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Notes

Kernel ~ sees the file as flat

User ~ sees them as hierarchical

Pseudo-device ~ parts of the kernel that act like device drivers but do not
    correspond to any actual hardware

/dev/null ~ used in the shell scripts when we want to discard one of the
    standard stream

4 Types of Devices;

(1) Block

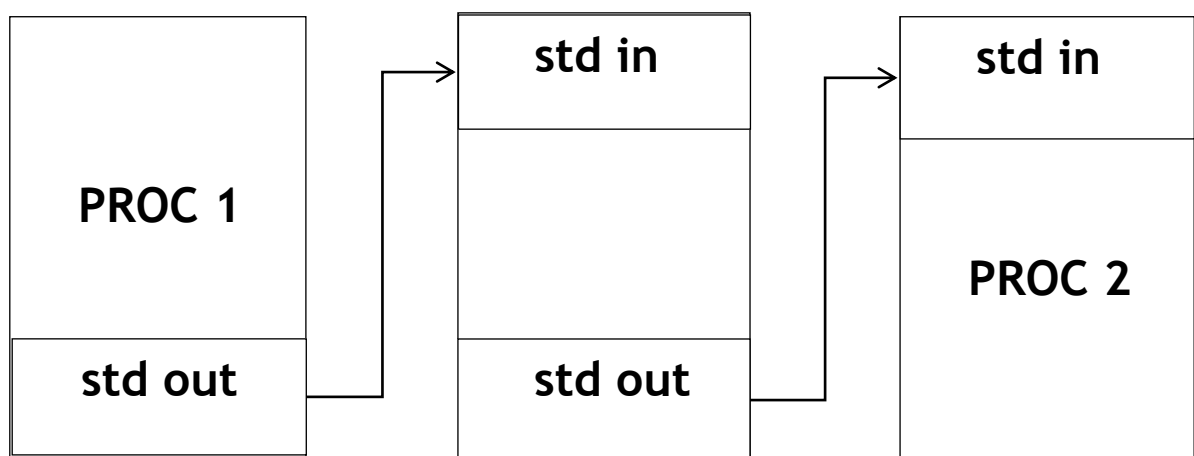   Usually for data storage, look for data in chunks of blocks.

(2) Character

    Standard stream, No fixed sizes.

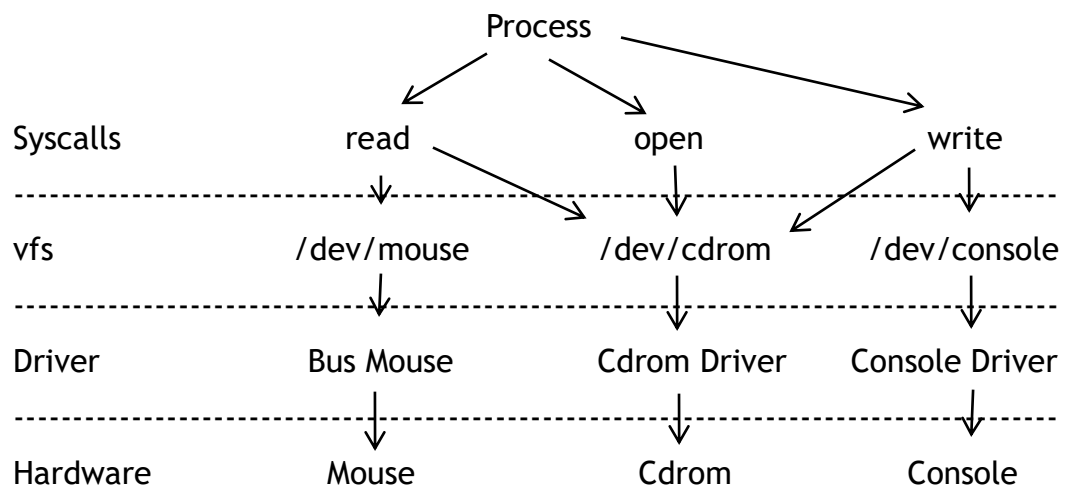(3) Pipes

    Only the kernel can used unnamed pipes.

(4) Sockets

Character Devices;

~ Works with stream, "read from, write to…"

~ Unlike block, character device doesn't have fixed sizes so we can't index
them easily.

~ Terminal device - a device for moving characters between processes and
iostream.

~ Audio devices

~ Printer

~ Ethernet device

~ Joystick

~ Pseudo-device

   - /dev/null: discard one of the standard streams

   - /dev/zero: read as many zeroes as you want, create a file full of zeroes

   - /dev/random: when a relatively good source of random data is needed.
(pseudo-random generator)

   - /dev/full: test how the application would behave when you run out of
disk space. Fail with an ENOSPC error.

I/O Interface;

```
                        Process
                    ↙      ↓        ↘
Syscalls          read    open      write
------------------↓----------↓---------↓--------
                     ↘    ↙       ↗
vfs            /dev/mouse  /dev/cdrom  /dev/console
------------------↓----------↓---------↓--------
Driver          Bus Mouse  Cdrom Driver  Console Driver
------------------↓----------↓---------↓--------
Hardware         Mouse      Cdrom       Console
```

I/O Highway;

Fastest

| CPU | | Memory |

Faster ─────────────────────────────── Memory I/O Bus

General I/O Bus

Slowest ←───────────────────────────→

| GRAPHICS |

Peripheral I/O Bus ←───────────────────────────→

Keyboard   Mouse   HDD