Algorithms and data structures
Labwork 4 - Recursion

Exercise 1 : In this problem, we would like to implement the algorithm to calculate the digit sum of a given natural number that can be used in detecting errors in message transmission or data storage.

For example:

N = 103509, the digit sum = 1 + 0 + 3 + 5 + 0 + 9 = 18.

N = 9512, the digit sum = 9 + 5 + 1 + 2 = 17

- Write a pseudo-code to solve the above problem using Iteration.

- Write a program from the pseudo-code and solve the Problem using Iteration.

- Calculate the complexity. Justify your answer.

- Write a program to solve the Problem using **Recursion** (with Iteration if necessary).

- Calculate the complexity. Justify your answer.

Exercise 2 :

Write a program in C/C++ to enter a natural number n and find all sphenic numbers from 1 to n using **Recursion**. Calculate the complexity of the proposed algorithm. Note: A sphenic number is a product of p*q*r where p, q, and r are three distinct prime numbers. Example: 30 = 2 * 3* 5; 42 = 2*3*7; 66 = 2*3*11