Chapter 2: Summary

Where are applications in the protocol hierarchy?

Internet protocol stack

- **application**: network applications
  - ftp, smtp, http, ...
- **transport**: host-host data transfer
  - tcp, udp
- **network**: routing of datagrams from source to destination
  - ip, routing protocols
- **link**: data transfer between neighboring network elements
  - ppp, ethernet
- **physical**: bits "on the wire"

Chapter 2 Summary

- **application service requirements**:
  - reliability, bandwidth, delay
- **client-server paradigm**
- **Internet transport service model**
  - connection-oriented, reliable: TCP
  - unreliable, datagrams: UDP
- **specific protocols**:
  - http
  - ftp
  - smtp, pop3
  - dns
- **socket programming**
  - client/server implementation patterns using sockets
  - tcp, udp sockets

Most importantly: learned about protocols with specific examples

- **typical request/reply message exchange**:
  - client requests info or service
  - server responds with data, status code
- **message formats**:
  - headers: fields giving info about data (HTTP, mail, MIME)
  - data: info being communicated
  - Finding boundaries between message parts
- **control vs. data msgs (FTP)**
  - in-based, out-of-band
- **centralized vs. decentralized (DNS discussion)**
- **Caching (HTTP, DNS)**
- **stateless vs. stateful protocols (HTTP vs. FTP)**
- **reliable vs. unreliable msg transfer**