# Final Study Guide

This is simply a guide of topics that I consider important for the midterm. I don't promise to ask you about them all, or about any of these in particular; but I may very well ask you about any of these, as well as anything we discussed in class, in discussion section, in the text, or that is in the reading.

1. *Anything from the midterm study guide*

2. Memory management

    (a) Paging and page tables

    (b) Segmentation and segment tables

    (c) Optimizations: cache, hit ratio, effective memory access time

    (d) Views of memory: program vs. operating system, address translation

    (e) Protection

    (f) Segmented paging (segment the page table)

    (g) Paged segmentation (page the segments)

    (h) Virtual memory: demand paging, page faults, pure demand paging

    (i) Page replacement and victims and dirty bits: FIFO, OPT, LRU, stack algorithms

    (j) Minimum number of pages per process

    (k) Global vs. local allocation

    (l) Working set: thrashing, principle of locality, working set principle and model

    (m) Prepaging, I/O interlock, choosing page size, restructuring program

3. File Systems

    (a) Virtual vs. physical; names; directory structures

    (b) Access control: rights, ACLs, UNIX abbreviations

    (c) Access via create, open, close, read, write, rewind, delete system calls or commands

    (d) Access methods: sequential, direct mapped, structured

    (e) Disk directory: free list implementations, allocation methods (contiguous, linked, indexed)

4. Computer Security

    (a) Confidentiality, integrity, availability

    (b) Policy vs. mechanism

    (c) Saltzer's and Schroeder's Design Principles

    (d) Access control: subjects, objects, access control matrix, ACLs, C-Lists, protection rings

    (e) Classical ciphers

    (f) Public key ciphers

    (g) Cryptographic hashes

    (h) Networks, computers, and security