

CS 314-001 Operating Systems, Spring 2019
Quiz #4 on February 19, 2019

List of the Possible Questions

#1: What do “sufficient conditions” guarantee?

#2: What do “necessary conditions” guarantee?

#3: If a sufficient condition is not satisfied, what conclusion can we draw?

#4: If a necessary condition is satisfied, what conclusion can we draw?

#5: What is “throughput” (in the context of process scheduling)?

#6: What is “response time” (in the context of process scheduling)?

#7: What is “turnaround time” (in the context of process scheduling)?

#8: What is “process starvation”?

#9: Which process scheduling algorithms can cause “process starvation” (select all that apply)?
   (1) FCFS
   (2) RR
   (3) SJF
   (4) SRTF

#10: What is “race condition”?

#11: How can “race condition” happen? Show “how” using an example.

#12: What is “critical section”?

#13: What is “mutual exclusion”?

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

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

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

#17: explain how a semaphore can prevent race condition.
#18: What are the two operations of a semaphore (just name them)?

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

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

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

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

#23: Who manages semaphores?

#24: 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)?