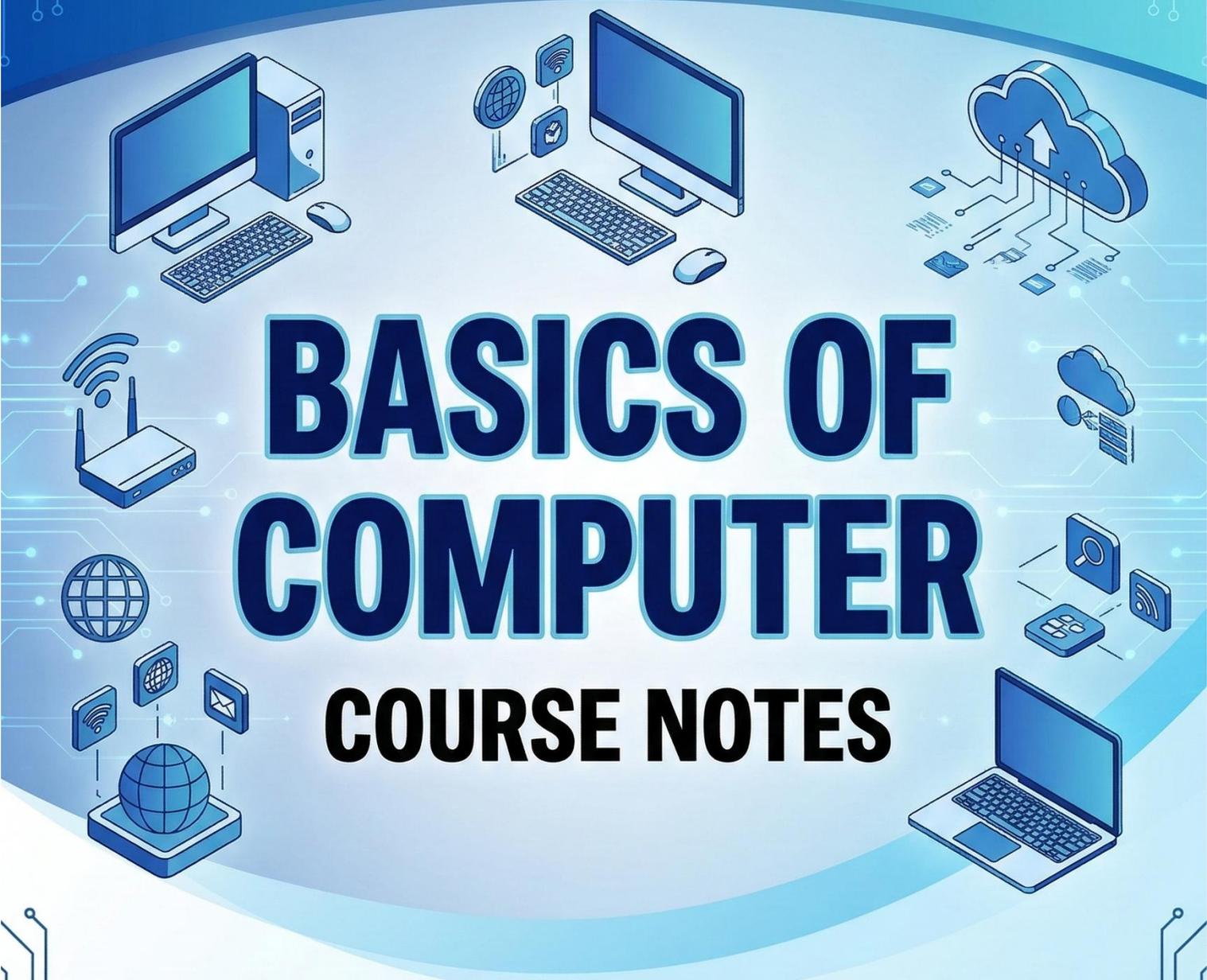# UNITED COMMUNITY COLLEGE HANDWARA

BASICS OF COMPUTER

COURSE NOTES

Prepared By: FASIL YOUSF

Contact Number: 7006960788

1) [COMPUTER]

Derived from Latin word "computare"

"To calculate"
or "To Count"

→ computer is a programmable electro-nic, that accepts data as input, process it according to given instructio-ns (program), Stored data and produc-es meaningful information as output.

