University of Biskra
Mathematics Department
Module: Algorithmics and Data Structures 1
Level : L1 2023/2024

TP N°: 03

Exercice 1 :

1. Write a program in C that displays the multiples table of an integer N,
2. Write a program in C that displays the multiples an integer N which are less than an integer M given by the user.

Exercice 2 :

Write a program in C that calculates the integer division of two integers (A / B) using successive subtractions method.

Exercice 3 :

Consider two positive integers A and B. Write a program in C which calculates the greatest common divisor (PGCD) of A and B using successive subtractions method.

Exercice 4 :

Write a program in C that asks the user to enter an integer and displays it in upside. For example, the user enters 13803 and the algorithm displays 30831.

Note. Use integer division and modulo.

Exercice 5 :

Let i, n and x three integers. Write a program in C that calculates:

1. $\sum_{i=1}^{n} i$
2. $\sum_{i=1}^{n} x^{i}$
3. $\sum_{i=1}^{n} i\,!$

Exercice 6 :

Write a program in C that calculates the N^{th} term of the Fibonacci sequence.

Reminder: The Fibonacci sequence is defined by:

$$\begin{cases} \boldsymbol{F_0 = 0} \\ \boldsymbol{F_1 = 1} \\ \boldsymbol{F_n = F_{n-1} + F_{n-2}}\ , \quad \mathbf{n \geq 2} \end{cases}$$

Exercice 7 : (optional)

Starting from a declared constant integer value, write a program in C that tries to find this constant value which is considered hidden for the user. For this, the user tries to guess by entering an integer value; if the entered value is greater or less than the hidden constant, the algorithm displays: (entered value less than the desired value) or (the entered value superior than the desired value), this process is repeated until the value is found or the user leave the research.

Exercice 8 : (optional)

Write a program in C that displays the first N prime numbers (we take for example: N = 100).

NB. A number is prime, if it is divisible by 1 and itself.