

CS571 Fall 2010 Final Exam Study Guide

The final exam will be similar in structure to the midterm; it will focus primarily on the content covered in the second half of the semester, but may include concepts from earlier in the course. Review Chapters 8 through 13, *Operating System Concepts 8th Edition*, Silberschatz, Galvin, and Gagne, and especially the *lecture presentations* for course sessions 6 through 13 (October 6 through December 8) on:

- OS Observability,
- Memory Management,
- Virtual Memory
- Cache Concepts
- File Systems
- Virtualization
- OS Performance and Troubleshooting
- Distributed Systems
 - Class Lecture presentations: Stallings, Google

Concept Review

You should be able to answer (explain) the following questions:

- what are the components of a computer system's memory hierarchy?
 - how does the operating system access data in each of the levels in the memory hierarchy?
- what are paging and swapping? what are the benefits and performance impacts of these techniques?
- what is a virtual memory system? what are the benefits and performance impacts of such a system?
 - how are memory pages selected for replacement? what is “thrashing”
- how are file systems and disk systems designed to minimize latency, maximize throughput, and protect data from corruption?
- what are the benefits of caching? what is the primary problem of using multiple caches? how is this problem solved?
- how can multiple, different, operating systems be hosted on the same physical server? what are the benefits and drawbacks to such techniques?
- what tools are used to observe operating system activity? what are the symptoms of poor OS and server performance? what are some solutions to poor OS and server performance?
- what are the primary challenges of creating large, distributed systems consisting of many servers and operating systems? how are these challenges addressed?