

CS 314-001 Operating Systems, Spring 2024

Quiz #4 on February 1, 2024

List of the Possible Questions

- #1: What is “thrashing”? Technically explain how does “thrashing” occur?
- #2: How does “FCFS” process scheduling algorithm work?
- #3: How does “RR” process scheduling algorithm work?
- #4: How does “SJF” process scheduling algorithm work?
- #5: How does “SRTF” process scheduling algorithm work?
- #6: What is “preemptive process scheduling”?
- #7: What is “non-preemptive process scheduling”?
- #8: What is “throughput” (in the context of process scheduling)?
- #9: What is “response time” (in the context of process scheduling)?
- #10: What is “turnaround time” (in the context of process scheduling)?
- #11: What is “process starvation”?
- #12: Which process scheduling algorithms can cause “process starvation” (select all that apply)?
 - (1) FCFS
 - (2) RR
 - (3) SJF
 - (4) SRTF
- #13: What is “race condition”?
- #14: How can “race condition” happen? Show “how” using an example.
- #15: What is “critical section”?
- #16: What is “mutual exclusion”?

- #17:** What does “atomic” in “atomic operations” mean?
- #18:** What is “a binary (or mutex) semaphore”?
- #19:** What are the two primary system calls for manipulating a semaphore?
- #20:** Explain how a semaphore can prevent race condition.
- #21:** What are the two operations of a semaphore (just name them)?
- #22:** What “wait” system call to a semaphore exactly performs?
- #23:** What “signal” system call to a semaphore exactly performs?
- #24:** Why must the two system calls for semaphores (“wait” and “signal”) be atomic operations (explain the reason)?
- #25:** What are “counting semaphores” (how are “counting semaphores” different from “binary (mutex) semaphores”)?
- #26:** Who manages semaphores?
- #27:** 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)?