

Computer Operating Systems

Problem#1

Define process CPU-burst. Explain how OS uses CPU-burst for process scheduling. Explain:

- i. why OS must know the length of CPU burst in advance for process scheduling
- ii. why this information is not available, and
- iii. how OS predicts the length of a CPU burst.

Define process starvation in scheduling. Among Shortest Remaining Time, Round-Robin and First Come First Served scheduling algorithms, which ones are subject to process starvation? Explain your answer.

Problem #2

Define the Mutual Exclusion (Critical Section) Problem. Explain why it is necessary to solve this problem for OS design. Define Read Modify Write (RMW) operations and explain why such operations are necessary to implement the solution to the Mutual Exclusion Problem. Give pseudocode to:

- one of the RMW operations,
- solution to the Mutual Exclusion problem using your RMW operation

Problem#3

Name and describe the three major methods of allocating disk space for a file. Compare their relative advantages and disadvantages. Unix uses a variant of one of these methods that has several levels. Explain how this multiple-level variant differs from the basic method and what advantages it has over the basic method.