159.271 Tutorial 7 : Self balancing trees

Semester 1, 2017

---

1. Construct a binary search tree with the key values being inserted in the following order: 23, 88, 19, 37, 59, 96, 49, 33, 6
2. What is the relationship between the height and the number of nodes in a balanced tree.
3. Write an expression to determine the balancing factor of a given node in a AVL tree
4. Determine the balancing factor of all the nodes in the tree you constructed in Q1, and show that the tree is unbalanced
5. Draw the resulting tree after you delete nodes 19 and 37.
6. Apply AVL algorithm to balance the resulting tree from Q5
7. Write the pseudo code for performing left rotation at given node
8. Given an AVL tree how do you determine which rotation operation (single, double, left or right) will balance the tree.
9. What is time complexity of performing insertion operation in a AVL tree, and how does it compare with insertion operation in a red-black tree