**AVL Trees**

Last Modified: 2 March 2022

This assignment is due to be completed and submitted by noon Tuesday, 22 March.

[Here](https://borax.truman.edu/310/322/template.h) is much of an AVL tree class, and [here](https://borax.truman.edu/310/322/runavl.cpp) is a program that uses it. Several things about this tree class differ from what we discussed in class.

* I have removed find\_min, find\_max, and remove from the class, as they are not used for this assignment.
* Instead of storing balance, a tree node stores its height, an unsigned value. The height of an empty tree is 0. The height of a tree with one node is 1. The height of an arbitrary node is the height of the tree rooted at that node.
* Some of the methods are not implemented. Specifically, I have implemented rotateRR, but the other three rotations are not implemented in your code.

Your assignment has two parts. The first part is to implement the three missing rotation implementations.

The second part is to run the main program in such a way that demonstrates that in fact your implementation maintains a height such that *h*(*n*) ∈ *O*(lg *n*). (Or, you can write a different main program that demonstrates the same thing.) Write a brief paper that shows your results. Explain how you ran the program (either mine or yours) to get your results. Ideally you would show a graph of input size vs. height that shows the logarithmic relationship.

By the due date, use the [homework submission](https://borax.truman.edu/310/submit.php) page to submit the .h class, the .tex source file, and the finished .pdf writeup.