

## KANHA COMPUTER INSTITUTE

### ❖ What is Computer :-

Computer is electronic machine. It can solve Any Arithmetical and logical calculation few in second.

### ❖ What is Full form of computer :-

### ❖ Computer full name is:-

- ✓ Common
- ✓ Operating
- ✓ Machine
- ✓ Particularly
- ✓ Used
- ✓ Technical
- ✓ Education
- ✓ Research



## ➤ Computer

A computer is an electronic machine that accepts raw data as input, processes it according to a set of instructions (software), stores the data, and produces output (information). It operates at high speeds and with high accuracy to perform

## History of Computer :-

calculations, data management, and automation.

A computer is an **electronic machine** that takes in data as input, processes it, stores information, and produces output. **Charles babbage is** considered the father of computers, having designed the first mechanical computer, the "difference engine," in 1822.

विश्व का पहला प्रोग्राम योग्य सामान्य-उद्देश्यीय इलेक्ट्रॉनिक डिजिटल कंप्यूटर **ENIAC**

**(एनियाक)** था, जिसे **1945** में **जॉन प्रेस्पर एकर्ट** और **जॉन मौचली** ने अमेरिका में बनाया था। यह एक विशाल मशीन थी जो एक कमरे के बराबर थी। हालाँकि, कंप्यूटर के वैचारिक जनक **चार्ल्स बैबेज** हैं, जिन्होंने 1837 में पहला मैकेनिकल कंप्यूटर डिज़ाइन किया था।

### **mother of computer**

**Ada Lovelace** (1815–1852) is widely recognized as the "Mother of Computers" or the "Mother of Programming". An English mathematician, she is considered the first computer programmer for creating the first algorithm intended for processing by Charles Babbage's analytical engine in 1843.

Full Name: Augusta Ada King, Countess of Lovelace.

### **Key Contributions of Ada Lovelace**

**First Programmer:** She understood that the analytical engine could follow a sequence of instructions (a program).

**Visionary Insights:** Lovelace realized that computers could do more than just calculate numbers; she foresaw their ability to create art, music, and process information, going beyond Charles Babbage's original vision.

**Analytical Engine Notes:** Her notes on Babbage's analytical engine detailed a method for calculating Bernoulli numbers with the machine, now considered the first algorithm.

## Functioning of the Computer :-

❖ There are type 4<sup>th</sup> step of the Computer :-

### 1<sup>st</sup> Step Of The Computer :-

In the 1<sup>st</sup> step of computer give input data by:- keyboard, mouse, scanner, light pen, microphone, webcam, joystick, touch screen, barcode reader, OMR (Optical Mark Reader), OCR (Optical Character Reader), MICR (Magnetic Ink Character Reader ), Trackball, Touchpad, Graphics Tablet, Biometric Device, (Fingerprint/Face), Smart Card Reader, Digital Camera, Voice Recognition system, VR Controller

### 2<sup>nd</sup> Step Of The Computer :-

In the 2<sup>nd</sup> step of computer give Storage data by:- Ram, Rom, Hard disk drive(H.D.D) CD (compact disk) DVD (Digital video disk), Solid State Drive (SSD), Pen Drive / USB Flash Drive Memory Card (SD Card), Floppy Disk, Blu-ray Disc, Hybrid Drive (SSHD), Cloud Storage, Cache Memory

Storage Device	Type	Use	Speed
RAM	Primary Storage	Temporary data store	Very Fast
ROM	Primary Storage	Permanent instructions	Fast
Cache Memory	Primary Storage	CPU speed increase	Very Fast
HDD (Hard Disk Drive)	Secondary Storage	Main computer storage	Medium
SSD (Solid State Drive)	Secondary Storage	Fast storage	Fast
NVMe SSD	Secondary Storage	High-speed storage	Very Fast
Pen Drive	Portable Storage	Transfer files	Fast
Memory Card	Portable Storage	Mobile/Camera storage	Medium
CD	Optical Storage	Music/Data storage	Slow
DVD	Optical Storage	Video/Data storage	Medium
Blu-ray Disc	Optical Storage	HD video storage	Medium
Floppy Disk	Magnetic Storage	Old data storage	Very Slow
Magnetic Tape	Magnetic Storage	Backup storage	Slow
External Hard Disk	Portable Storage	Backup & extra storage	Medium
Cloud Storage	Online Storage	Internet data storage	Depends on Internet
NAS	Network Storage	Network file sharing	Fast
Zip Disk	Portable Storage	Old backup device	Slow

Storage Device	Type	Use	Speed
EEPROM	Primary Storage	Rewritable ROM	Fast
Optical Disk	Optical Storage	Laser-based storage	Medium
Hybrid Drive (SSHD)	Secondary Storage	HDD + SSD mix	Fast

### 3<sup>rd</sup> Step Of The Computer :-

In the 3<sup>rd</sup> step of computer give Processing data by:-

Microprocessor, Chipset, BIOS , CPU, ALU, CU, GPU

Processing Device	Full Form	Work
CPU	Central Processing Unit	Main processing device
ALU	Arithmetic Logic Unit	Calculation और logical work
CU	Control Unit	सभी parts को control करना
GPU	Graphics Processing Unit	Graphics और gaming processing
Microprocessor	—	Small CPU chip
Multi-core Processor	—	एक साथ कई tasks process करना
DSP	Digital Signal Processor	Audio/video signal processing
TPU	Tensor Processing Unit	AI और machine learning processing
Coprocessor	—	Main processor की help करना
FPU	Floating Point Unit	Decimal calculations करना

### 4<sup>th</sup> Step Of The Computer :-

In the 4<sup>th</sup> step of computer give Output data by:-

Monitor, Printer, Speaker, Projector, Plotter, Digital Billboard

Output Device	Type	Use
Monitor	Soft Copy	Screen पर output दिखाना
Printer	Hard Copy	Paper पर print करना
Speaker	Audio Output	Sound सुनाना
Headphone	Audio Output	Personal sound output
Projector	Visual Output	बड़ी screen पर display
Plotter	Hard Copy	Maps/design print करना
LED Monitor	Visual Output	LED display output

Output Device	Type	Use
LCD Monitor	Visual Output	Digital screen display
Touch Screen	Input + Output	Touch और display दोनों
Smart TV	Visual Output	Large display output
VR Headset	Virtual Output	Virtual Reality display
3D Printer	Hard Copy	3D object print करना
GPS Device	Navigation Output	Location information देना
Braille Printer	Special Output	Blind users के लिए print
Braille Display	Special Output	Braille output दिखाना
Sound Card	Audio Output	Audio process/output
Graphics Card	Video Output	Graphics display करना
Digital Billboard	Visual Output	Advertisement display
E-Book Reader	Visual Output	Digital book reading
Haptic Device	Touch Feedback	Vibration/touch output

## Components of the Computer :-

Input Device:-

What is key board:-

Keyboard is an input device of the Computer. It is used to enter data, text, numbers and instructions into the computer.

**Definition** :-“A keyboard is an electronic input device used to type letters, numbers, symbols and commands into a computer.”



1. Keyboard

## Types of Keyboard

- Wired Keyboard
- Wireless Keyboard
- Mechanical Keyboard
- Multimedia Keyboard
- Gaming Keyboard
- Virtual Keyboard



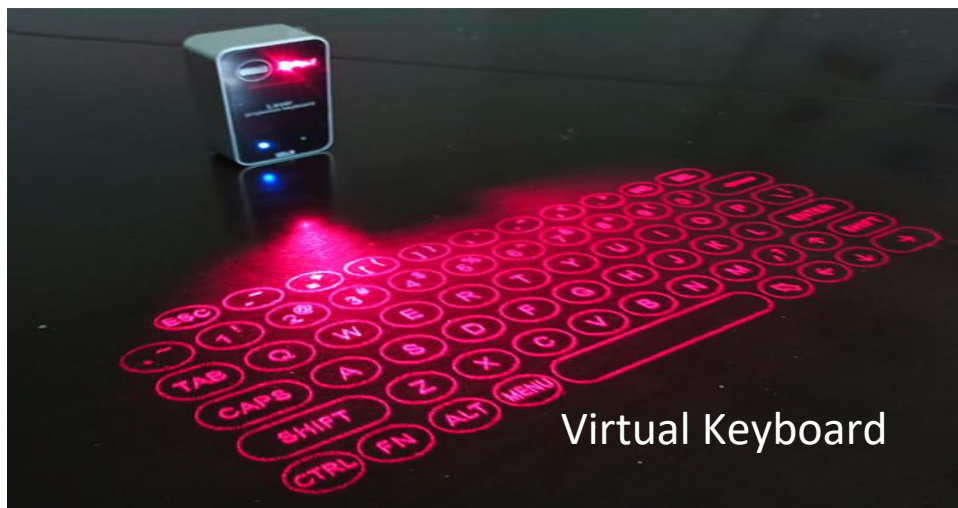
➤ Mechanical Keyboard



➤ Wireless Keyboard



➤ Gaming Keyboard



Virtual Keyboard

**Shortcut Key**

Ctrl + A  
Ctrl + B  
Ctrl + C  
Ctrl + D  
Ctrl + E  
Ctrl + F  
Ctrl + G  
Ctrl + H  
Ctrl + I  
Ctrl + J  
Ctrl + K  
Ctrl + L  
Ctrl + M  
Ctrl + N  
Ctrl + O  
Ctrl + P  
Ctrl + Q  
Ctrl + R  
Ctrl + S  
Ctrl + T  
Ctrl + U  
Ctrl + V  
Ctrl + W  
Ctrl + X  
Ctrl + Y  
Ctrl + Z

