

CSC458

Topics to Review for Final

Topics

- Protocols and layering
- Encoding bits with signals: NRZ, NRZI, Manchester, 4B/5B
- Error detection and correction: parity, CRC, Hamming distance
- Latency and RTT calculation
- MAC Protocols:
 - Wired: Aloha, CSMA/CD, Ethernet
 - Wireless: CSMA/CA, RTS/CTS
 - Contention-free: token ring, FDDI, DQDB

Topics(2)

- Bridging LANs, spanning tree algorithm
- IPv4
 - Header fields
 - Fragmentation
 - Path MTU
- ICMP
- Forwarding and routing
- Distance vector protocols: RIP, count-to-infinity, split horizon, split horizon with poison reverse
- Link state routing: Dijkstra algorithm, OSPF, cost metrics

Topics(3)

- Inter-domain routing: BGP, AS, path vectors, multi-homing
- IP addressing: ARP, CIDR, hierarchical addressing
- Transport layer and reliability: ARQ, sliding windows
- Connection-oriented vs. connectionless protocols
- TCP 3-way handshake
- TCP flow control
- TCP congestion control: congestion collapse, RTT estimators, slow-start, congestion avoidance (AIMD), fast retransmit, and fast recovery
- HTTP: ver. 1.0 vs. ver 1.1
- Domain Name Service: naming, lookup, and resolution

Topics(4)

- Network security: privacy, integrity, authenticity, symmetric vs. public key protocols, phishing, Internet worms, DoS attacks
- Peer-to-peer systems: unstructured vs. structured P2Ps, Napster, Gnutella, Kazaa, Chord, scalability limits

Schedule

- Office hours:
 - Monday, April 17th, 11:00 -- 12:00, UTM SB2040D
 - Tuesday, April 18th, 15:00 -- 16:00, St. George BA4258
 - By appointment (requires at least 24 hours + I'm also traveling)
- Final exam:
 - April 24th, 8pm-10pm
 - All material in the lectures + lecture slides + book is fair game
 - 8 questions in 2 hours for 150 points
 - Similar in style to midterm
- Thank you for a wonderful class!