

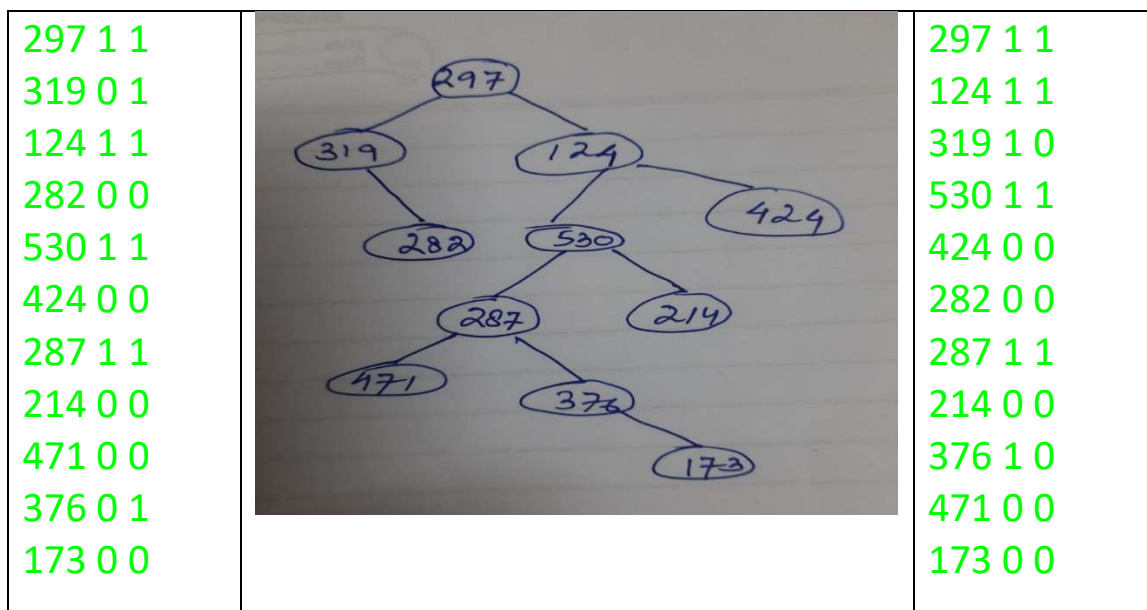
CS515 CS Lab 2

Assignment No: 8

1. Let a binary tree is denoted by Tbt with each node storing a distinct key and two child pointers (L and R). Let n denotes the number of nodes in Tbt, and $ht(v)$ indicates the height of subtree with root node v.

Previous class you have Constructed a binary tree from a input file

Write a code (without using special purpose library) to construct a binary tree Tbt is to be constructed with input file `ip.txt`. The user specifies each node by a triple (k; l; r), where k is an integer key to be stored in the node, and l and r are bits (1/0) indicating whether the node has a left child and a right child, or not. The triples are specified in a level-by-level and left-to-right (in each level) fashion. One sample input and its corresponding binary tree is shown as below.



- i) Now your task is to Construct a left-tilted tree corresponding to the given binary tree. A binary tree Tbt is called left-tilted tree or Tlbt if for any node v in Tbt, we have $ht(L(v)) \geq ht(R(v))$. Here L(v) and R(v) indicate left and right subtrees with root node v respectively.

So, while constructing T_{lbt} , if a node v is encountered such that $ht(L(v)) < ht(R(v))$ then swap the two child links. The resultant left tilted tree for the sample binary tree will be as shown in the right side of the above figure.

Printing the tree: Use the code u have developed in last class `printtree()` to print the binary tree T_{lbt} using preorder, inorder and post order traversal manner in an output file `op.txt`.