2) BIOS

→ BIOS stands for Basic Input Out-put System, It is a firmware sto-red in the ROM chip of motherboa-rd that starts the computer, checks the hardware and loads the OS into RAM, when turned ON.

Cold Booting	Warm Booting
→ computer is start-ed from OFF state	→ computer is restar-ed from without turning OFF.
→ Happens when we press power button	→ uses restart option or clrl + Alt + Del
→ Takes more time	→ Takes less time.

→ **Functioning Of A Computer:**

A computer system is made up of four Basic Units. These units works together to make the computer function properly.

1) Input Unit   System Unit
2) Centerial Processing Unit (CPU)
3) Memory Unit
4) Output Unit

[Input Unit] Keyboard
                        Mouse
                        Scanner

→ Instruction ~~Information~~ or data that is entered into a computer is called Input. or

→ The Input Unit is the part of a computer that takes data and instructions from the user. and sends them to the computer for processing. e.g keyboard, Touchscreen, Scanner, Mouse, Microphone, webcam.

→   **[SYSTEM UNIT]** {CPU} UPS

→ The System Unit is the main box (cabinet) of the computer. Inside this system unit, the CPU (Centerial Processing Unit) is installed along with other important parts.

3) <u>**Memory Unit**</u> [RAM, ROM]. Hard disk, Pen Drive

Memory unit is the part of a comp-uter that stored data, instruction, and result, so that CPU can them when needed.

[OUTPUT UNIT]

→ The Output Unit is a part of a computer that recieved processed data from the CPU and presents it to the user, in a form that human can understant (text, images, sounds video or print).

* [TYPES OF COMPUTERS]

1) <u>Desktop Computers</u>:- A desktop is a computer that kepts on a desk-top at one place. It has seperat-te parts like System Unit (CPU), mo-nitor, keyboard and mouse.
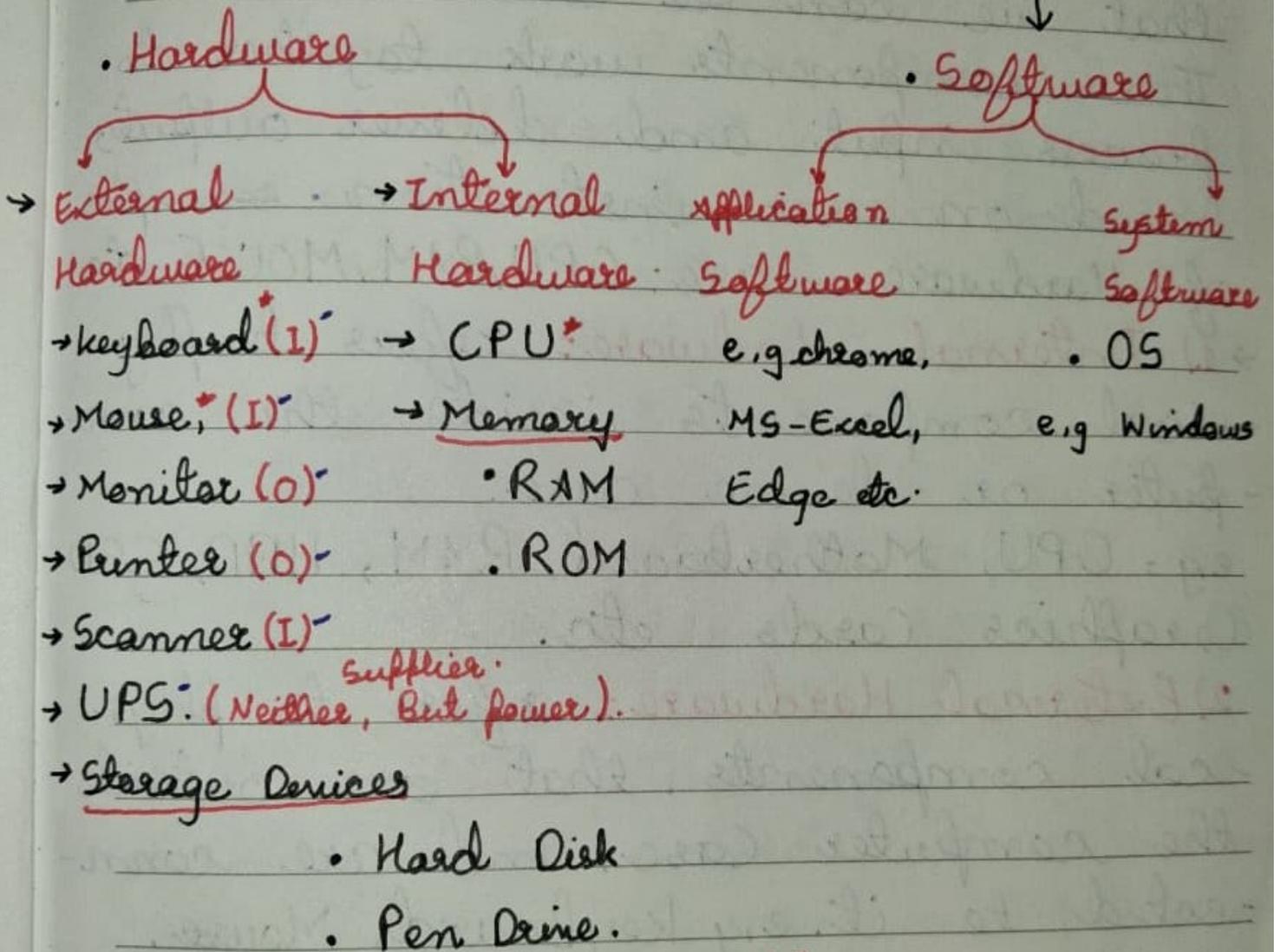It is mostly used in Schools, offi-ces, banks and homes.
e.g office computer, School lab computers.

