Course Objective:

This course covers TCP/IP network programming using Berkeley sockets as the application program interface. After an introduction to TCP/IP and sockets, TCP/UDP sockets and their example client-server programs are presented. A midterm is scheduled to review these. The second half of the course covers advanced topics including threads, IP options, datalink access, etc. Along the semester, three mini-program assignments will be given to modify the example programs in the text, including one TCP example, one UDP example, and one TCP thread example. A term project chosen from (1) chatroom client/server, (2) TCP proxy, or (3) HTTP server, is due at the end of the semester. Students may leverage the mini-projects to accumulate functions that lead to the final term project. A quiz at the end of the semester is to help you to review the key concepts in this course.

Pre-requisite: fluency in C language, operating system concepts
Grade: 36% for 3 mini-program reports (12% each), 30% for midterm, 14% for quiz, 20% for term project report and demo to TA.
Lecture: ED117, 12:30-3:20PM Thursday

Table of Content

**Part I: Elementary Sockets**
1. Introduction and TCP/IP
2. Sockets Introduction
3. Elementary TCP Sockets and TCP Client-Server Example
4. I/O Multiplexing and Socket Options
5. Elementary UDP Sockets and UDP Client-Server Example

**Part II: Advanced Sockets**
1. Client-Server Design Alternatives
2. Name and Address Conversions
3. Daemon Processes: syslogd and inetd
4. Threads
5. IP Options
6. Raw Sockets
7. Datalink Access

Assignment

- Mini-Project #1
- Mini-Project #2
- Midterm
- Mini-Project #3
- Quiz
- Term Project: Report&Demo