CSYE7215: Homework 1:
Due date: January 26, 2016; 5:59 pm

Goal: In this project you will accomplish two tasks;

1. Complete several classes to find the **maximum Integer** in a LinkedList **in parallel**. These classes should be **thread safe**.
2. Modify the code to compute an "**walking average value" of the integers** in a randomly generated LinkedList (as above) in parallel. Again, the classes should be thread safe. The walking average means that each of the "workers" will pull one element from the list, average it with the value it currently has, and replace the old value with the newly calculated value. This value will be initialized to zero. At the end, the main will average the values computed by all the threads and print the final result. The computation should be repeated ten times for the same LinkedList, i.e., the same randomly generated list should be used ten times, each time printing the final result.

Code to implement: In the starter files, the methods to implement the first task have the comment // TODO: IMPLEMENT CODE HERE within them. The Javadoc explains what these methods should do for the max integer (which you can compare against the public test). Replace / modify these comments for the second task so that they faithfully represent the objective of the second task (computing the walking average values).

Public tests are in the file PublicTest.java. They are in Course Documents / Code / HW 1 Code:

- Class ParallelMaximizer, method max
  Note: Since this method invokes several ParallelMaximizerWorkers, it is expected to be thread safe. The method runs numThread number of threads and then joins them. You are responsible for computing the partial maximum from these results by calling getPartialMax() from each ParallelMaximizerWorker.
- Class ParallelMaximizerWorker, method run
  Note: This method should find the maximum for all integers processed by this worker, which can be combined to find the overall maximum. If the list is not empty, the function synchronizes on it to prevent access by other threads and removes the head node, storing its value in the variable number. You are responsible for taking this value and evaluating the new partial maximum.
- Note: It is not acceptable that only one of the workers computes the maximum / average. Insure that all of the workers participate in this process. Show the results of each of the worker.

Additionally, you should modify the PublicTest.java so that it can be used for the testing of the computation of the walking average.

Submission: Use your Last Name (just one word; you can simplify your last name if you prefer) for the package name. Submit a .zip file containing your project files to Assignments in Blackboard as specified in the slides for Lecture 1. Remember to include Ant build scripts (build.xml).