Intro to LAN/WAN

CS 513
CS 513 Final Review

General:
- Monday, May 3, 2010
- In-class, 2 hours
- No cheat sheets, formula sheets

Material:
- Non-cumulative
- Tests only portions not tested in last exams
- Roughly covers transport and application layers
Review: Transport Layer

Services provided:
- End-to-end, etc
- Similarities to data link layer (ACKs, sliding window, sequence numbers, error control, etc), differences (end-to-end)
- Similarities to network layer, differences

Sockets API:
- Why, function, etc
Review: Transport Layer

Elements of transport layer

- Addressing (ports, name server)
- Connection establishment (3-way handshake)
- Connection release (2-army problem)
- Flow control and buffering
- Multiplexing
- Crash recovery
Review: TCP

Segments

Sliding window

Service model:
- Inetd daemon, end-to-end, full-duplex

Protocol:
- ACKs, piggybacking, connection establishment/release, receiver’s buffer management, Nagle’s algorithm, silly window problem

Congestion control:
- Network buffer, slow start, congestion avoidance, timer management, RTT
Review: UDP

Features:
- Minimal, multiplexing/demultiplexing

Non-features:
- Flow control, error control, retransmission

Typical applications:
- Client-server, multimedia, etc

Remote Procedure Call
- Overview, main steps
Review: Application Layer (DNS)

- Human readable to ASCII
- Steps for lookup
- Domain name space (generic and country)
- Resource records
- Nameservers (zones, primary-secondary servers)
- Address resolution process (recursive lookup)
Review: Application Layer (Email)

- User agent (RFC 822)
- Transmission Protocol (SMTP)
- How Email works!!
- MIME
  - why necessary, etc
- Disconnected Users
  - Pop3, IMAP, webmail
Review: Application Layer (WWW)

Architecture:
- Client side
  - how to get web page, plug-ins, helper applications
- Server side
  - Just know steps, what it does
- URL, web pages (static, dynamic, etc)
- HTTP
- Performance enhancements (caching, server replication, CDNs)
- Wireless web (Imode, WAP)
Review: Application Layer

- Multimedia: Audio
  - Audio compression: MP3, etc
  - Streaming Audio
  - Voice over IP (H.323, SIP)

- Multimedia: Video
  - MPEG