CSE 4501 Operating Systems
Chapter 2: Operating-System Structures

Practice Exercises (*Will help to understand questions those may come in the quiz, mid and final examinations*)

1. What is the purpose of system calls?
2. What are the five major activities of an operating system with regard to process management?
3. What are the three major activities of an operating system with regard to memory management?
4. What is the purpose of the command interpreter(shell)? Why is it usually separate from the kernel?
5. What system calls have to be executed by a command interpreter or shell in order to start a new process?
6. What is the purpose of system programs?
7. What is the main advantage of the layered approach to system design? What are the disadvantages of the layered approach?
8. List five services provided by an operating system, and explain how each creates convenience for users. In which cases would it be impossible for user-level programs to provide these services? Explain your answer.
9. Why do some systems store the operating system in firmware, while others store it on disk?
10. How could a system be designed to allow a choice of operating systems from which to boot? What would the bootstrap program need to do?
11. It is sometimes difficult to achieve a layered approach if two components of the operating system are dependent on each other. Identify a scenario in which it is unclear how to layer two system components that require tight coupling of their functionalities.
12. What is the main advantage of the microkernel approach to system design? How do user programs and system services interact in a microkernel architecture? What are the disadvantages of the microkernel approach?
13. In what ways is the modular kernel approach similar to the layered approach? In what ways does it differ from the layered approach?
14. Give three examples of Unix System calls for following categories.
    a. Process Control
    b. File Manipulation
    c. Device Manipulation
    d. Information Maintenance
    e. Communication
    f. Protection