CS2420 – Fall 2008
Program 2
Due September 18, 2008

The file p2.cpp is a minimal implementation of a Binary Search Tree and has an interpreter that executes a sequence of operations from an input file. The file prog2.txt contains a sequence of Binary Search Tree operations that correspond to the figures in Section 4.3. The file avl.txt contains a sequence of AVL tree operations that correspond to the figures in Section 4.4. Do the following:

1. Modify the p2.cpp to a make it implement an AVL tree and call the resulting file avl.cpp. Test your implementation using the input file avl.txt. Note: You need to figure out how to do the balancing after deletion. The textbook (page 148) says it is "somewhat more complicated than insertion," but it is actually not that difficult. You should not use "lazy deletion."
2. Extend your program avl.cpp so that it performs the following tasks when no input file is given:
    a. Perform 800 insert operations of random integers between 0 and 999.
    b. Print the tree.
    c. Output the height and the number of nodes of the tree. Is your height within the bounds given by the textbook formula (page 136, the last line)?

Note

Use srand(2420) to initialize your random number generator, and use rand() % 1000 to generate the random numbers.

Turn In

When complete submit a .zip file (and only .zip files, not .tar, not .rar, not .7z, just a .zip file) containing your entire project solution directory. Remember to delete the \Debug and \Release directories, along with the .ncb file.