**Shortcut Key**

Alt + Tab  
Alt + F4  
Windows + E  
Windows + L  
Windows + R  
Ctrl + Shift + Esc  
Ctrl + Alt + Delete

**Function**

Select All  
Bold Text  
Copy  
Bookmark / Font Dialog  
Center Align  
Find  
Go To  
Replace / History  
Italic Text  
Justify Text  
Insert Link  
Select Address Bar/ left Align  
New Slide / Indent  
New File  
Open File  
Print  
Remove Paragraph Format  
Refresh / Right Align  
Save  
New Tab  
Underline  
Paste  
Close Tab  
Cut  
Redo  
Undo

**Function**

Switch Windows  
Close Program  
Open File Explorer  
Lock Computer  
Open Run Command  
Open Task Manager  
Security Options

## Shortcut Key

Ctrl + Home  
Ctrl + End  
Ctrl + Backspace  
Ctrl + Delete  
Shift + Delete  
Ctrl + Shift + T  
Ctrl + Tab  
Ctrl + Shift + Tab  
F1  
F2  
F3  
F5  
F11  
Esc  
Tab  
Caps Lock  
Num Lock  
PrtSc  
Windows + D  
Windows + Tab  
Windows + Shift + S  
Windows + I  
Windows + M  
Windows + Shift + M  
Windows + Arrow Keys  
Alt + Enter  
Alt + Space  
Ctrl + Esc  
Ctrl + Mouse Wheel  
Shift + Arrow Keys

## Shortcut Key

Ctrl + T  
Ctrl + N  
Ctrl + H  
Ctrl + J  
Ctrl + D  
Ctrl + +  
Ctrl + -  
Ctrl + 0

## Function

Top of document  
End of document  
Delete whole word  
Delete next word  
Permanent delete  
Reopen closed tab  
Next tab  
Previous tab  
Help  
Rename file/folder  
Search  
Refresh  
Full screen  
Cancel operation  
Next option  
Capital letters on/off  
Numeric keypad on/off  
Screenshot  
Show desktop  
Task view  
Screenshot tool  
Open Settings  
Minimize all windows  
Restore minimized windows  
Window positioning  
Properties  
Window menu  
Open Start menu  
Zoom in/out  
Select text

## Function

New tab  
New window  
History  
Downloads  
Bookmark page  
Zoom in  
Zoom out  
Reset zoom

What is Mouse:-

**Mouse is an input device of the computer.**

It is used to control the pointer (cursor) on the computer screen.

**Definition:-**

**“A mouse is a pointing input device used to move the cursor and select items on a computer screen.”**

### Main Parts of Mouse

1  Left Button

Select और open करने के लिए

2  Right Button

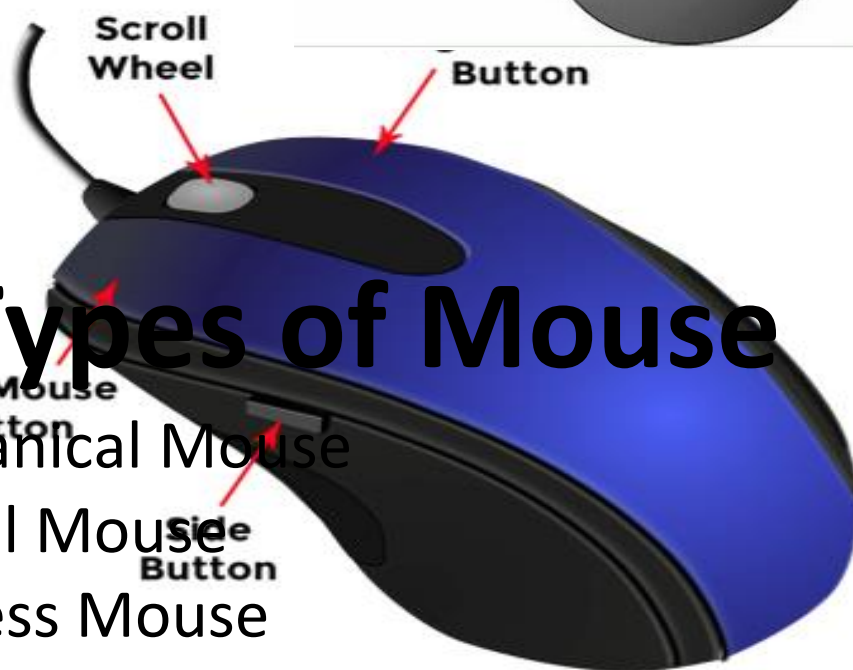
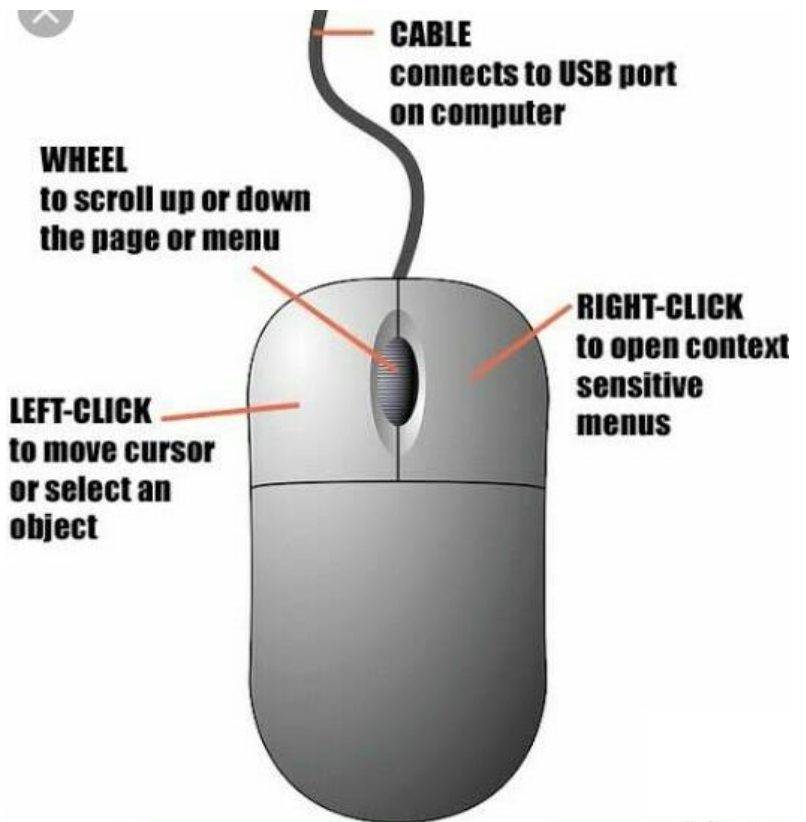
Shortcut menu खोलने के लिए

3  Scroll Wheel

Page ऊपर-नीचे करने के लिए

4  Sensor

Mouse movement detect करता है



## Types of Mouse

- ✓ Mechanical Mouse
- ✓ Optical Mouse
- ✓ Wireless Mouse
- ✓ Bluetooth Mouse

- ✓ Gaming Mouse
- ✓ Trackball Mouse

## Types of Computer Mouse



What is Scanner:-

**Scanner is an input device of the computer.**

It is used to Scanning paper documents, photos, and images into digital form.

Definition

**“A scanner is an electronic input device that scans documents and converts them into digital format.”**

# Main Parts of Scanner



## 1 Glass Surface

यह Scanner का ऊपरी काँच वाला भाग होता है। इस पर Document या Photo रखा जाता है जिसे scan करना होता है।

## 2 Scan Head

यह Scanner का मुख्य भाग होता है। यह Document की image को पढ़ता (read) है और उसे digital form में बदलने में मदद करता है।

## 3 Sensor

Sensor scanned image की जानकारी detect करता है। यह light और image data को पहचानकर computer तक भेजता है।

## 4 Control Buttons

इन buttons की मदद से scan operation control किया जाता है। जैसे — Start, Stop, Copy आदि कार्य किए जाते हैं।

## Types of Scanner

1. Flatbed Scanner
2. Handheld Scanner
3. Drum Scanner
4. Sheet-fed Scanner
5. Barcode Scanner
6. 3D Scanner

# TYPES OF SCANNER

### 1. Flatbed Scanner



Scans documents or images placed on a flat glass surface.

