

B1

```
import
java.util.ArrayList;

import java.util.Collections;

import java.util.Scanner;

public class Array_value{

    Scanner sc = new Scanner(System.in);

    private ArrayList<Integer> arrayList;

    public Array_value() {

        this.arrayList = new ArrayList<Integer>();

    }

    public void GetValue(){

        System.out.print("Nhập Số lượng phần tử: ");

        int n = sc.nextInt();

        for (int i = 0; i < n; i++){

            this.arrayList.add(sc.nextInt());

        }

    }

}
```

```
public void SortUp(){  
    Collections.sort(this.arrayList);  
}
```

```
public void SortDown(){  
    Collections.sort(this.arrayList);  
    Collections.reverse(this.arrayList);  
}
```

```
public void PrintArray(){  
    for (int i = 0; i < this.arrayList.size() ; i++) {  
  
System.out.print(this.arrayList.get(i).toString()+" ");  
    }  
}
```

```
public static void main(String[] args) {  
    Array_value arr = new Array_value();  
    arr.GetValue();  
  
    System.out.println("Xap xep tang");  
    arr.SortUp();  
}
```

```

arr.PrintArray();

System.out.println("\nXap xep Giam");
arr.SortDown();
arr.PrintArray();
}
}

```

B2

```

public class
CayTimKiemNhiPhan
{

```

```

    public int Key;
    public CayTimKiemNhiPhan left,right;

```

```

    public CayTimKiemNhiPhan(int key){
        this.Key = key;
        this.left = null;
        this.right = null;
    }

```

```

    public static CayTimKiemNhiPhan
    addNode(CayTimKiemNhiPhan root,int node){
        if (root == null) {

```

```
        root = new CayTimKiemNhiPhan(node);  
        return root;  
    }
```

```
    if (root.Key > node){  
        root.left = addNode(root.left,node);  
    }else if (root.Key < node){  
        root.right = addNode(root.right,node);  
    }  
    return root;  
}
```

//Duyệt trung thứ tự (In-order Traversal)

```
public void InOrDerTraversal  
(CayTimKiemNhiPhan Node){
```

```
    if (Node != null){  
        InOrDerTraversal(Node.left);  
        System.out.print(Node.Key+" ");  
        InOrDerTraversal(Node.right);  
    }  
}
```

// Duyệt tiền thứ tự (Pre-order Traversal)

```

    public void PreOrDerTraversal
(CayTimKiemNhiPhan Node){
        if (Node != null){
            System.out.print(Node.Key+" ");
            PreOrDerTraversal(Node.left);
            PreOrDerTraversal(Node.right);
        }
    }

```

// Duyệt hậu thứ tự (Post-order Traversal)

```

    public void PostOrDerTraversal
(CayTimKiemNhiPhan Node){
        if (Node != null){
            PostOrDerTraversal(Node.left);
            PostOrDerTraversal(Node.right);
            System.out.print(Node.Key+" ");
        }
    }

```

```

    public static void main(String[] args) {
        CayTimKiemNhiPhan Node = new
CayTimKiemNhiPhan(25);

```

```

        Node = addNode(Node, 15);

```

```
Node = addNode(Node, 50);  
Node = addNode(Node, 10);  
Node = addNode(Node, 22);  
Node = addNode(Node, 35);  
Node = addNode(Node, 70);  
Node = addNode(Node, 4);  
Node = addNode(Node, 12);  
Node = addNode(Node, 18);  
Node = addNode(Node, 24);  
Node = addNode(Node, 31);  
Node = addNode(Node, 44);  
Node = addNode(Node, 66);  
Node = addNode(Node, 90);
```

```
System.out.print("\nDuyệt tiền thứ tự: ");  
Node.PreOrderTraversal(Node);  
System.out.print("\nDuyệt Trung thứ tự: ");  
Node.InOrderTraversal(Node);  
System.out.print("\nDuyệt hậu thứ tự: ");  
Node.PostOrderTraversal(Node);
```

```
}
```

```
}
```

