CSE 451 Winter 2012: Final Exam Sample Study Questions

(1. Suppose there is a user level application that lets you run Linux binaries in Windows, called lin.exe. lin.exe is simply a user application that runs on Windows, and is not part of the Windows kernel, nor does it modify the kernel in any way.
- Suppose there is a binary called "linuxApp" that runs on Linux. Why can't this run directly on Windows? (Assume you compiled for the correct processor.)
- Briefly explain how lin.exe could work. Why can a program designed for Linux run in lin.exe but not Windows directly?

(2. Assuming we are using a disk (not a solid state drive), name one advantage on each side for each of the following comparisons:
- Log-based FS vs. Journaling FS
- Unix FS vs. Log-based FS

(3. When would using separate processes be advantageous over using separate threads?

(4. Which scheduling algorithms (at the user level, assuming one processor) are best used for the following:
- web server
- video editor (requires heavy rendering tasks)
- web browser
- cracking multiple encrypted messages at once, with messages of different lengths
- multi-threaded file copy

(5. What advantage does RAID 5 have over RAID 1? Over RAID 0? Disadvantages?

(6. Suppose we doubled the size of the TLB. How does this affect performance of virtual memory?

(7.
- Assume we have a system that writes large files often but seldom reads them. What is the best FS to use?
- Assume we have a system that writes and reads small files very often. What is the best FS to use?

(8. When would it make sense to use a Mesa monitor over a Hoare monitor, and vice versa? (We don't care about programmer convenience in this case.)