Internet Applications

—— *Course Outline*

BUPT/QMUL

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Instructor

- Instructors: 马严，时岩，黄小红，程莉
- From School of Computer Science (计算机学院), Institute of Network Technology (网络技术研究院), BUPT
- Course Website: www.mayan.cn/IA/
- Course FTP
  - ftp://10.3.255.85 (Username: gjxy2019; Passwd: student)

Prerequisite Courses

- Prerequisite courses
  - 1300029
    - Programming Fundamentals
  - EBU5403
    - Internet Protocols

Topics

Background

- Introduction of Internet
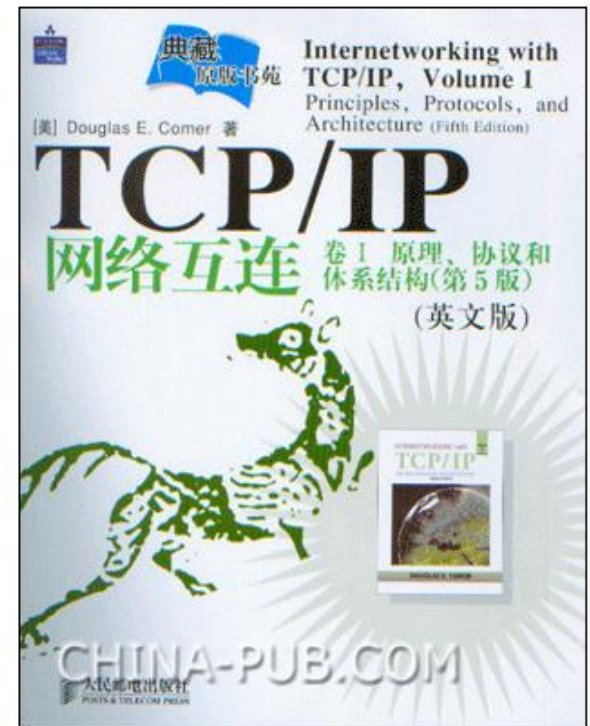- TCP/IP and OSI/RM
- Sockets

Typical Internet Applications

- DNS (Domain Name System)
- DHCP (Dynamic Host Configuration Protocol)
- Remote Interactive Computing: TELNET/SSH
- Email: SMTP/POP/IMAP/MIME
- File Transfer and Access: FTP/TFTP/NFS
- World Wide Web: HTTP
- Network Management: SNMP
- Multimedia and Voice: SIP / H.323, RTP / RTCP
- New applications

Reference Textbooks

- Internetworking with TCP/IP Volume I Principles, Protocols and Architecture
- Fifth Edition
- Douglas E. Comer

Labs and Projects

- Basics—Linux commands, compiling, debugging, …

- Simple UDP client / server program

- Simple TCP client / server program

- Application programming, such as email server and client …

Evaluation

- Your final credit in this course will be determined by:

  - Labs and Coursework ---- 30%
  - Final Exam ---- 70%

Course Schedule (1)

Week	Lecture (Monday)	Lab (Thursday)
1 (Feb 25)	Introduction: History of Internet	Install Linux in VM
2 (Mar 4)	Network Layered Architecture	Commands and Operations in Linux
3 (Mar 11)	Basic Concepts in Network Programming	How to use text editor *vi* ?
4 (Mar 18)	Introduction to Sockets Interface	Socket programming practice with given example program
5 (Mar 25)	Socket Programming: UDP Echo as example	Socket programming: get information of a host
6 (Apr 1)	Dynamic Host Configuration Protocol	Socket programming: UDP

Course Schedule (2)

Week	Lecture (Wednesday)	Lab (Thursday)
7(Apr 8)	Domain Name System	Socket programming: UDP
8 (Apr 15)	TELNET / SSH and Applications	Socket programming: UDP
9 (Apr 22)	File Transfer Protocols	using Wireshark to capture and analyze DHCP and DNS
10 (Apr 29)	**NGI seminar**	Socket programming: TCP
11 (May 6)	Email Systems and Protocols	**Project**
12 (May 13)	WWW and HTTP	

Course Schedule (3)

Week	Lecture (Wednesday)	Lab (Thursday)
13 (May 20)	Network Management Protocols	
14 (May 27)	Multimedia on Internet	
15 (Jun 3)	New Application	**Project**
16 (Jun 10)	Review	
17 (Jun 17)	Preparation for Final Exam	
18 (Jun 24)		