Data Structures and Algorithms — Lab 5

# Objective

* Practice on Recursion

Note: All codes in today’s lab MUST be **RECURSIVE**.

# Lab Task 1

Write a program that takes an input **N** from user and computes the Factorial of **N.** For example, if a user enters N=5, the program should display120 as output.

# Lab Task 2

Write a Program that take computes the sum of first **N** natural numbers. For example, if a user enters 5 as input, the program should display 15 as output (since 5+4+3+2+1 = 15).

# Lab Task 3

Write a program that takes a string (or char \*) as input from user. Write a program to reverse the input string. For example, if a user enters “Pakistan”, your program should display “natsikaP”.

# Lab Task 4

The least common multiple (LCM) of two numbers is the smallest number that is a multiple of both. Write and test a method LCM with the following specification.

PARAMETERS: positive integers j and k

RETURN VALUE: the least common multiple (LCM) of j and k

EXAMPLES: LCM (3, 5) is 15 LCM (6, 8) is 24

# Lab Task 5

Write a recursive code that returns the sum of digits of an input number N. For example, if the input number is 264, the value returned must be 12 (since 2+6+4 = 12).

# Lab Task 6

Write a recursive code that gets a filled integer array and size of that array as input to a value returning function and returns the sum of the values stored in it. Understanding this code is a part of the lab task, therefore, no example is being provided. Hint:

Function prototype would be: **int sumElements (int arr[], int N)** where N is size of the array.