

ICS 332 Operating Systems

final review

- exam will be Monday, December 10th, 2018, 12noon
- same general format as exams 1 and 2
- questions may be from:
 - the lectures (lecture notes, material linked from the web page)
 - the assignments
 - the textbook
- answering questions may require knowing the material that was already tested in exams 1 and 2

Outline

- OS and APIs
- computer architecture
- processes and threads
- scheduling
- synchronization: race conditions, synchronization primitives such as atomic operations, spinlocks, mutexes, and java synchronized methods. deadlocks
- counting, addressing, exponents (and 2^x), logarithms
- main memory, swapping, paging, virtual memory, page tables, segmentation, and standard Unix segments
- allocation of contiguous blocks of memory
- static vs. dynamic loading, static vs. dynamic linking
- hard disk properties
- file system interfaces, file system implementations

Virtual Memory

- page numbers and frame numbers, offsets
- tables, multi-level page tables, inverted page tables
- TLB
- page faults and page replacement: FIFO, LRU, optimal
- swapping

Non-Volatile Storage and File Systems

- hard disk geometry, moving parts
- seek time vs. rotational latency
- RAID
- file systems API (review the strace part of homework 1)
- file systems implementations:
 - File Allocation Table, a single global index
 - inodes, one per file
 - log-based file systems

Suggestions for Doing Well

- sleep well the night before the exam
- review all the material well in advance
- review again on the day of the exam
- practice problems
- review, understand the homeworks!
- read, understand the textbook!
 - and practice problems, at least to the point of sketching a solution
- read, understand the lecture notes!