

# I/O Devices Part 1

MCIT 595

## Operating System Key Components

### System Call API

#### Process Management

Process/Thread  
Management (2,3,6)

Scheduler (3)

Signal Handling (4)

Job Control (5)

Synchronization (7,8)

#### Memory Management

Memory Allocation (9)

Virtual Memory  
Management (10)

#### I/O Component

Virtual File System

Character  
Devices  
Drivers

Network  
Devices  
Drivers  
(11,12)

File  
Systems  
(13,14)

Block  
Device  
Drivers

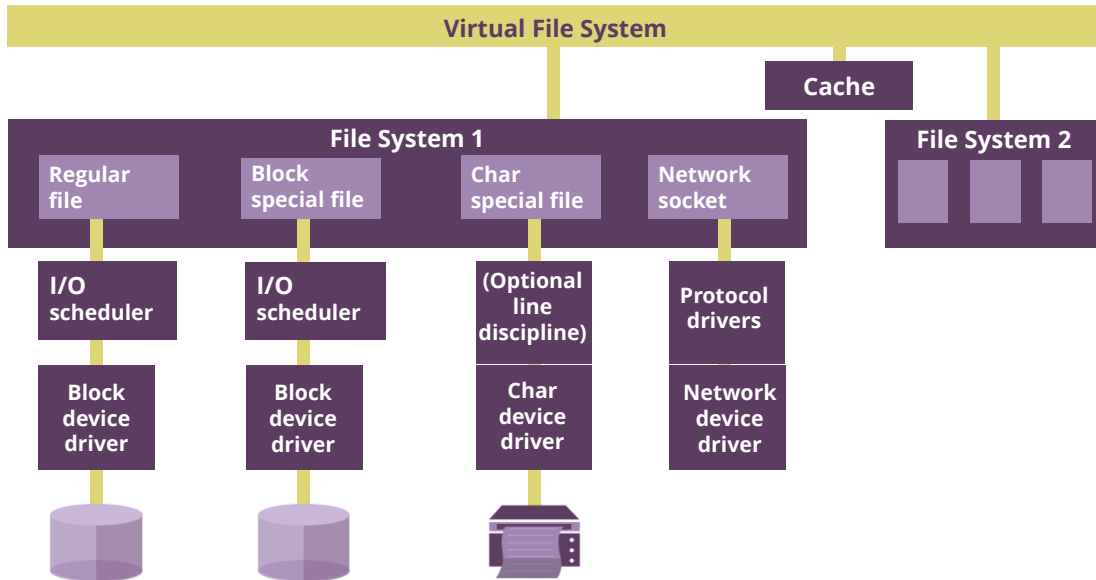
### Hardware Abstraction

External Device and Controllers

Memory

CPU

# Linux I/O



## I/O Devices

- Storage devices
  - Floppy, Magnetic disk, Magnetic tape, CD-ROM, DVD...
- User interaction
  - Keyboard, mouse, monitor, sound card, printer, modem ....
- Significant fraction of OS code deals with I/O
  - Device drivers

# Device Controllers

- Devices have two parts
  - Physical / mechanical
  - Electronic / interface
    - Usually including a controller
- For most devices, controller's basic job is to convert serial bitstream (to/from device) into blocks (to/from CPU)
  - Also error handling using error correction codes
- Controller interface
  - Device registers (status and other control functions)
  - Data buffers

# I/O Architecture

