Homework 3

Due: 5:00pm, February 22, 2008

Total Points: 35

1. (4 points) Show the final BST tree resulting from the insertion of 7, 5, 6, 2, 8, 3, 4, 1 (in this order) into an initially empty BST.

2. (4 points) Show the final AVL tree resulting from the insertion of 7, 5, 6, 2, 8, 3, 4, 1 (in this order) into an initially empty AVL tree.

3. (6 points) Show the final B-tree resulting from the insertion of the keys 1-20 (in order) into an initially empty B-tree of order M=5 and L=5.

4. (3 points) Show the BST that would generate a pre-order traversal of 5, 3, 2, 1, 4, 6, 8, 7, 9.

5. (3 points) Show the BST that would generate a post-order traversal of 1, 3, 5, 7, 6, 4, 2, 9, 8.

6. (4 points) Show the Splay tree resulting from accessing key 7 from the Splay tree in Figure 4.75.

7. (3 points) Show the Splay tree resulting from removing key 7 from the Splay tree in Figure 4.75.

8. (8 points) Exercise 4.32. Your algorithm should be written as a compilable (i.e., no pseudocode) method of the BinarySearchTree class defined in Section 4.3.