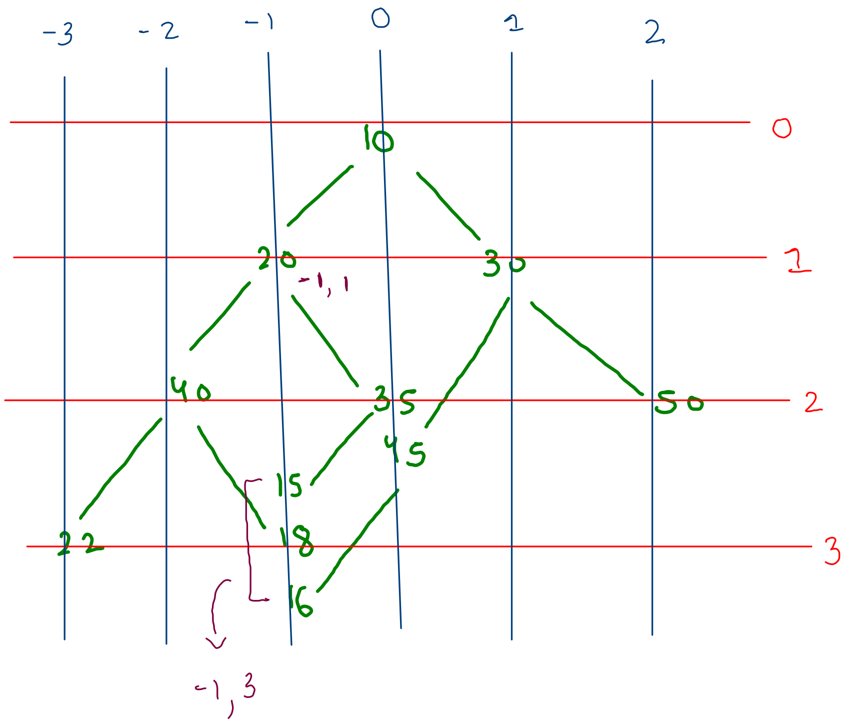
987. Vertical Order Traversal of a Binary Tree

