

# Computer Hardware and Software

## What Is a Computer?

An electronic device that:

- accepts input
- processes data
- produces output
- stores information



## How does my computer work?

- Signals are sent to the computer's **central processing unit (CPU)**
  - CPU is also known as the microprocessor
  - Performs calculations & carries out instructions
  - Speed is measured in **hertz**, or cycles.
    - Megahertz (MHz) – Millions of cycles per second
    - Gigahertz (GHz) – Billions of cycles per second

## Bit, Bytes, and Binary Numbers

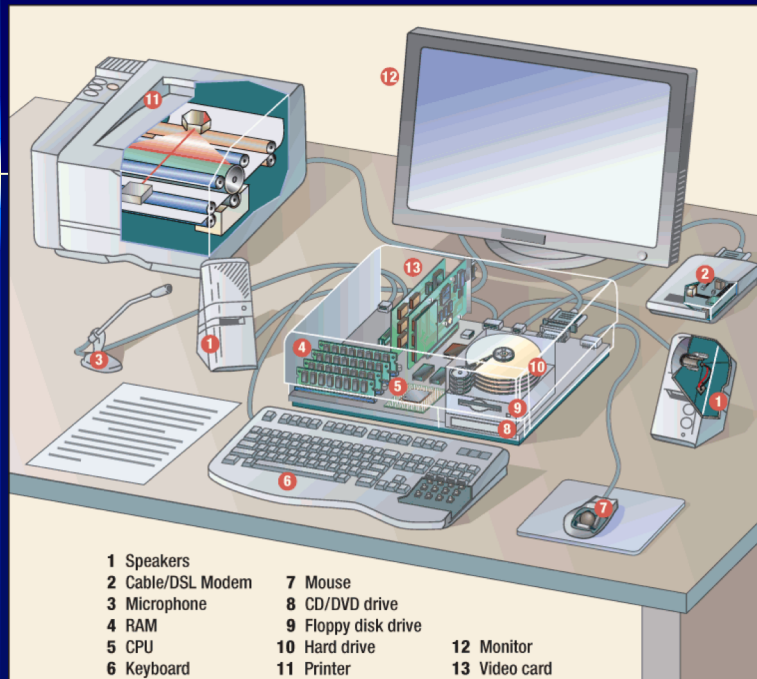
- Computers process only two numbers: 0 and 1
- A string of 1s and 0s is called a binary number
- Language is known as **binary code**
- Each 1 or 0 is known as a **bit**
- **Byte** is eight bits (basic building block of info)
  - Kilobyte (1,000 bytes)
  - Megabyte (1 million bytes)
  - Gigabyte (1,000,000,000 bytes)
  - Terabyte (1 million million bytes)

### The word "cool" in binary numbers

0100011	01001111	01001111	01001100
C	O	O	L

## Hardware Basics

- **Hardware** is the collection of physical devices that make up your computer system
  - Also known as components
- Hardware components may be internal or peripheral
  - Internal components are housed inside the system unit
  - **Peripheral devices** are connected on the outside of the system unit



## Input and Output Devices

- Input and output devices are components that you use to communicate with your computer.
- **Input** – when a user enters info into a computer
- **Output** – when a computer delivers info back to a user

## Types of Input Devices



## Types of Output Devices

- Monitor
- Printer
- Speakers



## Memory and Storage Basics

- Computer stores data in three main places:
  - Random Access Memory (RAM)
  - Read-Only Memory (ROM)
  - Storage Device

## When do I use RAM or ROM?

### ■ Read-Only Memory (ROM)




- **Permanent** information
- Holds the computer's built-in instructions
- Cannot be erased or changed

### ■ Random Access Memory (RAM)

- **Temporary** information
- Erased when you turn off the computer

## How is information stored?

- When you save a file, you move the information from RAM to a **storage device**.

Storage Device	What It Does	Size
Hard Drive 	Major storage device <u>inside your computer</u> ; also known as the hard disk; <u>magnetic storage</u> ; <u>C: drive</u>	40 GB to 320 GB or more
Flash Drives 	<u>Portable</u> devices that plug directly into a computers <u>USB port</u> ; is referred to as <u>solid state storage</u>	256 MB to 4 GB or more
CDs and DVDs 	<u>Portable</u> devices that amounts of information such as Videos; <u>optical storage</u> ; <u>D: drive</u>	CD = 700 800 MB DVD = 4.7 GB to 17 GB

## Software Basics

- **Software** – set of instructions that makes it possible for your computer to perform tasks
- Two main categories:
  - Operating System Software
  - Application Software

## Operating System Software

- Required for the computer to work
- Controls all the other software programs and allows your hardware devices to work properly
- May be referred to as the **platform**
- Examples:
  - Windows
  - Mac OS
  - DOS



## Operating System Software (cont.)

- Windows and Mac OS use a graphical user interface (GUI)
  - GUI uses icons and menus to help the user perform tasks
- Operating System allows the user to multitask
  - Multitasking is having more than one program open at the same time.

## Application Software

- Programs that perform specific tasks for users
- Many different types



Web Browsers



Word Processing



Spreadsheet



Presentations