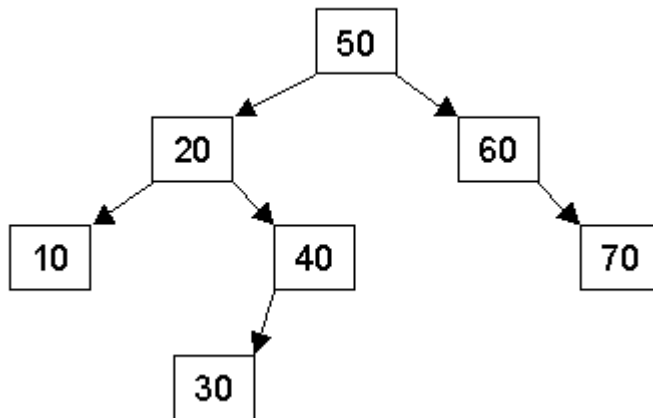# Software Development Fundamentals-II (15B11CI211)
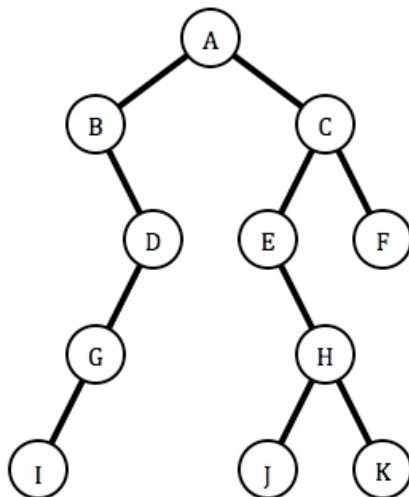
Tutorial-9 [c110.4]

Topic: Binary Trees

Q.1 Consider the following binary search tree,

Using the simplest binary search tree (BST) insertion algorithm (no balancing), show the tree that results after inserting into the above tree the nodes 80, 65, 71, 15, 39 and 25 in that order.

Q. 2 Write the preorder, inorder and postorder traversals of the binary tree shown below.

Q. 3 A binary tree has a preorder traversal of CABDIHKMEFGJLNO and an inorder traversal of AIDBKHMCFEJNLOG. What is its postorder traversal?

Q. 4 A full binary tree is a binary tree where each level of the tree has the maximum number of nodes possible. If the level of the root of a non-empty full binary tree is level 1, the level of the root's children is level 2, etc., how many nodes are on level i, i ≥ 1?

Q. 5 Write a method for the BinarySearchTree that returns the minimum and maximum in the binary search tree using recursion.

Q.6 Implement the following functions on binary trees:

a) Count the number of nodes in a binary tree.
b) Count the number of leaves in a binary tree.
c) Count the number of right children.
d) Find the height of the tree.

Q.7 Given a Binary Tree, check if all leaves are at same level or not

Q.8 Check if a Binary Tree (not BST) has duplicate values

Q. 9 Given the roots of a tree. print out all of its root-to-leaf paths one per line.