S.No: 4	Exp. Name: ***Search for an element in a given list of elements using Binary Search.***	Date:2023-09-14

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 BinarySearch
{
   public static void main(String args[])
   {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter the number of elements: ");
      int n = sc.nextInt();
      int a[] = new int[n];
      System.out.println("Enter the sorted elements:");
      for(int i=0;i<n;i++)
      {
         a[i]=sc.nextInt();
      }
      System.out.print("Enter the element to search for: ");
      int key=sc.nextInt();
      int low=0,high=n-1,mid;
      while(low<=high)
      {
         mid = (low+high)/2;
         if(key==a[mid])
         {
            System.out.println("Element "+key+" found at index "+mid);
            break;
         }
         else if(key>a[mid])
         {
            low = mid+1;
         }
         else
         {
            high = mid-1;
         }
         if(low>high)
         {
            System.out.println("Element "+key+" not found in the list.");
         }
      }
   }
}
```

Execution Results - All test cases have succeeded!

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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.