



# 系統程式設計 Systems Programming

鄭 卜 壬 教 授  
臺 灣 大 學 資 訊 工 程 系

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# Who am I?

- **Pu-Jen Cheng (鄭卜壬)**
- **Research Interests:**
  - Information Retrieval
  - Web Knowledge Discovery
  - Intelligent Information Processing
  - Machine Learning
  - Data Mining
- **Lab:**
  - Web Mining & Information Retrieval Lab (R302)
- **Homepage:**
  - <http://www.csie.ntu.edu.tw/~pjcheng>



# Goal of SP Course

You are expected ....

to be familiar with the UNIX-like systems  
to become good system programmers

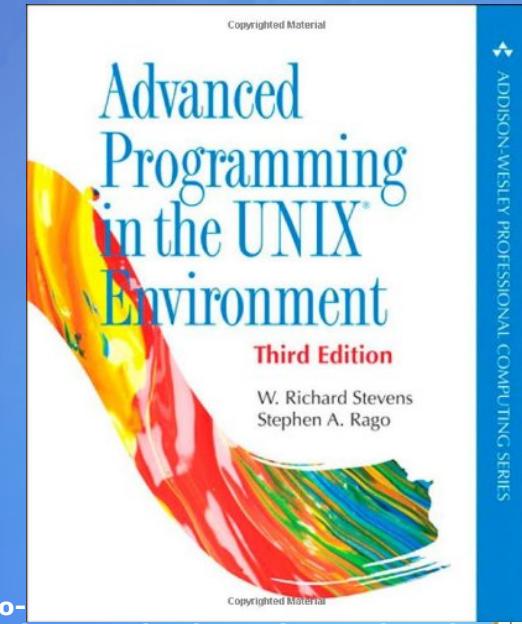
**Client**



**Server**

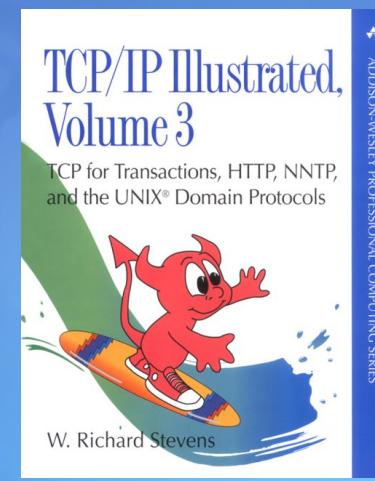
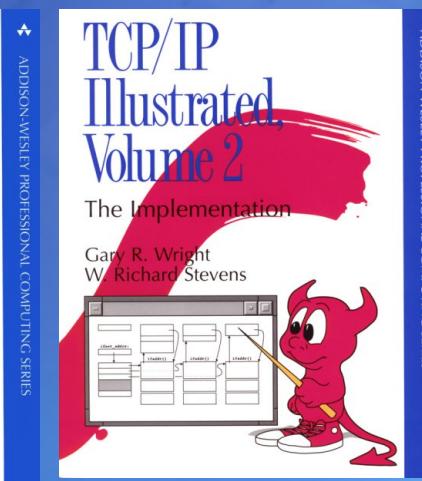
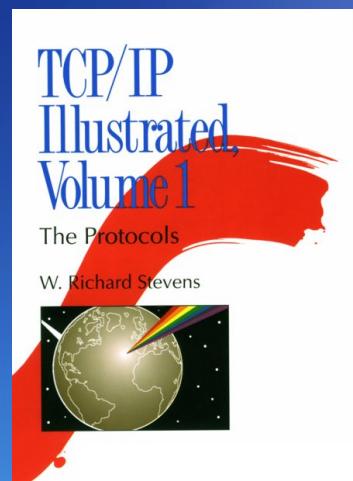
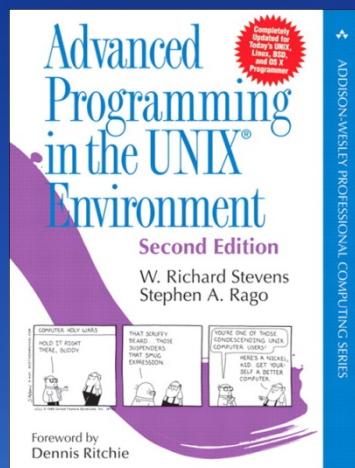


