

Homework 1 EE 469 Spring 2001

Due Tuesday, Jan. 23, 2001

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1. (30pts) Operating system types
 - (a) (10 pts) Explain briefly the characteristics of a realtime operating system, timesharing, and multiprogramming.
 - (b) (15 pts) Assume that we have a both realtime and non-realtime applications that we need to run on our computer. Assume that our realtime applications ran on average once every 5 minutes and that they needed .2 CPU seconds to run. The non-realtime applications are quite a mix: some take only a few seconds, others can take up to 30 minutes of CPU time with very little I/O. If you didn't have a realtime operating system, which would be a better choice: pure multiprogramming, or a timesharing system? Why?
 - (c) (5 pts) Explain the problems that your above choice would still have.
2. (20pts) Explain the difference between spooling and buffering. Give an example of where each is used in modern operating systems.
3. (15 pts) How does having monitor mode and user mode give some protection to our system?
4. (15 pts) Explain briefly how interrupts work and how they are serviced.
5. (10 pts) What is the main advantage of the layered approach to OS design?
6. (10 pts) What are system calls? What are system programs? What are the differences between system calls and system programs?