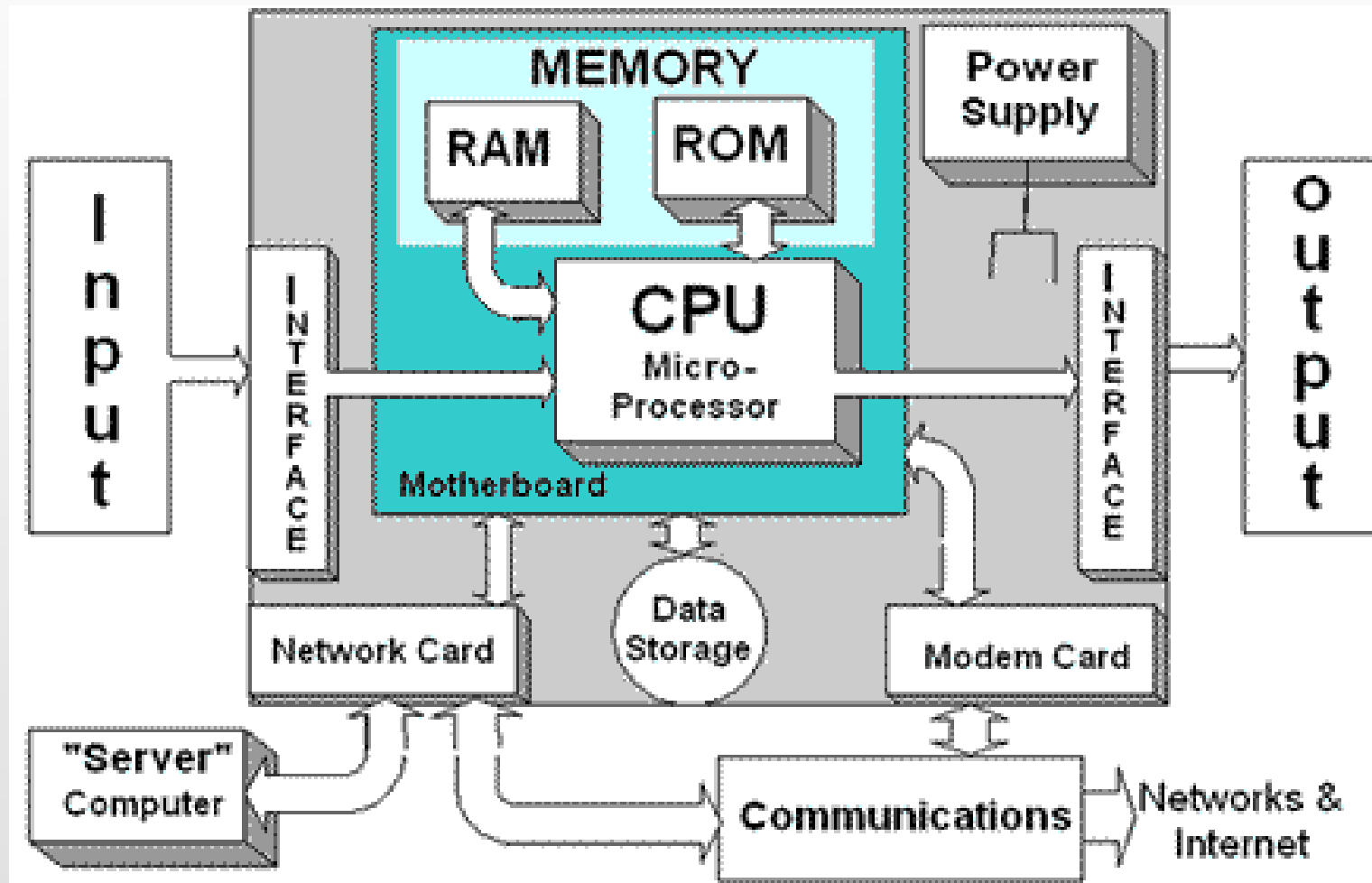# 2.0 COMPUTER HARDWARE AND SOFTWARE

School of Education
Faculty of Social Sciences and Humanities

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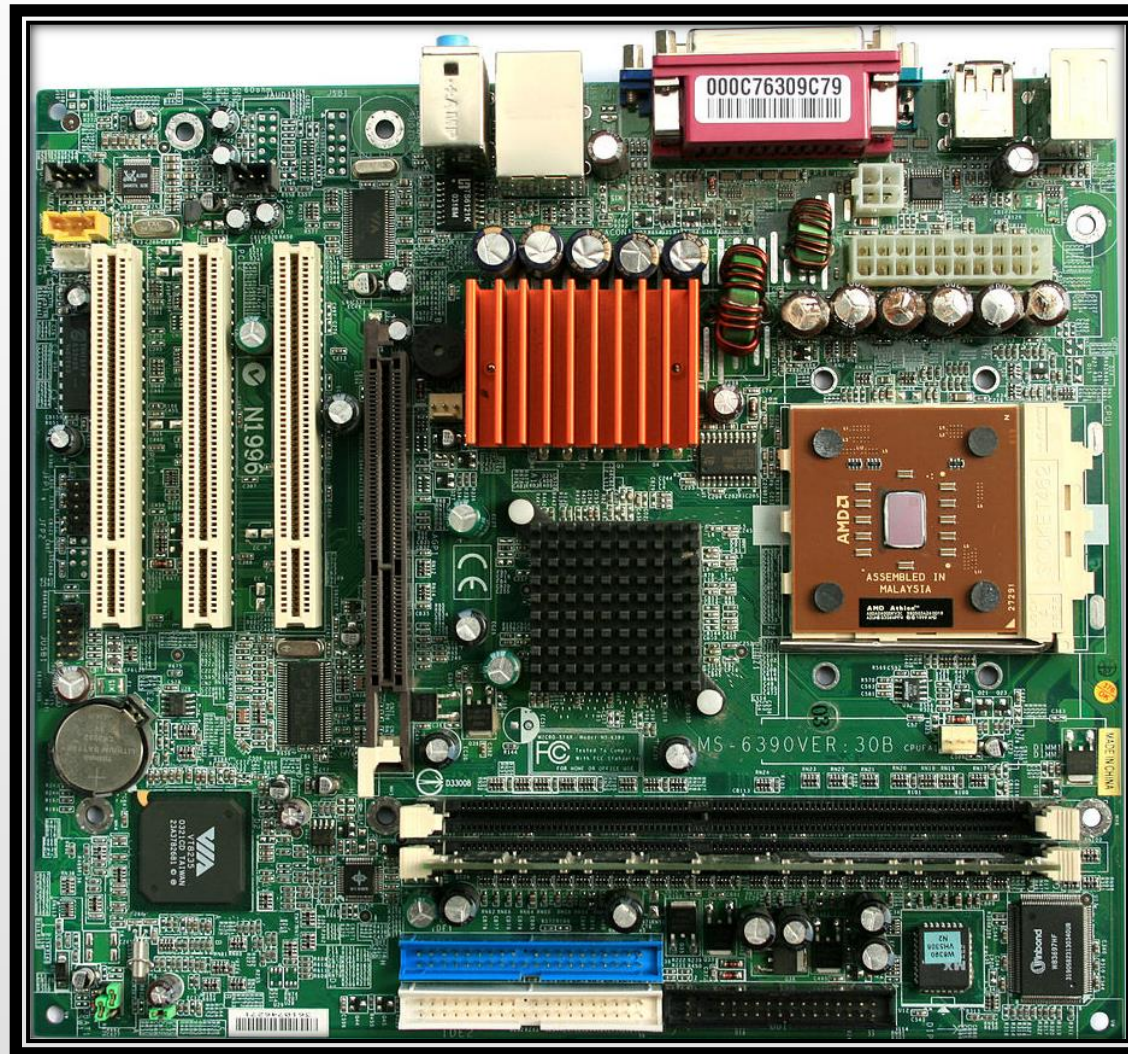# COMPUTER HARDWARE

Computer Hardware

Computer Hardware

- Computer hardware is the physical components that a computer system requires to function.

- A motherboard is an electronic circuit board in a computer which interconnects hardware devices attached to it.

Computer Hardware: Motherboard

Computer Hardware

Four categories of computer hardware devices:

Input Devices: For raw data input.

Processing Devices: To process raw data instructions into information.

Output Devices: To disseminate data and information.

Storage Devices: For data and information retention.

Computer Hardware

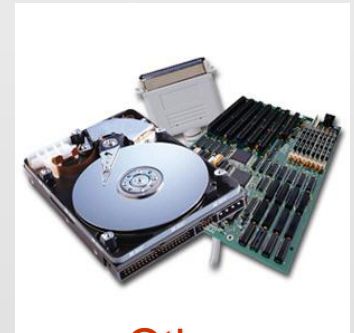|					
RAM Memory	CPU's Processors	Motherboards	Hard Drives	Floppy Drives	CD ROM Drives
Mice	Keyboards	Modems	Video Cards	Monitors	Printers
Multimedia Speakers	Sound Cards	Video Camera	Backup Drive	Computer Cases	Other Equipment
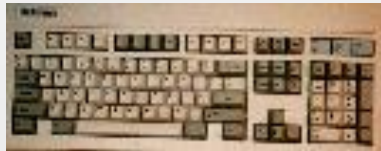
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Hardware: Processing Devices

- When a computer receives data from an input device, the data must go through an intermediate stage before it can be sent to an output device.

- A processing device is any device in a computer that handles this intermediate stage.

