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

Chapter 2: Summary

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