

Prompt	Scratchpad	Our Solution(s)	Video Explanation	Run Code
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Solution 1	Solution 2	Solution 3	Solution 4
<pre>1  # Copyright © 2020 AlgoExpert, LLC. All rights reserved. 2 3  # Average case: when the tree is balanced 4  # O(n) time   O(n) space - where n is the number of nodes in the Binary Tree 5  ▾ def allKindsOfNodeDepths(root): 6      nodeCounts = {} 7      addNodeCounts(root, nodeCounts) 8      nodeDepths = {} 9      addNodeDepths(root, nodeDepths, nodeCounts) 10     return sumAllNodeDepths(root, nodeDepths) 11 12 13  ▾ def sumAllNodeDepths(node, nodeDepths): 14  ▾     if node is None: 15         return 0 16     return sumAllNodeDepths(node.left, nodeDepths) + sumAllNodeDepths(node.right, nodeDepths) + nodeDepths[node] 17 18 19  ▾ def addNodeDepths(node, nodeDepths, nodeCounts): 20     nodeDepths[node] = 0 21  ▾     if node.left is not None: 22         addNodeDepths(node.left, nodeDepths, nodeCounts) 23         nodeDepths[node] += nodeDepths[node.left] + nodeCounts[node.left] 24  ▾     if node.right is not None: 25         addNodeDepths(node.right, nodeDepths, nodeCounts) 26         nodeDepths[node] += nodeDepths[node.right] + nodeCounts[node.right] 27 28 29  ▾ def addNodeCounts(node, nodeCounts): 30     nodeCounts[node] = 1 31  ▾     if node.left is not None: 32         addNodeCounts(node.left, nodeCounts) 33         nodeCounts[node] += nodeCounts[node.left] 34  ▾     if node.right is not None: 35         addNodeCounts(node.right, nodeCounts) 36         nodeCounts[node] += nodeCounts[node.right] 37 38 39  # This is the class of the input binary tree. 40  ▾ class BinaryTree: 41  ▾     def __init__(self, value): 42         self.value = value 43         self.left = None 44         self.right = None 45</pre>			

