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LAB EXAM

DATA STRUCTURE AND ALGORITHMS

1. Write a Java program to

a. Perform binary search operation

```
package com.Binaryprgm;

public class BinarySearch {
     public static void binarySearch(int arr[], int first,
int last, int key){
             int mid = (first + last)/2;
             while( first <= last ){
                if ( arr[mid] < key ){
                  first = mid + 1;
                }else if ( arr[mid] == key ){
                  System.out.println("Element is found at
index: " + mid);
                  break;
                }else{
                   last = mid - 1;
                }
                mid = (first + last)/2;
             }
             if ( first > last ){
                System.out.println("Element is not found!");
             }
          }
          public static void main(String args[]){
                 int arr[] = {10,20,30,40,50};
                 int key = 30;
                 int last=arr.length-1;
                 binarySearch(arr,0,last,key);
          }
        }
```

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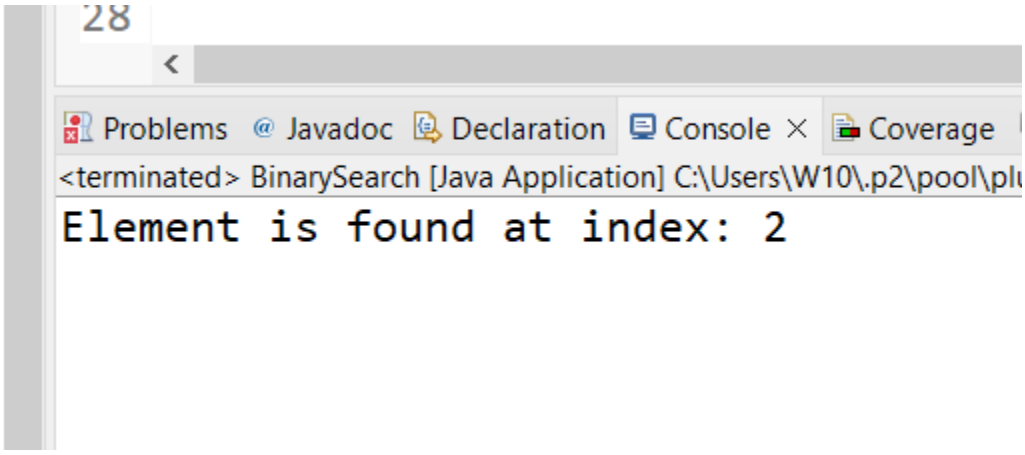

b. Execute tree traversal in postorder

```
package com.postorder;

public class Node {
    public int value;
    public Node left, right;

    public Node(int element)
    {
        value = element;
        left = right = null;
    }
}
```

```
package com.postorder;

public class PostorderTraversal {
     Node root;

    PostorderTraversal() { root = null; }

    void traversePostorder(Node node)
    {
```

```
        if (node == null)
            return;
        traversePostorder(node.left);
        traversePostorder(node.right);
        System.out.print(node.value + " ");
    }

    void traversePostorder() { traversePostorder(root); }

    public static void main(String args[])
    {
        PostorderTraversal pt = new PostorderTraversal();
        pt.root = new Node(36);
        pt.root.left = new Node(26);
        pt.root.right = new Node(46);
        pt.root.left.left = new Node(21);
        pt.root.left.right = new Node(31);
        pt.root.left.left.left = new Node(11);
        pt.root.left.left.right = new Node(24);
        pt.root.right.left = new Node(41);
        pt.root.right.right = new Node(56);
        pt.root.right.right.left = new Node(51);
        pt.root.right.right.right = new Node(66);

        System.out.println();
        System.out.println("The Postorder traversal of given
binary tree is - ");
        pt.traversePostorder();
        System.out.println();
    }

}
```

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