CL-1002
Programming Fundamentals
Lab # 7

<u>**Objectives:**</u>

1. Practice and understanding on repetitions C++ programs
2. Loop Control Structure
3. For Loop
4. While Loop
5. Counter control loop variable
6. Sentinel controlled 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 + 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.

Problem: 1 (For Loop)

Write a program that will print the table of user choice.

Problem: 2 (While loop)

Write a program that will calculate the average of n numbers. Input all number(s) from user and display there average.

For example

Enter limit of numbers= 2

Enter number 1= 10

Enter number 2= 10 Average of numbers = 10

Problem: 3 (While loop, flag control variable, sentinel control variable)

Write a program that input a number from user and display that number in reverse order. Your entered number must be non-zero for example:

```
Please enter number: 12346
Number in reverse order: 64321
Press any key to continue . . .
```

Problem: 4 (For Loop)

Write a C++ Program to print Capital and Small alphabets using Loops.
Hint: You can use data type "char" and ASCII numbers in the loop to perform the task.

```
Uppercase Alphabets are:
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Lowercase Alphabets are:
a b c d e f g h i j k l m n o p q r s t u v w x y z
```

Problem: 5 (For Loop)

Write a program in C++ to display n terms of natural number and their sum.

Test Data: 7

Expected Output:

The first 7 natural number is:

1 2 3 4 5 6 7

The Sum of Natural Number upto 7 terms: 28

```
Enter your number
10
1 2 3 4 5 6 7 8 9 10
 The sum of number is = 55

...Program finished with exit code 0
Press ENTER to exit console.
```

Problem: 6 (For Loop, Counter Control Loop)

Write a C++ program to (n) from the user and print Odd numbers and Even numbers separately using Loops till (n).

Hint: You can use Modulus % operator for this task!

```
Odd numbers
1 3 5 7 9

Even numbers
2 4 6 8 10
```

Problem: 7 (Any Suitable Loop)

Write a simple C++ program using loops to find the frequency of each digit in a given integer

```
 Find frequency of each digit in a given integer:
 ------------------------------------------------
 Input any number: 12213
The frequency of 0 = 0
The frequency of 1 = 2
The frequency of 2 = 2
The frequency of 3 = 1
The frequency of 4 = 0
The frequency of 5 = 0
The frequency of 6 = 0
The frequency of 7 = 0
The frequency of 8 = 0
The frequency of 9 = 0


...Program finished with exit code 0
Press ENTER to exit console.
```

Problem: 8 (While loop, flag control variable, sentinel control, variable)

Write a program that reads the letter codes A to Z and prints the corresponding telephone digit. This program uses a sentinel-controlled while loop. To stop the program, the user is prompted for the sentinel, which is #. Your program converts uppercase letters to their corresponding // telephone digits.

1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PQRS 7	TUV 8	WXYZ 9
*	0	#