Synchronization Review Chapter 6

6.9, 6.11, 6.12

1. Define Critical Section.

2. Define Mutual Exclusion.

3. Define Progress.

4. Define Bounded Waiting.

5. What might happen (which hazard) if your synchronization technique did not provide Bounded Waiting?

6. What might happen (which hazard) if your synchronization technique did not provide Progress?

7. Define Deadlock.

8. Define Starvation.

9. Define Priority Inversion.

10. Explain why you want your critical section to be as short as possible.

11. In the producer/consumer example on page 226 in your book (and slide 5 in the lecture), which pieces of data need to be synchronized for safety?

12. What assumptions does Peterson's Solution require?

13. Explain clearly how Peterson's Solution guarantees Bounded Waiting.

14. Why do synchronization solutions require support from the CPU in terms of atomic instructions?

15. Explain how Figure 6.8 (page 233) does guarantee Bounded Waiting.

16. Why does Figure 6.7 (page 233) not guarantee Bounded Waiting?

17. What is a semaphore? What does wait() do? What does signal() do?

18. What is the difference between a binary and counting semaphore.

19. What is a busy wait or spin lock?

20. What is a Monitor? Why use a monitor rather than a semaphore?

21. Explain the purpose of each semaphore in producer/consumer example in Figures 6.10 and 6.11 (page 240).