

Solution 1Solution 2

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 #include <vector>
4 using namespace std;
5
6 class BinaryTree {
7 public:
8     int value;
9     BinaryTree *left = NULL;
10    BinaryTree *right = NULL;
11
12    BinaryTree(int value);
13 };
14
15 vector<BinaryTree *> getNodesInOrder(BinaryTree *tree,
16                                     vector<BinaryTree *> *array);
17
18 // O(n) time | O(n) space - where n is the number of nodes in the Binary Tree
19 BinaryTree *flattenBinaryTree(BinaryTree *root) {
20     vector<BinaryTree *> inOrderNodes =
21         getNodesInOrder(root, new vector<BinaryTree *>{});
22     for (int i = 0; i < inOrderNodes.size() - 1; i++) {
23         BinaryTree *leftNode = inOrderNodes[i];
24         BinaryTree *rightNode = inOrderNodes[i + 1];
25         leftNode->right = rightNode;
26         rightNode->left = leftNode;
27     }
28     return inOrderNodes[0];
29 }
30
31 vector<BinaryTree *> getNodesInOrder(BinaryTree *tree,
32                                     vector<BinaryTree *> *array) {
33     if (tree != NULL) {
34         getNodesInOrder(tree->left, array);
35         array->push_back(tree);
36         getNodesInOrder(tree->right, array);
37     }
38     return *array;
39 }
40
```

