

CS570: Operating Systems

Spring 2004

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Office Hours: MW 17:30-19:00;
Lectures: MW 16:00-17:15, BAM 347
Prerequisites: CS310 (Data Structures), CS370 (Computer Architecture), knowledge of C programming language.

Grading: 6 individual programming assignments (35%), 2 midterm tests, closed-book (65%). In order to pass the course, the average score for the assignments must be above 60 points. Each working day passed the deadline for the assignments will be penalized 20 points.

Course Outline:

- Introduction (What is operating system?)
- Programs (their structure and execution environment)
- Processes and Threads
- Memory Management
- Virtual Memory
- Synchronization and Communication
- File System
- I/O Management
- Distributed Systems
- Graphical user interface
- Case Study: Windows NT

Notices:

The main purpose of the course is to cover the essential concepts and technologies needed to understand a modern operating system. Occasional comparisons between the UNIX and Windows NT will be made, however a deeper analysis of the Windows NT will be made through the case study. The case study will cover concepts such as deferred procedure calls (DPC), asynchronous procedure calls (APC), local procedure calls (LPC), object-oriented design, security, protected subsystems, application programming interface (API), micro kernel philosophy and structure, symmetric multiprocessing, access control, etc.

The programming assignments will be simple console-oriented programs which make use of the most essential API and system services and which cover the basic concepts presented throughout the course, including the case study. Students will be allowed to develop the assignments on their own PC. The Visual C++ (Visual Studio 6.0) is recommended. Other arrangements, including the usage of Department's facilities will be discussed in class.

Textual material:

- (1) M. Vuskovic, CS570 Lecture Notes, http://medusa.sdsu.edu/cs570/Course/Table_of_Contents.htm (required),
- (2) Silberschatz and Galvin, "Operating System Concepts" 6th edition, Addison-Wesley, 2001 (optional)

Other sources:

W. Stallings, "Operating Systems, Internals and Design," 4th ed., Prentice-Hall, Inc, 2001 (optional),
D. Solomon: "Inside Windows NT", 2nd edition, Microsoft Press 1998.
M. Brain and Ron Reeves, "Win32 System Services, the Hearth of Windows 98 and Windows 2000," 3rd edition, Prentice-Hall PTR, 2001 (required).