

CSYE7215: Homework 1:
Due date: September 13, 2018; 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 **average value of the integers** in a LinkedList (as above) in parallel, instead of the max value. Again, the classes should be thread safe. You need to make sure that the “workers” know the total number of numbers in the linked list.

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 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 (the average value).

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 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`).