INFS 519   Homework #3
Spring 2019   Instructor: Hal Greenwald
Due April 16, 11:59 PM

In this program you will convert the BST from homework #2 to an AVL tree as the basis for your address book.

Your program will appear the same as Program 2 to the user *except* that the "displayAll()" operation will additionally display the *height* and *balance factor* of each node within the tree.

- The **height** of a node is the number of edges from the node to the deepest leaf.
- The **balance factor** of a node is the difference in heights of its two subtrees.

Internals
Again, you will write (among other classes) a class Table that will store entries comprised of (key/value) pairs of Strings. This class will have the same public methods as did Program 2, and will include (at a minimum) the following additional private methods:

- private void rebalance(Node n)
- private Node rotateLeft(Node n)
- private Node rotateRight(Node n)
- private Node rotateLeftThenRight(Node n)
- private Node rotateRightThenLeft(Node n)

Table will now be implemented as an AVL tree. Each node will have two String fields (for the name and address), along with an *int height* field and an *int balance* field. Optionally, you may include a *Node parent* field along with the *Node left* and *Node right*. Your code may be implemented either recursively, iteratively, or as a combination of the two. All other specifications from homework #2 carry over.

To turn in: As before, you will turn in a well documented source listing via Blackboard.

Rubric for HW3 (10 points):
- Read in and populate BST: *2 points*
- Properly save, so that the file may be re-read and processed: *2 points*
- Professional looking code/comments: *2 points*
- All other functionality: *4 points*