Government College University, Lahore

Department of Computer Science

Programming Fundamentals

Lab – 06

Task 01(Factorial) :

Write an application that displays the factorial for every integer value from 1 to 10. A factorial of a number is the product of that number multiplied by each positive integer lower than it. For example, 4 factorial is 4 * 3 * 2 * 1, or 24.

Task 02 (The T Triangle):

Write a program that displays a seven-line triangle pattern using character "T" as shown below:

```
        T
       TTT
      TTTTT
     TTTTTTT
    TTTTTTTTT
   TTTTTTTTTTT
  TTTTTTTTTTTTT
```

Note : You can not use a simple cout statement you have to do it using a loop.

Task 03 (InBetween Numbers) :

Write an application that prompts a user for two integers and displays every integer between them. Display a message if there are no integers between the entered values. Make sure the program works regardless of which entered value is larger.

Example Output :

```
Enter Number 1 : 1
Enter Number 2 : 10
    2   3   4   5   6   7   8   9   10
Process returned 0 (0x0)   execution time : 4.454 s
Press any key to continue.
```

Another Example :

```
Enter Number 1 : 36
Enter Number 2 : 25
    26    27    28    29    30    31    32    33    34    35    36
```

Task 04 (Fibonacci Series up to n number of terms):

The Fibonacci sequence is a series where the next term is the sum of previous two terms. The first two terms of the Fibonacci sequence is 0 followed by 1.

The Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21

Take an Integer **n** input from the user and then display Fibonacci Series up to **n** number of terms.

Sample output :

```
Enter the number of terms: 10
Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34
```

Task 05 (Barchart) :

The Government College University basketball team has five players named Art, Foo, Cal, Dan, and Zoo. Accept the number of points scored by each player in a game and create a bar chart that illustrates the points scored by displaying an asterisk for each point.
The output look similar to the chart displayed below :

```
Enter points Earned by Ali : 5

Enter points Earned by Foo : 12

Enter points Earned by Cal : 3

Enter points Earned by Dan: 15

Enter points Earned by Zoo: 9


Points For Game :
Ali : *****
Foo : ************
Cal : ***
Dan : ***************
Zoo : *********
```

Task 06 :

Modify the above program to accept the number of points scored by each player in a season. The bar chart displays one asterisk for each 10 points scored by a player. For example, if a player has scored 48 points, then display four asterisks only.

Task 07 (Take My Quiz) :

Write an application that creates a quiz. The quiz should contain at least five questions from the quiz you have given in the lab. Each question should be a multiple-choice question with at least four answer options. When the user answers the question correctly, display a congratulatory message. If the user responds to a question incorrectly, display an appropriate message as well as the correct answer. At the end of the quiz,display the number of correct and incorrect answers, and the percentage of correct answers.

Task 08 (using All Loops):

Write a program that uses **while loops** to perform the following steps:

a. Prompt the user to input two integers: firstNum and secondNum

(firstNum must be less than secondNum).

b. Output all odd numbers between firstNum and secondNum.

c. Output the sum of all even numbers between firstNum and secondNum.

d. Output the numbers and their squares between 1 and 10.

e. Output the sum of the square of the odd numbers between firstNum and secondNum.

f. Output all uppercase letters.

Within same file redo all these task using **for Loops** and **do while Loops**

Task 09 :

Write a c++ program that takes number of rows as an input from user and then using loops print the sequence shown in the figure below :

```
Enter number of rows: 5
*
* *
* * *
* * * *
* * * * *
```

Task 10 :

Write a c++ program that takes number of rows as an input and then using loops print a diamond made of asterisks "*" as shown in the figure below :

```
Enter number of rows: 5

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

Happy Coding 🥰😄 !!