PROGRAM TO FIND NTH TERM OF FIBONACCI SERIES (TAIL-RECURSIVE)

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ASSIGNMENT 2

DATA STRUCTURES (CS-403)

2022

**ALGORITHM**

# Step 1. Start

# Step 2. Read index.

# Step 3. Call fibTail(index) and store the returning value in fibNum.

# Step 4. In fibTail(index) call fibTailRecursive(n,a,b) and return the returning value of fibTailRecursive(n,a,b).

# Step 5. In fibTailRecursive(n,a,b):

# If(n==1): return a

# Else: return fibTailRecursive(n-1,b,a+b)

# Step 6. Print fibTail.

# Step 6. Return 0.

# Step 7. End.

// Assignment 2

// Subject: DATA STRUCTURE

// Topic: PROGRAM TO FIND Nth TERM OF FIBONACCI SERIES (TAIL RECURSIVE).

// Submitted By: UMANG KANCHAN (MCA sem-1).

#include <stdio.h>

int fibTailRecursive(int *n*,int *a*,int *b*){

    if(n==1){

        return a;

    }

    return fibTailRecursive(n-1,b,a+b);

}

int fibTail(int *index*)

{

   return fibTailRecursive(*index*,0,1);

}

int main()

{

    int index, fibNum;

    printf("Enter the index:\n");

    scanf("%d", &index);

    fibNum = fibTail(index);

    printf("The number at index %d in the Fibonacci series is %d. \n", index, fibNum);

    return 0;

}

**TEST CASE 1:**

**Enter the index:**

**5**

**The number at index 5 in the Fibonacci series is 3.**

**TEST CASE 2:**

**Enter the index:**

**8**

**The number at index 5 in the Fibonacci series is 13.**