

Computer Operating Systems

Problem #1

Answer the following questions about CPU scheduling.

- a. How should we develop a basic framework for thinking about scheduling?
- b. What are the key assumptions?
- c. What basic approaches have been used in the earliest computer systems?

Problem #2

Answer the following questions about virtualizing memory.

- a. How can we build efficient virtualization of memory?
- b. How do we provide the flexibility needed by applications?
- c. How do we maintain control over which memory locations an application can access, and thus ensure that application memory accesses are properly restricted?

Problem #3

The four conditions that characterize deadlock are mutual exclusion, no preemption, hold and wait, and circular wait.

- a. If the system is deadlocked, will *all four* of these conditions hold? Answer Yes or No, and then explain.
- b. If *all four* of these conditions hold, will the system *always* be deadlocked if there are single instances of all resources? Answer Yes or No, and then explain.
- c. If *all four* of these conditions hold, will the system *always* be deadlocked if there are multiple instances of all resources? Answer Yes or No, and then explain.