Computer Network Administration

曾亮齊

國立陽明交通大學資工系資訊中心

Syllabus

- Website:
  - https://nasa.cs.nctu.edu.tw/na/2021/
- Instructors:
  - 曾亮齊 lctseng@cs.nctu.edu.tw
  - 王則涵 wangth@cs.nctu.edu.tw
  - 林瑞男 jnlin@cs.nctu.edu.tw
  - 許立文 lwhsu@cs.nctu.edu.tw
- Time:
  - Thu. IJK (PM 6:30 ~ 9:20)
- Place:
  - EC114

Syllabus

- Discussion Forum
  - https://groups.google.com/forum/#!forum/nctunasa
  - We suggest you to join - TAs might give homework hints there
  - Request join and tell us your student ID
  - Ask course-related/technical questions there
  - Everyone in the group can answer/vote
  - But DON'T post direct answer/configuration there!
    - You will be banned.

電子郵件傳送偏好設定： 有新訊息時通知我 (每天最多 1 封) ▾

☑ 當我針對某個主題留言時，自動為我訂閱該主題的電子郵件更新

這個群組的其他成員可查看你的電子郵件地址，甚至也可以查看你的 Google 個人資料。 加入這個群組後，你就能存取群組的共用資源。瞭解詳情。

您可以在下面的文字方塊中填入說明，將詳細資訊傳送給管理員。

我是108下學期NA的修課生曾亮齊，學號0116057

申請加入這個群組　　取消

Syllabus

- Lecture/Exam in Chinese
  - Not recommend for those do not speak Chinese
- TAs:
  - We might have about 6 TAs.
  - Email to TAs: ta@nasa.cs.nctu.edu.tw
    - Also received by all lecturers
  - 3GH every week
    - Website:
  - https://nasa.cs.nctu.edu.tw/sa/2020/

Syllabus

- Email Policy (IMPORTANT)
  - Don't send course-related/technical questions to TAs
    - TAs won't answer you
  - Only ask TAs for personal/non-technical questions
    - Course registration/dropping
    - Grading
    - Office hour appointment
    - Demo appointment

# Syllabus - Registration & Dropping Policy

- Registration (non-NYCU students)
  - Send registration form to CSCC front desk if cannot find lecturers
- Dropping (after midterm)
  - Contact CS Department Office if cannot find lecturers near the deadline
  - Email to ta@nasa.cs.nctu.edu.tw

Syllabus – Course Overview

- Main topics
  - Networking
    - TCP/IP Networking Environment
    - NAT, DHCP, Firewall, VPN, Load Balancer, …
  - DNS – BIND (Berkeley Internet Name Domain)
  - Mail System - Postfix
    - SPF (Sender Policy Framework)
    - DKIM (Domain Keys Identified Mail)
    - DMARC (Domain-based Message Authentication, Reporting & Conformance)
  - Network Management/Authentication/Authorization
    - LDAP, SNMP
    - Configuration Management (Ansible, Puppet)

Syllabus – Course Textbook and Reference

- Textbook
  - Unix and Linux System Administration Handbook (5th Edition)
  - Course slides
- Reference book
  - TCP/IP Illustrated Volume 1
  - Postfix
  - DNS and BIND
  - SNMP, SNMPv2, SNMPv3 and RMON 1, 2
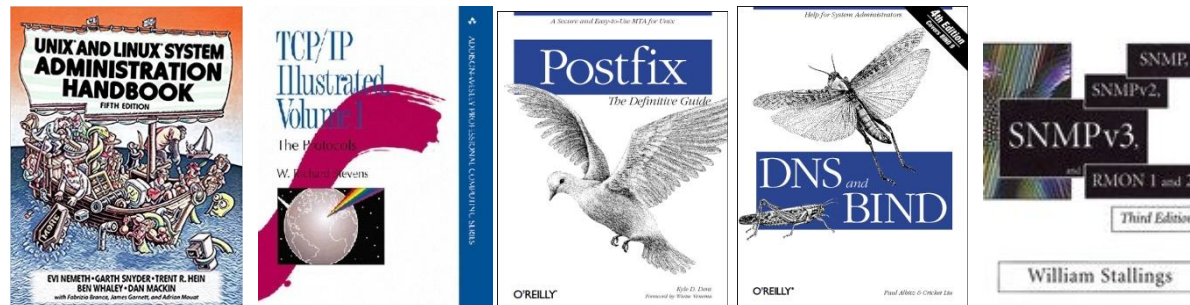
Syllabus – Text book outline