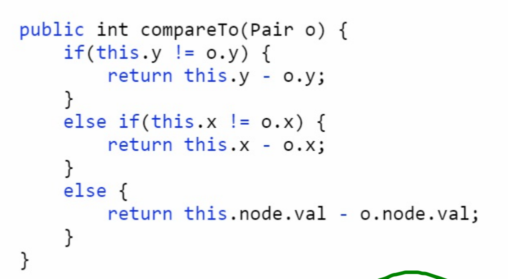
vot 1 : 20 18 15 16

vot 2 : 20 15 16 18

PQ, Pair : x, y, node

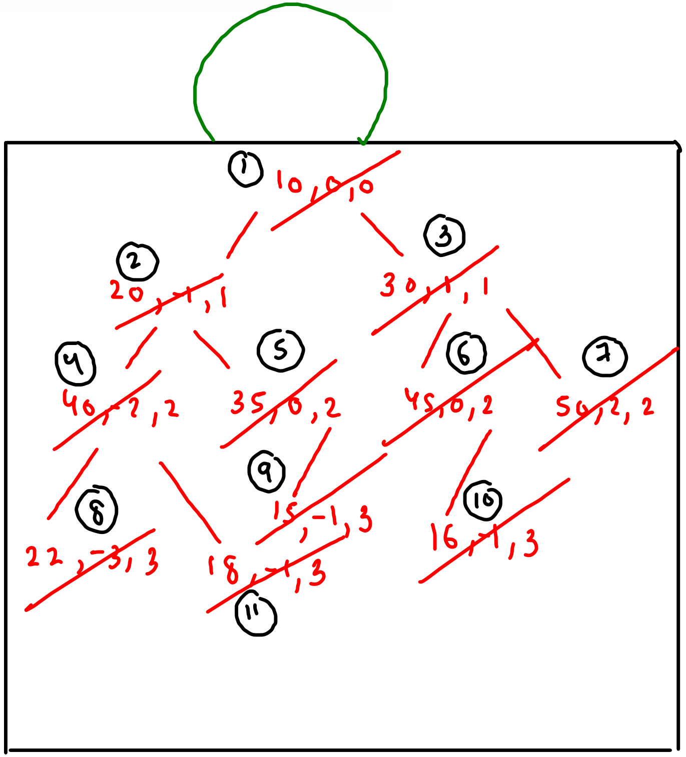
(i) y
(ii) x
(iii) value

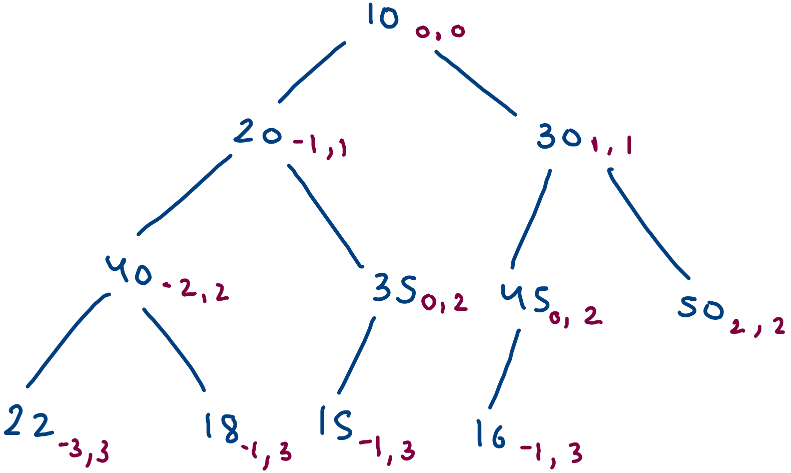




```
public int compareTo(Pair o) {
    if(this.y != o.y) {
        return this.y - o.y;
    }
    else if(this.x != o.x) {
        return this.x - o.x;
    }
    else {
        return this.node.val - o.node.val;
    }
}
```

rwa





x, y

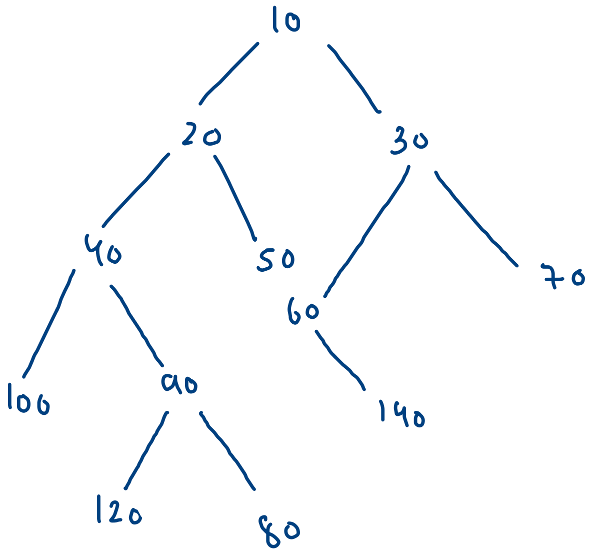
0	->	10, 35, 45
-1	->	20, 15, 16, 18
1	->	30
-2	->	40
2	->	50
-3	->	22

