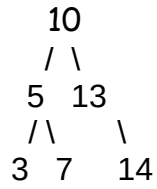
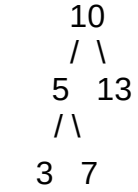
Homework 6

1. Write a function that will print nodes for each level of a binary search tree (Hint use a queue): Example



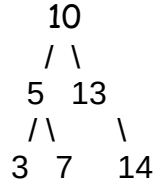
The output of the function will be:
10
5 13
3 7 14

2. Write a function that will print the largest element in each level of a binary search tree.



The output of the given tree when the function is applied:
10
13
7

3. Check whether the leaf nodes of a BST is even or odd.



The output of the BST above is [odd, odd, even].

4. Traverse a BST and store in the numOfDescendants variable, the numberof descendants that each of the nodes in the BST contains.

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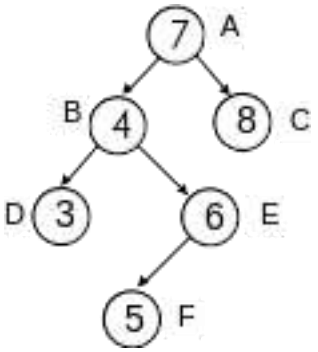
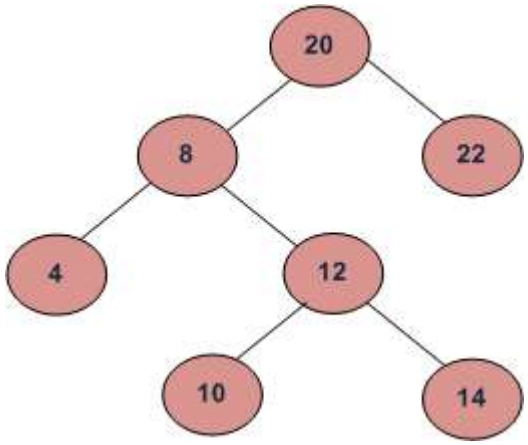


For example in the above figure: Output will be as follows:
7 has 5 descendants
4 has 3 descendants
8 has 0 descendant
3 has 0 descendant
6 has 1 descendant
5 has 0 descendant

5. Check whether two BSTs are identical or not. Write a function isDuplicate(root1, root2) that will check whether the BST with root1 is exactly identical to the other BST with root2.
6. Write a function int findLCA(root, nodeA, nodeB) thatwill return the value of the lowest common ancestor of the given nodeA and nodeB.

Detail Hints: https://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/

Example:



Homework 6

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LCA of 10 and 14 is 12
LCA of 14 and 8 is 8
LCA of 10 and 22 is 20
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7. Write a Function bool isBST(root) to check whether the tree with **root** is a valid BST or not. Please write the function iteratively and recursively.
8. Write a function int calculatesum(root) to calculate sum of all nodesof the BST with root. Please write the function iteratively and recursively.
9. Write a function int countNodes(root) to calculate number of allnodes of the BST with root. Please write the function iteratively and recursively.