CL-1002
Programming Fundamentals
Lab # 5

Objectives:

1. Understanding IDE.
2. Practicing Basic Programming using if, else-if and nested if.
3. Practicing Basic Programming using switch-case, compound statement and ternary operator.
4. Practicing Basic Programming using while loop.

Note: Carefully read the following instructions (*Each instruction contains a weightage*)

1. First think about statement problems and then write your program.
2. Write Program in C compiler/IDE and save source file **for each program.**
3. Do not copy from any source otherwise you will be penalized with negative marks.
4. Complete your lab **within given Time Slot**.
5. Add your source code in this word document (take screen shot) + Make one ZIP file of your all source codes.
6. Please submit your **Both files** with this naming convention ROLLNO_SECTION_LABNO.
7. Submit your lab on Google Classroom.

Find the OUTPUT of the following code.

```
#include <iostream>
using namespace std;

int main() {

int a = 1;
while (a <= 5)
       {
       cout<<”Welcome to iteration
structure: ”<<endl;
       }

    return 0;
}
```

```
#include <iostream>
using namespace std;

int main() {

int a = 1;
(a%2==0) ?
Cout<<”Even Number:” :
cout<<”Odd Number:” ;
    return 0;
}
```

Exercise

1. **Write a C++ code to add first five odd integer and display their sum and average with proper output i.e.** numbers = 1,3,5,7,9,11 Sum = 25, Average = 5.0 (using loop)
2. **Write a C++ code that display the following patterns** (using loop):

   1-> * * * * * *

   2-> $
   $
   $
   $
   $

3. **Write a C++ program that displays the Fibonacci series upto 'n' number, where 'n' is entered by user.** n = 6, output: 0,1,1,2,3,5
4. **Write a C++ program that's decimal number and display its binary equivalent (using loops)**
5. **Using simple loop and switch statements, make a menu driven program that takes 2 number and apply simple operators like + - / * . The program must take 2 numbers and operator in character variable . The program must terminate only when user enters Q or q otherwise it should either perform correct operation or display some error message.**
6. **Write a C++ code that calculate the factorial of any given number.**

   Number = 5, factorial = 5*4*3*2*1->120

7. **Write a C++ code that take base and power from user and display it's solution:**

   Base = 5, power = 5 , solution = 3125

8. **Write a C++ code that shows the average, minimum and maximum marks of students in a class. Your program can take total number of students and at the end marks of each subject.**

   Total_students = 5
   Total_subjects = 2 (fix)

Subject1	Subject2
52	63
88	55

45 65
87 22
100 99
Average = 74.4 Average = 60.5
Maximum = 100 Maximum = 99
Minimum = 45 Minimum = 22

9. **Write a C++ Program input 'n' numbers and output their sum. It asks the user if he/she would like to run the program. If the answer is Y or y, it prompts the user to enter 'n' numbers. After adding the numbers and displaying the results, it again asks the user if he/she would like to add more numbers.** (where n is user defined value)
10. **A box of cookies can hold 24 cookies, and a container can hold 75 boxes of cookies. Write a program that prompts the user to enter the total number of cookies, the number of cookies in a box, and the number of cookie boxes in a container. The program then outputs the number of boxes and the number of containers to ship the cookies. Note that each box must contain the specified number of cookies, and each container must contain the specified number of boxes. If the last box of cookies contains less than the number of specified cookies, you can discard it and output the number of leftover cookies. Similarly, if the last container contains less than the number of specified boxes, you can discard it and output the number of leftover boxes.**
11. **Write a C++ code that calculates a customer's bill for a local cable company. There are two types of customers: residential and business. There are two rates for calculating a cable bill: one for residential customers and one for business customers.**

    For residential customers, the following rates apply:

    • Bill processing fee: $4.50

    • Basic service fee: $20.50

    • Premium channels: $7.50 per channel

    For business customers, the following rates apply:

    • Bill processing fee: $15.00

    • Basic service fee: $75.00 for first 10 connections, $5.00 for each additional connection

    • Premium channels: $50.00 per channel for any number of connections

    The program should ask the user for an account number (an integer) and a customer

code. Assume that R or r stands for a residential customer, and B or b stands for a business customer (using switch -case)

Input: The customer's account number, customer code, number of premium channels to which the user subscribes.

Output: Customer's account number and the billing amount.

Best of Luck ☺