### 2. Handheld Scanner



Portable scanner that is moved by hand over the document.

### 3. Drum Scanner



Uses a rotating drum to scan high-quality images, often used in professional imaging.

### 4. Sheet-fed Scanner



Scans documents automatically by feeding sheets of paper.

### 5. Barcode Scanner



Reads barcodes using a laser or light sensor and converts data into digital form.

### 6. 3D Scanner



Captures the shape and size of physical objects to create 3D digital models.

What is Light Pen:-

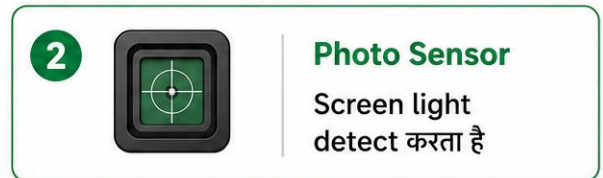
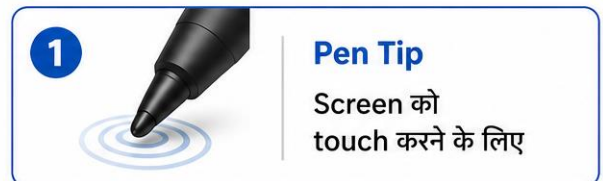
**Light Pen is an input and sensitive device of the computer.**

It is used to draw, select, and point directly on the computer screen.

**Definition:-**

**“A light pen is a pointing input device used to draw and select objects directly on a computer screen.”**

## MAIN PARTS OF WIRELESS LIGHT PEN



✓ यह Light Pen पूरी तरह Wireless है और बिना Cable के काम करता है।

# Types of Light Pen

1. Wired Light Pen
2. Wireless Light Pen

Graphic Light Pen

## TYPES OF LIGHT PEN

### 1. WIRED LIGHT PEN



- यह Light Pen एक Cable के माध्यम से Computer से जुड़ा होता है।
- Screen को touch करने पर यह position को detect करता है।
- यह पुराने Computer Systems में अधिक उपयोग होता था।

### 2. WIRELESS LIGHT PEN



- यह Light Pen बिना Cable के काम करता है और Wireless तकनीक से जुड़ा होता है।
- इसमें Battery होती है और यह Radio Frequency (RF) या Bluetooth के द्वारा Computer से communicate करता है।
- यह आधुनिक सिस्टम्स में अधिक उपयोग होता है क्योंकि यह सुविधाजनक और portable होता है।

### 3. GRAPHIC LIGHT PEN



- यह Light Pen विशेष रूप से Graphics Tablet या Digitizer के साथ उपयोग किया जाता है।
- यह drawing, designing और editing के लिए उपयोगी होता है।
- यह high accuracy देता है और कलाकारों, इंजीनियरों तथा डिजाइनरों के लिए बहुत उपयोगी है।



Light Pen का उपयोग Screen पर किसी भी बिंदु (Point) को select करने या draw करने के लिए किया जाता है।

## Computer Input Devices – Images with Names

 <p><b>1</b> Microphone</p>	 <p><b>2</b> Webcam</p>	 <p><b>3</b> Joystick</p>	 <p><b>4</b> Touch Screen</p>	 <p><b>5</b> Barcode Reader</p>	 <p><b>6</b> OMR (Optical Mark Reader)</p>
 <p><b>7</b> OCR (Optical Character Reader)</p>	 <p><b>8</b> MICR (Magnetic Ink Character Reader)</p>	 <p><b>9</b> Trackball</p>	 <p><b>10</b> Touchpad</p>	 <p><b>11</b> Graphics Tablet</p>	 <p><b>12</b> Biometric Device (Fingerprint)</p>
 <p><b>13</b> Biometric Device (Face)</p>	 <p><b>14</b> Smart Card Reader</p>	 <p><b>15</b> Digital Camera</p>	 <p><b>16</b> Voice Recognition System</p>	 <p><b>17</b> VR Controller</p>	

### Microphone

#### Definition:

A microphone is an input device that converts sound into digital signals and sends it to the computer.

### Webcam

#### Definition:

A webcam is an input device used to capture photos and videos and send them to the computer.

### Joystick

#### Definition:

A joystick is an input device used to control games and simulations.

## **Touch Screen**

### **Definition:**

A touch screen is an input and output device that allows users to give commands by touching the screen.

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## **Barcode Reader**

### **Definition:**

A barcode reader is an input device used to scan barcodes and send the information to the computer.

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## **OMR (Optical Mark Reader)**

### **Definition:**

OMR is an input device used to read marked answers and symbols on forms and answer sheets.

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## **OCR (Optical Character Reader)**

### **Definition:**

OCR is an input device or software that converts printed text into digital text.

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## **MICR (Magnetic Ink Character Reader)**

### **Definition:**

MICR is an input device used to read characters printed with magnetic ink, mainly on bank cheques.

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## **Trackball**

### **Definition:**

A trackball is a pointing input device in which the cursor is controlled by rotating a ball.

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## **Touchpad**

### **Definition:**

A touchpad is a pointing input device used to control the cursor with a finger.

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## **Graphics Tablet**

### **Definition:**

A graphics tablet is an input device used for drawing, designing, and creating digital artwork.

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## **Biometric Device (Fingerprint/Face)**

### **Definition:**

A biometric device is an input device used to identify and verify a person through fingerprint or face recognition.

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## **Smart Card Reader**

### **Definition:**

A smart card reader is an input device used to read information stored on a smart card.

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## **Digital Camera**

### **Definition:**

A digital camera is an input device used to capture photos and videos and store them digitally.

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## **Voice Recognition System**

### **Definition:**

A voice recognition system is an input technology that recognizes human voice and converts it into commands.

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## **VR Controller**

## Definition:

A VR controller is an input device used to control actions in a virtual reality environment.

# Components of the Computer :-

## Storage Device:-

### What is Ram:-

Ram is temporally Storage device of the computer. It is store the data temporally of the computer. It is light turn off all data deleted. **RAM is a primary memory of the computer.**

RAM stands for **Random Access Memory.**

### Definition:-

**“RAM is a temporary memory that stores data and instructions currently used by the computer.”**

## RAM

RAM (Random Access Memory) is a type of **volatile memory** used to store data temporarily while a computer is running.

## Types of RAM

### SRAM (Static RAM)

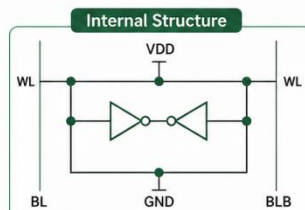
- Faster memory
- Expensive

### DRAM (Dynamic RAM)

- Slower than SRAM
- Commonly used

#### 1. SRAM (Static RAM)

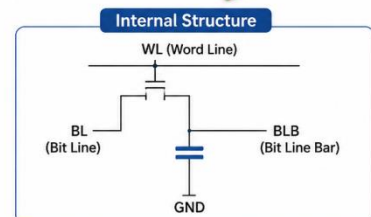
- Faster memory
- Expensive
- Does not need refreshing frequently
- Used in Cache Memory



SRAM stores each bit using flip-flops (6 transistors per bit).

#### 2. DRAM (Dynamic RAM)

- Slower than SRAM
- Cheaper
- Needs refreshing continuously
- Used as Main Memory in computers



DRAM stores each bit using a capacitor (1 transistor + 1 capacitor per bit).

<b>RAM Type</b>	<b>Speed</b>	<b>Voltage</b>	<b>Pins</b>	<b>Use</b>
DDR1	200–400 MHz	2.5V	184 Pins	Old Computers
DDR2	400–1066 MHz	1.8V	240 Pins	Old PCs
DDR3	800–2133 MHz	1.5V	240 Pins	Desktop/Laptop
DDR4	2133–3200 MHz	1.2V	288 Pins	Modern Computers
DDR5	4800 MHz+	1.1V	288 Pins	Latest High-Speed PCs

## ROM

What is Rom:-

Ram is permanently Storage device of the computer.  
It is store the data permanently of the computer. It is light turn off does  
not all data deleted.

or

What is ROM:-

**ROM is a primary memory of the computer.**



ROM stands for **Read Only Memory.**

It is used to store permanent data and instructions in the computer.