2) Laptop Computer: A laptop is a portable computer that can be easily carried anywhere. All parts are combined in one device and it works on a battery. It is used for study, work, online classes etc.

e.g: HP Laptop, Dell Laptop.

3) Tablet Computers = A tablet is a small, lightweight computer with a touch screen. It is operated using fingers or a stylus pen and usually has no keyboard.

It is used for reading, drawing, watching videos, and learning apps.

e.g: iPad, Samsung Galaxy Tab.

HARDWARE AND SOFTWARE 5)

COMPUTER COMPONENTS.

. Hardware   . Software

→ External   → Internal   Application   System
Hardware   Hardware   Software   Software

→ Keyboard (I)   → CPU*   e.g chrome,   . OS
→ Mouse, (I)   → Memory   MS-Excel,   e.g Windows
→ Monitor (0)   . RAM   Edge etc.
→ Printer (0)-   . ROM
→ Scanner (I)
                  Supplier.
→ UPS. (Neither, But power).

→ Storage Devices
                . Hard Disk
                . Pen Drive.

[Memory]

Primary (Main)   Secondary
Memory   Memory
. RAM   . Hard Disk
. ROM   . Pen Drive

→ **computer Hardware** = Refers to the physical components of a computer that we can see and touch. These components work together to process input and deliver output, based on user instruction. Examples of Hardware are: CPU, RAM, MOUSE etc

→ **1) Internal Hardware** = refers to physical components inside the computer or device case:
eg = CPU, Motherboard, RAM, HDD, SSD Graphics Cards etc.

2) External Hardware = refers to physical components, that are outside the computer Case, and are connected to it. e,g keyboard, Mouse, Monitor, Printer, Scanner, Speakers etc.

→ **Computer Software** = Software refers to the collection of instructions, data programs that tells a computer or device what to do.

→ **1) Application Software** = It refers to the

program designed to perform specific task for end users such as web browsing gaming, word processing etc. e.g MS-w- -ord, MS-Excel, chrome, Photoshop etc.

