**RollNo-** 2019329

**Name-** Nikita Arora

**Q- Write a menu driven program of Searching algorithms (Binary Search and Linear Search ) using classes and templates.**

#include<iostream>

using namespace std;

template <class t>

class Searching

{

private:

t ar[10];

int n,x;

public:

void input();

int binarySearch();

int linearSearch();

};

template <class t>

void Searching<t>:: input()

{

cout<<"Enter the size of the array: ";

cin>>n;

cout<<"Enter the elements of the array: "<<endl;

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

cin>>ar[i];

cout<<"Enter the element to search: "<<endl;

cin>>x;

}

template <class t>

int Searching<t>:: binarySearch()

{

int first=0;

int last=n-1;

while(first<=last)

{

int mid=(first+last)/2;

if(ar[mid]==x)

return mid;

else if (x>ar[mid])

first=mid+1;

else

last=mid-1;

}

return -1;

}

template <class t>

int Searching<t>:: linearSearch()

{

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

{

if(x==ar[i])

return i;

}

return -1;

}

int main()

{

Searching <int> o1;

o1.input();

int s,a,b;

char ch='y';

do

{

cout<<"1.Binary Search "<<endl;

cout<<"2.Linear Search "<<endl;

cout<<"Enter your choice "<<endl;

cin>>s;

switch(s)

{

case 1: a=o1.binarySearch();

if(a!=-1)

cout<<"Element Found at "<<a+1;

else

cout<<"Element not Found ";

break;

case 2: b=o1.linearSearch();

if(b!=-1)

cout<<"Element Found at "<<b+1;

else

cout<<"Element not Found ";

break;

}

cout<<"\n Do you want to continue ";

cin>>ch;

}while(ch=='y');

return 0;

}

