Network Programming

- Instructors:
  - 吳毅成, x31855
  - Email: icwu@csie.nctu.edu.tw
  - WWW: http://aigames.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)
    - You are required to use Git-type version control, announced by TAs.
    - 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:
  - Not fixed weighting. But, the sample weighting in 2015 is:
    - HW(6%), P1-4 (22% 21% 17% 12%), Exam (21%)
  - Extra bonus policy: final grade = max(grade, min(grade+bonus, 95))

Outline

- Syllabus + Introduction --- 1.5hrs (Week 1)
- Unix Programming [S] --- 6hrs (Weeks 2 & 3)
  - Shared memory (after Concurrent servers) --- 3hr (Week 7)

  ➔ first task (processes + pipes + file redirection) (Week 4)
- Network Primer [S] --- 2hrs (Week 4)
- Berkeley Socket [S] --- 2hrs (Weeks 4 & 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)
  - FastCGI --- 1hrs (Week 8)
  - Winsock and AsyncSock --- 2hrs (Week 9)

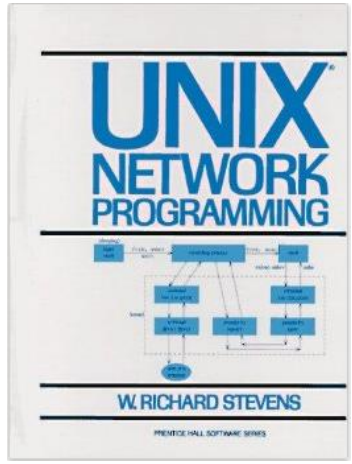
  ➔ third task (CGI, HTTP servers, Windows servers) (Week 9)
  - Thread vs. Select --- 1hrs (Week 9)
  - AIO, C10K problem, Boost --- 2hrs (Week 9)
  - Cookie, Web Programming, PHP, I18N --- 0hrs
- Case Studies:
  - Firewalls [H] --- 9 hrs (Weeks 10-12)
  - P2P --- 2hrs (Week 12)
    - NAT and UDP Hole 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 X)
    - RMI, Corba -- 2hrs (not decided yet)
    - Web services -- 2hrs (not decided yet)

  ➔ final exam

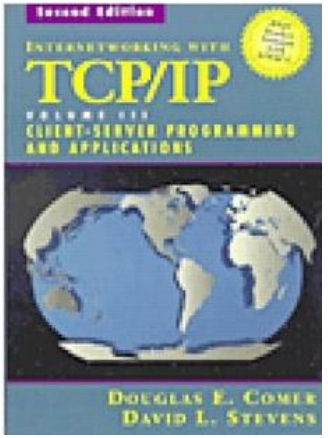
Date	Week	課程內容	備註
9/15	1	Syllabus + Introduction	
9/22	2	Unix Programming	
9/29	3	Unix Programming	**HW0**
10/6	4	Network Primer **PJ1 (Processes + Pipes + File redirection)**	**PJ1 宣佈**
10/13	5	Berkeley Socket, Iterative Servers, Concurrent Servers	
10/20	6	Single-Process Concurrent Servers, Multi-services Servers, Server issues	10/22(六) Demo PJ1
10/27	7	Shared memory **PJ2 (Single-process Concurrent)**	**PJ2 宣佈**
11/3	8	Concurrent Clients, HTTP, CGI, FastCGI	(期中考週)
11/10	9	Winsock and AsyncSock, Thread vs. Select, AIO, C10K problem, Boost **PJ3 (CGI, HTTP servers, Windows servers)**	11/12(六) Demo PJ2
11/17	10	Firewalls	**PJ3 宣佈**
11/24	11	Firewalls	
12/1	12	P2P	12/3(六) Demo PJ3
12/8	13	NAT and UDP Hole Punching, BT, web-socket **PJ4 (SOCKS servers or WebSocket)**	**PJ4 宣佈**
12/15	14	彈性保留	
12/22	15	彈性保留	12/24(六) Demo PJ4
12/29	16	Final Exam	(期末考週)

Textbooks

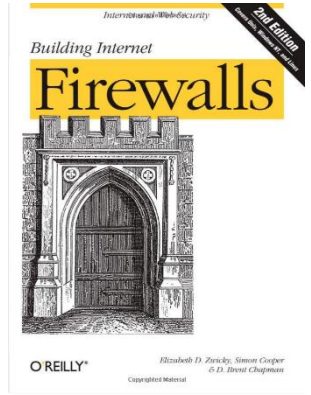


[S] Unix Network Programming, W. R. Stevens.

- Use the old version.



[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