

ASSIGNMENT 2

DATA STRUCTURES (CS-403)

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

SUBMITTED BY: UMANG KANCHAN (MCA SEM-1)

SUBMITTED TO: DR. TIRTHANKAR GAYEN

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.