



Computer Applications in Statistics (STAT-5103)

Looking inside the computer system

Topics

01

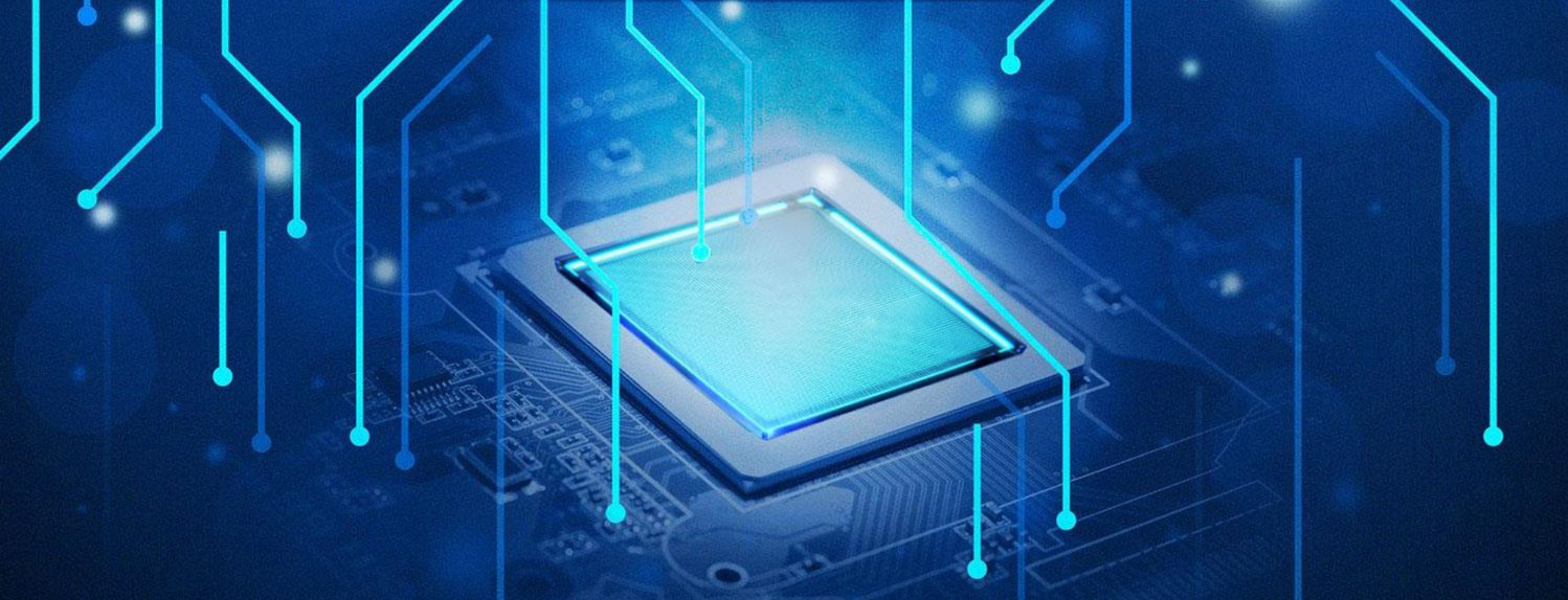
The parts of a computer system

02

The information processing cycle

03

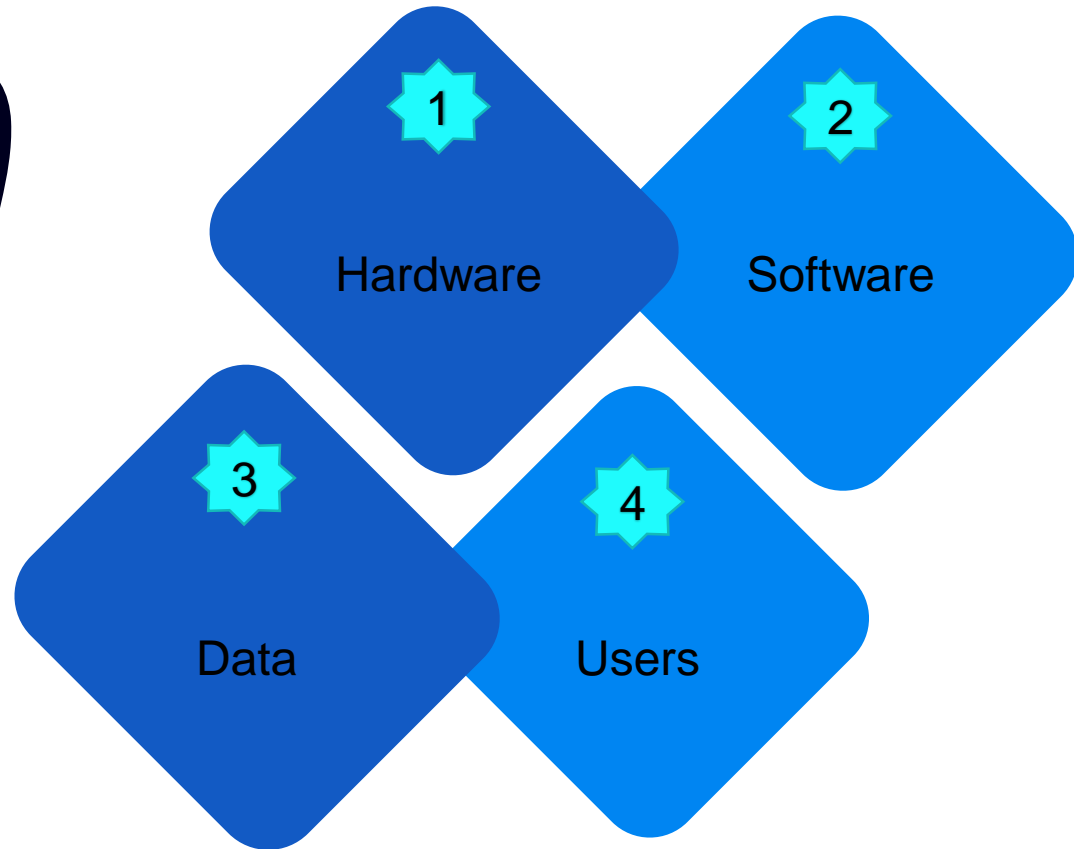
Essential computer hardware



