

Assignment No:- 4

Assignment Name:- Program Write a program for searching element in given array using binary search.

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//BINARY
#include<iostream.h>
#include<conio.h>
#include<stdlib.h>
#include<time.h>
class LIST
{
    int n,*A;
public:
    LIST(int);
    void SORT();
    void BIN_SRCH(int,int &);
    void BIN_SRCH1(int,int &);
    void DISPLAY();
};
LIST::LIST(int par)
{
    n=par;
    A=new int[n+1];
    for(int i=1;i<=n;i++)
        A[i]=random(1000);
}
void LIST::BIN_SRCH(int x,int &j)
{
    int low,high,mid;
    low=1;high=n;
    while(low<=high)
    {
        mid=(low+high)/2;
        if(x < A[mid])
            high=mid-1;
        else
            if(x > A[mid])
                low=mid+1;
            else
            {
                j=mid;
                return;
            }
    }
}
void LIST::BIN_SRCH1(int x,int &j)
{
    int low,high,mid;
    low=1;high=n+1;
    while(low<high-1)
    {
        mid=(low+high)/2;
        if(x < A[mid])
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        high=mid;
    else
        low=mid;
    }
    if(x==A[low])
        j=low;
    else
        j=0;
}
void LIST::DISPLAY()
{
    cout<<"\n List ele are :\n";
    for(int i=1;i<=n;i++)
        cout<<A[i]<<" ";
}
void LIST::SORT()
{
    for(int i=1;i<=n-1;i++)
        for(int j=1;j<=n-i;j++)
            if( A[j]>A[j+1] )
            {
                int t=A[j];A[j]=A[j+1];A[j+1]=t;
            }
}
void main()
{
    Timer T;
    int x,size,pos;
    cout<<"\nEnter size of list : ";
    cin>>size;
    LIST obj(size);
    clrscr();
    obj.DISPLAY();
    obj.SORT();
    obj.DISPLAY();
    cout<<"\nEnter ele to srch : ";
    cin>>x;
    T.start();
    obj.BIN_SRCH1(x,pos);
    T.stop();
    if(pos)
        cout<<"\nele "<<x<<" is found at "<<pos;
    else
        cout<<"\nele not found ";
    cout<<"\nTime taken to search is "<<T.time();
    getch();
}

```