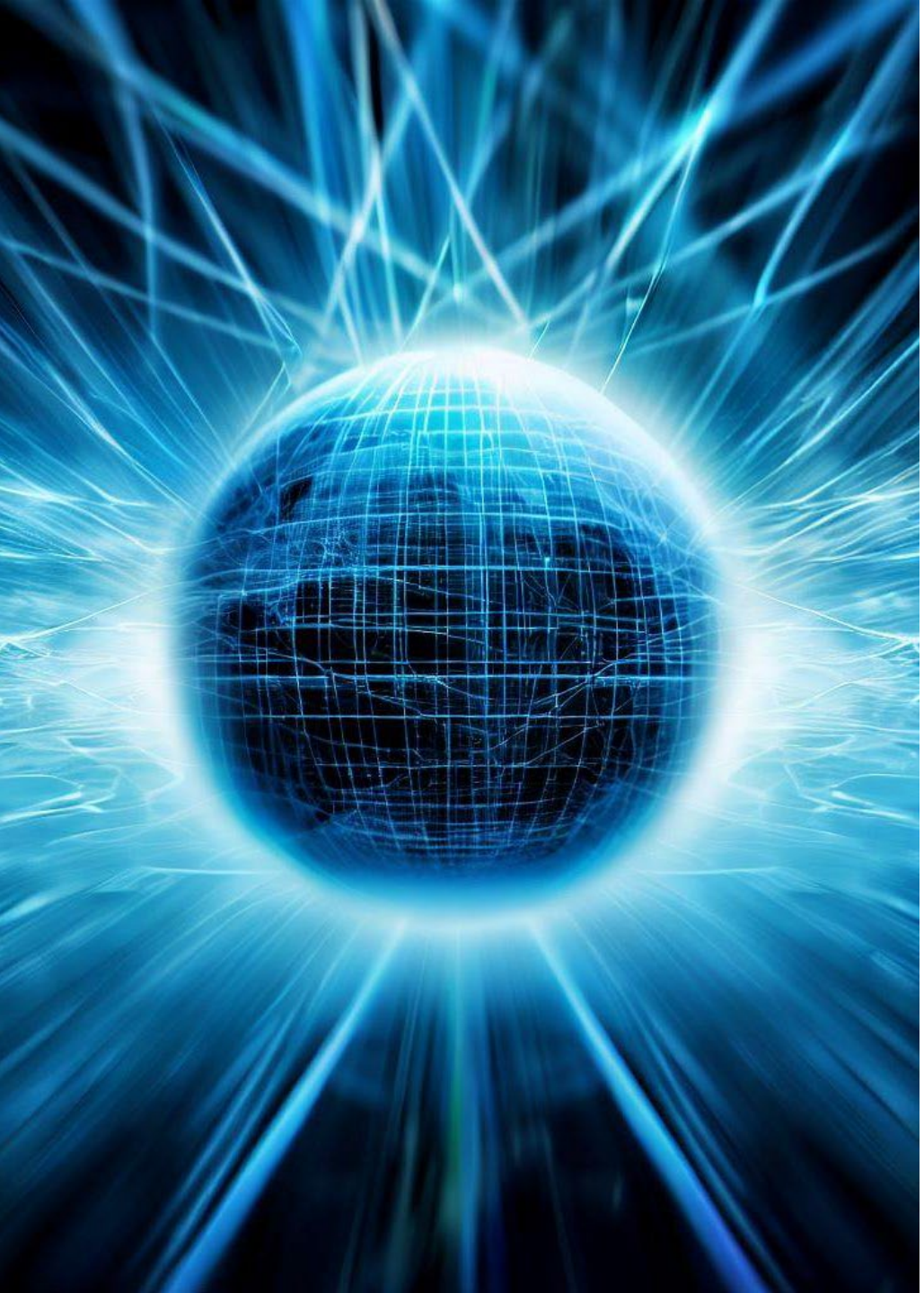
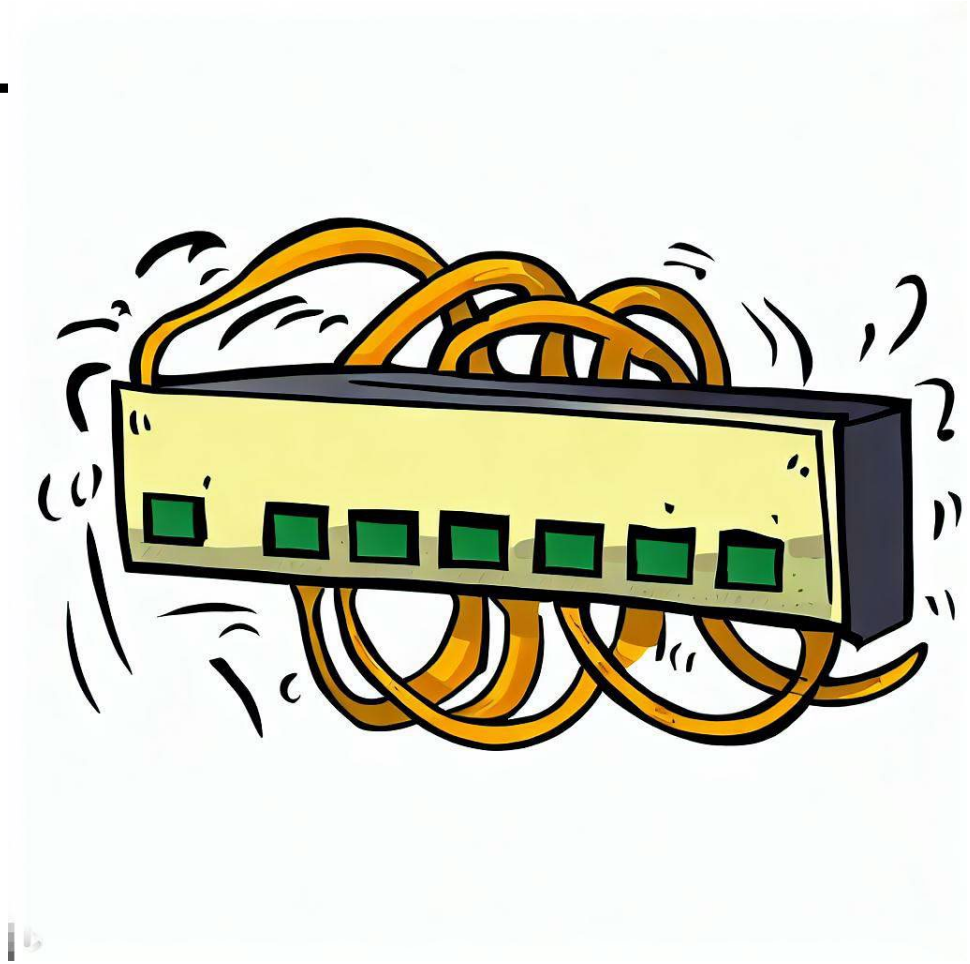


