Experiment 6

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Branch: CSE **Section/Group: 640-B**
Semester: 6 **Date of Performance:**
Subject Name: AP LAB-II **Subject Code: 22CSP-351**

1. Aim:

- **Maximum Depth of Binary Tree**
- **Validate Binary Search Tree**
- **Symmetric Tree**

2. Implementation/Code:

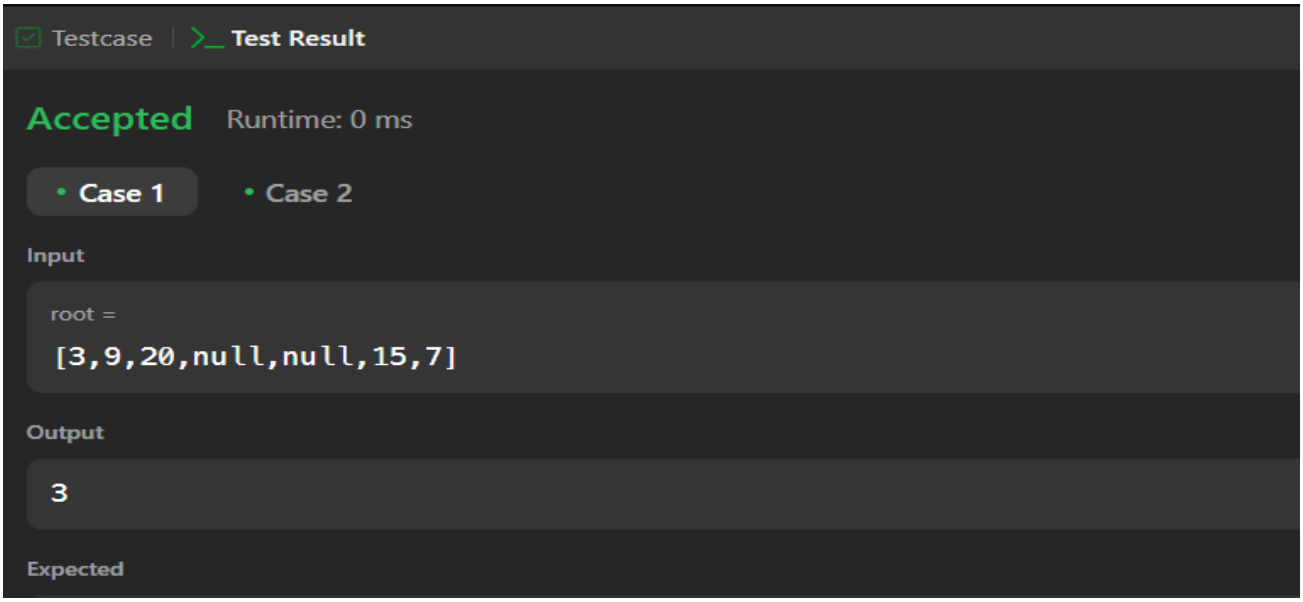
```
class Solution {

  public int maxDepth(TreeNode
      root) {

    if (root == null)

      return 0;

    return 1 +
      Math.max(maxDepth(root.left
      ), maxDepth(root.right));

  }

      }
```

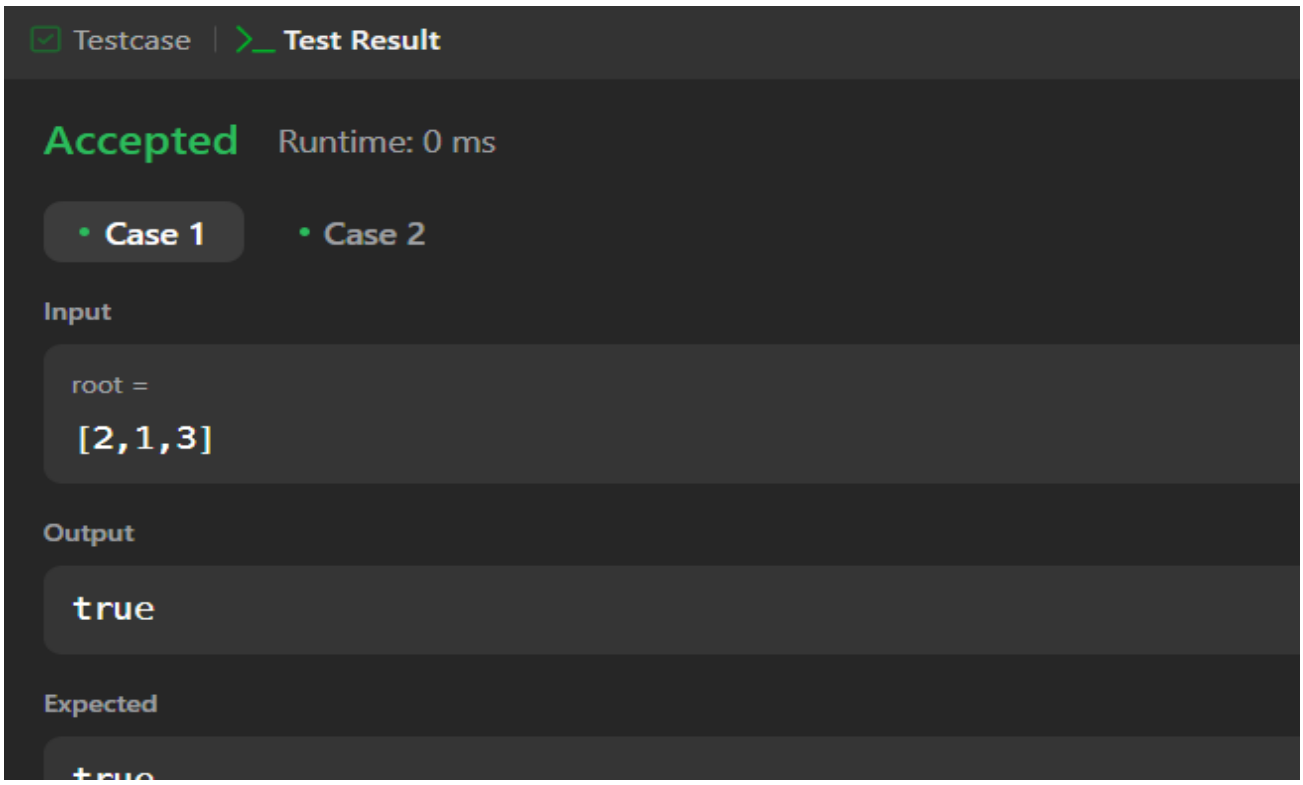
```
class Solution {

  public boolean
      isValidBST(TreeNode root) {

    return isValidBST(root, null,
      null);

  }
```

