CL-217
Programming
Fundamentals Lab # 12

<u>**Objectives:**</u>
- Practice and understanding on basic c++ programs
- Control Structure(repetition)
- While loop statement
- Counter control loop variable
- Sentinel controlled loop
- Flag controlled loop
- For loop
- Nested Loop
- File Handling

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

1. Use proper **font family (Calibri or Times New Roman)** and **font size** of **title (16 points), heading (14 points), sub heading (12 points)** and **normal text (10 points)**.
2. First think about problem statement and then write/draw your logic on paper.
3. **Microsoft Visual Studio** should be used to make c++ programs. Programs made with any other software would not be accepted.
4. For each task in the manual create a new C++ program with the naming convention as follows: **TASK-NO**
5. **Mention what is happening in each line of code using comments**.
6. Write all codes one by one with proper numbering and also paste screen shot of each problem using **snipping tool**(default screen capture software in windows) on **Microsoft word file.**
7. Please submit your file with this naming convention **ROLLNO_SECTION_GROUPNO_LABNO**.
8. Do not copy from any source otherwise you will be penalized with negative marks.
9. Submit your lab on **Google Classroom**.

Problem: 1 | Nested Loop

Write a program display same output given below

```
C:\Users\hannan.farooq\Documents\Visual Studio 20
1 2 3 4 5 6 7 8 9 10
1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
Press any key to continue . . .
```

Problem: 2 | Nested Loop, Triangle variation 1

Make the following triangle with asterisk. Also, the size of the triangle will be defined by user
For Example

```
C:\Users\hannan.farooq\Documents\Visual Studio 2013
Enter size of Triangle: 5
*
**
***
****
*****
Press any key to continue . . .
```

Problem: 3 | Nested Loop, Triangle variation 2

Make the following triangle with asterisk. Also, the size of the triangle will be defined by user
For Example

```
C:\Users\hannan.farooq\Documents\Visual Studio 2
Enter size of Triangle:5
*****
****
***
**
*

Press any key to continue . . .
```

Problem: 4 | Nested Loop, Triangle variation 3

Make the following triangle with asterisk. Also, the size of the triangle will be defined by user
For Example

```
C:\Users\hannan.farooq\Documents\Visual Studio 2013\P
Enter size of Triangle: 5
    *
   **
  ***
 ****
*****
Press any key to continue . . .
```

Problem: 5 | Nested Loop, Triangle variation 4

Make the following triangle with asterisk. Also, the size of the triangle will be defined by user
For Example

```
C:\Users\hannan.farooq\Documents\Visual Studio 2013\Projects\Proj
Enter size of Triangle: 5
*****
 ****
  ***
   **
    *
Press any key to continue . . .
```

Problem: 6 | Switch Case, Nested Loop, Triangle Variation

Make a menu driven program that asks user for four triangle variations (P2, P3, P4 and P5) designed in previous problems and let the user switch between the options given by user.

Problem: 7 | Switch Case, Nested Loop, single Loop

Make a menu that asks the user for the following options.
1. Square with asterisk
2. Square with numbers in increasing order (input square number limit from user)
   Hint: 1, 4, 9, 16…n²
3. Square with numbers in decreasing order (input square number limit from user)

Problem: 8 | Nested Loop, Patterns

Make a menu driven that prints the following patterns

```
11111
22222
33333
44444
55555

12345
12345
12345
12345
12345

55555
44444
33333
22222
11111

54321
54321
54321
54321
54321
```

Problem: 9 | Nested Loop, Pyramid

Make the following pyramid.

```
   *
  ***
 *****
*******
```

Also make inverted pyramid.

Problem: 10 | Nested Loop, Diamond

Make the following pattern.

```
   *
  ***
 *****
*******
 *****
  ***
   *
```

Problem: 11 | Nested Loop, Hollow Diamond

Consider the diamond in problem 10. Make a hollow diamond

Problem: 12 |

Write a C++ program using while loop that will print the pattern as shown below

```
1
2= =1
3= =2= =1
4= =3= =2= =1
5= =4= =3= =2= =1
6= =5= =4= =3= =2= =1
7= =6= =5= =4= =3= =2= =1
8= =7= =6= =5= =4= =3= =2= =1
9= =8= =7= =6= =5= =4= =3= =2= =1
```

Problem: 13 | File handling, Write operation

1. Write a c++ program that creates a text file named firstfile.txt. now open this file and write following sentences in the file
2. My name is……. I am student of BS SE 1st semester. My roll number is …….. I am taking course of PF. This is my first created file.
3. Now close the file.