The parts of a computer system

The parts of a computer system

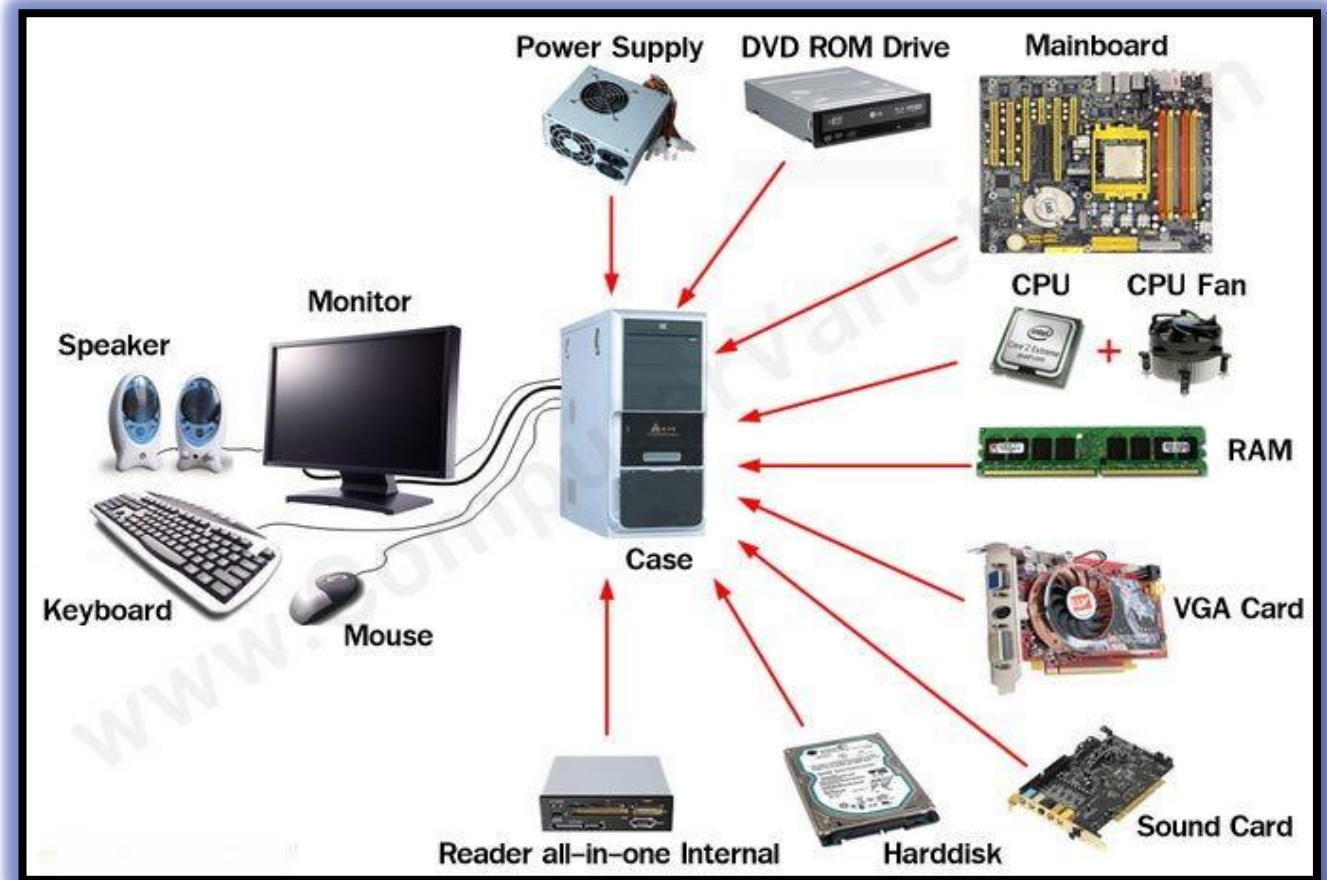
Every complete computer system consists of four parts:



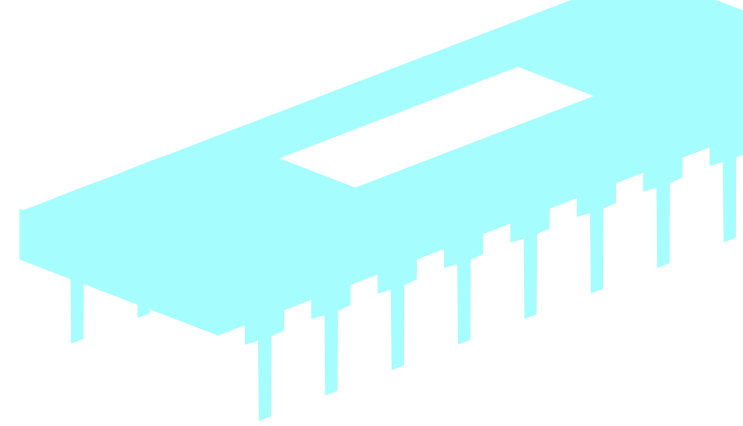
Hardware

The mechanical devices that make up the computer are called hardware.

