LEBANESE AMERICAN UNIVERSITY
School of Arts and Science
Department of Computer Science and Mathematics

CSC 310: Algorithms and Data Structures

Lab I

08. Sep. 2015

Implement an AVL tree by writing the class AVLNode which represents an AVL tree node. The class has an integer value, a AVLNode reference to the left child, a AVLNode reference to the right child, and the height.

Using AVLNode, implement the class AVLTree. This class has a root variable, which is of type AVLNode, and an insert method. The insert method should handle balancing the tree by rotations based on the left left case, left right case, right right case, and right left case that were discussed in class.

Input

All input is read from a file named "lab1.in".

The first line of input is an integer *T* representing the number of test cases.
Each test case is made up of two lines. The first line has an integer *N* representing the number of nodes in the tree. The second line contains *N* integers representing the values to insert.

Output

For each test case, output the tree using a pre-order traversal.

Sample Input	**Sample Output**
3 7 25 13 10 30 15 27 37 4 6 7 8 9 6 10 7 15 13 4 6	25 12 10 15 30 27 37 7 6 8 9 10 6 4 7 15 13