

CS323 Fall 2002 Operating System Design

Course Overview

Updated 1/14/03

Staff

Professor Yuanyuan Zhou, Instructor <http://www.cs.uiuc.edu/~yyzhou/>

[Room 3312 DCL](#), Phone 244-4563

TAs: Jeff Carlyle, Alexander Kramnik, Pierre Salverda



Machine Problems

The programming assignments in this class are based on Nachos simulator. It is difficult to learn to implement new operating system policies such as thread management, virtual memory, page replacement and disk head scheduling in the kernel and so these are programmed as Nachos simulation parts. You will extend the simulation and build a complete operating system on top of Nachos. Most new operating systems are built using object-oriented design and coding. We will use C++.

One Unit Students

Graduate students MAY take this course for one unit instead of three quarters of a unit. (Undergraduates take this course for three hours credit.) Those taking the class for more credit are expected to do more work. In this case, the one unit students will do a project.

Prerequisite

CS 225 is the prerequisite for CS323. Since CS110C covers C in detail and basic concepts of some of the C++ concepts, and it is the prerequisite for CS 225, C++ will not be taught in this class. If you do not know C or C++, you are advised to take the CS110 C++ programming laboratory.



Lectures

9-9:50am Monday, Wednesday and Friday in [Room 1320 DCL](#). No lecture on Mar 24th, 26th, 28th (Spring break). Lectures cover only important operating system concepts and principles. **It is students' responsibility to read the textbook and related materials.** You are expected to attend lectures, and will be responsible for all announcements made during lecture, on the [cs323 web page](#), and on the newsgroup, [uiuc.class.cs323](#).

Laboratory Facilities from [CSIL](#)

We will be using the Sparc lab in 1235 and 1245 DCL. Course accounts have been created from the advance enrollment roster. Your password is available from the lab-sitter upon presenting your student ID card. The lab hours will be 9 am to midnight, Monday through Thursday; 9 am to 7 PM Friday; 10 am to 5 PM Saturday; and 10 am to midnight Sunday. If you register late or otherwise have problems relating to the **existence of your account** or **membership in the group cs323**, see the TA's; all other account problems should be directed to the lab-sitters.



Course Outline

Time-line of lectures and assignments

| Time | Topic | Material | Assignments | Due |
|-----------|-----------------------------|-------------------|-------------------|------------------|
| ===== | | | | |
| 1/22-1/24 | Introduction, Overview | Chap. 1 | Reading | |
| 1/27-1/31 | Processes/Threads | Chap. 2.1,2.2 | Learn Nachos | |
| 1/31-2/03 | CPU scheduling | Chap. 2.5 | MP 1(threads) | Quiz 1 |
| 2/05-2/14 | Process Synchronization | Chap. 2.3, 2.4 | MP 1 | MP1 |
| 2/17-2/21 | Deadlock | Chap. 3 | MP 2 (multi-prog) | |
| 2/24-2/28 | Memory Management | Chap. 4.1,2,3,4 | MP 2 | Quiz 2 |
| 3/03-3/07 | Virtual Memory | Chap. 4.5,6,7,8 | MP 2 | MIDTERM 1(3/10) |
| 3/10-3/14 | I/O Systems | Chap. 5.1,2,3,4 | MP 3 (vm) | MP2 |
| 3/17-3/21 | I/O Systems | Chap. 5.4,6,7,8,9 | MP 3 | Quiz 3 |
| 3/24-3/28 | ----- Spring Vacation ----- | | | |
| 3/31-4/04 | File Systems | Chap. 6 | MP 3 | MP3 |
| 4/07-4/11 | File | Chap. 6.2 | MP 4 (file) | Quiz 4 |
| 4/14-4/18 | Multimedia Systems | Chap. 7 | MP 4 | MIDTERM 2 (4/21) |
| 4/21-4/25 | Distributed Systems | Chap. 8.2,8.3 | MP 4 | MP4 |
| 4/28-5/02 | Security | Chap. 9.1,2,3,4 | MP 5 (net/dist) | Quiz 5 |
| 5/05-5/07 | Protection | Chap. 9.5,6,7 | MP 5 | MP5 |
| 5/10 | Saturday, 8:00-11:00 am | FINAL EXAM | | |

Exam Dates

- Mid-term 1: Monday, 3/10, 7-8pm. DCL 1320 and MSEB 100
- Mid-term 2: Monday, 4/21, 7-8pm, DCL 1320 and MSEB 100
- Final exam: Saturday, 5/10, 8-11am, DCL 1320 and Loomis 141

Textbook

Modern Operating Systems (Second Edition) , Andrew S. Tanenbaum, Prentice Hall, 2001

Recommended Books

The C++ Programming Language, Bjarne Stroustrup, 2nd Edition. Addison-Wesley: Reading, Massachusetts, 1993.

Other Books

Applied Operating System Concepts, Silberschatz, Galvin, Gagne, 1th Edition, John Wiley&Sons, Inc., 2000

The Design of the Unix O.S., Maurice J. Bach.

The UNIX System, S. R. Bourne.

The Mythical Man Month. F. Brooks.

Operating System Design, D. Comer, T. Fossum.

Internetworking with TCP/IP, Doug Comer.

An Introduction to Operating Systems, Harvey M. Deitel.

Operating Systems: Design and Implementation, Andrew S. Tanenbaum.

The Logical Design of Operating Systems, Alan Shaw.

Operating Systems, Internals and Design Principles, William Stalling.(3rd Edition)