→ **System Software**: It is a software that helps your computer run smoothly, and controls all the hardware. It serves as a bridge between hardware and user. Without system software, a computer can't run. It provides a platform for application software to run. e.g: Windows, Linux, macOS, Android etc.

→ **Utility Software** = These software helps to manage, maintain, and optimize a computer system performing tasks like security, clean up and performance enhancement to ensure smooth operation. e.g Anti various, disk cleaner, backup tools * Macfree   c-cleaner   WinZip

→ **Mouse:** A mouse is a hand held pointing device that controls a cursor on a computer screen, allowing users to sel -ect, click, drag and scroll items in the graphical user interface (GUI).

1) → **Left key:** the primary action button.
Single click = used to click. select
double click = open application
hold / long press = dragging, dropping etc.

2) → **Right key:** The secondary button, prima -rily used to open a context menu (or shortcut menu), that offers relat- -ed / relavant to whatever you clicked on, like copy, Paste, Delete etc.

3) **Scroll wheel** = a small wheel, usually on a computer mouse used to navigate document and web pages vertically (up/ down) without using the scroll bar.

→ **keyboard:** A keyboard is a primary input device with keys (buttons) like letters, numbers, symbols used to comm- -unicate with the computer by pressin -g keys.

3) **Multi media keys** = Multimedia keys are shortcut keys that help you control music, videos, volume and internet features quickly.

(VDU = Visual Display Unit)

1 → **Monitor** = A monitor is an importa-nt output device that shows inform-ation from a computer, such as text, pictures and videos, on the screen.

2 The monitor works by recieving data from the video card inside the comp--uter, which processes the information and displays it for user.

→ **Scanner** = A scanner is an input de--vice that converts physical documen--ts, images, or objects into digital fi--lies (Soft copies) for computer proce--ssing and storage. By using a light source and photosensitive sensors, it creates high-resolution, editable digital copies (such as PDFs or JPG) from paper, photos or books. e.g Flatbed (Glass)
Sheet-fet (ADF)
Portable wa-

→ **Printer** = A printer is an essential hard-

-ware output device that creates physic
-al, "Hard copies" of digital text or imag
-es from a computer or other electron
-ic device onto paper or other materials.
~~output device~~ e.g Inkjet, Laser, Dot Matrix.

→ UPS (Uninterruptible Power Supply).
is a device that provides immediate
battery backup power to electrical eq
-uipment when the main utility po-
-wer fails preventing data loss, system
shutdowns and hardware damage.

Exzamples:

Monitors => CRl monitor (Cathode Ray
Tube (old computer)
→ LCD Monitor = (Liquid Crystal Display)
→ LED Monitor = Light Emitting Diode.
→ OLED Monitor = Organic Light Emitt-
-ing Diode.

word.

12) CPU [Centeral Pracessing Unit]

→ The [CPU] Centeral Pracessing Unit is like the brain of a computer. It is the part that does most of the thin--king, calculating and decision-mak--ing to make your computer work. Whether you are playing a game, typing a school assignment, or watching a video, the CPU is busy handling all the instruc-tions to get the job done.

→ The "CPU" is usually placed in a spec--ial slot called a socket on the co--mputer's motherboard, which is like the main circuit board that connects all the parts of computer. The CPU handles tasks like :

