S.No: 4	Exp. Name: ***Search for an element in a given list of elements using Binary Search.***	Date:2023-09-13

Aim:

Write a program to search for an element in a given list of elements using **Binary Search** mechanism.

Source Code:

q36414/BinarySearch.java

```
package q36414;
import java.util.*;
class BinarySearchDemo
{
   public static int Bs(int high,int key,int a[],int low)
   {
      int mid;
      while(low<=high)
      {
         mid=(low+high)/2;
         if(a[mid]==key)
         {
            return mid;
         }
         else if(a[mid]<key)
         {
            low=mid+1;
         }
         else
         {
               high=mid-1;
         }
      }
      return -1;
   }
 }
 class BinarySearch
 {
   public static void main(String args[])
   {
         Scanner s=new Scanner(System.in);
         int i,n,low,high,key,pos=-1;
         System.out.print("Enter the number of elements: ");
         n=s.nextInt();
         int a[]=new int[n];
         System.out.println("Enter the sorted elements:");
         for(i=0;i<n;i++)
         {
            a[i]=s.nextInt();
         }
         low=0;
         high=n-1;
         System.out.print("Enter the element to search for: ");
         key = s.nextInt();
         pos = BinarySearchDemo.Bs(high,key,a,low);
```

```
        if(pos==-1)
        {
           System.out.println("Element "+key+" not found in the list.");
        }
        else
        {
           System.out.println("Element "+key+" found at index "+pos);
        }
    }
}
```


Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter the number of elements: 5
Enter the sorted elements: 10 20 30 40 50
Enter the element to search for: 30
Element 30 found at index 2

Test Case - 2
User Output
Enter the number of elements: 8
Enter the sorted elements: 2 4 6 8 10 12 14 16
Enter the element to search for: 9
Element 9 not found in the list.