Talk and find your partners for peer discussion group
(3 people each)

Lecture starts at 1:05 PM

UIC UNIVERSITY OF ILLINOIS AT CHICAGO Department of Computer Science
COLLEGE OF ENGINEERING

CS450 – Introduction to Networking

Lecture 2 – Programming environment and assignment 1

Phu Phung & Xiang Huo (TA)

January 14, 2015

Prerequisites & Syllabus Revisit

- Prerequisites
  - –CS361 is required for undergrads
- NO group presentation

TA Office hours

- 10 AM-12 PM Wednesdays
- Office: 1306 SEO

Recommended environment for programming assignments

- Work on a virtual machine
  - VirtualBoxVM https://www.virtualbox.org/
- Ubuntu 14.04.1 LTS
  - http://www.ubuntu.com/download/desktop (ubuntu-14.04.1-desktop-amd64.iso)

  (Install the Guest Additions for fullscreen display in VirtualBox)
- Work on your own physical computer is not recommended

Assignment 1

- Write a simple web client program, name hw1
  - Input: URL
  - Output: the HTML content of the URL

  Example:

  $make

  $./hw1 http://www.cs.uic.edu/~phu/cs450.html

  -> cs450.html

Assignment 1 – Suggested algorithm

1) Check arguments
2) Get hostname and filename from the first arguments (argv[1])
   - Host: www.cs.uic.edu
   - Filename ~/phu/cs450.html
3) Create Socket and connect to the server
4) Construct and send the HTTP request message to the server
5) Receive the response message from the server and store the content into a local file

Deadline & other stuffs

- Monday January 26, 7 AM
- Firm deadline
- Talk to me 36 hours before the deadline if you have an “acceptable” reason
- 1 bonus point, 36 hours

Demo

Peer discussion group

- 1

  Matthew Borgelt
- 12

  James Angelakos

  Tianniu Lei

  Analil Mamucod
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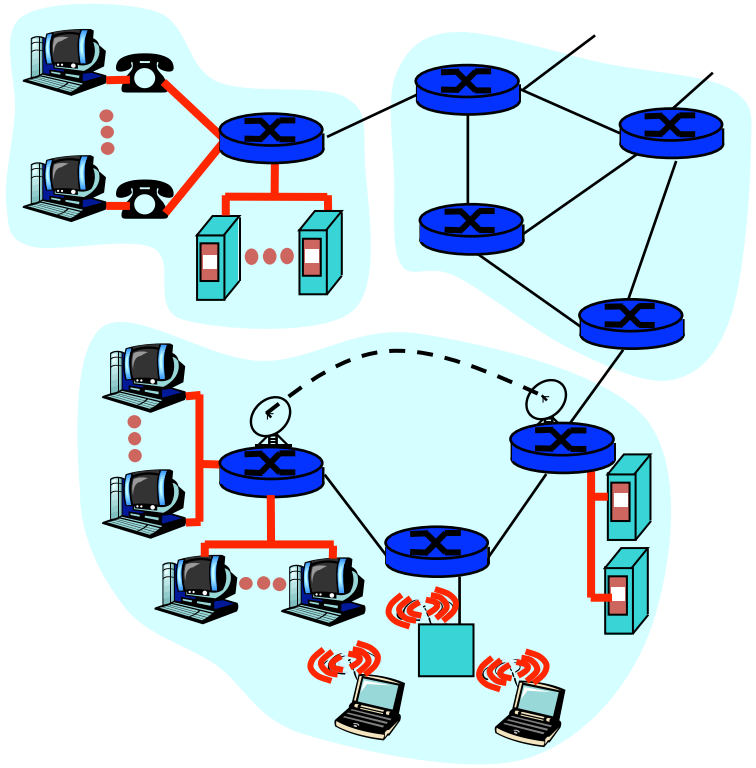
Course overview

- The Internet and layer model
- Application layer
- Transport layer
- Network layer
- Link layer & Physical layer
- Other stuffs: network security, mobility

A top-down approach:

We'll cover networking top-down

- end-system applications
- transport: TCP/UDP
- network core: routing, hooking nets together
- link-level protocols, e.g., Ethernet
- other stuff: security, mobility, management,



Credit: V. Arun

Application layer

- Principles of application-layer protocols
- Socket programming
- World Wide Web: HTTP
- Email system: SMTP
- Name system: DNS

Transport layer

- Transport-layer services and principles
- Multiplexing and demultiplexing applications
- Connectionless transport: UDP
- Principles of reliable of data transfer
- TCP case study
- Principles of congestion control
- TCP congestion control

Network layer

- Introduction and network service model
- What's inside a router?
- Routing principles (algorithms)
- Hierarchical routing
- IP: the Internet Protocol
- NAT and Checksums
- Internet routing: RIP, OSPF, BGP

Link and physical layer

- Introduction to link layer and services
- error detection, correction
- multiple access protocols, LANs
- LAN addresses, ARP
- Ethernet
- Introduction to Physical layer
- Wireless and Mobility

What is the order of Internet layers?

A. Application/Protocol/Network/Physcial/Link

B. Protocol/Application/Network/Link/Physical

C. Application/Transport/Network/Link/Physical

D. Transport/Application/Physical/Link/Network

E. None of above

Next lecture

- iClicker is required
- Groups are formed (either by you or me)

- Protocol and Internet layers
  - Required readings: K&R 1.1, 1.5, 1.6

- Socket programming