CSE 326 Summer 2006
Assignment 4
Due: Wednesday, July 19

For all algorithm and data structure design problems, please provide elegant pseudocode and an adequate explanation of your methods. It is often helpful to include small examples demonstrating the method. Put your name at the top of each sheet of paper that you turn in.

1. In this problem you will demonstrate how splay insertion and deletion work on the example tree below (it is the same tree as last week’s homework).
   
   (a) Insert 8 into the tree below. Show the tree after each operation.
   
   (b) Delete 10 from the tree below. Show the tree after each operation.

2. Consider the task of printing a range of values that are stored in a binary search tree. For example, for the above tree, a call to \texttt{printRange(root, 9, 25)} would print out 9 10 15 18 20 25. Give pseudocode for an efficient recursive implementation of \texttt{printRange(Node root, integer low, integer high)}. You may assume that the values low and high actually appear in the tree.

   Analyze your algorithm, and prove that if the tree is complete (perfectly balanced) it runs in time $O(k + \log n)$ where $n$ is the number of nodes in the tree, and $k$ is the number of values printed out.

3. Weiss, 8.1 and 8.2.