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SUMMARY OF RECENT ONLINE TECHNICAL COURSE, Network Protocols, a review of protocols already known, and an introduction to those that I've not used before – see my Linked In Project Section for details and github links to files:

- **The network protocols and topics covered in this course were:**
  - Internet layers
  - IP service model
  - TCP and UDP service models
  - encapsulation
  - packet switching
  - end to end principle
  - the Finite State Machine of the HTTP Request and TCP Connections
  - Internet names and addresses
  - **Packet Switching topics:**
    - delay guarantees
    - delay model
    - end to end delay
    - playback buffers
  - **Queue properties:**
    - Burstiness increases delay and Little's Result
    - Packet Arrivals are not Poisson processes but some events are, such as web requests and new flow arrivals
    - the M/M/1 simple queue model
  - Rate guarantees
  - Fragmentation,
  - Flow Control using Stop and Wait
  - Flow Control using sliding window
  - Congestion Windows Using TCP Tahoe and Slow Start
  - Congestion Timeout estimates using round-trip-time (RTT) and self-clocking
  - Congestion Performance Improvements Using TCP Reno and TCP NewReno
  - Max-Min Fairness in Throughput and Allocation
  - Additive Increase Multiplicative Decrease (AIMD) for varying window size for TCP Congenstion Control for a single flow and multiple flows
  - TCP header
  - reliable connections
  - reliability error detection
  - Domain Name System (DNS) Queries and Resource Records
  - IP Address subnetting
  - flooding computer networks
  - source routing
  - forwarding table and the spanning tree

- multicast routing
- routing in the internet
- Bellman-Ford algorithm
- Dijkstra's algorithm
- open shortest path first
- autonomous system for the internet
- border gateway protocol
- Ethernet over twisted pair
- Carrier Sense Multiple Access With Collision Detection (CSMA/CD)
- WiFi and IEEE 802.11
- Address Resolution Protocol (ARP)
- Dynamic Host Configuration Protocol (DHCP)
- IPv4 32-bit address
- IPv6 128-bit address
- Network Address Translation (NAT)
- Medium Sharing Algorithms use Media Access Control (MAC) Algorithms to share it:
  - the Aloha Packet Switched Radio Network
  - Token Passing / Token Ring (IEEE 802.5)
  - The Wireless MAC protocol
  - Wireless Carrier Sense Multiple Access / Collision Avoidance (CSMA/CA),
  - Wireless Request-to-Send and Clear-to-send
  - Wireless WiFi