S.No: 4	Exp. Name: ***Write a C program to implement Fibonacci Search technique***	**Date:2023-04-30**

Aim:

Write a C program to implement **Fibonacci search** technique

Source Code:

FibonacciSearch.c

```c
#include <stdio.h>
#include <conio.h>
int main() {
   int size;
   int *arr, i,x,result=-1;
   printf("Enter the size of an array: ");
   scanf("%d",&size);
   arr = (int*) malloc(size * sizeof(int));
   printf("Enter the %d array elements\n",size);
   for(i = 0; i < size; i++) {
      scanf("%d", &arr[i]);
   }
   printf("Enter the element to be searched: ");
   scanf("%d",&x);
   result = fibonaccianSearch(arr,x,size+1);
   if (result != -1 )
   printf("Element found at index: %d.\n",result);
   else
   printf("Element not found.\n");
   return 0;
}
int min(int x,int y)
{
}
int fibonaccianSearch(int arr[],int x,int n)
{
   int m2=0;
   int m1=1;
   int m=m1+m2;
   while(m<n)
   {
      m2=m1;
      m1=m;
      m=m1+m2;
   }
   int offset=-1;
   while(m>1)
   {
      int i=min(offset+m2,n-1);
      if(arr[i]<x)
      {
         m=m1;
         m1=m2;
         m2=m-m1;
         offset=i;
      }
      else if(arr[i]>x)
      {
         m=m2;
         m1=m1-m2;
         m2=m-m1;
      }
      else
      return i;
   }
   if(m1&arr[offset+1]==x)
   return offset+1;
   return -1;
}
```

Execution Results - All test cases have succeeded!

Test Case - 1

User Output

```
Enter the size of an array:  5
Enter the 5 array elements 3 4 5 6 7
Enter the element to be searched:  3
Element found at index: 0.
```

Test Case - 2

User Output

```
Enter the size of an array:  5
Enter the 5 array elements 3 4 5 6 7
Enter the element to be searched:  4
Element found at index: 1.
```