CSCI 4320 (Principles of Operating Systems), Fall 2001

Review for Exam 2

1 Format of the exam

The exam will be in class December 4. 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 computer, or each other's papers. (You may use a calculator, but you should not need one.) Questions will focus on material not covered in the first exam, but observe that some topics require a basic understanding of earlier material (e.g., to understand deadlocks you must know something about the process abstraction). Most questions will likely be similar in form to those on the first exam and those in the homeworks.

2 Lecture topics to review

You are responsible for all material presented during lecture, but the following is a list of topics I consider most important.

- Deadlocks — what they are, how to prevent them.
- Memory management:
  - Address space abstraction; virtual (program addresses) versus physical addresses.
  - Schemes for managing memory — monoprogramming, multiprogramming with variable partitions, paging, segmentation (very briefly); advantages and disadvantages of each; implementation details at the level of the homework problems.
  - "Page faults" — what they are, how they're handled.
  - "Locality of reference" and how this relates to application-program performance (refer to 11/08 lecture notes).
- I/O:
  - Basics about I/O hardware — devices, device controllers, I/O ports versus memory-mapped I/O, DMA.
  - Goals of I/O software.
  - Basics about I/O software — programmed I/O versus interrupt-driven I/O versus I/O using DMA.
  - I/O software layers and how they work together.
  - I/O software for specific types of devices — disks, clocks, character-orienter terminals, GUI and network terminals.
- Files and file systems:
  - View from user / application program side — file and directory abstractions.
  - View from implementation side — ways of allocating space for files, disk-space management, reliability issues.

3 Reading to review

You should have read all of chapters 3, 4, 5, and 6; the following is a list of sections to read or review more carefully. You might also review the last (summary) section of each chapter.

- Chapter 3: Sections 3.1, 3.2, 3.3, and 3.6.
- Chapter 4: Sections 4.1, 4.2, 4.3, 4.4, and 4.7.
- Chapter 5: Sections 5.1, 5.2, and 5.3. Also skim sections 5.4 through 5.8.
- Chapter 6: Sections 6.1, 6.2, and 6.3 (except 6.3.8).