Announcements
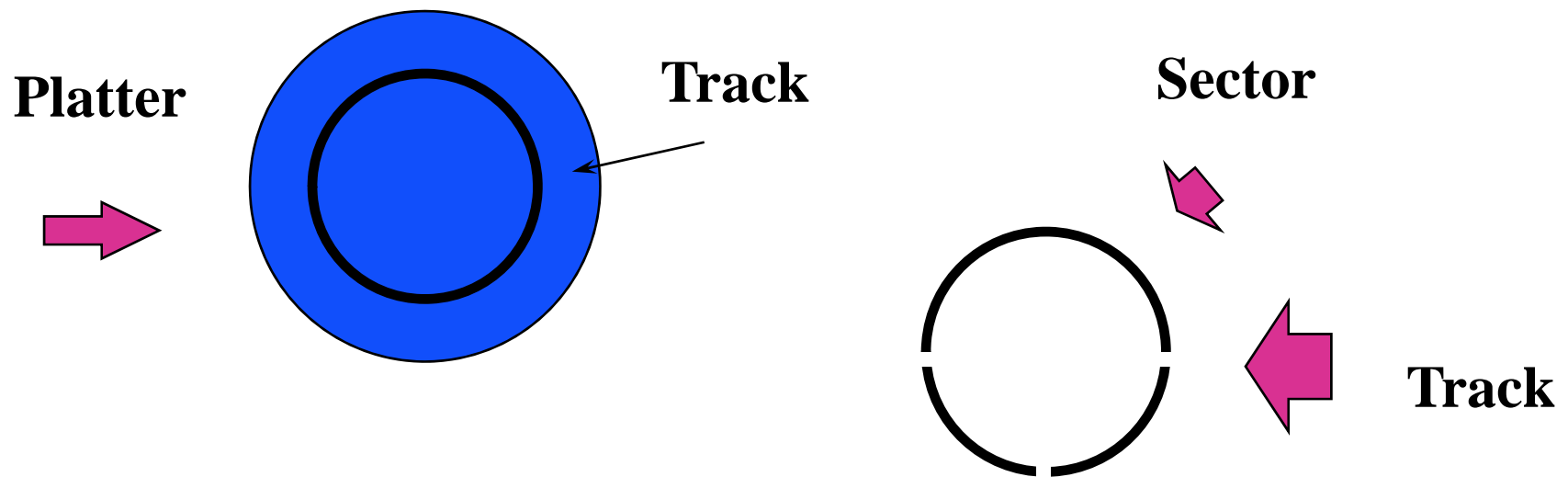
- Reading Chapter 13

- Project #5 handout available

- Midterm #2 is Thursday

  – Updated list of books chapters covered is on web page.

Magnetic Disks

Platter **Track**

Sector

Track

Total capasity: up to 6TB
Collection of platters (1-20)
Rotate at 3600-15000 RPM
Size - usually 2.5-3.5 inch
1,000-50,000 tracks per platter
Track consists of ~100-700 sectors
    zones: vary number of tracks/sector based on distance from center

Access Times

- Seek: Move disk arm over appropriate track
  - Seek times vary depending on locality
  - Times are order of milliseconds
- Rotational delay: Wait until desired information is under disk arm
  - A disk that rotates at 10,000 RPM will take 6.0 ms to complete a full rotation
  - Improving only a few percent per year
- Transfer time: time taken to transfer a block of bits
  - Minimum transfer is one sector
  - Depends on recording density of track, rotation speed, block size
  - Achieved transfer rate for many blocks can also be influenced by other system bottlenecks (software, hardware)
  - Rates range from 2 to 40 MB per second

Solid State Disks (SSD)

- **Random Access nearly as fast as sequential**
- **Limited number of writes to a sector possible**
    - Controller needs to move things around
- **Implemented to provide same HW interface as disks**
    - IDE and SCSI attached
- **Long Term reliability of media still unknown**
    - Will they be readable if idle for 5-10 years?