

## CS 3204 Fall 2009

### Final Preparation

**Date:** Monday, Dec 14 1:05pm to 3:05pm

**Location:** ROB 112 (usual classroom)

#### **Format:**

The final exam will consist of 4-6 questions. It will be **closed book, closed notes, closed computer/without wireless access**. However, you are **allowed to bring one letter-sized sheet of paper with prepared notes** (you may use front and back of that sheet.) In addition, you may also bring the sheet of notes you previously prepared for the midterm.

You are responsible for the content of lectures 1 through 24. This includes:

- Introduction to OS: general goals & principles of operating systems.
- Multiprogramming basics: protection, dual-mode operation, system calls and exceptions. Linking and loading.
- Threads & processes: context switching, mode switching, procedure switching, context management, threading & process APIs.
- Concurrency & Synchronization: critical section problem, race conditions, approaches for guaranteeing mutual exclusion, including locks, semaphores, monitors, spinlocks & disabling interrupts.
- Deadlock: conditions, detection & recovery.
- Scheduling: general goals & constraints, priority scheduling, FCFS, RR, SPN, MLFQS, Lottery Scheduling.
- Virtual memory basics: address translation, memory protection, page table & TLB management; physical memory management: buddy systems and bitmap-based allocation; virtual page replacement strategies, working set & thrashing; segmentation.
- Disks & File systems: disk characteristics, buffer cache, general design of file systems, file allocation & layout strategies including indexed files, directory representation and lookup, consistency in file systems, write-ordering & journaling, virtual file system interfaces, volume management, RAID.
- Security and Protection: principles of protection, authentication, authorization, and models for access enforcements.

More weight will be given to material covered since the midterm.

Silberschatz covers this material in Chapters 1-12, 14-15. The final may contain questions related to projects 0-4.

There are sample exams posted on the class website on the "Course Information" page in the section "Course material," which you may find useful.