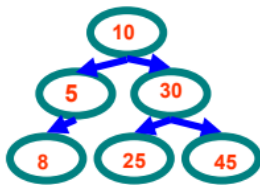


QUIZE 2

PROBLEM 1. Consider the following tree and answer the following questions.



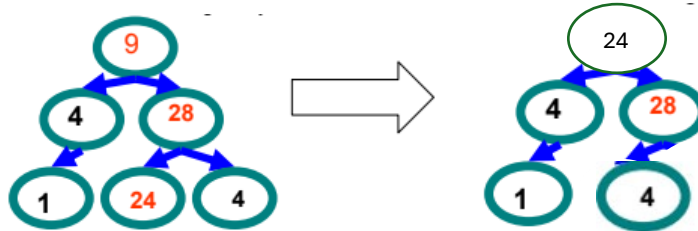
- a. Is it a Binary Search Tree. (Yes or No)

b. Is it a Complete Binary Tree (Yes or No)

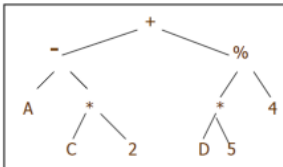
c. Is it a Balance Tree (Yes or No)

- A. No - The left child of node 5 (8) violates the Binary Search Tree rule.
- B. Yes - All levels are filled except the last, which is filled from left to right.
- C. Yes - The height difference between left and right subtrees of every node is at most 1.

PROBLEM 2: Consider the following binary tree. What is the result if you delete 9 from the tree.

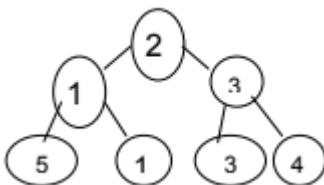


PROBLEM 3: Consider the following parse tree. What is the output after inorder traversal.



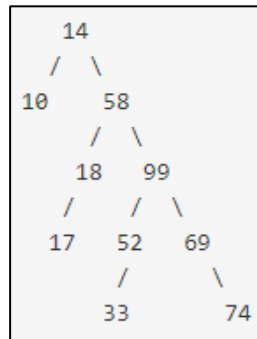
Answer: A-C*2 + D * 5 % 4

PROBLEM 4: Consider the following tree and answer the following questions.



MIN HEAP	MAX HEAP
1	5
/ \	/ \
1 2	4 3
/ \ / \	/ \ / \
5 3 3 4	1 1 2 3

PROBLEM 5: Draw the binary search tree that would result from the insertion of the following integer keys:



PROBLEM 6:

- A. The node with the value 5 is a parent of the node with the value 10 (True/False). **False**. The node with the value 10 is the parent of the node with the value 5.
- B. The node with the value 30 is a child of the node with the value 25 (True/False). **False**. The node with the value 25 is a child of the node with the value 30.
- C. The tree is a complete tree (True/False). **False**. A complete tree is a binary tree in which all levels are filled except possibly the last level, and the last level has all keys as left as possible. This tree does not meet those criteria.

D. What is the depth of the tree? **Depth of the tree: 2**

F. What is the order of nodes visited using a pre-order traversal?

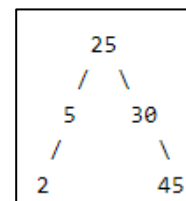
- Pre-order traversal: 10, 5, 2, 30, 25, 45

g. What is the order of nodes visited using a post-order traversal?

- Post-order traversal: 2, 5, 25, 45, 30, 10

H. We remove the root, what will be the new tree?

- Here, the in-order successor is 25.
- New tree after removing 10 and replacing with 25:



I. We add the element 21, what will be the new tree?

- 21 is less than 30 but greater than 25, so it becomes the left child of 25.
- New tree after adding 21:

