Introduction

CIS-3152: Network Programming
Spring 2014
Vermont Technical College
Peter C. Chapin
What's This Course About?

- Builds on CIS-2151
  - 75% (or so) on upper layers of OSI model
    - Client/Server programming
    - Application level protocols
    - Data exchange issues
      - Character sets
      - XML
    - Distributed programming
      - RPC and friends
  - 25% (or so) on lower layers of OSI model
    - TCP/UDP details (sockets)
    - IPv6
Programming

- *Learn networking via network programming.*
  - Assignments involve programming.
    - Network interactions (of course)
    - Also error handling
    - Additional supporting topics as needed
- C and Java required
  - Basic network APIs are C.
  - Java for easier development and distributed objects.
Topics

- Topics from Network/Transport Layer & Up
  - TCP/UDP, IPv6
    - Understanding what the protocols are good for.
    - Understanding how the protocols work.
    - Using the network analyzer tool.
  - Application Protocols
    - SMTP, RFC-2822, MIME, etc
  - Data Exchange
    - Unicode
    - Introduction to XML, XML Schema, XSLT
- Reading RFCs, W3C Recommendations, etc
Resources

• Class web site
  • http://web.vtc.edu/users/pcc09070/cis-3152
    – Slides
    – Homework assignments
    – Lab handouts
    – Sample programs
    – Links to other resources
      • Documentation
      • Software
    – One stop location for all course related information!

• Review course syllabus!
First Assignments

• Homework #1 posted
  • Due January 24, 2014
  • You should have everything you need to do the assignment by the beginning of next week.

• Lab #1 posted
  • Fun, easy lab to introduce HackBox.
  • No report.

• Lab #2 posted
  • Fun, more complex... will take time to develop.
Contact Information

• Peter C. Chapin <PChapin@vtc.vsc.edu>
  • Email is the best way to contact me.
    – I will reply to student messages in one business day.
  • I will send information to a class distribution list.
    – List currently uses your official VTC address
      • Let me know if you want another address instead (or in addition)
    – Check your mail regularly.
  • Email questions encouraged
    – May send answers to class via email unless you explicitly ask otherwise.

• Also Skype: pchapin; IRC: pcc on FreeNode
First Topic

• Sockets API
  • The interface into the OS for network functionality
    – Standardized by POSIX in the Unix world.
    – Provided as a “compatibility layer” on Windows.

• WinSock?
  • Our programming will be in a Unix environment.
In the TCP/IP world these three layers are not distinct.
Why Sockets?

- Low level entry into the OS
  - If it can be done at all, it can be done with the sockets API
  - Thus sockets are fundamental
- Other network features ultimately call sockets
  - ... regardless of programming language
  - ... regardless of library
- Straight C
  - For this part of the course we will be using plain C
    - No Java.
Good Luck

Have fun and enjoy CIS-3152!