HOW THE WEB WORKS

CTD Intro Week 8

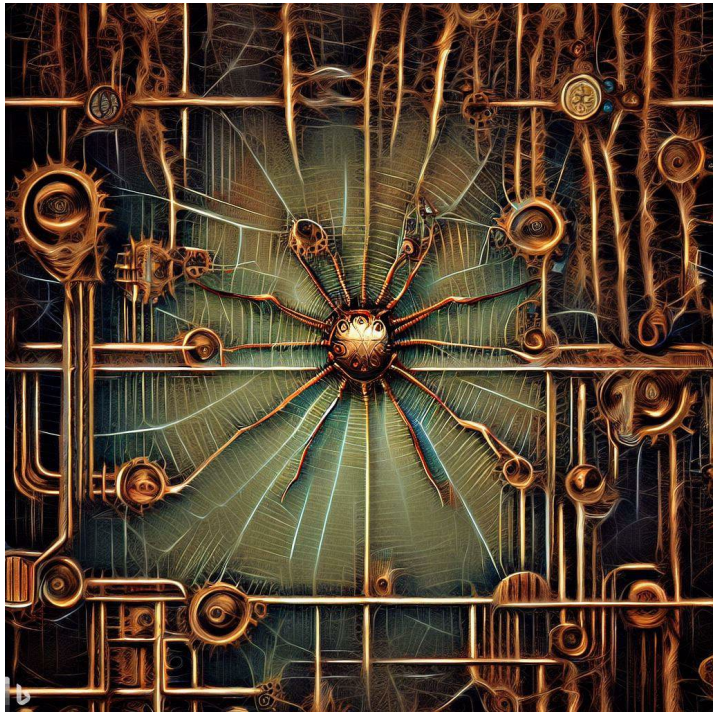
NETWORKS

- Packet switched digital networks
  - vs circuit switched (land lines)
- Network protocols
  - ARPANET
  - IP – Internet Protocol
    - IP addresses
    - Routers, switches
  - TCP – reliable end-to-end transfer
  - UDP – simple but unreliable
  - Domain names
  - DNS – Domain Name System/Service
- Ethernet
- Cellular networks



