Workload

So ...

- seeks are slow
- rotations are slow
- transfers are fast

What kind of workload is fastest for disks?

- Sequential : access sectors in order (transfer dominated)
- Random : access sectors arbitrarily (seek+rotation dominated)

➡ Disk Scheduler decides which I/O request to schedule next

- First Come First Served (FCFS)
- Shortest Seek Time First (SSTF)
- Elevator Scheduling (SCAN) commonly used on Unix

Solid State Drive (SSD)

➡ Completely solid state (no moving parts), remembers data by storing charge (like RAM)

✓ Same interface as HDD (linear array of sectors)

✓ No mechanical seek and rotation times to worry about (SSD are way faster than HDD)

✓ Lower power consumption and heat (better for mobile devices)

◉ More expensive than HDD yet (but getting cheaper)

◉ Limited durability as charge wears out over time (but improving)

◉ Limited # overwrites possible

- Blocks wear out after 10,000 (MLC) – 100,000 (SLC) erases
- Requires Flash Translation Layer (FTL) to provide wear levelling, so repeated writes to logical block don't wear out physical block
- FTL can seriously impact performance