➤ Hardware is any part of the computer you can touch. For example mouse, keyboard, Central Processing Unit (CPU), monitor etc.



Software



Software is a set of instructions that makes the computer perform tasks

- In other words software tells the computer what to do. For example window, MS office, file manager etc.

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graph TD; A[Types of Computer Software] --> B[System Software]; A --> C[Application Software]
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Types of Computer Software

System Software

Application Software

Types of computer software



System Software

System software are those software which are required for the proper work of our system. For example: drivers, window etc.



Application Software

Application software are those software that are develop for requirements of users. For example: MS office, adobe photoshop etc.



Data

Data is a set of rough information, that may be given by a user or program.

For example $2+2$.

Users

- If any body operate the computer system they are called user.
- Users are actually computer operators.

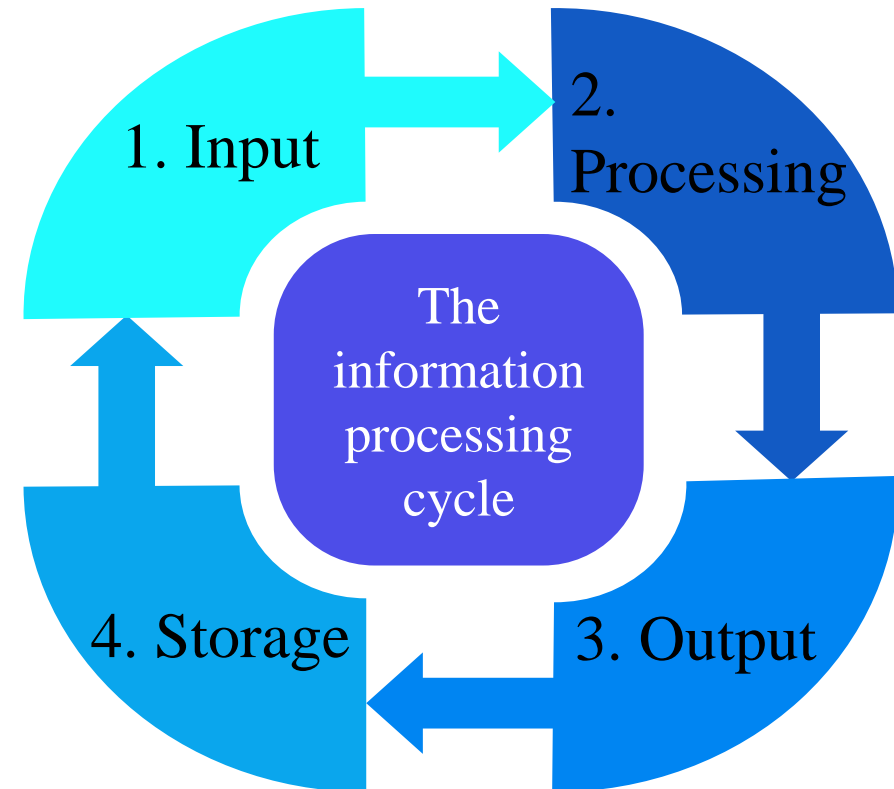


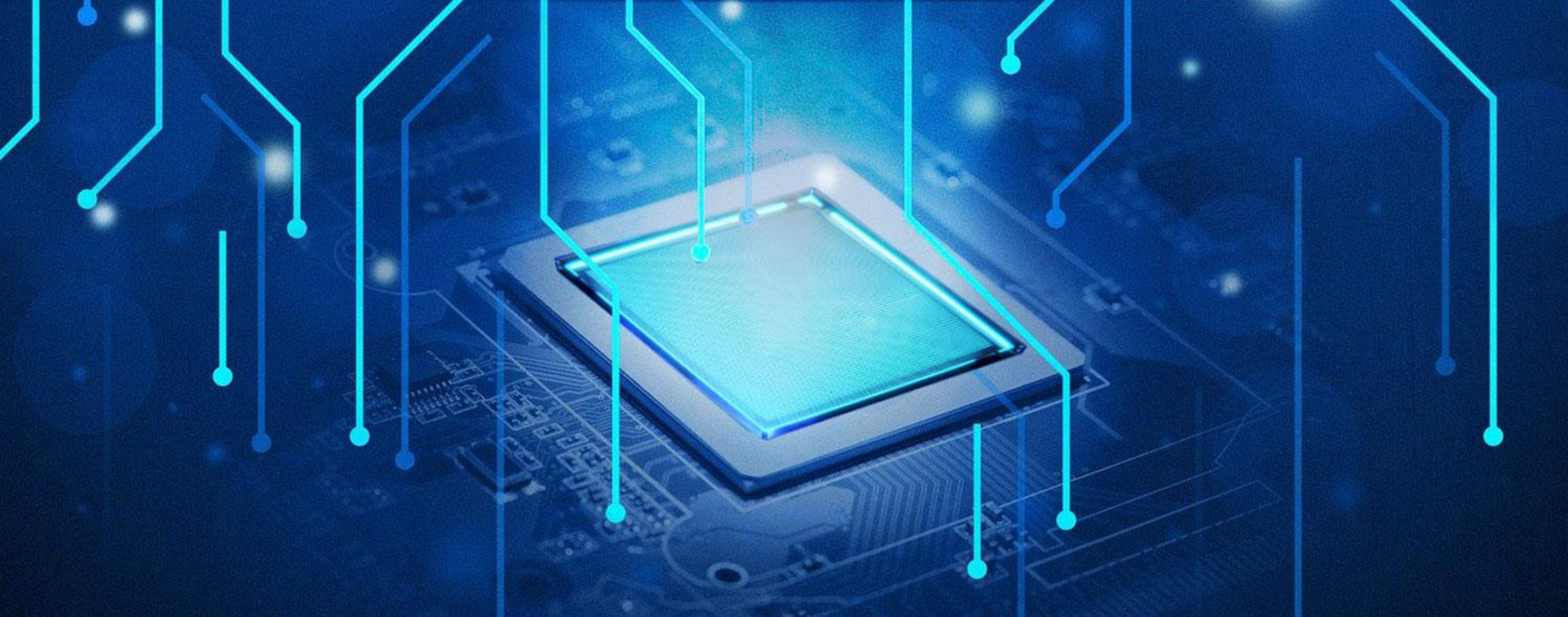
**The information processing
cycle**

The information processing cycle

❖ Using its all parts together, a computer converts data into information by performing various actions on the data.

❖ The information processing cycle has four parts:





Essential computer hardware

Essential computer hardware

1

- Processor

2

- Memory

3

- Input output devices

4

- Storage

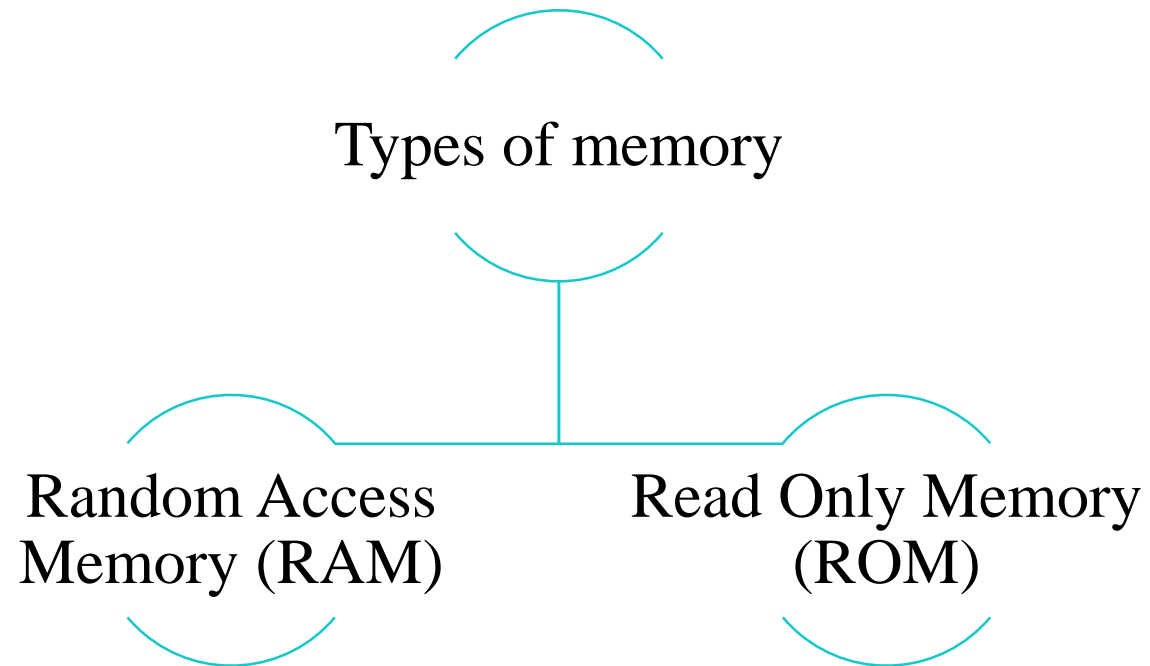
Processor

- ❖ Also called a Central Processing Unit (CPU).
- ❖ Processor is like the brain of the computer, it organize and manage all tasks in our computer.
- ❖ Processor usually consists of one or more specialized chips called microprocessors.
- ❖ A personal computer's processor consist of single chip or set of chips: For example i3, Pentium 4, i7 etc.