- Doing math calculations (like adding, multiplying etc)
- Running applications and games.
- Input Output (I/O) operations.
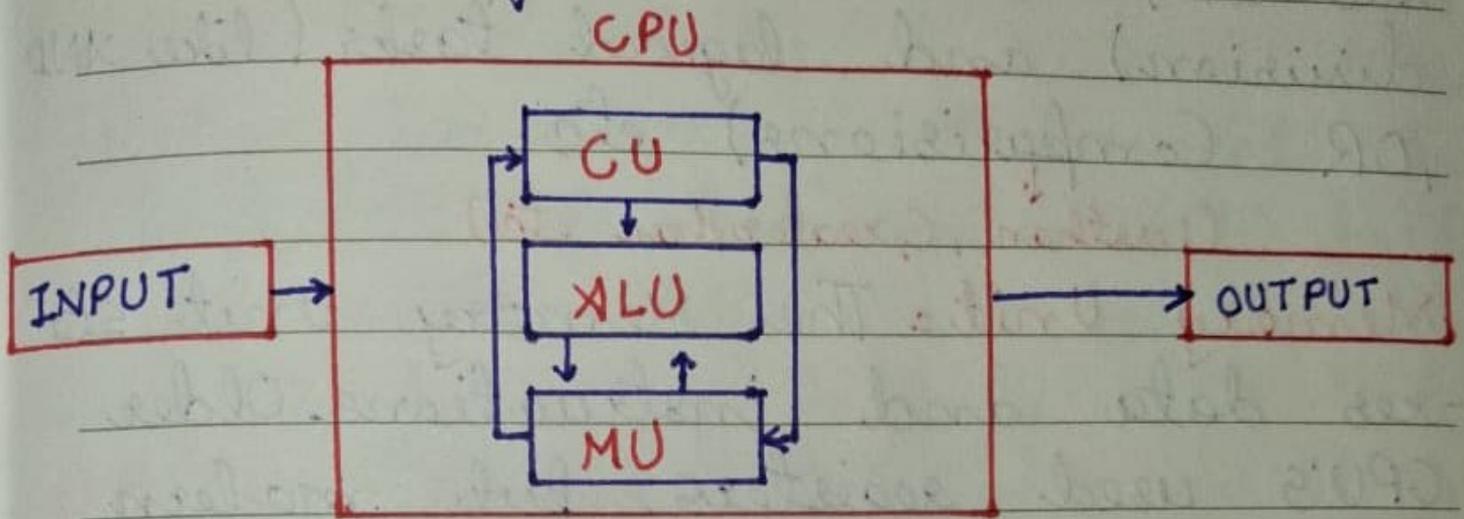- Storing and retrieving information during tasks.

→ Main components of CPU:

ALU= Arithmetic Logic Unit

13)

CU = Control Unit
MU = Memory Unit.

CPU

```
          ┌──────┐
       ┌─▶│  CU  │
       │  └──┬───┘
       │     ▼
       │  ┌──────┐
INPUT ─┼─▶│ ALU  │──────────▶ OUTPUT
       │  └──┬─▲─┘
       │     ▼ │
       │  ┌──────┐
       └──│  MU  │◀─
          └──────┘
```

→ Control Unit = The control Unit is a part of the CPU that controls and coordinates all operations of the computer system.

1) Fetch Instruction = Gets instructions from memory.

2) Decode Instruction = Understands what the instructions means.

3) Execute Instruction = Sends signals to ALU, memory and I/O devices.

4) Control Data Flow = Manages movement of data.

5) Control Timing = Controls speed and timing of operations.

ALU (Arithematic and Logic Unit) :- 14)

The ALU handles arithematic tasks (like Addition, Subtraction, multiplication and division) and logical tasks (like AND, OR (Comparisions) etc.
(Lessthan, Greaterthan etc)

Memory Unit = The Memory Unit stores data and instructions. Older CPU's used registers, but modern ones also have faster cache memory. The CPU fetches in data from ROM, RAM or hard disks and stores it in registers or cache during tasks.

MEMORY

Primary Memory	Secondary Memory
. RAM	. Hard Disk
. ROM	. Pen Drive

Memory = Memory is the electronic storage space where a computer keeps the instructions and data it needs to access quickly. It's the place where

information is stored for immediate use. Memory is an important compo-nent of computer, as without it, the system wouldn't operate correctly. The computer's operating system (OS), hard-ware and software all rely on mem-ory to function properly.

1) **Primary Memory** = It is also called as Main memory of the computer system. It is used to store data and progr-ams or instructions during compu-ter operations. It uses semiconduct-or technology and hence is commonly called Semiconductor Memory.

• **RAM** = (Random Access Memory): It is a Volatile memory stores informat-ion based on the power supply. If the power supply fails / interrupted / stopped all the data and information on thi-s memory will be lost. RAM is used for booting up or starting the comp-uter. It stores temparaily programs/da-ta which has to be excuted by the

processor.

