

Network Programming, Spring 2006

Instructor: Prof. Ying-Dar Lin

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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

Textbook: W. Richard Stevens, UNIX Network Programming, Vol.1, Third Edition, Prentice Hall, 2004.

Course homepage: <http://www.cis.nctu.edu.tw/~ydlin/course/cn/np/index.html>

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

Assignment

Part I: Elementary Sockets

1. Introduction and TCP/IP
2. Sockets Introduction
3. Elementary TCP Sockets and TCP Client-Server Example Mini-Project #1
4. I/O Multiplexing and Socket Options
5. Elementary UDP Sockets and UDP Client-Server Example Mini-Project #2
Midterm

Part II: Advanced Sockets

1. Client-Server Design Alternatives
2. Name and Address Conversions
3. Daemon Processes: syslogd and inetd
4. Threads Mini-Project #3
5. IP Options
6. Raw Sockets
7. Datalink Access Quiz
Term Project: Report&Demo