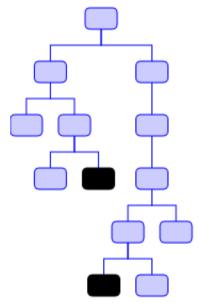


Diameter of Tree

The *diameter* of a tree is the **number of nodes** on the longest path between two leaves in the tree. The diagram below shows a tree with diameter nine, the leaves that form the ends of a longest path are shaded (note that there is more than one path in each tree of length nine, but no path longer than



nine nodes).

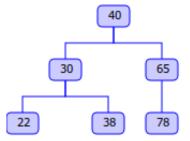
In particular, note that the diameter of a tree *T* is the largest of the following quantities:

- the diameter of T's left subtree
- the diameter of T's right subtree
- the longest path between leaves that goes through the root of *T* Given the root node of the tree, return the diameter of the tree

Sample Test Cases:

Input #00:

Consider the tree:



Output #00:

5

Explanation:

The diameter of the tree is 5

YOUR ANSWER

```
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                                     Java
                                                              Ö
 1 ★import java.io.*;
    import java.util.*;
    import java.text.*;
    import java.math.*;
    import java.util.regex.*;
 5
 6
7
    public class Solution {
 9 ♥ private static class Node {
           Node left, right;
10
11
           int data;
           Node(int newData) {
12 ▼
13
                left = right = null;
14
                data = newData;
15
           }
16
    }
17
18 → private static Node insert(Node node, int data) {
19 ▼
           if (node==null){
20
                node = new Node(data);
21
22 🔻
           else {
                if (data < node.data) {</pre>
23 🔻
                    node.left = insert(node.left, data);
```

```
25
               }
26
               else {
27
                    node.right = insert(node.right, data);
28
               }
29
           }
30
           return(node);
31
       }
32
33 ▼ private static Node addRandomElement(Node node, int data,
    int index){
34 ▼
           if (node==null){
35
               node = new Node(data);
36
           }
           else {
37 ▼
38
                if (index <= 2) {
39
                    node.left = addRandomElement(node.left,
    data, index);
40
41 ▼
               else {
42
                    node.right = addRandomElement(node.right,
    data, index);
43
44
45
           }
46
           return(node);
47
       }
48
49 ▼ static int diameterOfTree(Node root) {
      return diameterOfTreeHelper(root).diameter;
50
51
    }
52
53 ▼ static Pair diameterOfTreeHelper(Node root) {
      if (root == null) {
55
        return new Pair(0,0);
56
      }
      Node L = root.left;
57
      Node R = root.right;
58
59
      Pair LP = diameterOfTreeHelper(L);
      Pair RP = diameterOfTreeHelper(R);
60
      int height = Math.max(LP.height+1, RP.height+1);
61
      int candidate3 = LP.height + RP.height + 1;
62
63
      int diameter = Math.max(candidate3,
    Math.max(LP.diameter, RP.diameter));
      return new Pair(height, diameter);
64
65
```

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Sample Test

00:18:43 to test end

```
78
        79
               Node _root;
            int root i=0, root cnt = 0, root num = 0;
        80
        81
                root = null;
        82
               int isBst = in.nextInt();
        83
                    root cnt = in.nextInt();
1
        84 \forall for(root i = 0; root i < root cnt; root i++){
                   root num = in.nextInt();
        85
2
        86
                   if( isBst == 0 ){
                                                                 root =
            addRandomElement( root, root num, root i);
        87 🔻
                     } else {
                root = insert( root, root num);
        88
        89
                       }
        90
                  }
        91
                 bw.write(String.valueOf(diameterOfTree(_root)));
        92
        93
                 bw.newLine();
        94
                 bw.close();
        95
               return;
        96
             }
        97
        98
                                                            Line: 71 Col: 18
```

☐ Test against custom input

Run Code

Submit code & Continue

L Download sample testcases The input/output files have Unix line endings. Do not use Notepad to edit them on windows.

Status: Compiled successfully. All available test cases passed!

Testcase 1: Success

Your Output

Output hidden

Testcase 2: Success

Your Output

5

Expected Output

5

Testcase 3: Success

Your Output

Output hidden

Testcase 4: Success

Your Output

Output hidden

Testcase 5: Success

Your Output

Output hidden

Testcase 6: Success

Your Output

Sample Test :: powered by HackerRank Output hidden **Testcase 7: Success Your Output** Output hidden **Testcase 8: Success Your Output** Output hidden **Testcase 9: Success Your Output** Output hidden **Testcase 10: Success Your Output** Output hidden **Testcase 11: Success Your Output** Output hidden **Testcase 12: Success Your Output** Output hidden

Testcase 13: Success

Your Output

Output hidden

Testcase 14: Success
Your Output

Output hidden

Testcase 15: Success
Your Output

Output hidden

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