TU857/1 Programming Lab Test #1

Date: Monday, November 27th, 2023 (3.05pm – 4.55pm)

Requirements:

The Fibonacci series is a mathematical series of numbers as follows:

0, 1, 1, 2, 3, 5, 8, 13, 21,…

The Fibonacci series sequence is calculated as: ***The sum of the current number and the previous number produces the next number.*** The first two numbers in the sequence are always 0 and 1.

Write a C program to implement the Fibonacci series. Your program must implement the following:

1. Ask the user to enter the **number of terms** (to a maximum of 20) to be calculated in the Fibonacci series. For example, if the user enters the number 10, your program should calculate the first 10 numbers in the Fibonacci sequence.

2. Using an appropriate array, store the calculated Fibonacci sequence to the n^{th} term (as per part 1 above) in the array.

3. Display all the numbers in the Fibonacci series **up to the n^{th} term** in the array.

4. Your program must continuously run and should only end when the user selects an option to end the program. For example, when you run your program, it may display:

   Welcome to the Fibonacci series program

   Enter your selection:
   1. Enter the number of terms to calculate in the sequence and display
   2. End program

Note: Error checking for valid input is not required.

Submission details:

1. Submission file name: **labtest1.c**
2. Submit your labtest1.c file on Brightspace. This must be submitted on or before 4.55pm today in this lab session.

NB - This is an individual lab test and **NOT** a group one. Do your own work and do not plagiarise your code. Anti-plagiarism software will be used to randomly check submissions. Any submitted code suspected of having been plagiarised, generated using Generative AI tools, etc., will be brought to the attention of the module examiners for specialised checks under the TU Dublin general assessment regulations.

Marking scheme (Rubric):

Table 1 shows the marks allocated for this lab test.

Enter no. of terms	Correctly enter the number of terms to calculate in the Fibonacci sequence (to a **max** of 20).	5%	
Calculate and store the Fibonacci sequence in appropriate array	Calculate and store the sequence to the n^{th} term in an appropriate array.	40%	
Display the calculated Fibonacci sequence	Display the calculated Fibonacci sequence to the n^{th} term.	20%	
Program displays menu and ends gracefully	The program displays the main menu and allows the user to select appropriately, i.e., enter the number of terms OR ends.	10%	
		Sub Total:	**75%**
Commenting	Program Description, Author, Date	5%	
	Good comments throughout code body	10%	
Indentation and Spacing	Correct and consistent indentation and spacing throughout code body	10%	
		Sub Total:	**25%**

Table 1: Marking scheme (Rubric)