CSCI 4320 (Principles of Operating Systems), Fall 2004

Review for Exam 1

1 Format of the exam

The exam will be in class October 21. You will have 75 minutes. You may use your textbook and any notes or papers you care to bring, but you may not use other books, a calculator or computer, or (of course) each other's papers. Most questions are likely to be similar in format to those in the minute essays or homework assignments; there might also be a few multiple-choice or true/false questions. You might be asked to write or comment on code/pseudocode, but it's unlikely that you'll be asked to write more than a few lines. Most questions will be more difficult than the minute-essay questions but less difficult (or at least less time-consuming) than the homework problems.

2 Lecture topics to review

You are responsible for all material presented during lecture (including any topics not covered in the textbook), but the following is a list of topics I consider most important.

- History/evolution of operating systems.
- Functions we would like an operating system to provide.
- What functionality we need (and/or can expect) from hardware in order to write a reasonable operating system.
- The process abstraction.
- Implementing processes (what's involved in a context switch, what kinds of things are in a process table, etc.)
- Processes versus threads.
- Why interprocess communication (IPC) is needed.
- Mechanisms for IPC (shared variables, semaphores, monitors, message-passing).
- IPC problems (mutual exclusion, producers/consumers, dining philosophers) and their solutions.
- Scheduling and scheduling algorithms.
- Deadlocks — what they are, how to prevent them.

3 Reading to review

You should have read all of chapters 1, 2, and 3. Probably the best way to approach reviewing the reading is to skim all of it, paying more attention to topics I covered in class, and (re)read the last (summary) section of each chapter.

4 Other tips

You should also be sure to review all homeworks (and sample solutions) and the non-opinion minute essay questions.