**NAME:-VIVEK BULANI**

**ROLL NO:-SECOA115**

**ASSIGNMENT NO:-12**

**AIM** :- Write C++ program to store roll numbers of student in array who attended training program in random order. Write function for- a) Searching whether particular student attended training program or not using linear search and sentinel search. b) Searching whether particular student attended training program or not using binary search and Fibonacci search

**PROGRAM:-**

#include<iostream>

using namespace std;

class sort

{

int i,n,j;

public:

float m[50];

void accept()

{

cout<<"enter total students\n";

cin>>n;

cout<<"enter marks of student\n";

for(i=0;i<n;i++)

{

cin>>m[i];

}

}

float getm()

{

return m[50];

}

int getn()

{

return n-1;

}

void display()

{

cout<<"Marks are as follows\n";

for(i=0;i<n;i++)

{

cout<<m[i]<<" ";

}

cout<<endl;

}

int binary\_search()

{

float a;

cout<<"enter no to be search\n";

cin>>a;

int l=0,h=n-1,mid,var=0;

mid=(l+h)/2;

while(l<=h)

{

if(a<m[mid])

{

l=mid+1;

mid=(l+h)/2;

var=0;

}

else if(a>m[mid])

{

h=mid-1;

mid=(l+h)/2;

var=0;

}

else

{

var=1;

break;

}

}

if(var==1)

{

cout<<"elements is present\n";

}

else

cout<<"element is absent\n";

}

void seq\_search()

{

int b=0;

float a;

cout<<"enter no to be search\n";

cin>>a;

for(i=0;i<n;i++)

{

if(a==m[i])

{

b=1;

break;

}

}

if(b==1)

cout<<"element found\n";

else

cout<<"element not found\n";

}

void senti\_search(int k)

{

int i;

for( i=0;i<=n;i++)

{

if(m[i]==k)

break;

}

if(i==n)

cout<<"not present\n";

else

cout<<"present\n";

}

int fibo(int k)

{

if(k==0)

return 0;

if(k==1)

return 1;

else

return (fibo(k-1)+fibo(k-2));

}

int fib\_search(int k)

{

int f1,f2,t,mid,j,f;

j=1;

while(fibo(j)<=n)

{

j++;

}

f=fibo(j);

f1=fibo(j-2);

f2=fibo(j-3);

mid=n-f1+1;

while(k!=m[mid])

{

if(mid<0||k>m[mid])

{

if(f1==1)

return -1;

mid=mid+f2;

f1=f1-f2;

f2=f2-f1;

}

else

{

if(f2==0)

return -1;

mid=mid-f2;

t=f1-f2;

f1=f2;

f2=t;

}

}

return mid;

}

};

int main()

{

sort s1,s2,s3,s4;

s1.accept();

s1.display();

int ch,in,a,temp;

do

{

cout<<"\n1.binary search\n2.sequencial search\n3.sentinal search\n4.fibbonici search\n";

cin>>ch;

switch(ch)

{

case 1:

s1.binary\_search();

break;

case 2:

s1.seq\_search();

break;

case 3:

cout<<"enter no to be search\n";

cin>>a;

s1.senti\_search(a);

s1.display();

break;

case 4:

cout<<"enter no to be search\n";

cin>>a;

temp= s1.fib\_search(a);

if(temp==-1)

cout<<"element not present\n";

else

cout<<"element present\n";

break;

}

cout<<"continue?\nPress 1 to continue\n";

cin>>in;

}while(in==1);

return 0;

}

**OUTPUT:**

enter total students

5

enter marks of student

55 44 34 23

13

Marks are as follows

55 44 34 23 13

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

1

enter no to be search

44

elements is present

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

1

enter no to be search

22

element is absent

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

2

enter no to be search

22

element not found

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

2

enter no to be search

23

element found

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

3

enter no to be search

23

present

Marks are as follows

55 44 34 23 13

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

4

enter no to be search

23

element present

continue?

Press 1 to continue

1

1.binary search

2.sequencial search

3.sentinal search

4.fibbonici search

4

enter no to be search

45

element not present

continue?

Press 1 to continue

0