• ROM (Read Only Memory): It is non-valatile memory. Non-Valatile memory stores information even when there is a power supply fails / stopped. ROM is used to store information that is used to operate the system. As its name refers to read only memory, we can only read the programs and data that stored on it. It contains some electronic fuses that can be programmed for peiece of specific information. The information is stored in the ROM in binary format. It is also known as permenent memory.

→ Secondary Memory / Storage Devices: Secondary Memory also known as Secondary storages or storage devices. It is a non-volatile memory used to store data and programs permanently. It keeps information even when the computer is turned

off. It has large storage capacity but it is slower than primary memory. Examples Hard disk, SSD ad Pendrives etc

- **Hard Disk** = A Hard disk is a secondary storage device used in computers to store large amount of data permanently, including the Operating System, software and user files. It is non-volatile and keeps data even when power is turned off.

- **Pen Drive** = A pendrive is a small portable USB storage device used to store and transfer data between computers easily. It is also non-volatile and convenient to carry.

{OPERATING SYSTEM} Fundamental System S/W, that

→ An operating System acts as an inter-mediary between the computer hardware and the user.

→ The purpose of an operating system is to provide an environment in which a user can execute programs conveniently

and efficiently.

→ The operating system (OS) is an program that runs at all times on a computer. All programs include applications programs run on top of the operating system.

→ It assigns resources such as memory, processors, and input/output devices to processes that needs them. The assignment of resources has to be fair and secure.

Functions of Operating System:

→ Process Management
→ Memory Management
→ File Management
→ Device Management
→ Network Management
→ Security Management
→ Secondary Storage Management

Windows OS

→ Windows is an operating system developed by Microsoft. It is a graphical user Interface (GUI) based system that

allows users to interact with their computer and manage various tasks. It runs application and provides a user friendly interface that enables users to interact directly with the System to perform tasks.

Evalution of Windows

1) Windows 1.0 (1985). released 1st GUI. on 20 Nov 1985
2) Windows XP (2001). 25 Oct 2001. becomes one of the most popular version knows for its user friendly interface.
3) Windows 7 (2009). released on 22 oct 2009. It offered better performance and a more user friendly, visually appeal-ing interface.
4) Windows 10 (2015). 29 July 2015 to. It blended the best features of wind-ows 2007 and 2008.
5) Windows 11 (2021) was officially launc-hed on 5 Oct 2021. It featured a modernized ~~launched~~ user interface with sleek rounded corners and a redesigned start Menu for a cleaner, more intuitive experience.

→ **File** = A file is a structured collection of data stored on a storage device (like hard disk, SSD, pendrive or cloud) under a specific name and location.

→ A file is : a collection of data or information stored on a computer. Identified by a file name and extension.

e.g = students.xlsx, letter.docx, photo.jpg etc.

→ **Folder** = A folder (also called a directory) is a logical container used by the operating system to organise and manage files and subfolders in a hierarchical structure.

→ It stores refrences (addresses/paths) of files.

Creating New Files (Items).

. Method: Right-click in any empty space.

→ New → Folder (or File type).

Shortcut to create folder-

ctrl + shift + N.

→ **Renaming:**

. Method = Right click the file/folder → Select the Rename icon (or "Rename in the list).

. Shortcut : F2

→ **Deleting**

. Temporary Delete = Right-click → Delete (Moves it to the Recycle Bin).

. Shortcut = Del key.

. Permanent Delete = By-passes the Recycle bin entirely. Use this with Caution.

Shortcut = Shift + Del.

CONTROL PANEL

→ Think of the Control panel as the "command center" for your computer. While Windows 10, 11 have moved many things to the modern settings app, the control pannel remains the go-to spot for advanced configuration and legacy system management.

. It is essentially a collection of

small programs (called applets) that let us change how windows looks and communicates with your hardware.

Accessing Control Panel:
- By search Control Panel.
- CMD Run = control.

Main Categories in Control Panel:

1) System and Security
→ Windows Update, Backup & Restore, Firewall, Power Options, Administrative Tools.

2) Network and Internet
→ Network and Sharing center, change adapter settings, Internet Options.

3) Hardware and Sound:
→ Devices and Printers, Sound settings Mouse, Power Options.

