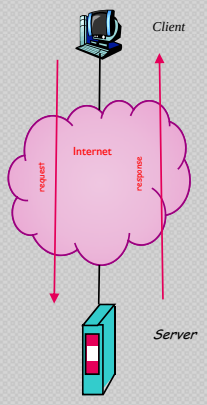

INTERNET PROTOCOLS AND CLIENT-SERVER PROGRAMMING SWE 344

Fall Semester 2008-2009 (081)

Module 0: Getting Started

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Objectives/Outline

- Objectives
  - Be familiar with the class requirements and policy
  - Learn what it is all about and set expectations.
- Outline
  - Course Objectives & Outcomes
  - Pre-requisites and Resources
  - Evaluation Methods
  - Tentative Major Topics
  - Questions & Answers
  - Caveat
  - Next Lecture …

Course Objectives & Outcomes

- Course Objectives
  - To provide students with basic understanding of how the Internet is structured into layers and various protocols in each layer with emphasis on the transport and application layers.
  - To teach students the theory and practice to develop client-server Internet applications using the socket interface and remoting.
- Learning Outcomes
  - *Upon completion of the course, you should be able to:*

1. Demonstrate understanding of the TCP/IP model and relevant protocols in each layer.
2. Describe the IP addressing, Internet domain names and recognize the role of the DNS servers.
3. Explain the operation and related issues of various common Internet applications and protocols including: HTTP, SMTP, POP, FTP, Telnet, IGMP, etc.
4. Identify and apply various socket programming concepts and mechanisms.
5. Use effectively the socket interface or remoting to develop Client-Server Internet applications.
6. Practice software engineering principles and methods in building network-aware applications.

Pre-requisites and Resources

- Prerequisites:
  - Some programming skills (ICS201)
- Required background
  - Enthusiasm and desire to learn
  - Ability to write programs in Java (or C++)
  - Familiarity with basic tools such as Windows and MS Office
- Resources
  - Textbook: Richard Blum, *C# Network Programming*. Sybex 2002.
  - Lecture notes and handouts
  - Several web sites and e-books to be available through the course website.

Available on WebCT

Evaluation Methods

Lab: Assignments: 12% + 3 Quizzes: 13%	25 %
Term Project (Group of 2 or 3): Proposal: 1%; Requirements & Design: 5%; Implementation: 10%; Presentation: 4%	20 %
Quizzes (2 or 3)	10 %
Midterm Exam (Date: Dec. 17, 2008@5:00-7:00PM & Room: TBA) **	20 %
Final Exam (semi-comprehensive) [Date: as announced by the registrar]	25 %

** Any legitimate changes to exam dates can only be discussed only in the first week.

Tentative Major Topics

- Overview of C# and .NET Framework
- C# Programming Basics
- OOP, GUI, Delegates, Events and Threads
- TCP/IP Protocols and Client/Server Model
- Analyzing Network Packets using Network Monitoring Tools
- IP Addressing and Domain Name System (DNS)
- Socket Programming using C# Sockets Helper Classes
- Raw Socket Programming
- Asynchronous and Multithreading C/S Programming
- Application-Layer Programming: HTTP and Web Applications, SMTP, POP/MIME, FTP, ICMP
- UDP Broadcast and Multicast
- Remoting and web services
- Security and databases
- Network management (as time permits)

Caveat

- What this course is not about

"… there is a difference between *training* and *education*. If computer science is a fundamental discipline, then university education in this field should emphasize enduring *fundamental principles* rather than *transient current technology*."

-Peter Wegner, Three Computing Cultures. 1970.

Q & A

?

Next Lecture Preliminary Questions

- What is the Internet? What are some of its common applications? How has it evolved?
- What are the main constituents of the Internet?
- Why is the Internet operating system structured into layers? What are the main layers and their roles? What are the common protocols in each layer?
- What does a C/S application mean?
- How are different processes on the Internet identified?
- What are the main phases in software development?
- What is .NET Framework?
- How do you write your first program in VS.NET ….
- Etc.