CS3.301: Operating Systems and Networks

IIIT Hyderabad

Quiz 4

1. What is the soft-real time system? Explain the implications if the operating system does not support soft real-time functionality.
2. What are preemptive and non-preemptive scheduling? Which is easy to implement for OS designers? If one of the schemes is challenging to implement, explain the corresponding difficulties.
3. What do you mean when you say, “the process is starving”? What kind of mechanism should you implement to detect the starving processes in the Operating system?
4. Explain the motivation for multi-programming and time sharing. What are the additional issues to be tackled by operating system to implement the time-sharing compared to multi-programming?
5. The kernel of a multiprogramming system classifies a program as CPU-bound or I/O bound and assigns appropriate priority to it. What would be the consequence of the wrong classification of programs for throughput and response times in a multi-programming system?
6. Why are preemption points included in system calls?
7. Pre-emptive kernels are challenging to design. However, why do almost all modern OSs go for it?
8. Explain the merits and demerits of queuing and simulation model-based performance evaluation methods.
9. UNIX is unsuitable for real-time applications because a process executing in kernel mode may not be interrupted. Elaborate.
10. Consider a system implementing multilevel queue scheduling. What strategy can a computer user employ to maximize the CPU time allocated to the user’s process?
11. Discuss how the following scheduling criteria conflict with specific settings (i) CPU utilization and response time (ii) I/O device utilization and CPU utilization.
12. UNIX is unsuitable for real-time applications because a process executing in kernel mode may not be interrupted. Elaborate.