WORLD WIDE WEB

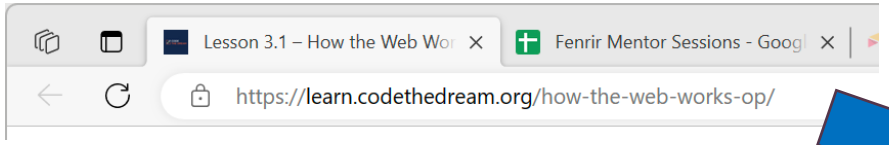
- Hypertext
- World Wide Web
  - HTML – Hypertext Markup Language
    - Elements for formatting and links, etc. (coming next week)
- URL – Universal Resource Locator
  - file://, http://, https://
- HTTP – Hyper Text Transport Protocol
  - Built on TCP/IP Protocol
- HTTPS – Secure
  - SSL – Secure Socket Layer
    - Public key encryption, symmetric ciphers
- Search Engines
  - Web crawlers
  - Sophisticated algorithm to find relevant content based on the query (e.g. google page rank)
    - How many pages link to this page? Etc. Constantly fine tuned.
  - LLM summarization



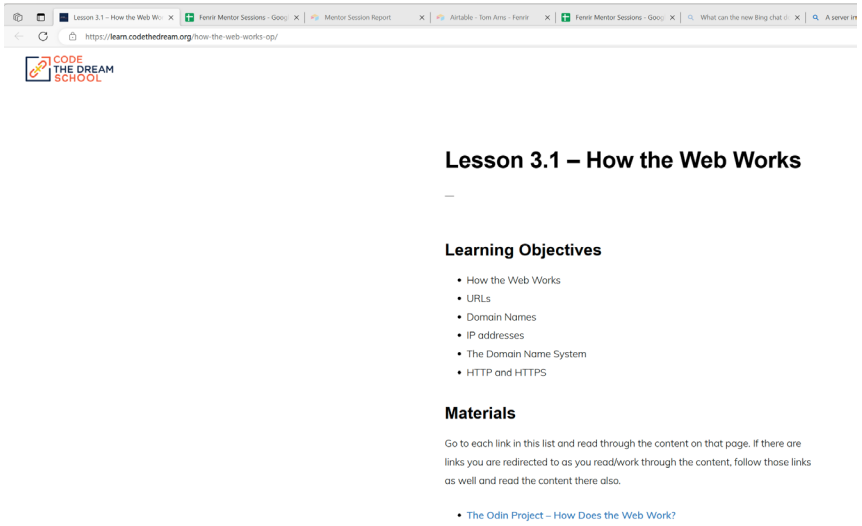
CLIENT / SERVER ARCHITECTURE

- Distributed systems
  - Separate large compute and storage from display and interaction
- Server
  - AKA back-end
  - Datacenter
- Client
  - Browser, phone app, desktop app
  - javascript
- Web Server
  - Server which uses http(s) protocol

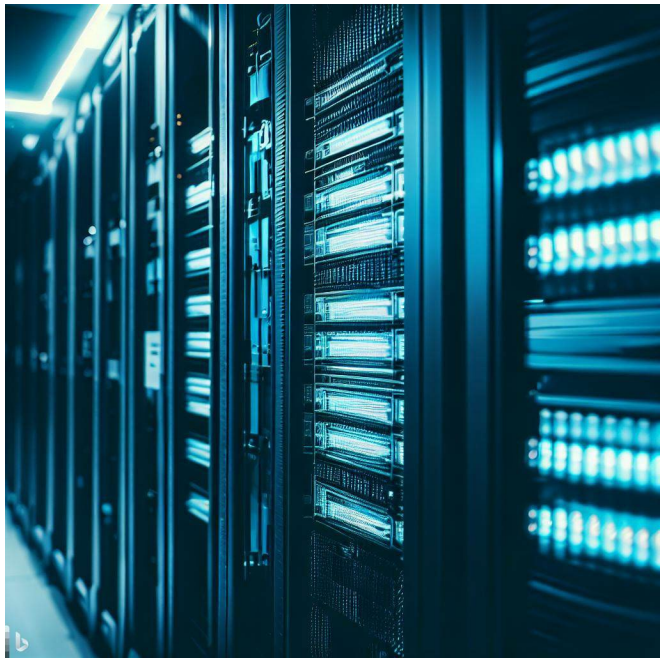
WEB IN ACTION



https get
lots of network hops



html page
lots of network hops



server in a datacenter

Q&A

- How is git, github, and vscode working?
- Demo