**Definition:-**

**“ROM is a permanent memory that stores important instructions  
required to start the computer.”**

## Types of ROM

<p><b>1. PROM</b> (Programmable ROM)</p> <p>Data written only one time</p>  <p><b>PROM</b> (Programmable ROM)</p>	<p><b>2. EPROM</b> (Erasable Programmable ROM)</p> <p>Data can be erased using ultraviolet light</p>  <p><b>EPROM</b> (Erasable Programmable ROM)</p>	<p><b>3. EEPROM</b> (Electrically Erasable Programmable ROM)</p> <p>Data erased electrically</p>  <p><b>EEPROM</b> (Electrically Erasable Programmable ROM)</p>	<p><b>4. Flash ROM</b> (Flash Memory)</p> <p>Modern ROM used in computers and mobiles</p>  <p><b>Flash ROM</b> (Flash Memory)</p>
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## Types of ROM

### 1. PROM (Programmable Read Only Memory)

- Data can be written only one time.

### 2. EPROM (Erasable Programmable Read Only Memory)

- Data can be erased using ultraviolet light.

### 3. EEPROM (Electrically Erasable Programmable Read Only Memory)

- Data can be erased electrically and rewritten.

### 4. Flash ROM

- Faster type of EEPROM
- Used in USB drives and modern devices.

# HARD DISK

- What is hard dish:-

Hard disk is permanently magnetic Storage device of the Computer. it is store the data permanently form. We can store data 162 to 1 TB.

## What is Hard Disk:-

**Hard Disk is a secondary storage device of the computer.**

It is used to store data, programs, files, and operating systems permanently.

Definition :-

**“A hard disk is a storage device used to store large amounts of data permanently in a computer.”**

## Types of Hard Disk

- HDD (Hard Disk Drive)
- SSD (Solid State Drive)
- External Hard Disk
- Hybrid Drive (SSHD)

## Types of Hard Disk

### 1. HDD (Hard Disk Drive)



HDD uses spinning disks (platters) to store data magnetically. It is large in size and offers high storage capacity at a lower cost.

### 2. SSD (Solid State Drive)



SSD uses flash memory chips to store data. It is faster, more reliable, silent, shock-resistant and consumes less power.

### 3. External Hard Disk



External hard disk is a portable storage device that connects via USB or other ports. It is used for backup and data transfer.

### 4. Hybrid Drive (SSHD)



Hybrid Drive (SSHD) combines HDD and SSD technology. It has a small amount of SSD for speed and large HDD for storage.

## **SSD (Solid State Drive)**

**What is SSD :-**

**SSD is a secondary storage device of the computer.**

SSD stands for **Solid State Drive**.

It stores data using flash **memory** chips and works faster than HDD.

## **External Hard Disk**

**What is External Hard Disk?**

**External Hard Disk is a portable storage device.**

It is connected to the computer using USB cable.

## **Hybrid Drive (SSHD)**

**What is Hybrid Drive?**

**Hybrid Drive is a combination of HDD and SSD.**

SSHD stands for **Solid State Hybrid Drive**.

## **CD (COMPACT DISK)**

- **What is CD :-**

CD is permanently storage device of the computer.

It is store the data permanently. We can store the data 700 MB

## **CD (Compact Disc)**

**What is CD :-**

**CD is an optical storage device of the computer.**

CD stands for **Compact Disc**.

It is used to store data, music, videos, and software.

**Definition :-**

**“A CD is an optical disc used to store digital data using laser technology.”**

## Types of CD

1. CD-ROM

Data write one time

2. CD-R

Only read data

3. CD-RW

Data erase and rewrite possible

## Types of CD

### ① CD-ROM

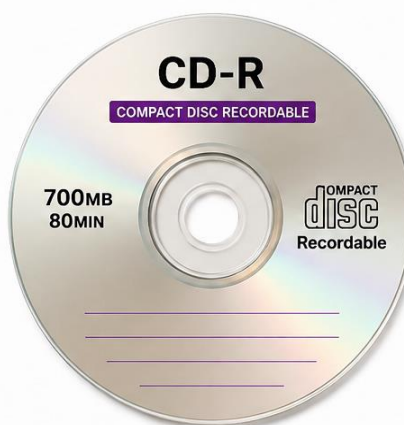
Only read data



CD-ROM (Compact Disc Read Only Memory) is a type of CD that can only be read and data cannot be written or erased.

### ② CD-R

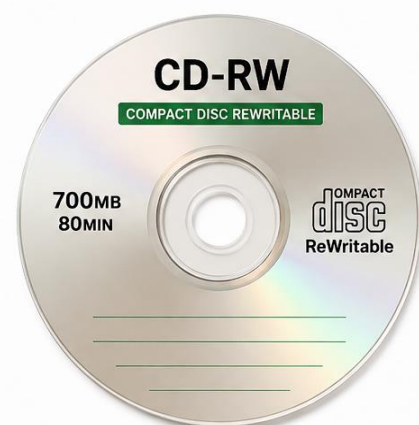
Data write one time



CD-R (Compact Disc Recordable) allows data to be written once. Data cannot be erased or modified after writing.

### ③ CD-RW

Data erase and rewrite possible



CD-RW (Compact Disc ReWritable) allows data to be erased and rewritten multiple times.

## DVD (DIGITAL VIDEO DISK)

- What is DVD :-

DVD is permanently storage device of the computer.

It is store the data permanently. We can store the data 4.7GB

**What is DVD :-**

**DVD is an optical storage device of the computer.**

DVD stands for **Digital Versatile Disc** (or Digital Video Disc).

It is used to store videos, movies, software, and data.

**Definition :-**

**“A DVD is an optical disc used to store large amounts of digital data using laser technology.”**

# Types of DVD

## 1. DVD-ROM

Only read data

## 2. DVD-R

Data write one time

## 3. DVD-RW

Data erase and rewrite possible

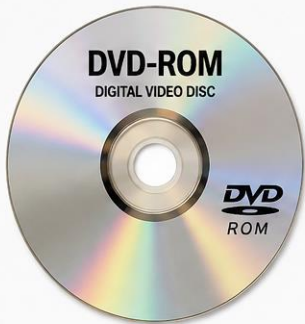
## 4. DVD-DL

Double layer DVD with more storage

# Types of DVD

## 1 DVD-ROM

Only read data



Read Only



Cannot Write

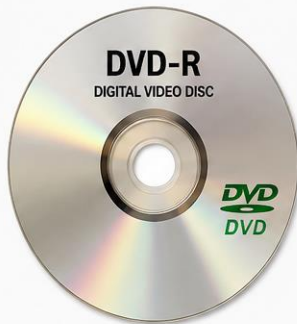


Data Permanent

DVD-ROM can only be read. Data stored in it cannot be written or erased. It is used for movies, software and games.

## 2 DVD-R

Data write one time



Write Once



Cannot Rewrite

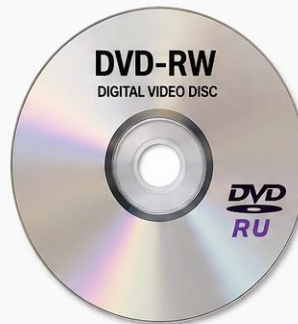


Data Permanent

DVD-R allows data to be written once. After writing, data cannot be erased or modified. It is good for backups and storing data.

## 3 DVD-RW

Data erase and rewrite possible



Rewrite Multiple Times



Erasable



Data Reusable

DVD-RW allows data to be erased and written again. It can be used multiple times for storing data. It is like a rewritable disc.

## 4 DVD-DL

Double layer DVD with more storage



Double Layer



More Storage



High Quality Video

DVD-DL has a double layer on one side. It stores more data than single layer DVDs. It is used for movies, games and large data files.

# Pen Drive / USB Flash Drive

## Definition :-

Pen Drive is a portable storage device used to store and transfer data through a USB port.

## Pen Drive / USB Flash Drive



### Features

- Portable and small in size
- Connects through USB port
- Available in different storage capacities (4GB, 8GB, 16GB, 32GB, 64GB, 128GB, etc.)
- Easy to use (Plug and Play)
- Can store all types of files and folders



### Definition

Pen Drive is a portable storage device used to store and transfer data through a USB port.



### Hindi Meaning

Pen Drive एक portable storage device है जिसका उपयोग data store और transfer करने के लिए किया जाता है।



### Uses

- Storing files, documents, photos, videos
- Data backup
- Transferring data from one computer to another
- Used in schools, offices, and homes
- Carrying important data easily



### Note:

Pen Drive is also called USB Flash Drive.

# Memory Card (SD Card)

## Definition:-

Memory Card is a small storage device used in mobile phones, cameras, and other digital devices to store data.

## Memory Card (SD Card)



Small in size,  
high in  
storage  
capacity.

### Features

- Small, lightweight and portable
- Available in different storage capacities (2GB, 4GB, 8GB, 16GB, 32GB, 64GB, 128GB, 256GB, 512GB, 1TB, etc.)
- Easy to use
- Works with many devices



### Definition

Memory Card (SD Card) is a small storage device used in mobile phones, cameras, tablets and other digital devices to store data.



