CS550 Advanced Operating Systems

Prerequisites

CS450 Operating Systems

All information provided here are tentative and subject to minor change

General Information

Instructor

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Office Hours: **Tuesday and Thursday**, 10:20am - 11:20am

Course Description

This course covers general issues of design and implementation of advanced modern operating systems. The focus is on issues that are critical to the applications of distributed systems and computer networks, which include interprocess communication, distributed processing, sharing and replication of data and files. Approximately two third of the course will be devoted to basic concepts and techniques, and the remaining third will be on assorted current topics in modern operating systems and distributed systems.

Course Materials

Textbook

Andrew S. Tanenbaum and Maarten van Steen
Distributed Systems: Principles and Paradigms
Prentice Hall, 2nd Edition, 2007. (Required)

Lectures

- (Lecture 1) Introduction to distributed systems
- (Lecture 2) Issues in communication
- (Lecture 3) Remote Procedure Call
- (Lecture 4) Remote Method Invocation
- (Lecture 5) Message- and Stream-Oriented communication
- (Lecture 6) Processes and threads
- (Lecture 7) Code migration and distributed scheduling
- (Lecture 8) Naming (1)
- (Lecture 9) Naming (2)
- (Lecture 10) Clock Synchronization
- (Lecture 11) Distributed mutual exclusion and distributed deadlocks
- (Lecture 12) Distributed transaction
- (Lecture 13) Consistency models
- (Lecture 14) Replication
- (lecture 15) Fault tolerance
- (Lecture 16) Distributed committ and failure recovery
- (Lecture 17) Distributed file systems
- (Lecture 18) NFS
- (Lecture 19) AFS & coda
- (Lecture 20) Security in distributed systems
- (Lecture 21) Security: authentication
- (Lecture 22) Current trends
- (Lecture 24) Course wrapup

Grading:

- 9% Three written homeworks
- 42% Three programming assignments
- 28% exam
- 21% project