Internet Applications

—— *Course Outline*

BUPT/QMUL

2010-9-21

北京邮电大学
BEIJING UNIVERSITY OF POSTS AND TELECOMMUNICATIONS

Electronic Engineering

Instructor

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Prerequisite & Subsequent Courses

- **Prerequisite courses**
  - ELE103
    - Telecommunication and Internet Fundamentals
  - ELE161
    - Programming Fundamentals

- **Subsequent courses**
  - ELE403
    - 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
  - File Transfer and Access: FTP/TFTP/NFS
  - Email: SMTP/POP/IMAP/MIME
  - World Wide Web: HTTP
  - Network Management: SNMP
  - Multimedia and Voice: SIP / H.323, RTP / RTCP
  - E-Commerce basics

Topics

Background
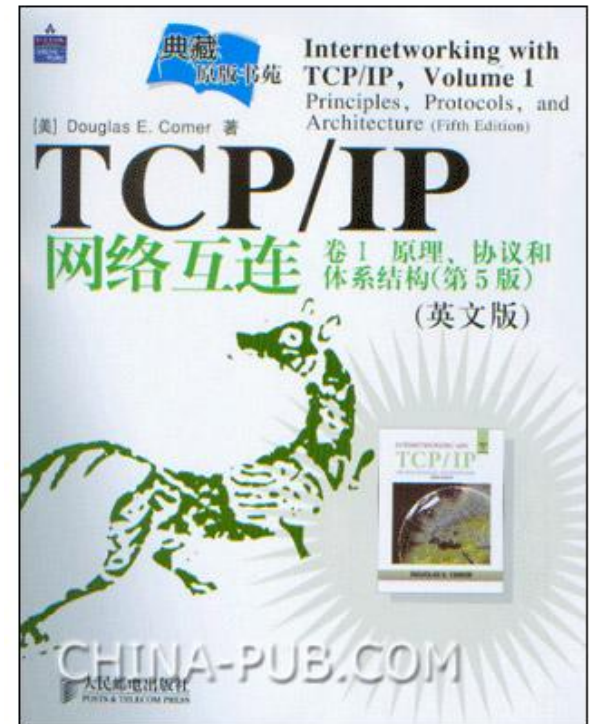
- Introduction
- TCP/IP and
- Sockets

Typical Internet Applications

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

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Reference Textbooks

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

Labs and Projects

- Basics—Linux command, compiling, debugging, …

- Simple UDP client / server program

- Simple TCP client / server program

- Application programming, such as email client, and others …

Evaluation

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

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

Course Schedule (1)

Week	Lecture (Tuesday)	Lab (Friday)
4 (Sep21)	Introduction: History of Internet	Commands and Operations in Linux (Sep 25)
5 (Sep28)	Network Layered Architecture	
7 (Oct12)	Basic Concepts in Network Programming	How to use text editor *vi* ?
8 (Oct19)	Introduction to Sockets Interface	Socket programming practice with given example program
9 (Oct26)	Socket Programming: UDP Echo as example	Socket programming: get information of a host
10 (Nov 2)	Dynamic Host Configuration Protocol	Socket programming: UDP

Course Schedule (2)

Week	Lecture (Monday)	Lab (Wednesday)
11 (Nov 9)	Domain Name System	Socket programming: UDP
12 (Nov16)	TELNET / SSH and Applications	using Wireshark to capture and analyze DHCP and DNS
13 (Nov23)	Email Systems and Protocols	Capture and Analysis of SMTP & POP3
14 (Nov30)	WWW and HTTP	Project
15 (Dec 7)	File Transfer Protocols	
16 (Dec 14)	Network Management Protocols	

Course Schedule (3)

Week	Lecture (Monday)	Lab (Wednesday)
17 (Dec 21)	Multimedia on Internet	Project
18 (Dec 28)	E-commerce Applications	
19 (Jan 4)	Review	
20 (Jan 11)	Preparation for Final Exam	
21 (Jan 18)		

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