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1  """
2  CS241 Homework 08
3  Written by Chad Macbeth
4  """
5
6  class TreeNode:
7      """
8      This class holds a basic binary tree node
9      For this assignment, you should not need to change the class.
10     """
11     def __init__(self, data=""):
12         self.data = data
13         self.left = None
14         self.right = None
15
16     def construct_tree():
17         """
18         This function constructs a simple balanced binary search tree.
19         Normally, we would add functions to our tree to be able to automatically insert
20         the values into the correct places, but for this assignment, this
21         function will simply construct it manually.
22         :return:
23         """
24
25         # You should not need to change anything here
26         root = TreeNode("50")
27
28         root.left = TreeNode("26")
29
30         root.left.left = TreeNode("12")
31         root.left.left.left = TreeNode("8")
32         root.left.left.right = TreeNode("16")
33
34         root.left.right = TreeNode("43")
35         root.left.right.left = TreeNode("34")
36         root.left.right.right = TreeNode("46")
37
38         root.right = TreeNode("83")
39
40         root.right.left = TreeNode("59")
41         root.right.left.left = TreeNode("56")
42         root.right.left.right = TreeNode("72")
43
44         root.right.right = TreeNode("93")
45         root.right.right.left = TreeNode("91")
46         root.right.right.right = TreeNode("99")
47
48
49         return root
50
51     def print_tree(node):
52         """
53         This functions should use RECURSION to print out all the nodes of the tree IN ORDER.
54         :param node:
55         :return:
56         """
57
58         # TODO: Put your code here
59         # The stopping case is when node is None. Otherwise, we traverse
60         # to the left, then print the current, then traverse to the right
61         if node != None:
62             print_tree(node.left)
63             print(node.data)
64             print_tree(node.right)
65
66

```

```
67 def main():
68     """
69     Call functions to construct a tree and print it.
70     :return:
71     """
72
73     # You should not change anything here.
74     root = construct_tree()
75     print_tree(root)
76
77 if __name__ == "__main__":
78     main()
79
```