

Final review

# DNS

- What does DNS do?
- What is a DNS zone?
- What is DNS caching?
  
- *Outline a potential sequence of steps that might happen when a host wants to resolve [www.cs.washington.edu](http://www.cs.washington.edu). Assume complete lack of caching.*
- *What does DNSSEC protect against?*

# HTTP

- What is DOM?
- Describe three changes made to HTTP to improve page load time

# Physical layer

- What is the function of physical layer?
- Why problem can a sequence of zeroes cause?
  
- What is wireless interference?
- What is multipath?
- What is Nyquist limit?
- What is Shannon limit?

# Link layer: Framing

- What problem does framing solve?
- What is the disadvantage of byte count as a framing method?

# Link layer: Errors

- Why does redundancy help with error correction and detection?
- What is the hamming distance of parity bit?
- If hamming distance is  $D$ , how many errors can be detected?
- If hamming distance is  $D$ , how many errors can be corrected?
- Compute Internet checksum for abcdefgh
- Hamming code question – where is the error?
- When is error correction more efficient than detection? Vice versa?

# Link layer: Multiple access

- Two ways to multiple access? TDM and FDM
- Why is it a harder problem in the Internet than the phone network?
- Describe ALOHA. Its major downside?
- Which ideas in Ethernet make it better than Aloha?
- What is CSMA persistence?
- Why are three link layer addresses needed in a WiFi packet?

# Link layer: Switching

- What is hub vs switch vs router?
- How do switches work?
- Why is STP needed? How does it work?



# Cryptography

- How can public key cryptography provide both confidentiality and integrity?
- What is the difference between hashing and encryption?
- How do digital signatures work?
- In TLS, how does client established the identity of the server?

# Other security threats

- What security guarantees do VPN/IPSec provide beyond encryption?
- What do you need to launch a DDoS attack? How can you protect against it?

# E2e

- Describe the end-to-end principle
- When is it OK to place functionality in the network according per e2e principle?

# SDN

- What is the advantage of centralized computation of forwarding paths?