National University of Computer and Emerging Sciences



Lab Manual 13

Programming Fundamentals

|  |  |
| --- | --- |
| Course Instructor | Mr. Waqas Manzoor |
| Lab Instructor (s) | Sophia Shahid  Hassan Minhas |
| Section | F |
| Semester | Fall 2020 |

Department of Computer Science

FAST-NU, Lahore, Pakistan

## Objectives

After performing this lab, students shall be able to:

* Have an improved problem-solving ability
* Understanding recursion

Note: For each of these questions, write recursive functions

**TASK 1:**

Write a C++ program to print the given star pattern. User will enter the height.

**Sample Input:**

**Enter height: 5**

**Sample Output:**

**\***

**\*\***

**\*\*\***

**\*\*\*\***

**\*\*\*\*\***

**TASK 2:**

Write a C++ program to print the pattern, User will enter the height.

**Sample Input:**

**Enter height: 5**

**Sample Output:**

1 2 3 4 5

2 3 4 5 1

3 4 5 1 2

4 5 1 2 3

5 1 2 3 4

**TASK 3:**

Write a program to print table of a number entered by the user.

**Sample Input:**

**Enter number: 3**

**Sample Output:**

**3x1 = 3**

**3x2 = 6**

**.**

**.**

**.**

**3x10 = 30**

**TASK 4:**

Ask user to enter a word/sentence and then print it in reverse using recursive function. You aren’t allowed to use any other character array/string other than the input’s array/string.

**Sample Input:**

**Enter a sentence/word: Hello World**

**Sample Output:**

**dlroW olleH**

**TASK 5:**

Write a recursive program which will print Fibonacci series up to a given range.

**Sample Input:**

**Enter limit: 25**

**Sample Output:**

**0,1,1,2,3,5,8,13,21**