

Computer Operating Systems

Problem#1

Define CPU burst cycle. Differentiate it from I/O burst cycle.

Differentiate I/O bound and CPU-bound processes. Differentiate preemptive and non-preemptive (cooperative) CPU scheduling. Define process starvation. Out of the four elementary process scheduling disciplines: First-come, first-served (FCFS), shortest job first (SJF), round robin (RR) and shortest remaining time (SRT), name the disciplines that may result in process starvation. Explain your answer.

Problem #2

Motivate the need for a page-replacement algorithm in demand-paging virtual memory organization. Explain how least recently used algorithm (LRU) operates. Explain why it is never used in practice. Describe the operation second-change page replacement algorithm. Explain why it approximates LRU.

Problem#3

Define the concept of a block in disk storage. Motivate the need for free space disk management. Explain the bit-vector and linked list free disk space management techniques. Compare their advantages and disadvantages.