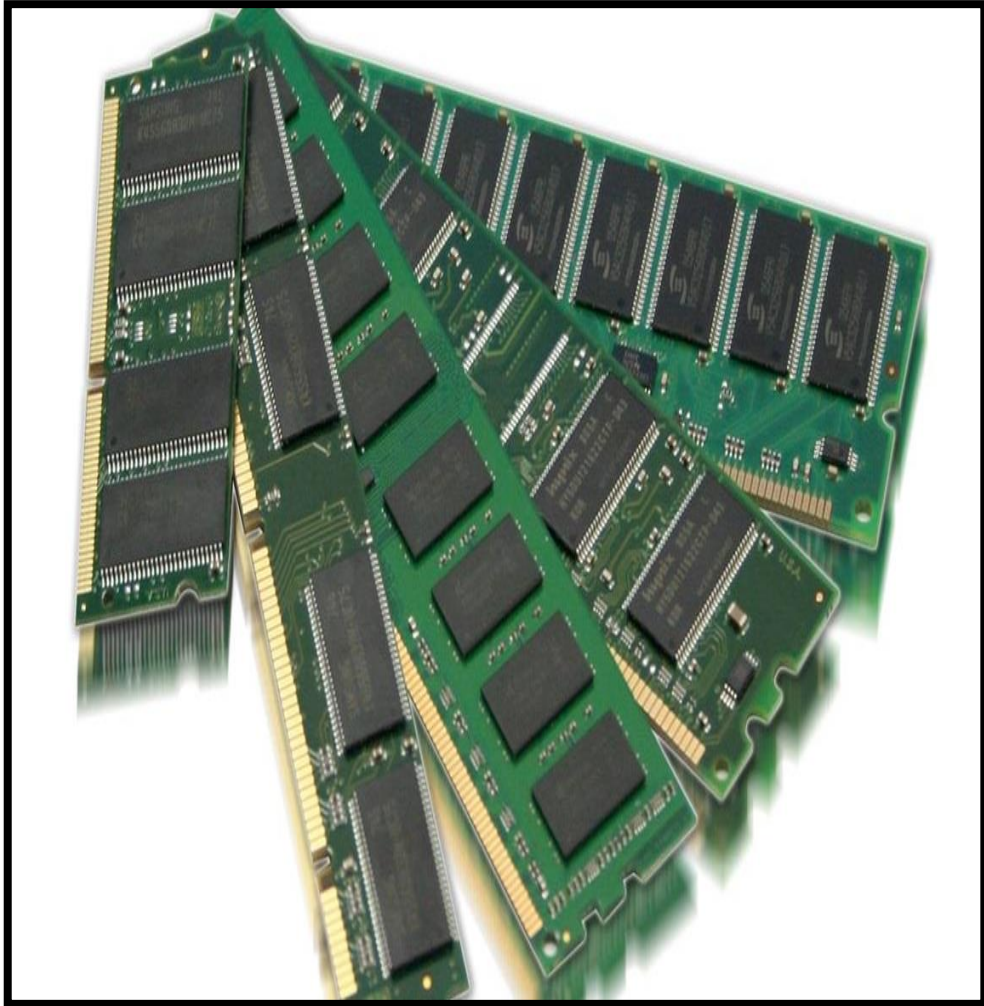


Memory

In a computer, memory is a set of one or more chips, who store data temporarily or permanently.



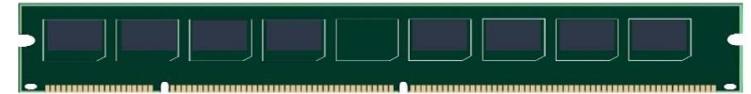
Random Access Memory (RAM)



- ❑ The most common type of computer memory is called RAM.
- ❑ RAM holds the data and instructions while the Central Processing Unit (CPU) works.

Types of Ram

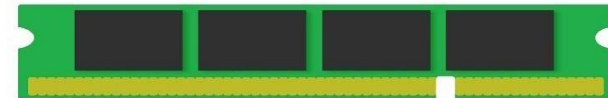
DDR1



DDR2



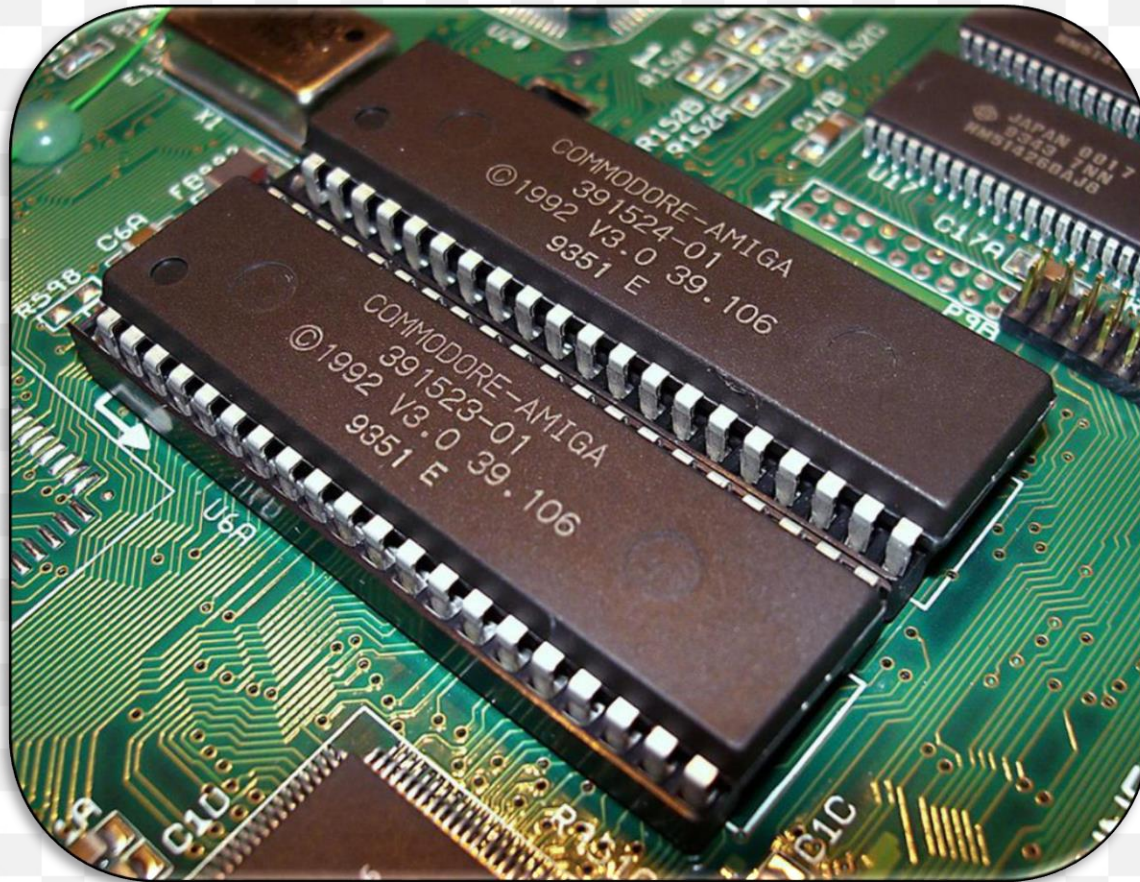
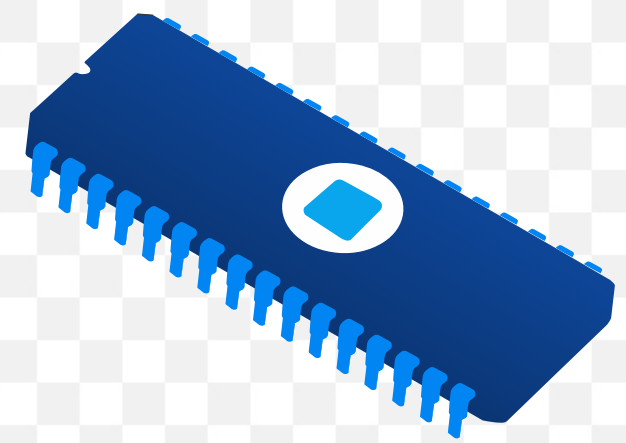
DDR3



