CSYE7215: Homework 1:
Due date: January 24, 2019: 05:59 pm

Goal: In this project you will complete several classes to find the maximum Integer in a LinkedList **in parallel**. These classes should be **thread safe**.

Code to implement: In the starter files, the methods to implement have the comment // TODO: IMPLEMENT CODE HERE within them. The Javadoc explains what these methods should do (which you can compare against the public test).

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.
- The starter files have been developed for a little different task; just to compute a max in parallel. But in this assignment, you need to modify `main`:
  - (1) you need to set the size of list to 10,000,000 and run 2,000 ParallelMaximizerWorker objects.
  - (2) The computation of the max must be done in two steps. First, all the workers compute their local max of the ints in list and then store them in another list (list2) on which you will invoke numWorker2 == 100 of ParallelMaximizerWorker in order to compute only numWorker2 local max results, which will then be passed to a sequential computation of the ultimate max.
- 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. Insure that all of the workers participate in this process. Show the results of each of the worker.
- You may find it useful to implement code in the main method of ParallelMaximizer for testing, however you are under no obligation to do so.
- I would suggest that you start with a simpler problem, i.e., the one for which the skeleton files have been developed; then move on to a more complicated problem of computing the max in two steps.

Submission: Use your Last Name (jut 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 an Ant build script (build.xml).