- Part II. Networking
  - Chap 16 – TCP/IP
  - Chap 17 – Routing
  - Chap 18 – DNS: Domain Name System
  - Chap 21 – SMTP: Simple Mail Transfer Protocol
  - Chap 22 – Directory Services
  - Chap 23 – Electronic Mail
  - Chap 25 – Network Management and Debugging
- Operations
  - Chap 30 – Monitoring

Syllabus – Grade Policy

- Mid
  - 15 ~ 20%
- Final
  - 15 ~ 20%
- Homework
  - 60 ~ 70%
    - No Delay Work
    - 4 homework

Syllabus – Homework Outline

- Building an intranet with DHCP, NAT, VPN, DNS, LDAP, Mail, WWW… services
- Understanding and managing all these services

VPN Server

Internet

Router

Multiple internal servers

PC
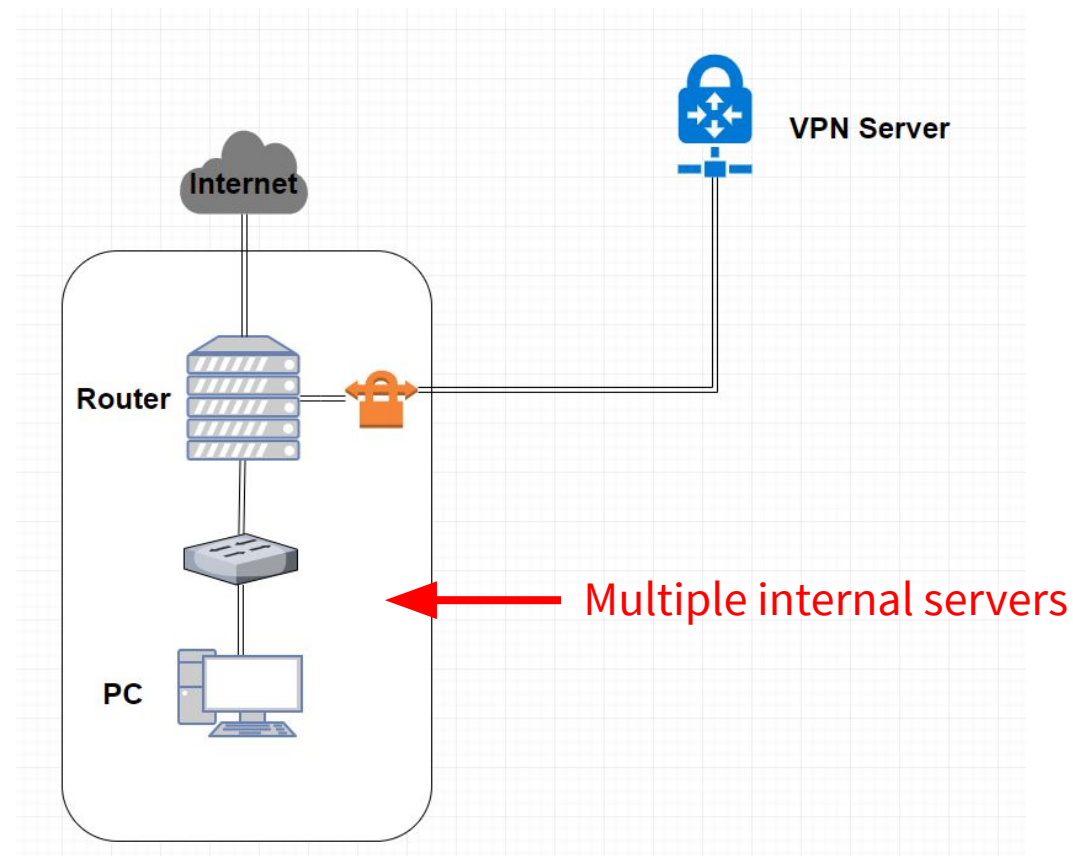
Syllabus – Homework Outline

- Every homework is based on previous one
- Homework 1
  - Setup Intranet
  - DHCP, NAT, VPN
- Homework 2
  - + DNS Service
- Homework 3
  - + Mail Service
- Homework 4
  - Authorization, Authentication, Monitoring, Management
  - + LDAP, SNMP

