INTRODUCTION TO COMPUTING
TOPIC 7: HARDWARE

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1. COMPONENTS

There are several types of computers:

- Maxicomputers (mainframes)
- Minicomputers
- Microcomputers (PCs and Macs)

Although they all have similar hardware components, will will focus on microcomputers for examples.

A modern microcomputer consists of various hardware components.

- Internal Components
  - Motherboard
    * CPU
    * RAM
    * ROM
  - Power source
  - Disk drive(s)
  - Diskette drive(s)
  - CD/DVD drive(s)
  - Internal (small) speaker
  - Connectors
    * Video Adapter
    * Parallel Printer Port
    * Serial Keyboard Connector
    * Serial Mouse Connector
    * Serial Jack (for telephone, etc.)
    * Ethernet Adapter (high speed networking)
    * Sound Card
    * USB Connectors
- External Components
  - Input
    * Keyboard
    * Mouse
    * Scanner
  - Output
    * Monitor
    * Printer
    * Speakers

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2. Mother Board

The mother board is the main circuit board of the computer. Attached to it are the primary components of the Von-Neumann architecture: the CPU (commonly on a single chip) and memory (often on multiple chips).

3. Storage

3.1. **Electronic Storage.**
- RAM = RANDOM ACCESS MEMORY: Temporary (volatile) electronic storage in circuits "the memory"
- ROM = READ ONLY MEMORY: Permanent (nonvolatile) electronic storage, cannot be changed
- PROM = PROGRAMMABLE ROM: e.g. USB Flash drives

3.2. **Magnetic Storage.**
- Tape drives (removable sequential access)
- Diskette drives (removable random access)
- Hard drives (nonremovable random access)

3.3. **Optical Storage.**
- CD Drives
- DVD Drives

4. I/O Devices

The abbreviation I/O stands for "Input/Output": this is how the computer communicates with the outside world.

4.1. **Keyboard.** When you push a key, the computer knows which key of a "key code'. It senses when you press, and separately, when you release the key. The key code is translated by software into an effect, most commonly into an ASCII character.

4.2. **Mouse.** Whatever.

4.3. **Video.**
- Logical Pixels
- Physical Pixels
- RGB
- bit-resolution of video card and/or image storage
- palettes

4.4. **Sound.** Generic analog/digital conversion through representation of a function of time.

4.5. **Printers.** Impact versus laser.

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