4) Programs
→ Uninstall a program, Turn windows features ON/OFF.

5) Other Settings: User account, Apperance and Personalization, clock and Region, Ease of Access etc.

{INTERNET}

→ Internet stands for Inter conne--cted Network. It is a network of networks that connects billions of computers across the world with each other.

→ It allows computers to commu--nicate and share data using stan-darised communication protocols.

* Network = It refers to a group of com--puters or devices connected to share resources, like fulies, printers or inter-net access.

Internet Connections

→ Internet connections refers to the methods or technalagues that allo-w a device to access the internet.

→ These connections are provided by ISP (Internet Service Providers) comp-anies.

Examples = JIO, Airtel, BSNL etc.

→ World Wide Web (www): The World wide Web (www), often called the web, is a System of interconnected webpages

and information that we can access using the internet. It was created by Tim Burners Lee to help people share and find information easily, using links that connect different pages together.

→ The Web allows us to browse websites, watch videos, shop online and connect with others around the world through our computers and phones.

{WEB BROWSERS}

→ The web browser is an application software used to explore the world wide web. (WWW). It acts as a platform that allows users to access information from the internet by serving as an interface between the client (user) and the server.

Examples:- Google chrome, firefox, Safari, Microsoft Edge, Opera mini etc

{E-Mail}

→ Email stands for Electronic Mail. It is a method to send messages

from one computer to another comp- -uter through the internet. It is mostly used in bussiness, education, technical communication and document inter -actions. In 1971, a test email was sent Ray Tomlinson to himself containing text.

Popular Email Services=

→ **Gmail** = Gmail is the world's most used email services provided by google. Today, more than 1.5 billion active users worldwide.

→ **Outlook** = Outlook is also a popular web- -mail service founded by Sabeer Bhatia and jack Smith as hotmail later in 1997 acquired by Microsoft. It is older than Gmail.

{Computer Security}

→ Computer security means protecting computer, networks and data from damage, theft or unauthorized acce- -ss. It helps keep our information safe from hackers, viruses and other

threats.

→ computer security is very important today because we use computers for banking, communication, education and storing personal Data.

VIRUS

→ A computer virus is a harmful type of malware that can infect, damage your computer and cause harm. It is called a virus because it spreads from one computer to another, just like biological virus spread between people.

How virus spread:

computer virus can spread through:

- Infected USB drives
- Downloding filies from unknown sites.
- Email attached ments from unknown people.
- Unsafe internet downloads

Effects

- Slowing down computer.

- Deleting or demaging filies.
- Display unwanted messages.
- Stealing personal data.
- Crashing the system.

[ANTIVIRUS]

→ Antivirus software is a program designed to detect, prevent, and remove viruses and other harmful programs from a computer.

It scans the computer regularly and protects the system from malware.

Functions of Antivirus:

- Detect viruses.
- Remove infected filies
- Protect the computer in real-time.
- Scan USB drives and downloads.

Examples= Quick Heal, McAfee, Windows Defender.

Importanke of Antivirus:

- Protects personal data.
- keeps the system running smoothly.
- Prevents cyber attacks
- Protects online actineties.

SAFE USE OF THE INTERNET

→ The internet is very useful, but it must be used carefully and responsibly to stay safe online.

Tips for safe internet use:

- Don't share personal information online.
- Don't open emails from unknown people.
- Don't click supicious links.
- Download software only from trusted websites
- Use secure website (https).
- Keep anti virus software updated

Dangers of Unsafe internet use:

→ Unsafe internet use can lead to:

- Identity theft.
- Financial fraud
- Cyberbullying
- Data Loss,
- Virus infection.

IMPORTANCE OF PASSWORD

→ A password is a secret code used to protect account and personal

information.

Passwords are used for:
- Email accounts,
- Social Media (FB, INSTA, SNXP).
- Computers and mobiles phones.
- Online Websites and Apps.

Characteristics of strong Password.

A stong password should:
- Be at least 8-12 characters long.
- Include Letters, numbers, and symbols
- Not contain Personal Information
- Be different and unique for each account.

e,g Fasil@ 2026 # Secure.