DDR4



Read Only Memory (ROM)

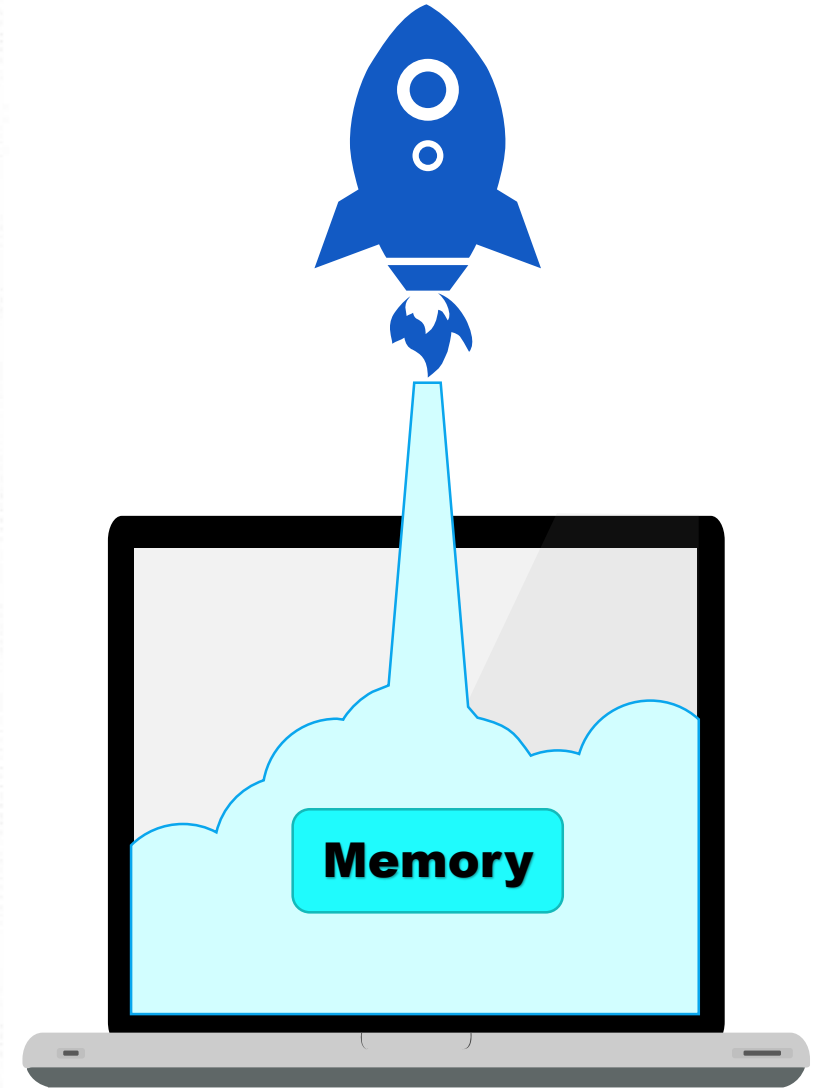


- ROM permanently store its data.
- It do not loss its data even the computer is shut off.

Units of Computer Memory Measurements

1 Bit	= Binary Digit
8 Bits	= 1 Byte
1024 Bytes	= 1 KB [Kilo Byte]
1024 KB	= 1 MB [Mega Byte]
1024 MB	= 1 GB [Giga Byte]
1024 GB	= 1 TB [Terra Byte]
1024 TB	= 1 PB [Peta Byte]
1024 PB	= 1 EB [Exa Byte]
1024 EB	= 1 ZB [Zetta Byte]
1024 ZB	= 1 YB [Yotta Byte]
1024 YB	= 1 Bronto Byte
1024 Brontobyte	= 1 Geop Byte

Geop Byte is the Highest Memory.



