**Lab 9 (2 hours)**

**Lab Task 1.**

**Objective:** Using nested loops with mixed types of inner loops

**Program Name:** Repeated multiplication tables

**Problem Statement:** In this lab task, you have to modify the multiplication table program in Lab 7 (Lab Task 2), so that it displays multiplication table of N integers one-by-one, where N is a positive integer input by the user.

1. Use a nested loop, where outer loop runs for N times, and inputs a number T for which the multiplication table should be printed. While the inner loop prints table of T upto 5 terms. A couple of sample outputs of the program is as below.
2. As a second step, modify the above program so that both the inputs (N and T) are validated, where valid values of N +ve integers greater than 0 and valid values of T are +ve integers greater than 1. **Hint:** This program first validates input N. Then, uses a nested loop, where the outer-loop is counter-controlled. Two inner loops are included inside this outer loop. First, input validation loop for T, second, counter-controlled loop for printing multiplication table.

A couple of sample outputs for the above program (after input validation) are given below.

|  |  |
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| **Sample output 1** | **Sample output 2** |
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**Home Task 1**

**Objective:** implement nested loops

**Problem Statement:**  *(Triangle Printing Program)* Write a program that prints the following patterns separately, one below the other. Use for loops to generate the patterns. All asterisks (\*) should be printed by a single print statement of the form cout<< "\*" ; (this causes the asterisks to print side by side).  
[***Hint****:* The last two patterns are tricky. They require that each line begin with an appropriate number of blanks, i.e. 2 inner loops inside the outer loop; the first will control the number of spaces to print using dynamic condition/initialization and the second will control the number of asterisks to print using dynamic condition/initialization.]

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