



Computer Network Administration

Syllabus

- ❑ Website:
 - <http://people.cs.nctu.edu.tw/~wangth/course/netadm>

- ❑ Instructors:
 - 王則涵 wangth@cs.nctu.edu.tw
- ❑ Time:
 - Thu. IJK (PM 6:30 ~ 9:20)
- ❑ Place:
 - EC122
- ❑ TAs:
 - We might get about 4 TAs
 - Email to TAs: ta@nasa.cs.nctu.edu.tw
 - 3GH every week
- ❑ Textbook:
 - [Unix and Linux System Administration Handbook \(5th Edition\)](#)

Syllabus – Course Overview

❑ Main topics

- Python Programming (TBC)
- Networking
 - TCP/IP Networking
 - Network Environment
 - NAT, DHCP, Firewall, FTP, VPN, Proxy, ...
- DNS – BIND (Berkeley Internet Name Domain)
- Mail System - Postfix
 - SPF (Sender Policy Framework)
 - DKIM (DomainKeys Identified Mail)
 - DMARC (Domain-based Message Authentication, Reporting & Conformance)
- Network Management

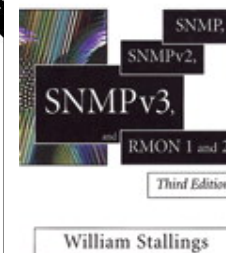
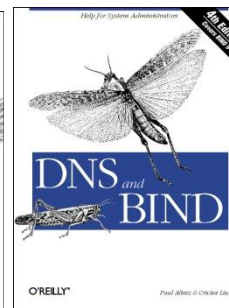
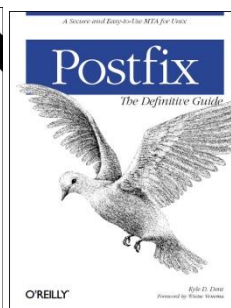
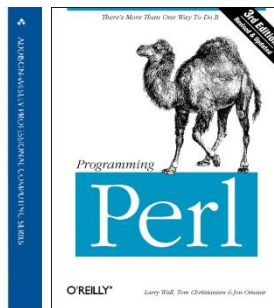
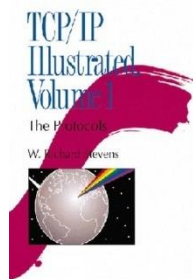
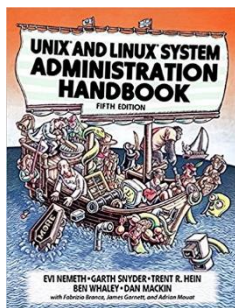
Syllabus – Course Textbook and Reference

❑ Textbook

- Unix and Linux System Administration Handbook (5th Edition)
- Slides

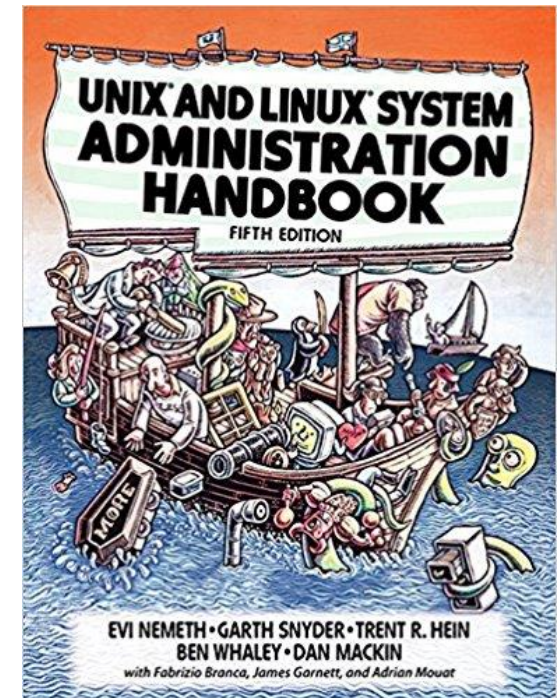
❑ Reference book

- TCP/IP Illustrated Volume 1
- Programming Perl
- Postfix
- DNS and BIND
- SNMP, SNMPv2, SNMPv3 and RMON 1, 2



Syllabus – Content

- We will cover the following chapters in this semester (NetAdm):
- Chapter 15 ~ 18, 21, 23 ~ 25, 30 ~ 32
 - NAT, DHCP, VPN, Proxy, ...
 - Python Programming (TBC)



Syllabus – Text book outline

Part I. Basic Administration

- ❑ Chap 1 – Where to start.
- ❑ Chap 2 – Booting and Shutting Down
- ❑ Chap 3 – The Filesystem
- ❑ Chap 4 – Access control and rootly powers
- ❑ Chap 5 – Controlling processes
- ❑ Chap 6 – User Management
- ❑ Chap 7 – Storage
- ❑ Chap 8 – Periodic processes
- ❑ Chap 9 – Backups
- ❑ Chap 10 – Syslog and log files
- ❑ Chap 11 – Software installation and management
- ❑ Chap 12 – The Kernel
- ❑ Chap 13 – Scripting and the Shell
- ❑ Chap 14 – Configuration Management

Part II. Networking

- ❑ Chap 15 – Physical Networking
- ❑ Chap 16 – TCP/IP
- ❑ Chap 17 – Routing
- ❑ Chap 18 – DNS: Domain Name System
- ❑ Chap 19 – NFS: Network File System
- ❑ Chap 20 – HTTP: Hypertext Transfer Protocol
- ❑ Chap 21 – SMTP: Simple Mail Transfer Protocol
- ❑ Chap 22 – Directory Services
- ❑ Chap 23 – Electronic Mail
- ❑ Chap 24 – Web Applications
- ❑ Chap 25 – Network Management and Debugging

Syllabus – Text book outline (Cont.)

