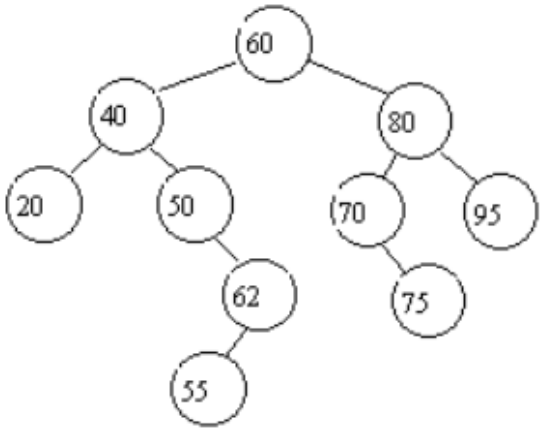
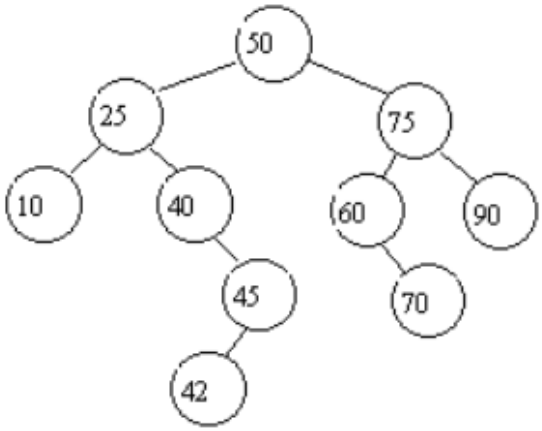
Lab 3

Q1. Which of the following two trees is a binary search tree ?





Q2. Draw the BST that results when you insert items with keys

E A S Y Q U E S T I O N

in that order into an initially empty tree

Q3. Construct two BST with the following conditions:

Condition 1: All nodes stored in the left subtree of a node whose key value is K have key values less than or equal to K.

Condition 2: All nodes stored in the right subtree of a node whose key value is K have key values greater than K

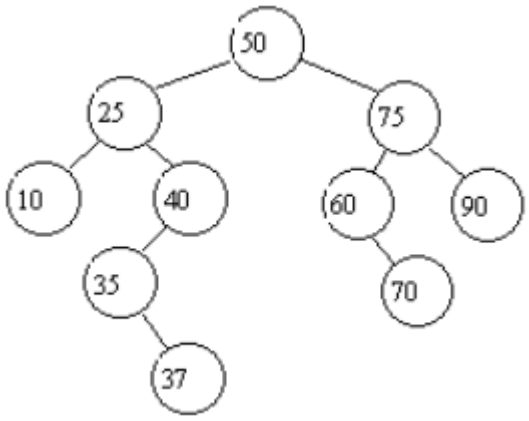
(a) inserted in the order 37, 24, 42, 7, 2, 40, 42, 32, 120

(b) inserted in the order 120, 42, 42, 7, 2, 32, 37, 24, 40

Traversal your trees in a) and b) with InOrder, Preorder and Postorder operation.

Which operation can keep the data in order sequence?

Q4. Draw the binary search tree after each operation. Each insertion and deletion operates on the original tree, and the new tree should again be a binary search tree.



a) Insert 65

b) Delete 70

c) Delete 60

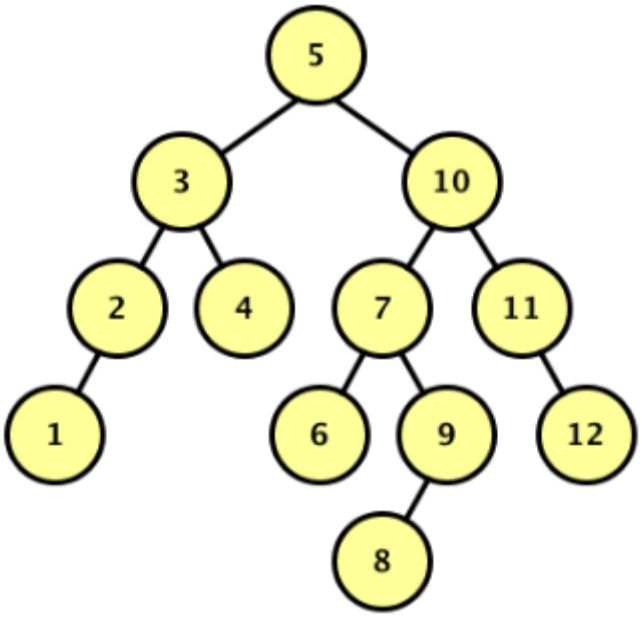
d) Delete 50

Q5. Starting with an empty tree, construct an AVL tree by inserting the following keys in the

Order given : 2,3,5, 6, 9, 8, 7, 4, 1.

If an insertion causes the tree to become unbalanced, then perform the necessary rotations to maintain the balance.

Q6. (a) Draw the resulting BST after 5 is removed, but before any rebalancing takes place. Label each node in the resulting tree with its balance factor



b)Now rebalance the tree that results from (a). Draw a new tree for each rotation that occurs when rebalancing the AVL Tree (you only need to draw one tree that results from an RL or LR rotation). You do not need to label these trees with balance factors