Introduction

In this assignment, you will work with recursive functions in C to calculate the Fibonacci sequence. You will implement a recursive function that efficiently computes Fibonacci numbers. Make sure to follow the instructions and requirements for the task.

Assignment Requirements

1. You are only allowed to edit the `solution.h` file.

Fibonacci Sequence using Recursion

Write a C program that includes a recursive function to calculate the Nth term of the Fibonacci sequence. The Fibonacci sequence is defined as follows:

The first two terms, F(0) and F(1), are 0 and 1, respectively. For N > 1, F(N) is the sum of F(N-1) and F(N-2). Your program should take an integer N as input from the user and use a recursive function to calculate and print the Nth term of the Fibonacci sequence.

Requirements:

1. Implement a recursive function, int Fibonacci(int n), which returns the Nth Fibonacci number.
2. Handle the base cases (N = 0 and N = 1) directly in the fibonacci function.
3. Make efficient use of recursion to compute Fibonacci numbers for N greater than 1.

Additional Challenge (Optional):

Implement a memoization technique to optimize the recursive Fibonacci calculation by storing previously computed Fibonacci numbers and reusing them to avoid redundant calculations. This can significantly improve the performance of your program, especially for larger values of N.

Submission Guidelines:

- You are required to submit a well-commented, single C source code file that contains the entire interactive console application.
- Submit the `solution.h` file and any other files required for the assignment by pushing them to your branch on git before the next lession.