Disk Structure of Scheduling

Disk Structure :-

- Modern magnetic disk drives are addressed as large 1D arrays of logical blocks.

- Logical block is the smallest unit of transfer & is usually of 512 bytes.

- Some disks can be low level formatted to have logical block size of 1024 bytes.

- Sector 0 is the first sector of the first track on the outermost cylinder. Mapping proceeds in order through that track, then to other track in that cylinder & then through rest of the cylinders from outermost to innermost.

- Disk that use constant linear velocity (CLV) have uniform density of bits per track.
  ∴ Farther a track is from the center of the disk, greater is its length ∴ it can hold more sectors. As we move in, sectors per track reduce. Outermost zone holds 40% more sectors than innermost zone.
  Here drive increases its rotation speed as head moves from outer to inner tracks to keep same rate of data moving under head //

○ In _Constant angular velocity (CAV)_ density of bits decreases from inner to outer tracks to keep data rate constant of disk rotation speed is fixed.

Disk Scheduling

○ Disk drives need _fast access time_ & large _disk bandwidth_

○ _Seek time_ : time for disk arm to move the heads to the cylinder containing desired sector.

○ _Rotational Latency_:- additional time for disk to rotate the desired sector to the disk head.

○ _Disk bandwith_:- total no. of bytes transferred, divided by total time b/w first request for service & completion of last transfer.

Methods:- FCFS, SSTF, SCAN, CSCAN, LOOK Scheduling. (also CLOOK)

⇑ Discussed on White board.

Selecting a Disk Scheduling Algo

- SSTF is common . LOOK also.
- SCAN & CSCAN perform better for system that have heavy load on disk as less stara vattun

- Performs of Algos depend on no. & type of request

- disk Scheduling algo must be written as a separate module of OS, allowing it to be replaced with different algo whenever needed.