Syllabus – Prerequisite

- Background Knowledges
  - Strongly recommend that you should take these first
    - "Computer System Administration" (計算機系統管理)
    - "Introduction to Networking" (計算機網路概論)
  - Unix-like system
    - You can use any OS for homework
    - FreeBSD is used for lecturing
- Environment
  - A dedicate(powerful?) PC that can run multiple VMs
    - VirtualBox, VMWare
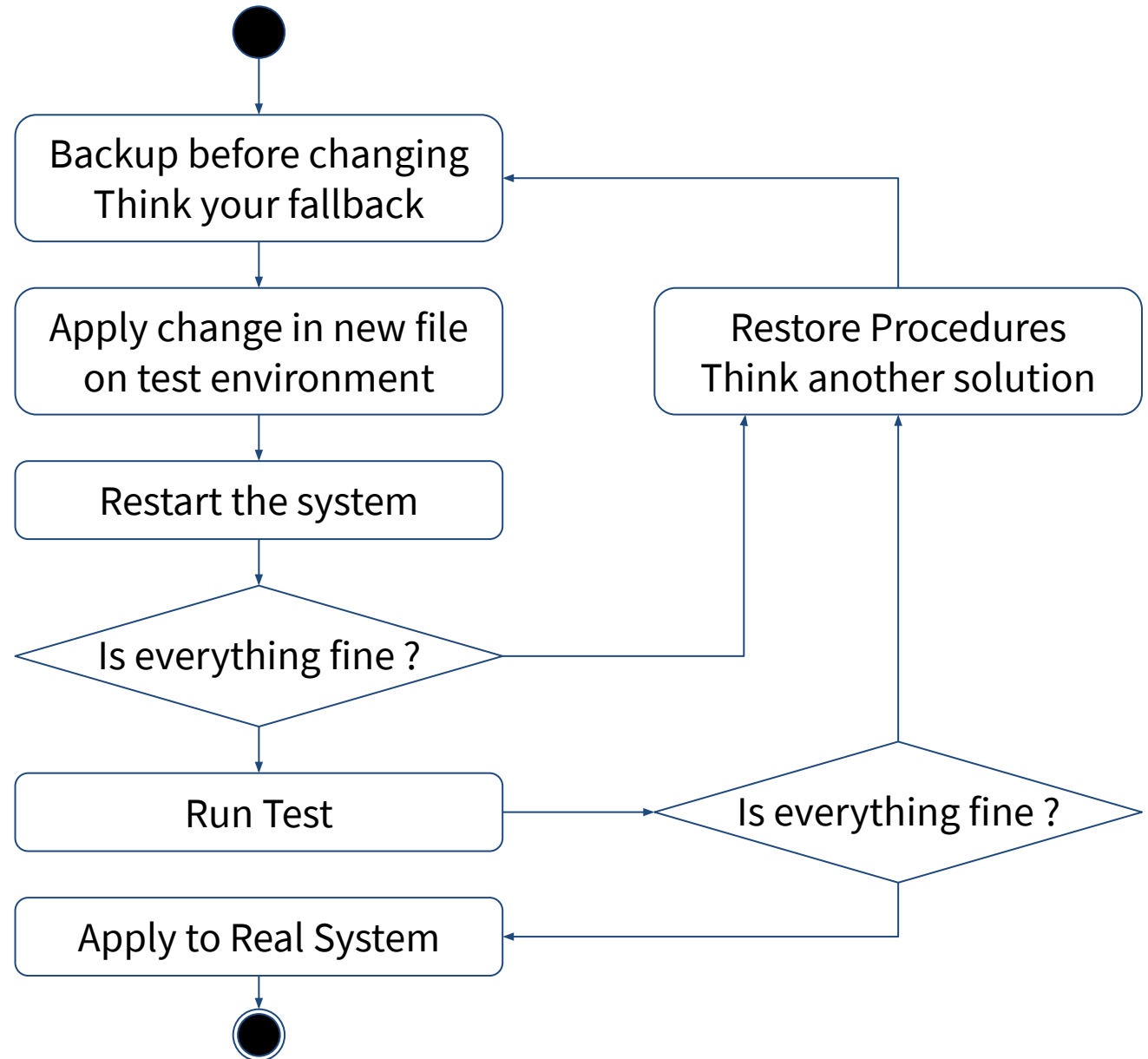   - 2~3 Unix-like system running at the same time

Attitude

- Attend every class
- Do every exercise
  - As early as possible
  - On your own
- Collect information on the Internet

  - The newer, the better.
- Not recommended for those have more than 3 major courses in this semester
  - This is a heavy course - loading roughly equal to a 9-credit course

When You Perform Any Changes…

- Flow of Change

Backup before changing
Think your fallback

Apply change in new file
on test environment

Restart the system

Is everything fine ?

Run Test

Apply to Real System

Restore Procedures
Think another solution

Is everything fine ?

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SA-NA Junction

- FreeBSD
  - 12.1-RELEASE
- Self-study for the SA course
  - https://nasa.cs.nctu.edu.tw/sa/2020/

Q & A