Input output devices



Input device



- An input device is a piece of computer hardware used to provide data to a computer, allowing you to interact with and control it.
- It allows input of raw data to the computer for processing.



Output device



- An output device is a piece of computer hardware that receives data from a computer and then translates that data into another form. That form may be audio, visual, textual, or hard copy such as a printed document.



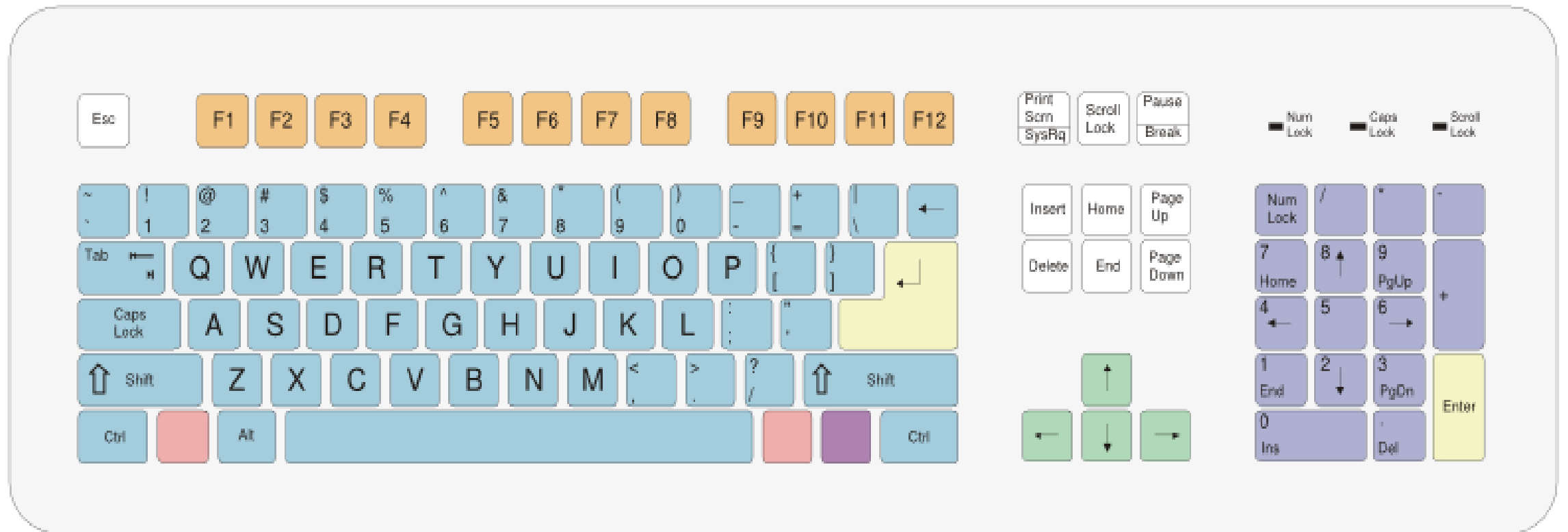
Input devices

Input devices

Keyboard

- One of the primary input devices used to input data and commands.
- A laptop keyboard is more compact than a desktop keyboard to make the laptop smaller and lighter.
- Smartphones and tablets use on-screen keyboard to input messages and select commands.





- Typewriter keys
- Function keys
- Enter keys
- Windows keys
- Numeric keypad
- Other
- Application key
- Cursor control keys

Input devices

Mouse

- An input device used to control the cursor and coordinates. It can be wired or wireless.
- A laptop uses a touchpad as the mouse.
- A smartphone and tablet use a touchscreen as primary input device and the user's finger is used as the mouse.



Input devices



Microphone

An input device that allows users to input audio into their computers



Digital Camera

An input device that takes pictures digitally



Scanner

An input device that reads an image and converts it into a digital file

Input devices



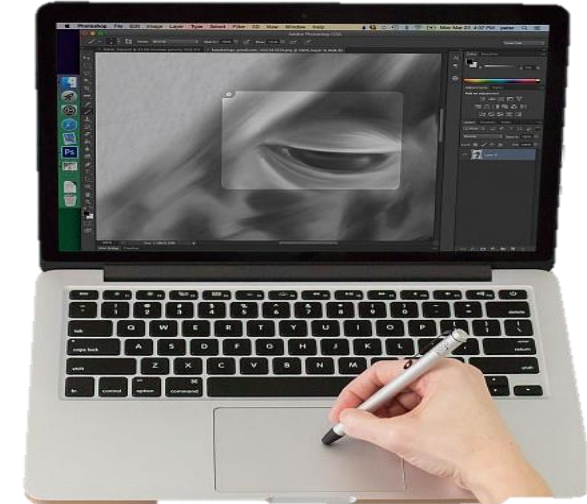
Barcode Reader

Also known as barcode scanner or point of sale (POS) scanner, is an input device capable of reading barcodes.



Biometric devices

An input device used to input biometric data into a computer.



Stylus

It is a pen-shaped input device used to write or draw on the screen of a graphic tablet or device.



Output devices

Output devices



Monitor

This is the most common computer output device . It creates a visual display by the use of which users can view processed data. Monitors come in various sizes and resolutions.



Printer

This device generates a hard copy version of processed data, like documents and photographs



Speakers

Speakers are attached to computers to facilitate the output of sound.

Output devices



Headset

This is a combination of speakers and microphone.



Projector

This is a display device that projects a computer-created image onto another surface: usually some sort of whiteboard or wall.



Plotter

This generates a hard copy of a digitally depicted design.

