CS 314-001 Operating Systems, Spring 2023
Quiz #5 on February 16, 2023

List of the Possible Questions

#1: What is “critical section”?

#2: What is “mutual exclusion”?

#3: What does “atomic” in “atomic operations” mean?

#4: What is “a binary (or mutex) semaphore”?

#5: What are the two primary system calls for manipulating a semaphore?

#6: Explain how a semaphore can prevent race condition.

#7: What are the two operations of a semaphore (just name them)?

#8: What “wait” system call to a semaphore exactly performs?

#9: What “signal” system call to a semaphore exactly performs?

#10: Why must the two system calls for semaphores (“wait” and “signal”) be atomic operations (explain the reason)?

#11: What are “counting semaphores” (how are “counting semaphores” different from “binary (mutex) semaphores”)?

#12: Who manages semaphores?

#13: Operating systems use “queue (FIFO data structure)” for managing processes blocked on a semaphore. Why is FIFO-queue used (the best reason for using FIFO structure)?

#14: What is “process deadlock”? How is it different from “process starvation”?

#15: If more than one mutex (binary) semaphore is used, can process deadlock occur? If no, explain why not. If yes, explain how using an example.