MIDTERM REVIEW

CPSC 441 - Tutorial 8

Winter 2018

TYPES OF QUESTIONS

- Multiple choice, Concepts and Definitions, Short answers
- Know properties/definitions so you can compare and contrast them within categories
  - Are they similar? What makes them different?
- Computational Question and TCP

CHAPTER 1

- Network edge: Hosts, Access networks, Links
- Network core:
  - Packet Switching vs. Circuit Switching
  - Forwarding and Routing (in Packet Switching)
  - FDM vs. TDM (in Circuit Switching)
- Internet Structure – Network of Networks
- Networking Delays – descriptions (where and how they happen), calculation
- Packet-Loss and Throughput calculation

CHAPTER 1

- Protocol Stack:
  - Order of Layers
  - Logical unit of communication for each layer
  - Encapsulation/de-Encapsulation

CHAPTER 2

- Application Structure:
  - Client/Server
  - Peer-to-Peer
- Sockets:
  - Definition
  - Programming – functions and their order for client and server
- Application Layer Protocol:
  - What does it define? What are transport service requirements?
- HTTP
  - Definition
  - Persistent vs. non-Persistent
  - Request vs. Response
  - HTTP/1.1 vs. HTTP/1.0
  - Web Caching - Proxy

CHAPTER 2

- Email:
  - User agent
  - Mail Server
  - Simple Mail Transfer Protocol – SMTP : Interactions, SMTP vs. HTTP
  - Access protocol: POP vs. IMAP vs. HTTP
- Domain Name System – DNS:
  - Structure
  - Iterated vs. Recursive query
  - Records
  - Messages
- Peer-to-Peer – P2P:
  - Structure, Examples
  - File distribution (Comparison with Client/Sever)

CHAPTER 2

- Video Streaming:
  - DASH protocol properties
- Content Distribution Networks – CDN:
  - Challenges and Solutions
- Socket Programming:
  - TCP vs. UDP socket
  - Functions and their orders for client and server
  - Client and Server interactions

CHAPTER 3

- Multiplexing / de-Multiplexing:
  - Connection-oriented vs. Connection-less
- User Datagram Protocol – UDP:
  - Properties, Performance, Usage
  - Segment header
  - Why use UDP?
- Reliable Data Transfer:
  - Principles, Network Layer error scenarios, Solutions – rdt versions with state machines
  - ACK vs. NACK
  - Pipelining – Go-Back-N vs. Selective Repeat

CHAPTER 3

- TCP:
  - Properties: point-to-point, reliable, in-order byte stream, pipelined, full-duplex, connection-oriented, flow-controlled
  - Segment structure
  - Sequence Numbers and Acknowledgments
  - RTT vs. RTO
  - Reliable data transfer: retransmission scenarios (time-out, duplicate ACKs), fast retransmit
  - Flow Control: Why? How?
  - Connection Management: establishing vs. ending

CHAPTER 3

- Congestion Control:
  - Principles, Scenarios and Costs,
  - TCP congestion control:
    - Slow Start, Congestion Avoidance (CA), Fast Recovery (FR): definition for each state, transition between states
    - Throughput
    - Fairness