### Hindi Meaning

Memory Card एक छोटा storage device है जो mobile phones, cameras और अन्य digital devices में data store करने के लिए उपयोग होता है।



### Uses

- Storing photos, videos, music and documents
- Increasing storage capacity in devices
- Data backup and transfer
- Used in cameras, mobiles, drones, tablets, etc.



### Types of SD Cards



Standard  
Capacity



High  
Capacity



eXtended  
Capacity



Micro  
SD



Micro SD  
HC



Micro SD  
XC



**Note:** SD Card stands for Secure Digital Card.

# Floppy Disk

## Definition:-

Floppy Disk is an old magnetic storage device used to store small amounts of data. Blu-ray Disc. We can store the data 3 MB

## Definition:-

Blu-ray Disc is an optical storage device used to store high-definition video and large amounts of data.



# Cloud Storage

## Definition:-

Cloud Storage is an online storage service used to store and access data through the internet.



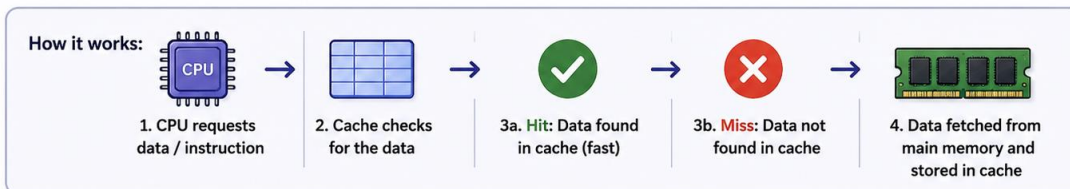
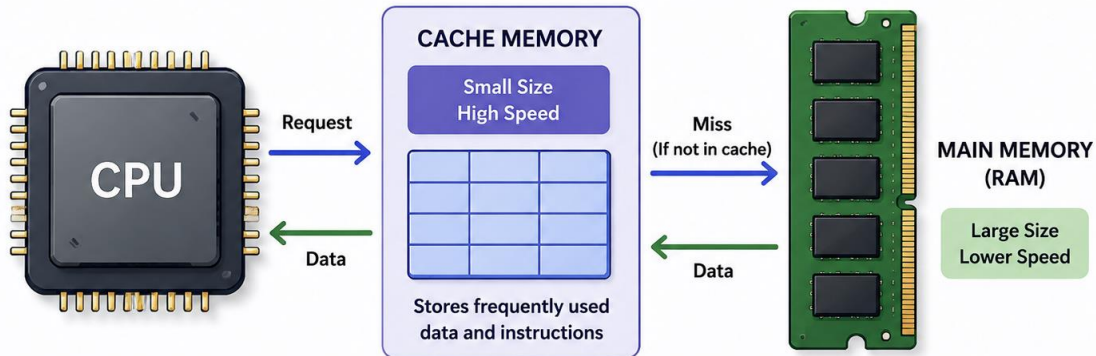
# Cache Memory

## Definition:-

Cache Memory is a very fast memory used to store frequently used data for quick CPU access.

# Cache Memory

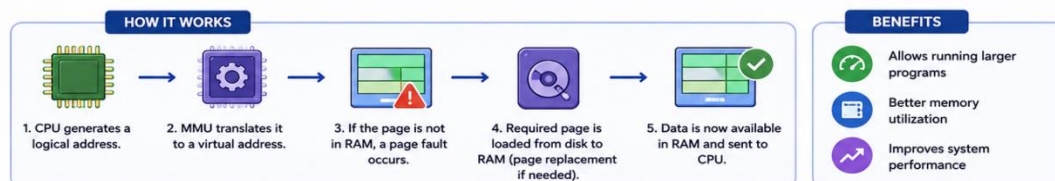
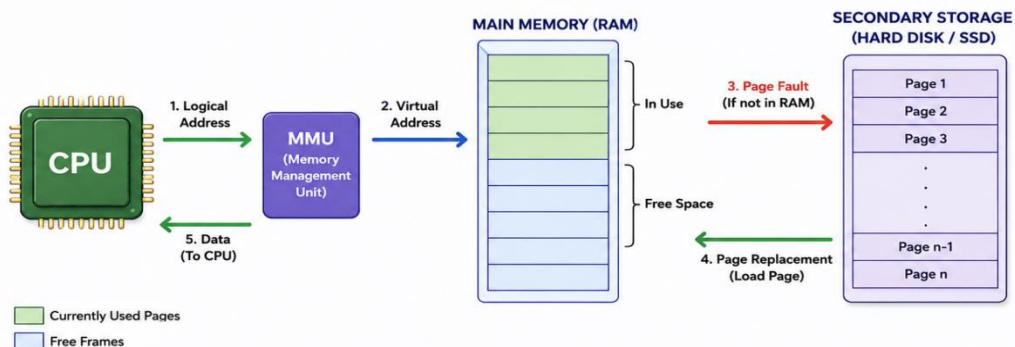
Cache memory is a small, high-speed memory that stores frequently used data and instructions to reduce access time to main memory.



# VIRTUAL MEMORY



Virtual Memory is a memory management technique that uses a part of secondary storage (hard disk/SSD) as an extension of main memory (RAM) to run larger programs than the physical memory.



**KEY IDEA:** It gives the illusion of having a large, contiguous memory space by using both RAM and disk.

# Components of the Computer :-

## Processing Device:-

### What is microprocessor:-

Microprocessor is processing device of the computer.

It is process the data of the computer

## Microprocessor

### What is Microprocessor:-

**Microprocessor is a processing device of the computer.**

It is a small electronic chip that works as the brain of the computer and processes data and instructions.

### Definition:-

**“A microprocessor is a programmable electronic chip that performs calculations and controls computer operations.”**

## Types of Microprocessor

1. Single-Core Processor
2. Dual-Core Processor
3. Quad-Core Processor
4. Octa-Core Processor
5. 64-bit Processor

## MICROPROCESSOR

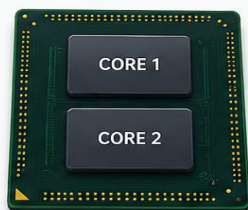
### 1. Single-Core Processor



Contains one core that can execute one instruction at a time.

Best for basic tasks and low-power devices.

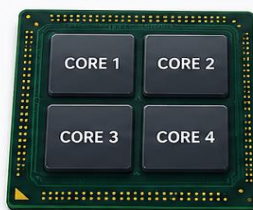
### 2. Dual-Core Processor



Contains two cores that can execute two instructions simultaneously.

Better performance and multitasking.

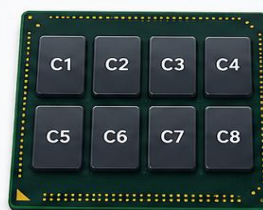
### 3. Quad-Core Processor



Contains four cores that can execute four instructions simultaneously.

High performance for multitasking and productivity.

### 4. Octa-Core Processor



Contains eight cores that can execute eight instructions simultaneously.

Excellent for heavy multitasking, gaming and advanced applications.

### 5. 64-bit Processor



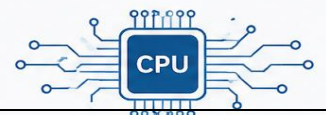
A processor that can handle 64-bit data at a time.

Supports more RAM, faster performance and advanced computing.



More cores allow a processor to handle more tasks at once.

64-bit architecture enables the processor to handle larger amounts of data and memory.



## What is Chipset:-

Chipset is processing device of the computer.  
It is processing device and all data set in the Computer.

