a is greater than c , therefore print a is greatest.

   Step 4: If a is not greater than c then print c is greatest.

   Step 5: If a is not greater than b then check if b is greater than c , if it is so print b is greatest .

   Step 6: If b is not greater than c then print c is greatest.

(ii)Step 1: Take input of 3 int numbers and store them in variables a,b,c respectively also initialize int x variable to store the final answer.

Step 2: Use ternary operators.

Step 3: First check if a greater than b then check with c then assign a's value to x.

Step 4: If a isn't then assign c's value to x .

Step 5: If a isn't greater than b check if b greater than c , if so assign b's value to x.

Step 6: If b isn't greater than c then assign c's value to x.

Step 7: Display x's value , this is the largest value.

2>
Step 1:Take input of score from user.

Step 2:Divide the score by 10 for ease of operating and also because switch case can't operate with relational operators.

Step 3:Compare the score with cases and print the appropriate response.

Step 4: Use fall through of cases for cases lesser than 5 as rest are fail grade.

Step 5: For default case print that the marks entered were invalid.
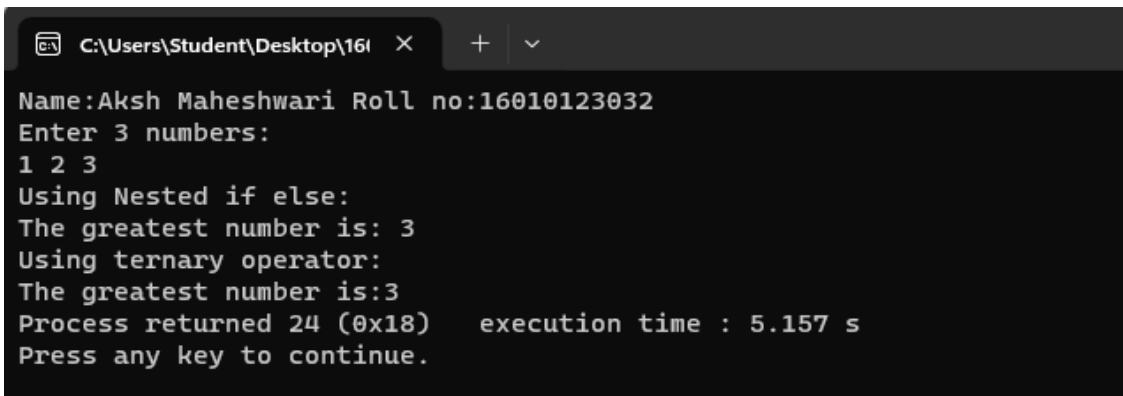
Implementation Details:

Q1)

```c
#include <stdio.h>
#include <stdlib.h>

void main()
{
    printf("Name:Aksh Maheshwari Roll no:16010123032\n");
    int a,b,c;
    printf("Enter 3 numbers:\n");
    scanf("%d %d %d",&a,&b,&c);
    printf("Using Nested if else:\n");

    if(a>b)
    {
        if(a>c)
        {
            printf("The greatest number is: %d\n",a);
        }else
        {
            printf("The greatest number is: %d\n",c);
        }
    }
    else
    {
        if (b>c)
        {
            printf("The greatest number is: %d\n",b);
        }else
        {
            printf("The greatest number is: %d\n",c);
        }
    }
    printf("Using ternary operator:\n");
    int large = ((a>b)?((a>c)?a:c):(b>c)?b:c);
    printf("The greatest number is:%d",large);

}
```

Q2)

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int marks,grade;
    printf("Enter marks (between 0-100):");
    scanf("%d",&marks);
    grade = marks/10;
    switch(grade)
    {
    case 10:printf("Grade O");
            break;
    case 9:printf("Grade A");
           break;
    case 8:printf("Grade B");
           break;
    case 7:printf("Grade C");
           break;
    case 6:printf("Grade D");
           break;
    case 5:printf("Grade E");
           break;
    case 4:
    case 3:
    case 2:
    case 1:
    case 0:printf("Grade F");
           break;
    }
}
```

Output(s):

Q1)

```
Name:Aksh Maheshwari Roll no:16010123032
Enter 3 numbers:
1 2 3
Using Nested if else:
The greatest number is: 3
Using ternary operator:
The greatest number is:3
Process returned 24 (0x18)   execution time : 5.157 s
Press any key to continue.
```

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Q2)


```
Enter marks (between 0-100):100
Grade O
Process returned 7 (0x7)    execution time : 4.778 s
Press any key to continue.
```
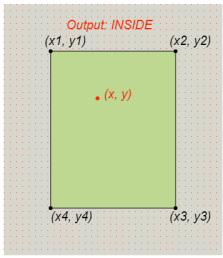
Conclusion:

We learnt about nested if else loop,ternary operator and switch case statement .

Post Lab Descriptive Questions
Virtual lab for switch statement
https://cse02-iiith.vlabs.ac.in/exp/basic-control-flow/simulation.html

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

Initialize	Step Execution	Code Output

Select the Day :

- DAY : 1
- DAY : 2
- DAY : 3
- DAY : 4
- DAY : 5
- DAY : 6
- ● DAY : 7

DAY : 7

Submit Day   Next

```
main() {
char* str;
str = null;
switch (DAY) {
    case 1 : str = 'Monday';
        break;
    case 2 : str = 'Tuesday';
        break;
    case 3 : str = 'Wednesday';
        break;
    case 4 : str = 'Thursday';
        break;
    case 5 : str = 'Friday';
        break;
    case 6 : str = 'Saturday';
        break;
    case 7 : str = 'Sunday';
        break;
    default : str = null;
        break;
}
if ( strcmp( str, 'Sunday' ) == 0 ) {
    printf ( 'HOLIDAY' ); }
else if ( str != null ) {
    printf ( 'WORKING DAY' ); }
else {
    printf ('INVALID INPUT'); }
}
```

str :   Sunday

day :   7

output :   HOLIDAY

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