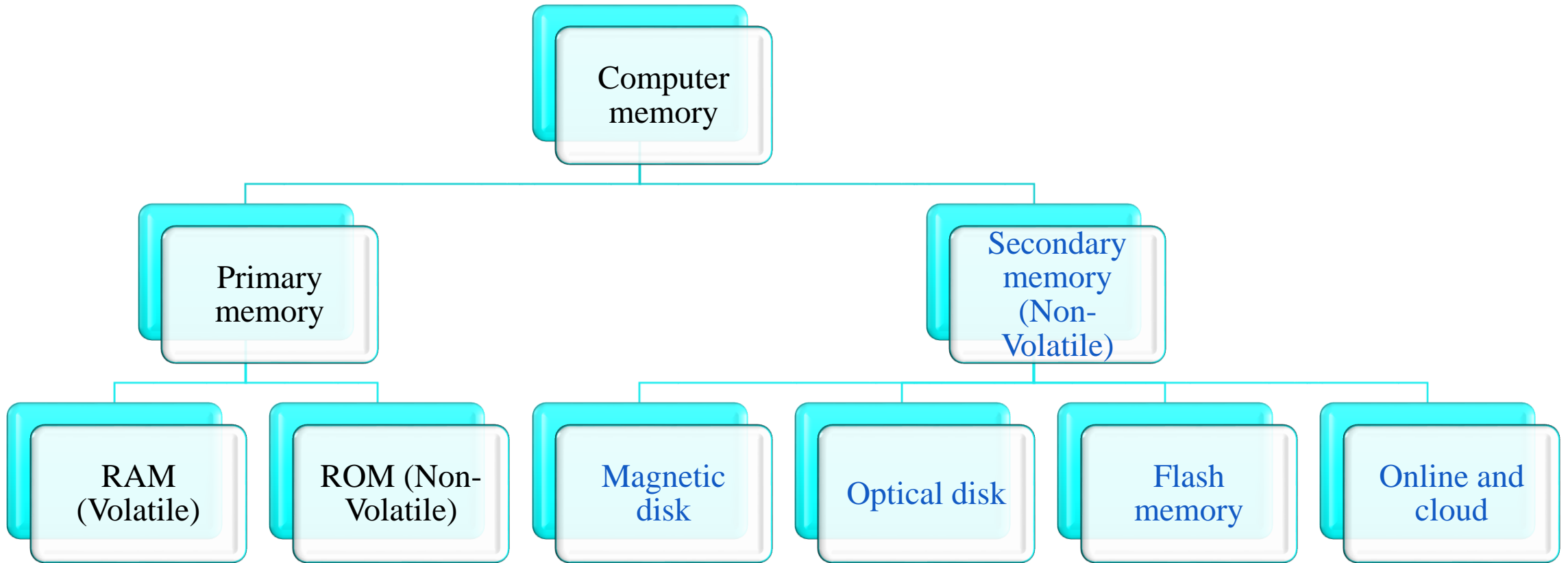


Storage



Memory refers to the location of short-term data, whereas the storage is the component within your computer that allows you to store and access data on a long-term basis.

A storage device is a piece of computer hardware used for saving, carrying and pulling out data. It can be a device inside or outside a computer or server. It comes in different shapes and sizes depending on the needs and functionalities. Other terms for storage device is storage medium or storage media.



Magnetic storage device

Today, magnetic storage is one of the most common types of storage used with computers.



Hard drive

A hard disk drive (sometimes abbreviated as a hard drive, HD, or HDD) is a non-volatile data storage device. An internal hard drive is the main storage device in a computer. An external hard drive is also known as removable hard drive. It is used to store portable data and backups.



Floppy disk

A normal 3 ½ inch disk can store 1.44 MB of data.

Optical storage device

Use lasers and lights as its mode of saving and retrieving data.



Compact Disc (CD)



**Digital Versatile/Video
Disc (DVD)**

❖ These have different types that can be written to once or to multiple times.

Flash memory device

Now replacing magnetic storage device as it is economical and more functional.



Memory card

An electronic flash memory device used to store digital information and commonly used in mobile electronic devices.

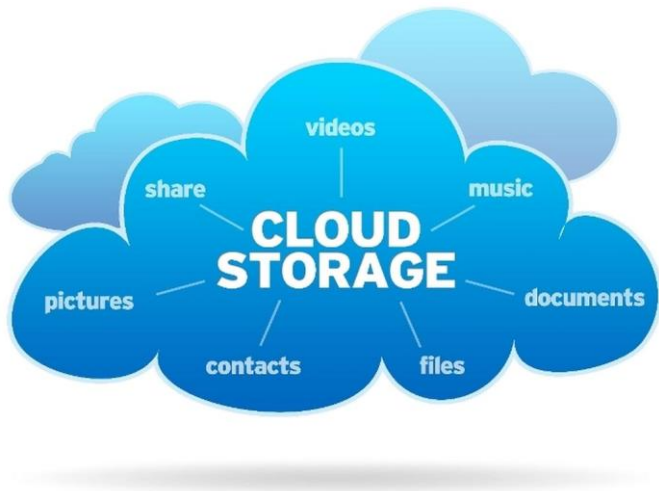


**Universal Serial Bus (USB)
flash drive**

A small, portable storage device connected through the USB port.

Online and cloud

Now becoming widespread as people access data from different devices.



Cloud storage



Microsoft OneDrive

Data is managed remotely and made available over a network. Basic features are free to use but upgraded version is paid monthly as a per consumption rate.



THANKS FOR YOUR ATTENTION