EE w382V: Multicore Computing
Homework 4

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Deadline: Aug. 6^{th}, 2015

The source code must be uploaded through Canvas before the end of the due date (i.e., 11:59pm on Aug. 6^{th}). The assignment should be done in teams of two. You should use the templates downloaded from the course github (https://github.com/kinmener/UT-Garg-Multicore.git). You should not change the file names and function signatures. In addition, you should not use package for encapsulation. Please zip and name the source code as [EID1_EID2].zip.

1. **(40 pts, Queues)**
   Implement lock-based and lock-free unbounded queues. For the lock based implementation, use different locks for `enq` and `deq` operations; use `AtomicInteger` for the variable `count`. For the lock-free implementation, use Michael and Scott's algorithm as explained in the class. For the Lock-based implementation, the *deq* operation should block if the queue is empty. For the Lock-Free implementation, the *deq* returns *null* if the queue is empty.

2. **(60 pts, Linked Lists)**
   Implement lock-based and lock-free list-based sets, which include three operations, *add*, *remove*, and *contains*. For lock-based, you should come up one coarse-grained and one fine-grained implementation. For lock-free, you should implement the approach as explained in the class.