

CS 470 - Operating Systems

Spring 2017 – Exam 1 Review Sheet

Reminders:

- Monday, February 27, has been set aside as a review for the exam. We will go over homework and answer any questions you have about the material.
- No class on Friday, March 3. However, the instructor will have office hours 10-11am and 2-3pm. If you have questions regarding the process management project during spring break, you may send email. Just do not expect an immediate reply.

Exam 1 will be on Wednesday, March 1. You may bring **one** 8.5in x 11in sheet of paper with notes on **one** side to the exam. You may print out the sheet, but it must be in a 10-point font or larger. E.g., please do not photoreduce or print 4 pages on a side. If you handwrite your notes, they may be as small as you like. You may handwrite notes in the margins of a printout. You may bring a calculator. These are the only notes and aids allowed for this exam.

The exam will consist of questions on the material in Chapters 1- 6, with emphasis on Chapters 3-6, and covered in lectures and assignments through Monday, February 20. The material from Sections 5.4, 5.9, and 5.10 and from Chapter 7 (real memory, which will be on the second exam) will not be on this exam. The exam will consist of questions similar to the homework problems.

The following is a list of topics that will be emphasized, but it is in no way to be construed as an exclusive list.

1. Operating system types, hardware structures, and software structures.
2. Processes, including process creation, process communication (i.e., shared memory and message queues), and process scheduling.
3. Threads and thread management, and their relationship to processes.
4. Process synchronization, including mutual exclusion algorithms, semaphores, and monitors. You should understand these techniques and how to apply them to problems similar to bounded buffer, readers/writers, and dining philosophers. You may be asked to read programs and comment on their appropriateness as solutions based on the criteria of mutual exclusion, progress, and bounded wait.
5. Deadlocks, the four necessary conditions for deadlock, and identifying when a system is or is not in deadlock.
6. Preemptive and non-preemptive CPU scheduling algorithms such as FCFS, SJF, STRE, priority, and RR.