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:
  - No 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)
- 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)
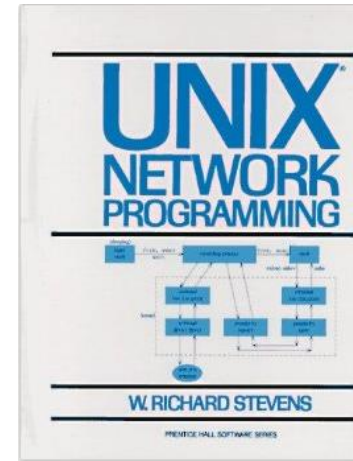
Outline (cont.)

- Internet and Distributed Information Systems [H]
  - HTTP, CGI, --- 2hrs (Week 8)
  - 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)
  - 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)
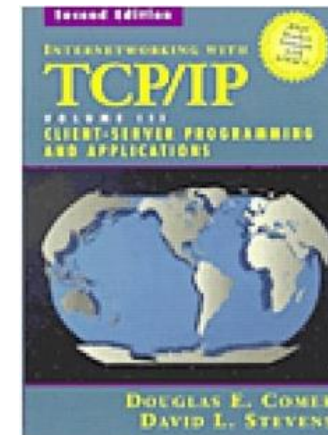 - ➔ final exam

Textbooks

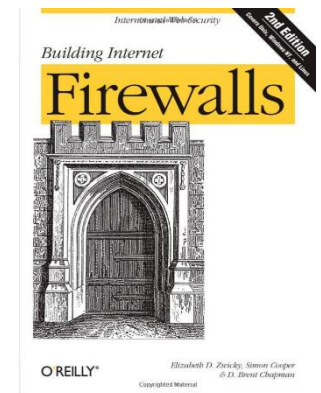[S] Unix Network Programming, W. R. Stevens.

- ▶ 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