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Notes

- Devices have 2 important components;

    ~ Hardware interface (Abstraction presented)

    ~ Internal structure (part of device where abstraction is implemented)

- Firmware is the software that running on micro controller

    ~ hardware, peripheral devices

- Firmware; software within a peripheral hardware device

    ~ Actual Hardware Interface {SATA, PCI, USB, etc....}

Canonical Device Diagram;

Interface	Registers	Status	Command	Data
Internals	- CPU	- Memory		- Hardware Specific Chips

Status : seeing current status of the device

Command : Allow the device to run a task

Data : Used to pass the data to device and take data from the device

```
while (true)
{
    while (status == Busy)    //Polling
        wait( );


    write (data, register);
    write (command, register);
}
```

- We can lower the CPU with **Interrupt.**
- OS Issue request to put command to sleep
    ~ Context switching
    ~ Interrupt Service Routine

- Driver: program that taste a piece of hardware and interface it
- Drivers: Specific piece of software that "knows" how a specific piece of
        hardware works!