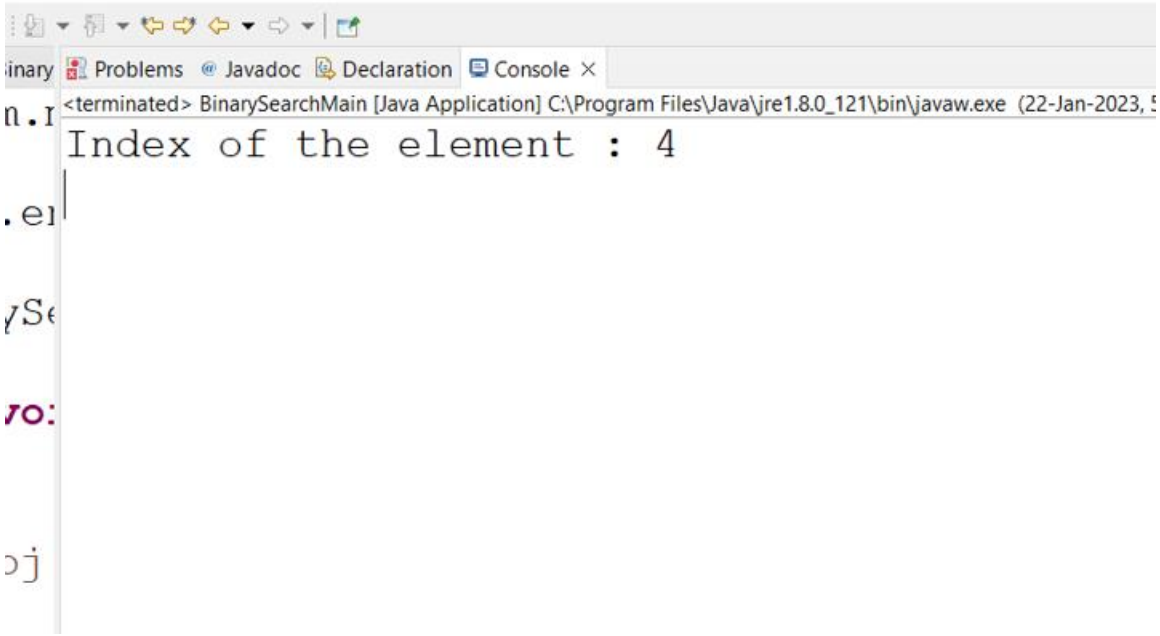
Q)1

```
package com.labexam.entity;

public class BinarySearch {

	public int search(int arr[], int start, int end, int element) {

		if(start == end) {
			if(arr[start] == element)
				return start;
			else
				return -1;
		}

		int mid = (start + end) / 2;

		if (element == arr[mid])
			return mid;

		if (element > arr[mid])
			return search(arr, (mid + 1), end, element);
		else
			return search(arr, start, (mid - 1), element);
	}

}
```

```
package com.labexam.main;

import com.labexam.entity.BinarySearch;

public class BinarySearchMain {

	public static void main(String[] args)
	{

	BinarySearch obj = new BinarySearch();

	int arr[] = {10,25,42,55,64,77,86,99};

	int n = arr.length - 1;
	int element = 64;

	System.out.println("Index of the element : "+ obj.search(arr, 0, n,
element));

	}
}
```



Q)2

```
package com.labexam.entity;

public class BinarySearchTree {

	class Node {
		int key;
		Node left, right;

		public Node(int item)
		{
			key = item;
			left = right = null;
		}
	}

	Node root;

	public BinarySearchTree(){
		root = null;
	}

	BinarySearchTree(int value){
		root = new Node(value);
```

```
    }


    public void insert(int key){
        root = insertRec(root, key);
    }

    public Node search(Node root, int key){

   if (root==null || root.key==key)
       return root;


   if (root.key < key)
      return search(root.right, key);

   return search(root.left, key);
}


    Node insertRec(Node root, int key){

        if (root == null) {
            root = new Node(key);
            return root;
        }

        else if (key < root.key)
            root.left = insertRec(root.left, key);
        else if (key > root.key)
            root.right = insertRec(root.right, key);

        return root;
    }


    public void postorder(){
        postorderRec(root);
    }

    public void postorderRec(Node root)
    {
        if (root != null) {
            postorderRec(root.left);
            postorderRec(root.right);
            System.out.println(root.key);

        }
    }

}
```

```java
package com.labexam.main;

import com.labexam.entity.BinarySearchTree;

public class BinarySearchTreeMain {

	public static void main(String[] args) {


		BinarySearchTree tree = new BinarySearchTree();


		tree.insert(20);
		tree.insert(15);
		tree.insert(75);
		tree.insert(44);
		tree.insert(19);
		tree.insert(88);
		tree.insert(83);
		tree.insert(3);

		tree.postorder();

	}

}
```