

Network Programming

- Instructors:

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- WWW: <http://java.csie.nctu.edu.tw/~icwu/>

- Course web site: <http://e3.nctu.edu.tw>

- TAs: Listed in this web site.
- Slides: Given in this web site. (Also in the 4th floor copy room)
- Forum: installed in this web site.

Evaluation

● Loading:

- 1 Homework (HW): A simple homework.
- 4 projects (P1-P4)
 - Normally, two weeks per project.
 - Normally, demo dates should have no conflicts with class dates.
 - If the due dates are marked as the date of this class, it means one day ahead.
- 1 Final Exam.
 - ▶ Normally, most are from classes. (原則上，不考要死背的內容)

● Weighting:

- No fixed weighting. But, the sample weighting in 2012 is:
 - ▶ HW(6%), P1-4 (22% 21% 17% 12%), Exam (22%)
- Extra bonus policy: $\text{final grade} = \max(\text{grade}, \min(\text{grade} + \text{bonus}, 95))$

Outline

- Syllabus + Introduction --- 1.5hrs (Week 1)
- Unix Programming [S] --- 6hrs (Weeks 2 & 3)
 - Shared memory (after Concurrent servers) --- 3hr (Week 7)
- Network Primer [S] --- 2hrs (Week 4)
- Berkeley Socket [S] --- 2hrs (Weeks 4 & 5)
 - ➔ first task (processes + sockets + pipes + file redirection) (Week 5)
- Socket Programming Paradigms [C]
 - Iterative Servers --- 1hrs (Week 5)
 - Concurrent Servers --- 1hr (Week 5)
 - Single-Process Concurrent Servers --- 1hr (Week 6)
 - Multi-services Servers --- 1hr (Week 6)
 - Server issues --- 1hr (Week 6)
 - Concurrent Clients --- 1hr (Week 8)
 - ➔ second task (single-process concurrent & shared memory) (Week 7)

Outline (cont.)

- Internet and Distributed Information Systems [H]
 - HTTP, CGI, --- 2hrs (Week 8)
 - Winsock and AsyncSock --- 2hrs (Week 9)
 - ➔ third task (CGI, HTTP servers, Windows servers) (Week 9)
 - Thread vs. Select --- 1hrs (Week 10)
 - FastCGI --- 1hrs (Week 10)
 - Cookie, I18n, C10K problem --- 2hrs (not decided yet)
 - Web Programming, PHP, I18N --- 0hrs
- Case Studies:
 - Firewalls [H] --- 9 hrs (Weeks 10-12)
 - P2P --- 2hrs (Week 12)
 - ▶ NAT and UDP Hole Punching, BT --- 2 hr (Week 13)
 - ▶ BT --- 2 hr. (not decided yet)
 - ▶ web-socket – 1 hr (Week 13)
 - ➔ fourth task (SOCKS servers or WebSocket) (Week 13)
 - Remote Procedure Call (RPC)
 - ▶ Sun RPC, DCE RPC, --- 2hrs (Week 14)
 - ▶ RMI, Corba -- 2hrs (not decided yet)
 - ▶ Web services -- 2hrs (not decided yet)
 - ➔ final exam

References

- Textbooks:

- [S] Unix Network Programming, W. R. Stevens.

- [C] Internetworking with TCP/IP Vol III (BSD Socket Version), Comer and Stevens

- [F] Building Internet Firewalls, Chapman and Zwicky

- Source code in the textbooks: in the web site of this course.

- References:

- [R] TCP/IP Administration, Craig Hunt

- [Q] <http://www.csie.nctu.edu.tw/document/unixfaq/unixfaq.html>

- [H] Handouts