



CS455 - Introduction To Distributed Systems

[Lab Session 7]

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Topics Covered in Today's Lab

- Quiz 5 Review
- HW2 FAQ

NOTE: Feel free to bring laptops, code, and questions!



Quiz 5 Review

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1. A program that has concurrency bugs may continue to function correctly if the rate of invocations and the number of threads are below a certain threshold.
 - True
2. Storing state variables of a particular class in public fields allows other classes within that program to reason about thread-safety
 - False

Quiz 5 Review

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3. The wait()/notify() mechanism in Java has an inherent race condition that cannot be solved without deep integration with the JVM.
 - True
4. The key to thread-safe programming is not so much what the object does, but rather how it will be accessed.
 - True
5. The transient keyword plays a role in thread-synchronization by ensuring that all accesses to that variable will be redirected to main memory.
 - False

Quiz 5 Review

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6. Stateless objects are always thread-safe.
 - True
7. Consider a variable count of type long. If the mutation operation on this variable is the increment operator (++) there is no need to synchronize accesses to the mutation operation.
 - False
8. We only need to synchronize accesses to write operations on a variable. The read operations need not be synchronized.
 - False

Quiz 5 Review

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9. Consider an instance `a1` of Class A. Class A has two synchronized methods `m1()` and `m2()`. Method `m1()` includes an invocation to method `m2()`. Any thread that invokes `a1.m1()` will deadlock.
 - False
10. Synchronizing all public methods of all classes within a program will guarantee thread-safety.
 - False



HW2

- Milestone
- WC will be released Wednesday
- HW3 will be released March 13th (next Friday)
 - Hadoop processing for an atmospheric dataset
 - Analysis of Sulfur Dioxide SO₂ and Meteorological surface temperatures between 1980-2019



HW2 FAQ

- What values of batch-size, batch-time, message rate, etc... should we be using
 - Batch-size ~10-20
 - Batch time
 - Varies by number of clients you have connected and the batch size specified
 - Message rate
 - We will use 100 clients and message rate ~1-4/second for testing
 - Thread pool threads: best performance ~#physical cores * 2



Questions?