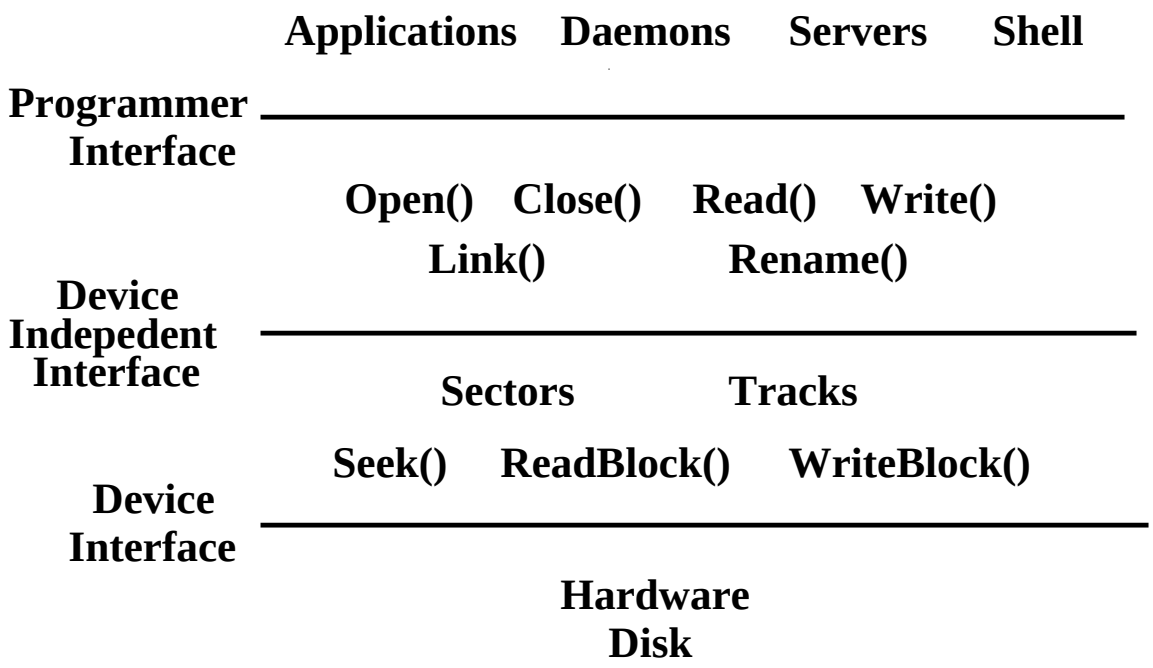
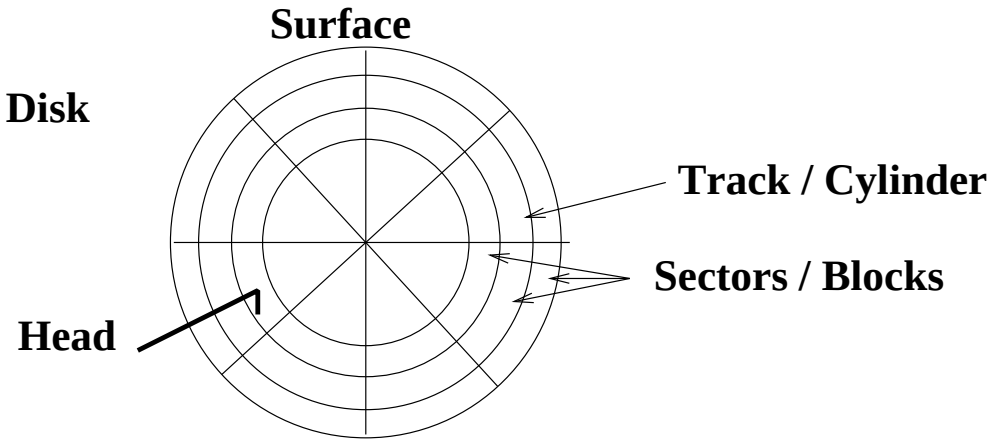
## File System Abstraction — Last Time




## How Disks Work




## File System Implementation — Today

- How to organize files on to disks.

## How do we find and organize files on the disk?

### The information we need:

fileID 0, Block 0 $\rightarrow$ Platter 0, cylinder 0, sector 0
fileID 0, Block 1 $\rightarrow$ Platter 4, cylinder 3, sector 8
...

### Key performance issues:

1. We need to support sequential and random access.
2. What is the right data structure in which to maintain file location information?
3. How do we lay out the files on the physical disk?

### Disk data structures:

- The structure used to describe where the file is on the disk and the attributes of the file is the *file descriptor (FileDesc)*. File descriptors have to be stored on disks just like files.
- Most systems fit the following profile:
  1. Most files are small.
  2. Most disk space is taken up by large files.
  3. I/O operations target both small and large files.

$\Longrightarrow$ The per-file cost must be low, but large files must also have good performance.