Algorithms (COT 6405): Assignment 9

Due date: November 6 (Thursday)

Problem 1 (4 points)
Suppose that we apply RB-INSERT to add a node to a red-black tree, and then immediately call RB-DELETE to remove this node. Can the resulting tree differ from the initial tree? If the new tree is always the same as the initial tree, explain why; if not, give an example of a situation when it is different.

Problem 2 (6 points)
Consider a binary search tree, and suppose that we need to print all nodes whose keys are between two given values. For example, if the given values are 3 and 5, and the tree includes the keys 1, 2, 3, 4, 5, 6, 7, we should print 3, 4, 5. Write an efficient algorithm for this problem; it should be faster than standard *inorder tree walk;* that is, it should not traverse the whole tree.