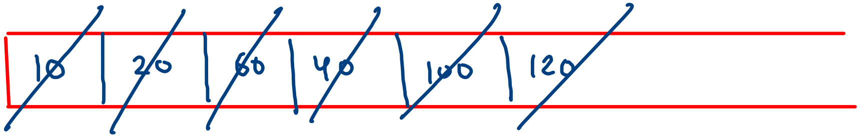
node, x, y

Diagonal Order Of A Binarytree

comp : node and its right branch

each diag: comps





~~10~~	~~20~~	~~60~~	~~40~~	~~100~~	~~120~~

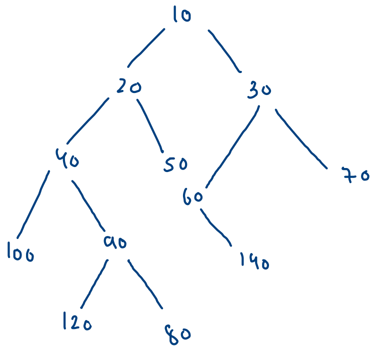
c = 2

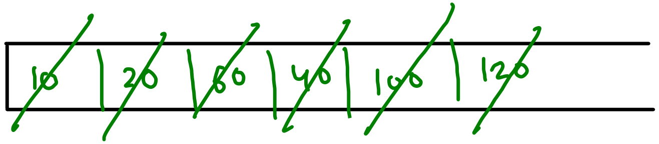
0 → 10 30 70

1 → 20 50 60 140

2 → 40 90 80

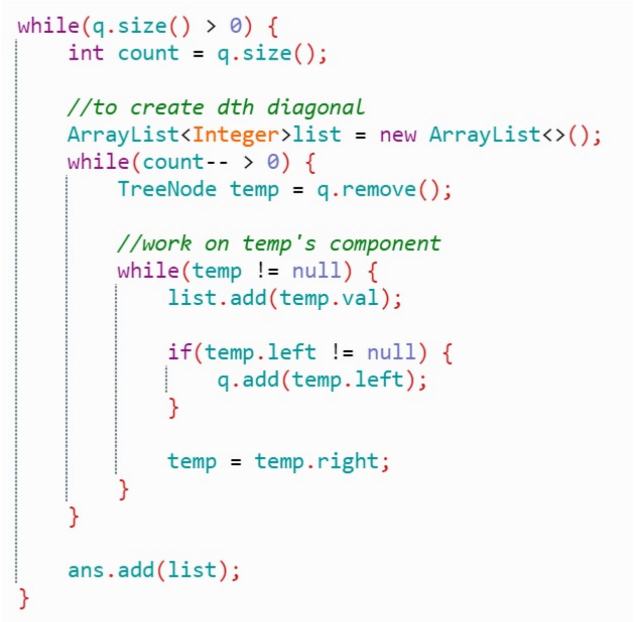
3 → 100 120





c = 2

temp =



```
while(q.size() > 0) {
    int count = q.size();

    //to create dth diagonal
    ArrayList<Integer>list = new ArrayList<>();
    while(count-- > 0) {
        TreeNode temp = q.remove();

        //work on temp's component
        while(temp != null) {
            list.add(temp.val);

            if(temp.left != null) {
                q.add(temp.left);
            }

            temp = temp.right;
        }
    }

    ans.add(list);
}
```

0 → 10 30 70

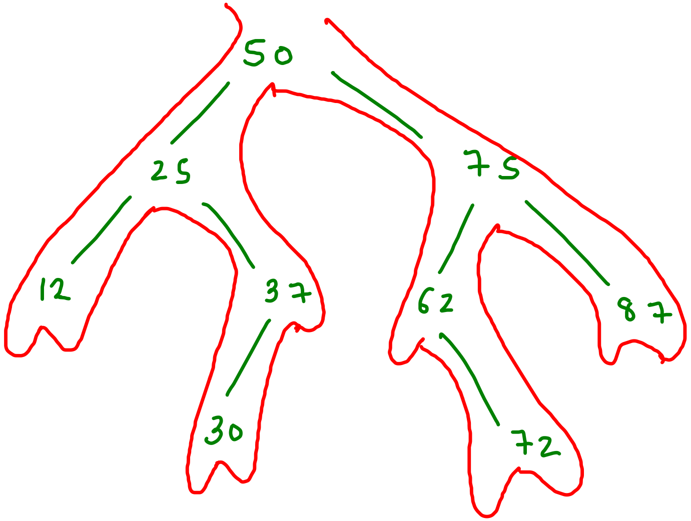
1 → 20 50 60 140

2 → 40 90 80

3 → 100 120

98. Validate Binary Search Tree

prev : inorder predecessor
of current

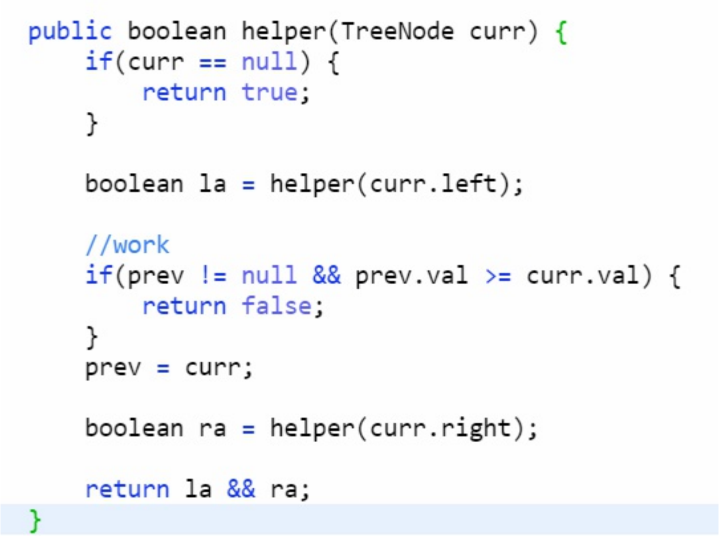


12 25 30 37 50 62 72 75 87

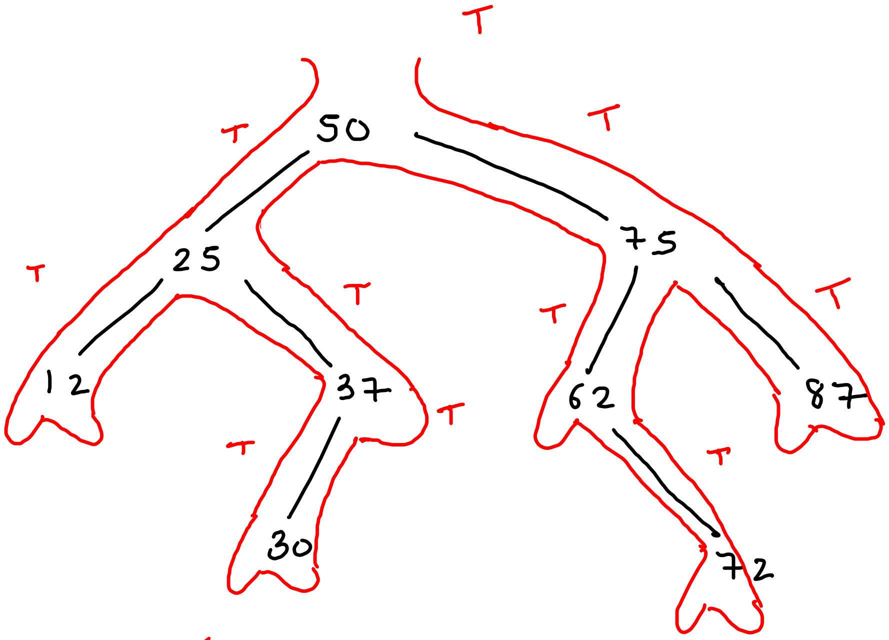
prev = ~~null~~ ~~12~~ ~~25~~ ~~30~~ ~~37~~ ~~50~~ ~~60~~ ~~72~~ ~~75~~ 87

