Dr. Monopoly 11.20

Capacity of a disk:

- Size of Sectors: 4KB or 16KB
    - Bigger Sectors to eliminate wasting space with gap (only good for smaller capacity disks)
- Stack numbers
    - 400 sectors/track
- Cooked Capacity

4KB/Sector

400 Sectors/Track

300RPM = 50RPS

1/50 sec = 0.02 sec for one revolution

Seek 0.005 Sec, read one sector

- Best case: no seek, revolve around that one sector- one sector
    - 1/400 x 1/50 sec
- Worst case: revolve all around
    - 1/50 + 0.005 +
- Avg case: seek but wait for half revolution

Seek (move files around/jumping around)

- Track request: 200,201, 200, 100, 201, 101, 100 (FIFO: Slow)
    - SSTF (shortest seek time first): 200->200->201->201->101
    - Elevator (keep going up until reach the destination)
        - Keep going one direction then go all the way down (repeat)
        - Reverse direction
            - 200->200->201->201[*reverse*]->101->100->100

RAID

- Independent
- Mirror
    - Recover one when the other fail
- Parody

    P D D D D

- o gives protection not usually good enough but know which disk failing by eliminating the disk with parody disk.
  - o Know which failed by CRC, or when overheating
  - o Parody disk tend to fail, need frequent replacement, usually distributed across.
- Strip (allow things to be done in parallel) Files, faster.

Network

- IP address (temp address): 32 bits (x.x.x.x)=> 2^32 possible addresses (not all usable)
  - o Roughly 4 bilion
  - o Change into IPv4 (33bits) =>2^33
  - o Then IPv6 (128bits) => 2^128
- MAC address (physical address): ~48 bits
  - o Burned into the device
- Layers
  - o Applic.
  - o TCP/IP
  - o Transport- more controll about connection type
    - Broken to small pieces(DDP)
    - Arrive at same sequence (TCP-voice)
    - No network no security problem (traditionally)
  - o NW layer(IP)
  - o HW DL Block-MAC
  - o SW DL (String bits)- MAC
  - o Physical (Wireless/Wired communication)