**FAST School of Computing**

**Object Oriented Programming – Spring 2025**

**Software Engineering Department**

**LAB 05**

**Recursion in C++**

**Learning Outcomes**

In this lab you are expected to learn the following:

* Basic Problems in Recursions

**Note:** Plagiarism (from some else or internet) in any 1 question will lead to zero marks in the whole lab task.

**Problem 1:**

**Problem Statement: Counting People Behind You**

You are sitting in a classroom with students arranged in **rows and columns**. Each column has one student per row.

Your teacher asks:  
**"How many students are sitting in the column behind you?"**

**Rules:**

* You can only ask the person **directly behind you**. e.g.: (Input the number of rows in the classroom, and input the row number of the student asking the question)
* If there is no one behind, return **0**.
* Otherwise, ask the person behind you the same question and add **1** to their answer.

**Problem 3: Game of Divisors**  
Two players start with a number N. On each turn, a player picks a **proper divisor** of N, and N is reduced by that amount. The player who cannot make a move loses:

**Recursive Approach:**

Try all valid moves.

If at least one move makes the opponent lose, the current player wins

**Submission Details:**

1. Save each question .cpp file with your roll no and lab number e.g. i22-XXXX\_Lab4.cpp
2. Take screen shot of running test cases of tasks.
3. Zip the .cpp file and screen shots (Do not create .rar file) with roll no and lab no. e.g. i22-XXXX\_Lab4.zip.
4. Submit the zip file on google classroom.