space allowed : recursion

```
call (c.left) ;
[work
 p = c;
call (c.right) ;
```

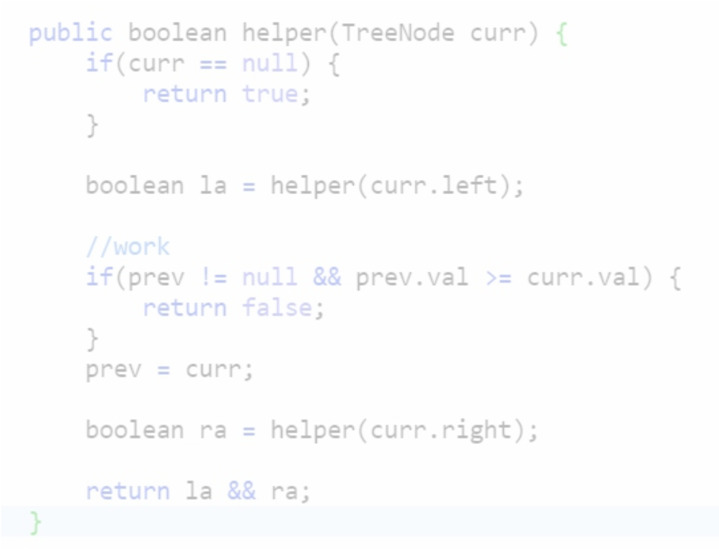


```
public boolean helper(TreeNode curr) {
    if(curr == null) {
        return true;
    }

    boolean la = helper(curr.left);

    //work
    if(prev != null && prev.val >= curr.val) {
        return false;
    }
    prev = curr;

    boolean ra = helper(curr.right);

    return la && ra;
}
```

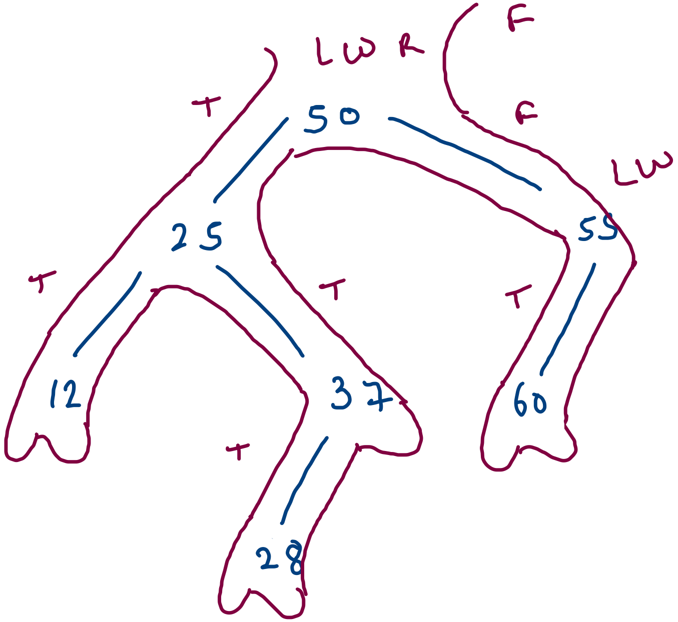


prev = ~~null~~ ~~12~~ ~~25~~ ~~30~~ ~~37~~ ~~50~~ ~~62~~ ~~72~~ ~~75~~ 87

12 25 30 37 50 62 72 75 87



```
public boolean helper(TreeNode curr) {
    if(curr == null) {
        return true;
    }

    boolean la = helper(curr.left);

    //work
    if(prev != null && prev.val >= curr.val) {
        return false;
    }
    prev = curr;

    boolean ra = helper(curr.right);

    return la && ra;
}
```



prew = ~~null~~ ~~12~~ ~~25~~ ~~28~~ ~~37~~ ~~50~~ 60

12 25 28 37 50 60 55

p c