# Chipset

## What is Chipset:-

Chipset is an important electronic component of the motherboard.  
**It controls communication between the CPU, RAM, storage devices, and other hardware components.**

## Definition:-

**“A chipset is a group of integrated circuits that manages data flow between the processor and other computer components.”**

# WHAT IS CHIPSET?

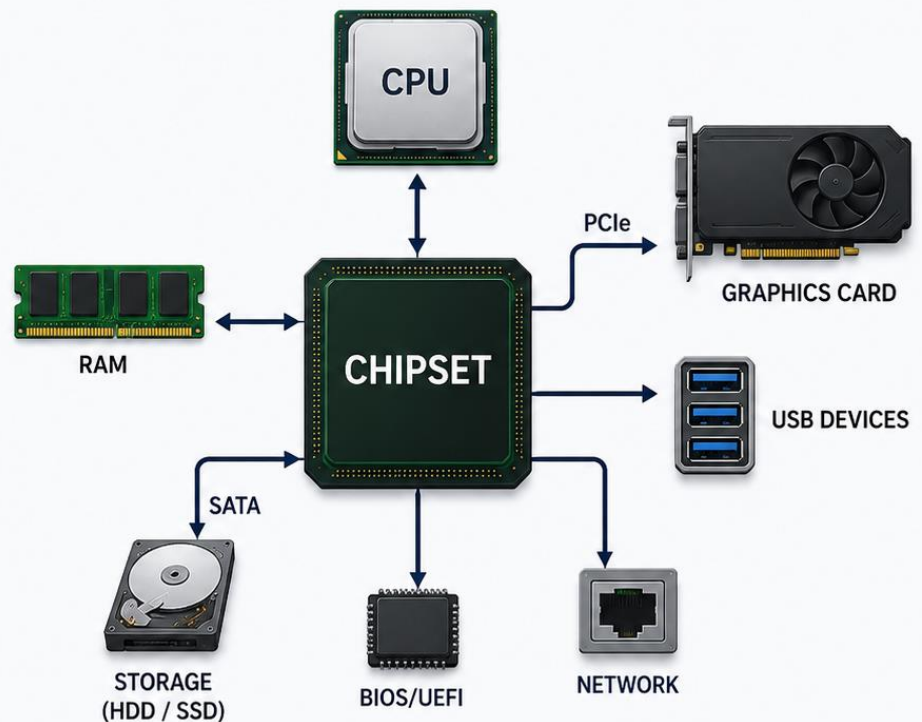
A chipset is a set of integrated circuits that manages data flow between the CPU, memory, storage devices, and other peripherals on a motherboard.

### KEY POINTS

- Chipset acts as a controller or traffic manager.
- It ensures smooth communication between the CPU and other components.
- It affects system performance, features, and compatibility.

### MAIN FUNCTIONS

- ✓ Manages data transfer between CPU, RAM, storage, and I/O devices
- ✓ Controls input/output devices (USB, SATA, PCIe, etc.)
- ✓ Supports system features and connectivity
- ✓ Determines compatibility and expandability



In modern motherboards, the chipset may be integrated into the CPU itself. Example: Intel (PCH – Platform Controller Hub), AMD (Chipset in SoC).

# Types of Chipset

## 1. Northbridge Chipset

CPU, RAM और graphics control करता था

## 2. Southbridge Chipset

USB, audio, storage devices control करता था

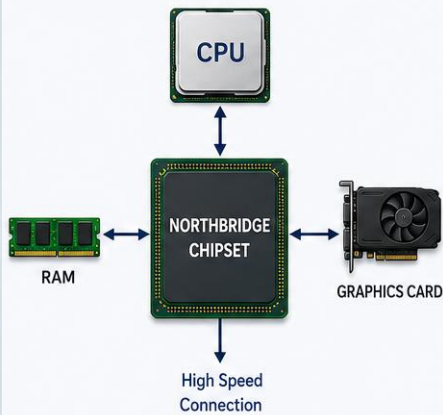
## 3. Modern Integrated Chipset

Modern motherboards में integrated chipset use होता है

# TYPES OF CHIPSET

### 1. Northbridge Chipset

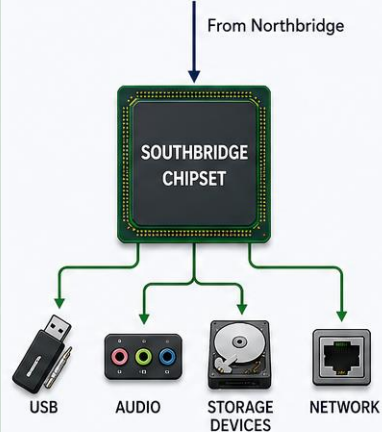
- CPU, RAM और graphics control करता था



**i** Northbridge high speed data transfer को handle करता था जैसे CPU, RAM और Graphics.

### 2. Southbridge Chipset

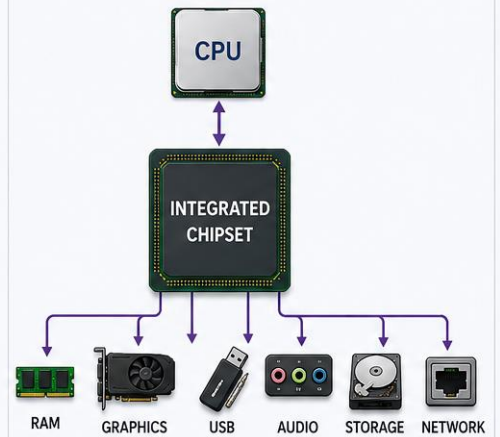
- USB, audio, storage devices control करता था



**i** Southbridge low speed devices को control करता था जैसे USB, Audio, Storage, Network आदि.

### 3. Modern Integrated Chipset

- Modern motherboards में integrated chipset use होता है



**i** Modern motherboards में Northbridge और Southbridge को एक ही chip में integrate कर दिया गया है जिसे Integrated Chipset कहते हैं.



**Summary:** पहले Northbridge और Southbridge अलग-अलग chips होते थे, लेकिन अब दोनों को मिलाकर एक Integrated Chipset बना दिया गया है.

## What is BIOS :-

BIOS(Basic input output system) is processing device of the computer.

# What is BIOS:-

BIOS is a firmware program of the computer.

**BIOS stands for Basic Input Output System.**

**It is used to start the computer and control basic hardware operations.**

### Definition:-

**“BIOS is a built-in software stored in ROM that initializes and tests computer hardware during startup.”**

## Types of BIOS

### 1. Legacy BIOS

. Old traditional BIOS

### 2. UEFI BIOS

. Modern advanced BIOS

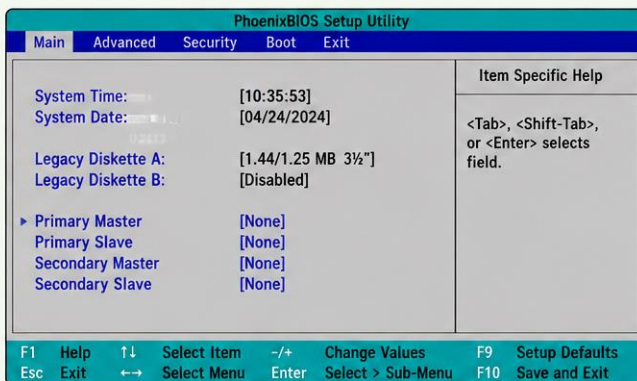
# BIOS

BIOS (Basic Input Output System) is a firmware program stored in ROM that starts the computer and controls basic hardware operations.

## Types of BIOS

### 1 Legacy BIOS

• Old traditional BIOS



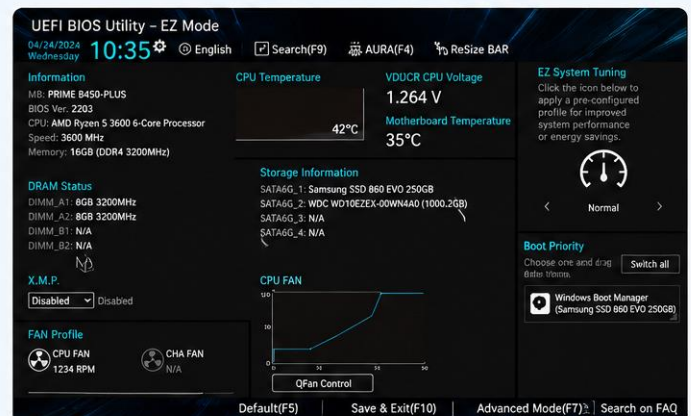
#### Features

- Text based interface
- Supports MBR partition style
- Boot process is slower
- Old and traditional system



### 2 UEFI BIOS

• Modern advanced BIOS



#### Features

- Graphical user interface
- Supports GPT partition style
- Faster boot process
- Supports advanced features and large drives



# What is CPU:-

CPU(central processing unit) is processing device of the computer. It is process the data of the computer.

What is CPU:-

CPU is a processing device of the computer.

CPU stands for Central Processing Unit.

It is called the brain of the computer because it processes all data and instructions

Definition:-

“CPU is the main processing unit of a computer that performs calculations and controls all operations.”

## Types of CPU

1.Single-Core CPU

2. Dual-Core CPU

3. Quad-Core CPU

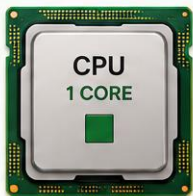
4. Hexa-Core CPU

5. Octa-Core CPU

## TYPES OF CPU

CPU (Central Processing Unit) is the **brain** of the computer. It processes instructions and controls all the operations.

