Aim:

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

Source Code:

q36414/BinarySearch.java

```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!

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.