Input Device
(Microphone)

Processing Device
(CPU)

Output Device
(Hard Disk)

ComputerHope.com
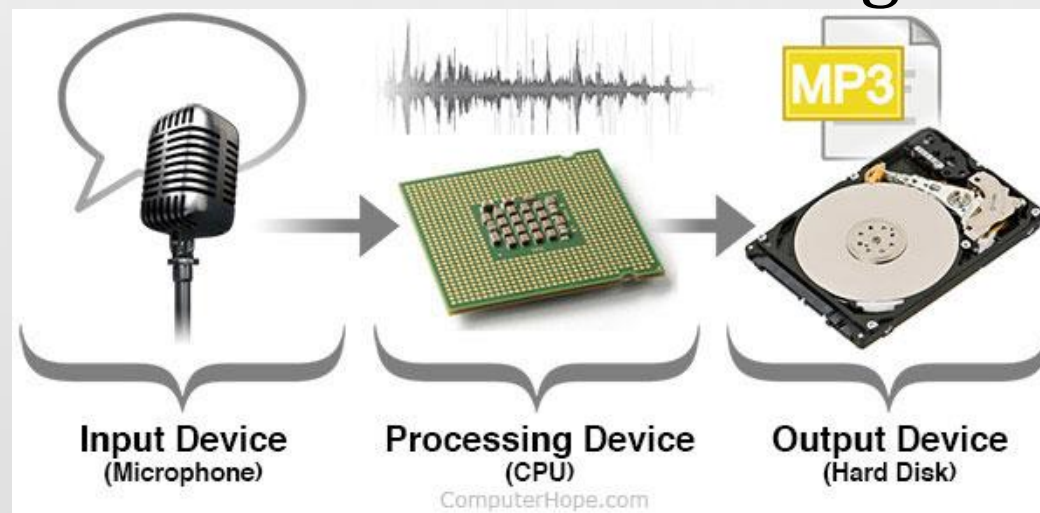
Hardware: Processing Devices

- Some of the most common processing devices in a computer include the following:
    - Central processing unit (CPU)
    - Graphics processing unit (GPU)

Hardware: Input Devices

- An input device is any hardware device that sends data to a computer, allowing you to interact with and control it.

Hardware: Output Devices

- An output device is any peripheral that receives data from a computer, usually for display, projection, or physical reproduction.

Hardware: Storage Devices

- Alternatively referred to as digital storage, storage, storage media, or storage medium, a storage device is any hardware capable of holding information either temporarily or permanently.

- RAM VS ROM

2.2
COMPUTER SOFTWARE

Computer Software

System Software

Application Software

Programming Software

System Software

- Systems software, are all designed to control and coordinate the procedures and functions of computer hardware.

- They actually enable functional interaction between hardware, software and the user.

- Systems software carries out middleman tasks to ensure communication between other software and hardware to allow harmonious coexistence with the user.

System Software

Systems software can be categorized under the following:

Operating system	• Harnesses communication between hardware, system programs, and other applications.
Device driver	• Enables device communication with the OS and other programs.
Firmware	• Enables device control and identification.
Translator	• Translates high-level languages to low-level machine codes.
Utility	• Ensures optimum functionality of devices and applications.

Application Software

- Application software is used for attaining specific tasks.

- Application software uses the capacity of a computer directly for specific tasks and are used to manipulate text, graphics and numbers.

Application Software

The different types of application software include the following:

Application Software Type	Examples
Word processing software	MS Word, WordPad and Notepad
Database software	Oracle, MS Access etc
Spreadsheet software	Apple Numbers, Microsoft Excel
Multimedia software	Real Player, Media Player
Presentation Software	Microsoft Power Point, Keynotes
Enterprise Software	Customer relationship management system
Information Worker Software	Documentation tools, resource management tools
Educational Software	Dictionaries: Encarta, BritannicaMathematical: MATLABOthers: Google Earth, NASA World Wind
Simulation Software	Flight and scientific simulators
Content Access Software	Accessing content through media players, web browsers
Application Suites	OpenOffice, Microsoft Office
Software for Engineering and Product Development	IDE or Integrated Development Environments

Programming Software

- Programming software usually provides tools to assist a programmer in writing computer programs and software using different programming languages in a more convenient way.

- The tools include text editors, compilers, interpreters, linkers, debuggers, and so on.

- Programming software examples - Turbo C, Xilinx, Kiel, compilers, debuggers, Integrated Development Environment (IDE), etc.

Sub-Type of Computer Software

- Apart from the major types of computer software, there are many other sub-types such as:

Freeware	• software that anyone can download from the Internet and use for free. • Examples - Google Talk, Yahoo Messenger, uTorrent, etc.)
Shareware	• Software that usually distributed for free on a trial basis. • It can be shared without violation of any laws. • They usually stop working or prompt the user to purchase the full version, once the trial period expires. • Examples - BearShare, Kazaa, Winzip, etc.)
Open Source Software	• software with open source code, which is available to all users. • As such, anyone can make changes to it and release their own new version. • Example- Android OS, OpenOffice, etc.)

2.3
COMPUTER ASSEMBLY

Computer Assembly

Watch the motherboard assembly tutorial here:

https://www.youtube.com/watch?v=WOOZ7qjSzy4