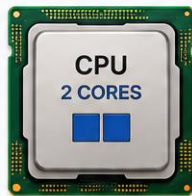
### 1. Single-Core CPU



- Has 1 core
- Can perform one task at a time
- Basic performance
- Low power consumption

**Best For:** Basic tasks like browsing, typing, and simple applications.

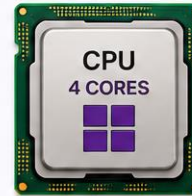
### 2. Dual-Core CPU



- Has 2 cores
- Can perform two tasks simultaneously
- Better performance than single-core
- Energy efficient

**Best For:** Multitasking, office work, media playback, and light gaming.

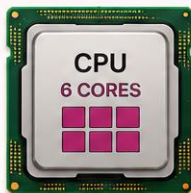
### 3. Quad-Core CPU



- Has 4 cores
- Can handle multiple tasks smoothly
- High performance
- Good for gaming and productivity

**Best For:** Gaming, video editing, multitasking, and heavy applications.

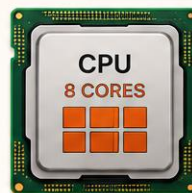
### 4. Hexa-Core CPU



- Has 6 cores
- Excellent multitasking capability
- Faster performance
- Handles heavy workloads with ease

**Best For:** 3D rendering, heavy gaming, content creation, and professional work.

### 5. Octa-Core CPU



- Has 8 cores
- Superior performance
- Smooth multitasking
- Best for high-end applications

**Best For:** High-end gaming, 4K/8K video editing, 3D modeling, and advanced workloads.



**Note:** More cores generally mean better multitasking and higher performance.

# Main Parts of CPU

## 1. ALU (Arithmetic Logic Unit)

Calculations और logical operations करता है

## 2. CU (Control Unit)

सभी instructions और operations control करता है

## 3. Memory Unit

Temporary data store करता है

**What is ALU:-**

**ALU is a part of the CPU of the computer.**

ALU stands for **Arithmetic Logic Unit.**

It performs arithmetic calculations and logical operations.

### 1. Arithmetic Operations

- i. Addition (+)
- ii. Subtraction (-)
- iii. Multiplication (×)
- iv. Division (÷)

### 2. Logical Operations

- i. Greater than (>)
- ii. Less than (<)
- iii. Equal to (=)
- iv. AND, OR, NOT operations

### 3. Main Functions of ALU

#### Calculation

i. Mathematical calculations करता है

#### Logic Decision

ii. Data comparison करता है

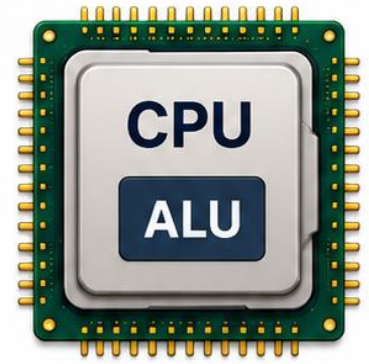
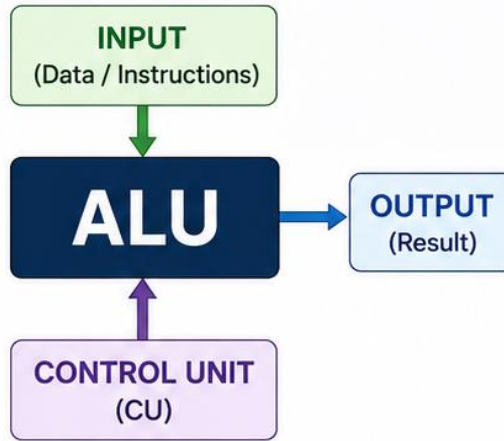
#### Data Processing

iii. CPU processing में मदद करता है

# ALU

(Arithmetic Logic Unit)

ALU is a part of the CPU that performs arithmetic operations and logical operations.



## 1. ARITHMETIC OPERATIONS

ALU performs basic mathematical operations.



### Addition (+)

Adds two numbers.

Example:  $5 + 3 = 8$



### Subtraction (-)

Subtracts one number from another.

Example:  $8 - 3 = 5$



### Multiplication (x)

Multiplies two numbers.

Example:  $4 \times 3 = 12$



### Division (÷)

Divides one number by another.

Example:  $12 \div 3 = 4$

## 2. LOGICAL OPERATIONS

ALU performs logical and comparison operations.



### Greater than (>)

Checks if one value is greater than another.

Example:  $5 > 3 \rightarrow \text{True}$



### Less than (<)

Checks if one value is less than another.

Example:  $3 < 5 \rightarrow \text{True}$



### Equal to (=)

Checks if two values are equal.

Example:  $5 = 5 \rightarrow \text{True}$



### AND Operation

True only if both conditions are True.

Example:  $T \text{ AND } T \rightarrow T$



### OR Operation

True if any one of the conditions is True.

Example:  $T \text{ OR } F \rightarrow T$



### NOT Operation

Gives the opposite (result).

Example:  $\text{NOT } T \rightarrow F$

## 3. MAIN FUNCTIONS OF ALU

ALU has important functions that help CPU to process data.



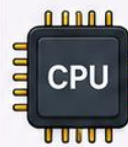
### 1 Calculation

Mathematical calculations करता है।



### 2 Logic Decision

Data comparison करता है।



### 3 Data Processing

CPU processing में मदद करता है।



## Summary

ALU is the brain of the CPU that performs arithmetic calculations, logical operations and helps in data processing.

## What is CU :-

CU (Control Unit)

What is CU :-

**CU is a part of the CPU of the computer.**

CU stands for **Control Unit**.

It controls and manages all operations of the computer.

## Definition:-

**“Control Unit (CU) is a component of the CPU that controls and coordinates all operations of the computer.”**

## Main Functions of CU

### 1 Instruction Control

Instructions को manage करता है

### 2 Data Flow Control

Data movement control करता है

### 3 Device Coordination

CPU, memory और devices को coordinate करता है

### 4 Program Execution

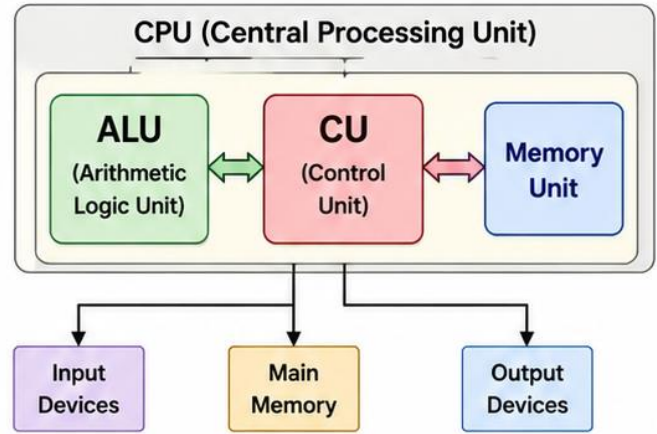
Programs run करवाता है

# CU (CONTROL UNIT)

CU is a part of the CPU of the computer.  
It controls and manages all operations of the computer.

## DEFINITION

Control Unit (CU) is a component of the CPU that controls and coordinates all operations of the computer.



## USES OF CU

- 1 Controls computer operations
- 2 Manages data flow
- 3 Gives instructions to devices
- 4 Coordinates input and output devices
- 5 Controls execution of programs



## MAIN FUNCTIONS OF CU

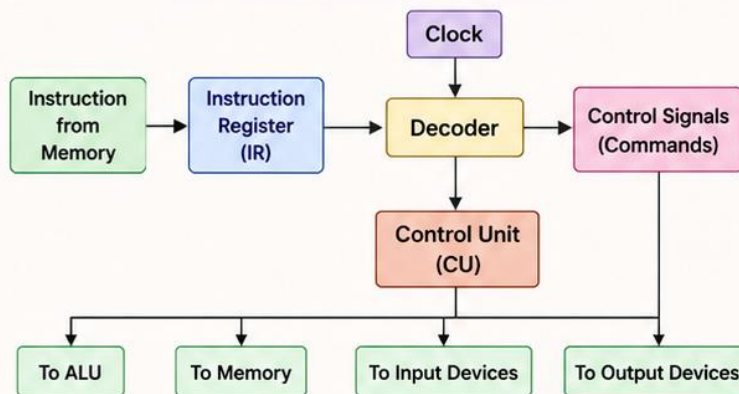
- Instruction Control**  
Instructions को manage करता है।
- Data Flow Control**  
Data movement control करता है।
- Device Coordination**  
CPU, memory और devices को coordinate करता है।
- Program Execution**  
Programs run करवाता है।



## WORKING OF CU

- 1 Instruction receive करता है। (CPU या memory से)
- 2 Instruction decode करता है। (Instruction को समझता है)   
1010  
0101
- 3 सही device को command भेजता है।
- 4 Processing control करता है। सभी कार्यों की निगरानी करता है।

## BLOCK DIAGRAM OF CU



## ADVANTAGES OF CU

- ✓ Smooth computer operation
- ✓ Better coordination between all parts
- ✓ Fast instruction handling
- ✓ Efficient management of devices



## DISADVANTAGES OF CU

- ✗ Cannot process calculations directly
- ✗ Depends on ALU and memory
- ✗ If CU fails, whole system can stop



## CONCLUSION

CU (Control Unit) is an important part of the CPU that controls and coordinates all computer operations and devices. It works like the brain's controller in the computer.

