Exam #1

• Closed book
• Mix of short answer ~ 40%
• Mid range ~ 20%
• Longer ~ 20%
Exam #1 Topics

• Kernel and Processes
• Threads and Concurrency
• Synchronization
• Multi-object synchronization
• Scheduling
• Address Translation
• Virtual Memory
Exam #1

• What to study?
  – Your notes!
  – Skim book chapters: focus on sections we talked about in class – ignore topics we did not cover
  – Do not need to memorize minor code details

• How to study?
  – Look at homework questions in the book
  – Look at exercises in the book
Exam #1 Content

• Short question examples:
  – contrast kernel threads with user threads – list pros of each.
  – why is reader-writer synchronization unfair?
    • How could you make it fair?
  – What is the key insight behind the MCS protocol?
  – .... RCU protocol?
  – Contrast hoare and mesa semantics for CVs?
Exam #1 Content

• Medium
  – Given a paging, segmentation, or multi-level AT, translate this VA to a PA
  
  – Given this job arrival pattern: compare scheduling algorithms
  
  – Use little law to do some simple queueing analysis
  
  – Explain the code fragment within a lock implementation discussed in class
Exam #1 Content

• Longer
  – Analyze this code for safety, progress, deadlock

• Given a memory access pattern
  – Analyze behavior of various page replacement strategies
Lab #3

- Lab #3
- We have built a user-level UNIX-like file system that is a good mirror of what a kernel-level file system would contain
- Understand a heap of code and add features
Lab #3

• Steps
  – Run it
  – Understand how it works: add `printfs` as needed
  – Start small
    • link, unlink
    • fsck
    • indirect blocks
  – Does not support relative paths
  – Few other glitches
  – May be others, let us know ASAP