CST 334: Operating Systems

Dr. Glenn Bruns

# Reading: Semaphores

**Instructions.** Read pages 1-15 of “[The Little Book of Semaphores](https://greenteapress.com/semaphores/LittleBookOfSemaphores.pdf)” Edit [semaphores.txt](https://drive.google.com/open?id=1n5MILc1jEXWkwtG5zyYW8KtmqBwKlLIY) by inserting your answers to these questions:

1. Suppose we cannot tell, by looking at the source code for a program, which of two events will happen first. Then the two events are a) concurrent, or b) sequential?
2. What would you call an operation that can’t be interrupted? a) shared, b) synchronizable, or c) atomic?
3. Suppose a semaphore is created with value 0, then two threads call wait() on the semaphore, so that the two threads get blocked, and the semaphore value is -2. If another thread now calls signal() on the semaphore, what happens? a) one of the blocked threads is unblocked, or b) nothing, because after the signal the semaphore is still negative.
4. Suppose a thread is blocked on a semaphore, and another thread then performs a signal() operation on the semaphore. What happens immediately afterward? a) the thread that performed the signal continues execution, b) the thread that was blocked will unlock and begin executing immediately, c) some other thread begins execution, or d) the programmer doesn’t know which of a,b,c might happen.
5. Semaphores can be used a) in place of locks, b) in place of condition variables, or c) in place of both locks and condition variables.

**Submitting**. Submit your edited semaphores.txt on iLearn.

**Grading.** 10 points/question.