## What is GPU

GPU is a processing device of the computer.

**GPU stands for** Graphics Processing Unit.

**It is used to process graphics, images, videos, and gaming visuals.**

### Definition

**“GPU is a specialized processor designed to handle graphics and image processing tasks.”**

## Types of GPU

### 1 Integrated GPU

CPU के साथ built-in होता है

### 2 Dedicated GPU

अलग graphics card के रूप में होता है

#### Advantages of GPU

- Smooth gaming
- Fast graphics processing
- Better video editing performance
- Supports high-quality visuals

#### Disadvantages of GPU

- Expensive
- Uses more power
- Can produce heat

#### Examples of GPU

- NVIDIA GeForce
- AMD Radeon
- Intel Iris Xe

#### Conclusion

- GPU is an important graphics processor that improves gaming, video editing, and graphic performance in a computer.



## WHAT IS GPU?

- GPU is a processing device of the computer.
- GPU stands for **Graphics Processing Unit**.
- It is used to process graphics, images, videos, and gaming visuals.



GPU कंप्यूटर का graphics processing device है जो images, videos और gaming graphics को process करता है।

# GPU

## (GRAPHICS PROCESSING UNIT)



GPU is a specialized processor designed to handle graphics and image processing tasks.

## USES OF GPU



1. Gaming graphics



2. Video editing



3. 3D designing







4. Animation rendering



5. AI and machine learning

## MAIN FUNCTIONS OF GPU

-  **Graphics Rendering**  
Images और graphics बनाता है।
-  **Video Processing**  
Videos process करता है।
-  **3D Processing**  
3D objects और games handle करता है।
-  **Parallel Processing**  
Multiple tasks एक साथ process करता है।

## TYPES OF GPU

### 1. Integrated GPU

CPU के साथ built-in होता है।



### 2. Dedicated GPU

अलग graphics card के रूप में होता है।



Dedicated GPU की performance Integrated GPU से बेहतर होती है।

## ADVANTAGES OF GPU

- ✓ Smooth gaming
- ✓ Fast graphics processing
- ✓ Better video editing performance
- ✓ Supports high-quality visuals
- ✓ Improves overall system performance

## DISADVANTAGES OF GPU

- ✗ Expensive
- ✗ Uses more power
- ✗ Can produce heat
- ✗ Not necessary for basic tasks

## EXAMPLES OF GPU



NVIDIA GeForce  
(RTX 3060, RTX 4060, etc.)



AMD Radeon  
(RX 6600, RX 7600, etc.)



Intel Iris Xe  
(Integrated Graphics)

## WHERE GPU IS USED?



Gaming



Video Editing



3D Modeling



Animation



AI / Machine Learning



High Resolution Display



## CONCLUSION

GPU is an important graphics processor that improves gaming, video editing, 3D designing, animation, and other visual performance in a computer.

# Components of the Computer :-

## Output Device:-

What is Printer :-

**Printer is output device. It is print any Document.**

**As:- Image , Photos, Document**

**What is Printer:-**

**Printer is an output device of the computer.**

It is used to print text, images, and documents on paper.

**Definition:-**

**“A printer is an output device that produces hard copy of documents and images on paper.”**

## Types of Printer

### TYPES OF PRINTER

Printers are **output devices** that print text, images and documents on paper.

#### 1 Inkjet Printer

Ink का उपयोग करता है



##### Features

- Ink cartridges का उपयोग करता है
- Color printing में बेहतर
- Photo और images प्रिंट करने के लिए अच्छा
- Home और small office के लिए उपयुक्त

##### Example



#### 2 Laser Printer

Toner powder का उपयोग करता है



##### Features

- Toner powder का उपयोग करता है
- Text printing बहुत तेज और साफ
- High volume printing के लिए अच्छा Office और business के लिए उपयुक्त

##### Example



#### 3 Dot Matrix Printer

Pins की मदद से print करता है



##### Features

- Pins (सूइचों) की मदद से print करता है
- Carbon ribbon का उपयोग करता है
- Multi-copy (एक साथ कई कॉपी) निकाल सकते हैं
- Noise ज्यादा करता है
- Banks, billing और invoices के लिए उपयोगी

##### Example



#### 4 Thermal Printer

Heat technology से print करता है



##### Features

- Heat technology का उपयोग करता है
- Ink या toner की जरूरत नहीं होती
- Silent और fast printing करता है
- Small size और portable होता है
- Bills और receipts के लिए उपयोगी

##### Example



**Note:** हर प्रिंटर की अपनी-अपनी खासियत होती है और अलग-अलग कामों के लिए अलग प्रिंटर उपयोग किए जाते हैं।

What is Monitor :-

Monitor is output device. It is Show data any Document.

This is displaying device.

As:- Image , Photos, Document

What is Monitor :-

Monitor is an output device of the computer.

It is used to display text, images, videos, and other information on the screen.

Definition:-

“A monitor is an electronic output device that displays visual information generated by the computer.”

## Types of Monitor

### TYPES OF MONITOR



A monitor is an **output device** of the computer. It is used to display text, images, videos, and other information on the screen.

#### 1 CRT Monitor

Old bulky monitor



##### Features

- Bulky and heavy
- High power consumption
- Low picture quality
- Old technology
- More space required

#### 2 LCD Monitor

Flat screen display



##### Features

- Thin and light
- Less power consumption
- Better picture quality
- No radiation
- Wall mount possible

#### 3 LED Monitor

Energy efficient display



##### Features

- More energy efficient
- Bright and clear display
- Better contrast ratio
- Long life
- Environment friendly

#### 4 OLED Monitor

High-quality color display



##### Features

- Excellent color quality
- Deep black and high contrast
- Wide viewing angle
- Very thin and light
- Expensive

#### 5 Touch Screen Monitor

Touch से control किया जाता है



##### Features

- Touch से control किया जाता है
- Easy and interactive
- Used in kiosks, ATMs, schools, offices
- Saves time
- Clean and user friendly

#### Quick Comparison Table

Type	Size	Power Consumption	Picture Quality	Best Use
CRT Monitor	Bulky	High	Low	Old systems
LCD Monitor	Thin	Low	Good	General use
LED Monitor	Thin	Very Low	Very Good	Office, Home
OLED Monitor	Very Thin	Low	Excellent	Professional use
Touch Screen Monitor	Thin	Low	Good	Interactive use



#### Conclusion:

Monitors are important output devices that display the results of processing. Different types of monitors are used according to our needs and technology.

# What is Projector

Projector is an output device of the computer.

It is used to display images, videos, and presentations on a large screen or wall.

## Definition:-

“A projector is an electronic output device that projects computer images and videos onto a large screen.”

## Types of Projector



# TYPES OF PROJECTOR



A projector is an **output device** of the computer. It is used to display images, videos and presentations on a large screen or wall.

### 1 LCD Projector

LCD technology का उपयोग करता है



#### Features

- Bright and clear image
- Good color accuracy
- Suitable for classrooms and offices
- Less maintenance

### 2 DLP Projector

Digital mirror technology उपयोग करता है



#### Features

- Sharp and smooth image
- High contrast ratio
- No screen door effect
- Good for home theater and presentations

### 3 LED Projector

LED light source उपयोग करता है



#### Features

- Energy efficient
- Long life (20,000+ hours)
- Compact and lightweight
- Instant on/off
- Eco-friendly

### 4 Laser Projector

Laser technology उपयोग करता है



#### Features

- Very bright and crisp image
- Long life (20,000+ hours)
- Low maintenance
- Works well in bright rooms
- High performance

### 5 Portable Projector

Small size और easy to carry



#### Features

- Compact and lightweight
- Easy to carry anywhere
- Connects with mobile, laptop, etc.
- Best for travel and home use



### ADVANTAGES OF PROJECTOR

- ✓ Displays large size images
- ✓ Ideal for presentations and teaching
- ✓ Can be used by many people together
- ✓ Better visual impact



### DISADVANTAGES OF PROJECTOR

- ✗ Needs dark room for best quality
- ✗ Lamp/laser replacement can be costly
- ✗ Initial cost can be high
- ✗ Dust needs to be cleaned regularly



### USES OF PROJECTOR

- Classroom teaching
- Office presentations
- Watching movies
- Seminars and meetings
- Home theater system
- Events and parties



**Conclusion:** Projector is an important output device used for displaying images, videos and presentations on a large screen.

# Digital Billboard

**What is Digital Billboard :-**

**Digital Billboard is an electronic output display device.**

**It is used to show advertisements, videos, images, and information on a large digital screen.**

**Definition:-**

**“A digital billboard is a large electronic display used for showing advertisements and multimedia content.”**