- **Required Text Book**
  - “Advanced Programming in the Unix Environment”  
by W. Richard Stevens and Steven A Rago, Addison-Wesley, 3rd Edition, 2013. (source code: <http://www.apuebook.com>)
- **Reference Book:**
  - “Understanding UNIX/LINUX Programming: A Guide to Theory and Practice” by Bruce Molay, Prentice Hall, 2002.
  - “The Art of UNIX Programming” by Eric S. Raymond.  
<http://www.faqs.org/docs/artu/>
- **Prerequisites:**
  - Data Structures and C/C++ Programming.
- **Getting started with UNIX:**
  - A material from Stanford (<http://ppt.cc/BtKvk>)  
Compile, link & debug program, gcc, make, gdb, shell commands



# W. Richard Stevens (1951~1999)

Ph.D. (Systems Engineering), Univ. of Arizona, 1982  
<http://www.kohala.com/start/>  
[http://en.wikipedia.org/wiki/W.\\_Richard\\_Stevens](http://en.wikipedia.org/wiki/W._Richard_Stevens)



# Administration Misc.

- **Class slides & assignment specifications**  
<http://www.csie.ntu.edu.tw/~pjcheng/course/sp2016>
- **Assignment submission & grades**  
<https://ceiba.ntu.edu.tw/1051CSIESP/>
- **Office hours**  
R323, 9:00~12:00, Friday
- **Forum**  
ptt2: **SysProgram** board



# Topics to be Covered

- **Basic OS Preface/Introduction**
- **Standardization and Implementation**
- **File I/O**
- **Standard I/O Library**
- **Files and Directories**
- **System Data Files and Information (optional)**
- **Environment of a Unix Process**
- **Process Control & Relationships**
- **Signals**
- **Inter-process Communication**
- **Thread Programming**
- **Networking (optional)**



# Grading Criteria

- **Mid-term exam: 30%**
- **Final exam: 30%**
- **Several hand-written exercises & 4 programming assignments: 40%**
  - Not allow to deliver hand-written exercises late
  - Late for programming assignments:
    - 5% for each day delay
  - Plagiarism: no credit

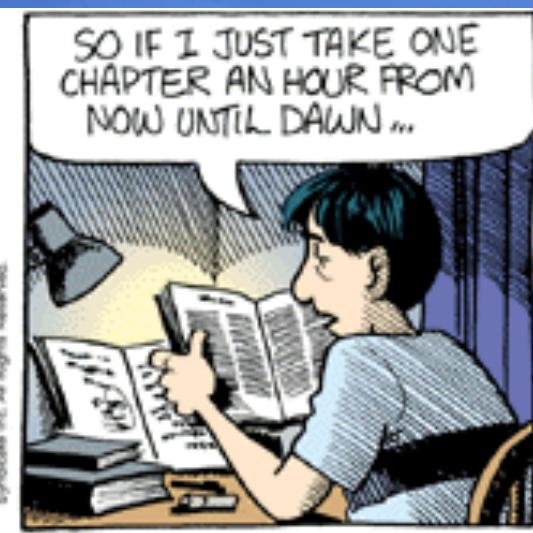


# Relation to Other CS Courses

- **Prescribed courses**
  - Programming language
    - Introduction to computer programming
    - Data structures and algorithms
    - Systems programming (this course)
  - System
    - Operating systems, computer network
- **Advanced courses**
  - Cloud computing, large-scale information system, embedded system...



# It's important to schedule your time wisely



# Enjoy & Have Fun!



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