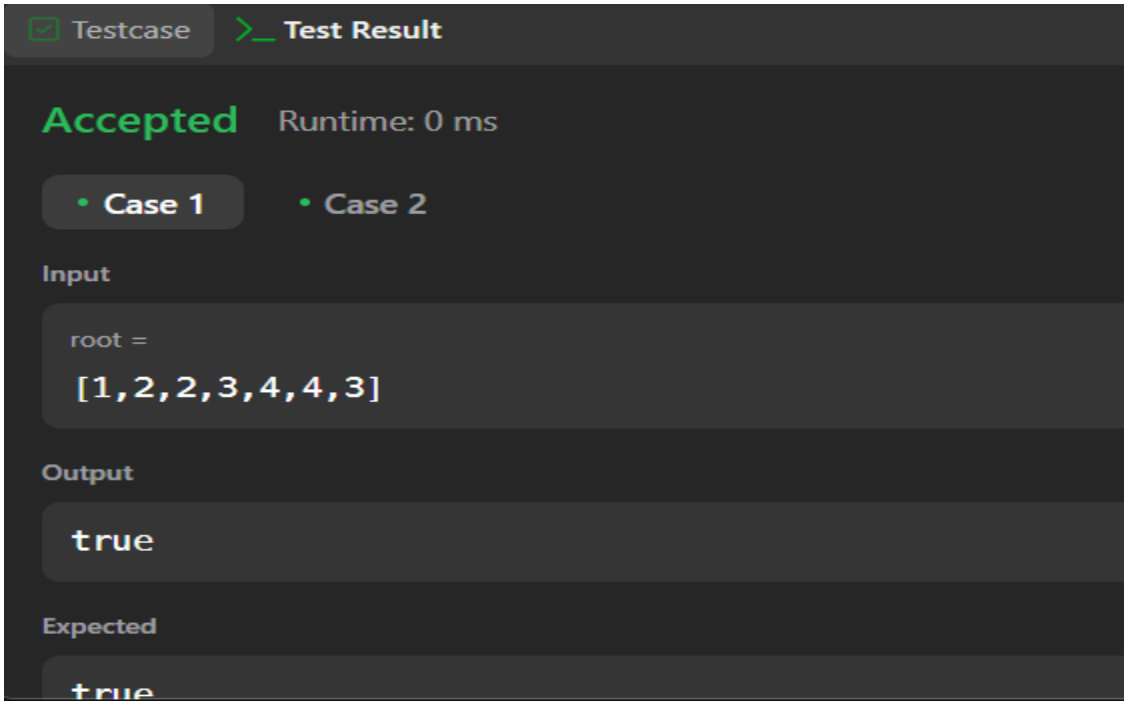
```
  private boolean
      isValidBST(TreeNode root,
      TreeNode minNode,
      TreeNode maxNode) {

    if (root == null)

      return true;

    if (minNode != null &&
      root.val <= minNode.val)

      return false;

    if (maxNode != null &&
      root.val >= maxNode.val)

      return false;


    return                              //

       isValidBST(root.left,
      minNode, root) && //

       isValidBST(root.right, root,
      maxNode);

  }

      }



class Solution {

  public boolean
      isSymmetric(TreeNode root)
      {

    return isSymmetric(root, root);

  }


  private boolean
      isSymmetric(TreeNode p,
```

```
    TreeNode q) {
  if (p == null || q == null)
    return p == q;

  return p.val == q.val &&
    isSymmetric(p.left, q.right)
    && isSymmetric(p.right,
    q.left);
}
  }
```

3. Output:




Testcase
Test Result
Accepted
Runtime: 0 ms
Case 1
Case 2
Input
root =
[2,1,3]
Output
true
Expected
true


Testcase
Test Result
Accepted
Runtime: 0 ms
Case 1
Case 2
Input
root =
[1,2,2,3,4,4,3]
Output
true
Expected
true

4. **Learning Outcome:**
   - Learning the concepts of Tree.
   - Trying some easy to medium level problem of trees.