Part III. Operations

- ❑ Chap 26 – Continuous Integration and Delivery
- ❑ Chap 27 – Security
- ❑ Chap 28 – Cloud Computing
- ❑ Chap 29 – Containers and Virtualization
- ❑ **Chap 30 – Monitoring**
- ❑ Chap 31 – Performance Analysis
- ❑ Chap 32 – Policy and Politics

Syllabus – Grade Policy

- ❑ Mid
 - 15 ~ 20%
- ❑ Final
 - 15 ~ 20%
- ❑ Exercise
 - 60 ~ 70%
 - **No Delay Work**
 - 4 exercises
 - 1 term project

Syllabus – Prerequisite

❑ Background Knowledges

- It is better to have taken
 - “Computer System Administration” (計算機系統管理)
 - “Introduction to Networking” (計算機網路概論)
- At least
 - Experience of using Unix-like environment

❑ Environment

- One **dedicated** PC (Or dual OS in your PC, VM is also accepted.)
 - With **Unix-like OS** installed (e.g., FreeBSD, Linux, Solaris, ...)

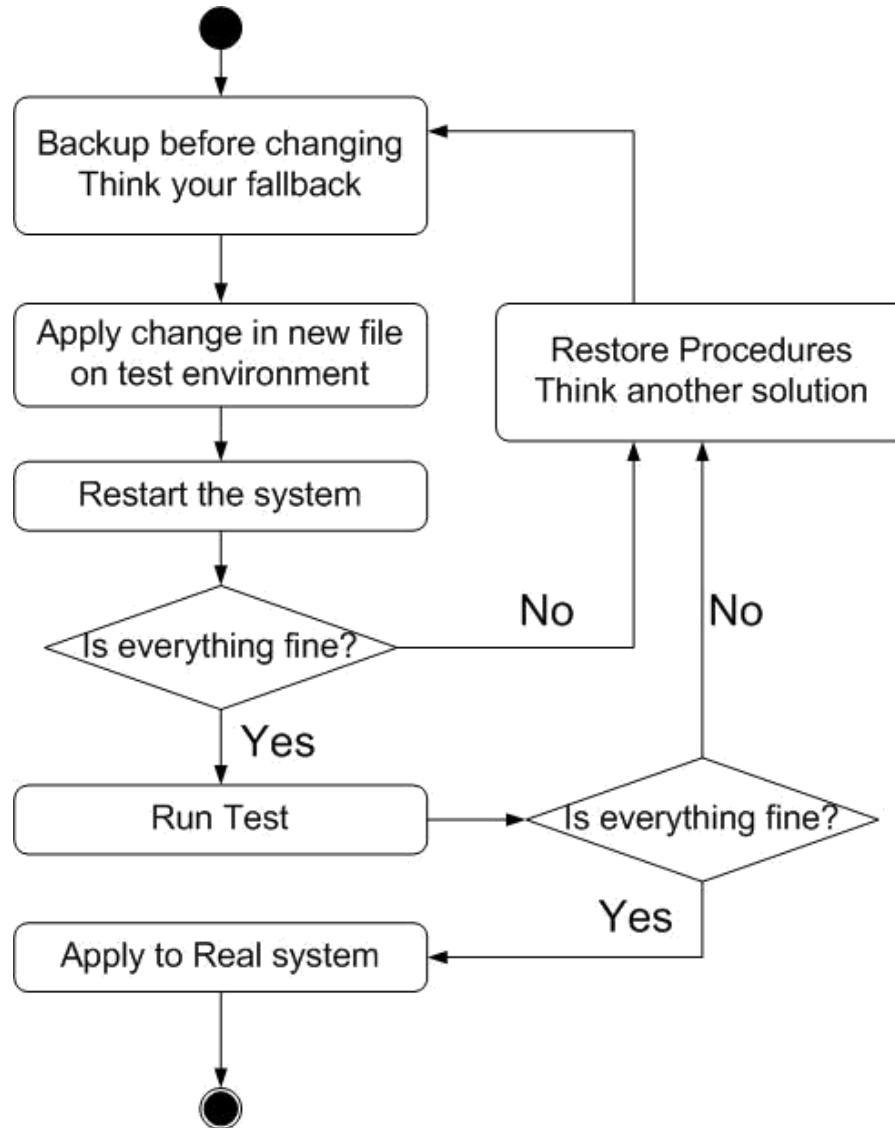
Attitude

- Attend every class
- Do every exercise
 - As early as possible
 - **On your own**
- Read book and practice at least 6 hours every week
 - Use Unix-like environment
 - Recommend: more than 1.5 hours/day averagely
- Collect information on the Internet
 - The newer, the better.



When You Perform Any Changes...

□ Flow of Change



SA-NA Junction

❑ FreeBSD

- 11.2-RELEASE
 - http://people.cs.nctu.edu.tw/~wangth/course/sysadm/slides/01_Install_FreeBSD.pdf

❑ Install OS and software (ports)

- <http://people.cs.nctu.edu.tw/~wangth/course/sysadm>
 - http://people.cs.nctu.edu.tw/~wangth/course/sysadm/slides/02_Installing_Applications.pdf