

B.A/B. Sc. Computer Application-Semester – I

Fundamentals Of Computers

Unit-I

Introduction to information technology: Development of computers - Generations of computers– An overview of computer system - Types of computers - Input & Output Devices. Looking inside the machine: Basic components of a computer system - Control unit – ALU - Input/output functions- Memory – RAM – ROM – EPROM - PROM and Other types of memory. Operating System: Meaning - Definition & Functions - Types of OS - Booting process - DOS – Commands (internal& external) – GUI - wild card characters – Virus & Hackers – Cryptography & cryptology. Windows: Using the Start Menu –Control Panel – Using multiple windows – Customizing the Desktop – Windows accessories (Preferably latest version of Windows or Linux Ubuntu).

Unit- II

Word processing: : Application of word processing software - Menus & Tool Bars - Opening word processor – Creating – Entering - Saving & printing the document - Editing & Formatting, Tables, Text Mail Merge and Macros (Preferably latest version of MS Word or Libre Office Writer).

Unit -III

Work sheet/spread sheet: Application of work sheet/spread sheet - Menus & Tool bars – Creating a worksheet - Entering and editing of numbers - Cell reference - Worksheet to analyse data with graphs & Charts. Advanced tools: Functions – Formulae – Formatting numbers - Macros – Sorting, filtering - validation & consolidation of Data (Preferably latest version of MS Excel or Libre Office Calc).

Unit IV

*Presentation: Application of Presentation – Menus & Tool bars – Creating presentations – Adding- Editing and deleting slides - Templates and manually – Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting – Insertion of Objects and Charts in slides - Custom Animation and Transition (Preferably latest version of MS Presentation or Libre Office Impress). **Internet & Browsing: Services** available on internet – WWW – ISP – Browsers. **Multimedia:** Application of multimedia – Images, Graphics, Audio and Video – IT security.*

Suggested Books

- 1 Introduction to Computers: Peter Norton, McGraw Hill.*
 - 2 Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.*
 - 3 Computer Fundamental: AnithaGoel, Pearson.*
 - 4 Information Technology Applications for Business: Dr. S. Sudalaimuthu, Himalaya 5*
- Fundamental of Computers: Balaguruswamy, McGraw Hill.*

Reference Books

- 1. Ivor Horton, Beginning C*
- 2. Ashok Kamthane, Programming in C*
- 3. Herbert Schildt, The Complete Reference C*

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1.1 History and Evolution of Computers

*In the earliest days of human civilization, when the need was limited to simple tasks such as counting and addition, people used their fingers, stones, or pebbles placed along lines drawn in the sand. As calculations became more frequent, a mechanical counting device called the **abacus** was developed in Asia Minor. The abacus consisted of a frame with sliding beads arranged on rods and enabled users to perform basic arithmetic operations efficiently.*

*With the advancement of time, several manual computing devices were invented to simplify complex calculations. Important among them were **Napier's Bones**, used mainly for multiplication and division, and the **slide rule**, which helped in logarithmic and scientific calculations.*

*In 1642, a French mathematician, **Blaise Pascal**, invented the first functional automatic calculator known as the **Pascaline**. This rectangular brass machine used a series of rotating wheels or dials and was capable of adding numbers up to eight digits.*

*In 1694, the German mathematician **Gottfried Wilhelm von Leibniz** improved Pascal's invention by developing a more advanced machine called the **Stepped Reckoner**. This device could perform multiplication, division, and square root calculations in addition to basic arithmetic operations.*

*The real foundation of modern computers was laid by the English mathematician **Charles Babbage**, who is known as the Father of Computers. In 1822, he proposed a mechanical machine called the **Difference Engine**, designed to automatically compute mathematical tables using differential equations.*

*In 1889, **Herman Hollerith**, an employee of the **United States Census Bureau**, applied the concept of punched cards (inspired by the Jacquard loom) to data processing. His system stored data on punched cards and processed them mechanically, greatly improving the speed of census data analysis.*

*A major milestone in computer development was achieved in 1944 with the creation of the **Mark I** computer. It was developed under the guidance of **Howard Aiken** in collaboration with **Harvard University** and **IBM**. Mark I was an electromechanical computer that used relays and electromagnetic components instead of purely mechanical parts.*

*In 1946, **John Eckert** and **John Mauchly** developed **ENIAC (Electronic Numerical Integrator and Calculator)**, the first fully electronic general-purpose computer. ENIAC used vacuum tubes for its internal operations, making it much faster than earlier machines.*

*Later, Eckert and Mauchly proposed **EDVAC (Electronic Discrete Variable Automatic Computer)**. EDVAC was the first electronic computer to use the **stored-program concept**, introduced by **John von Neumann**, where both data and instructions were stored in memory.*

*In 1949, at the **University of Cambridge**, **Maurice Wilkes** developed **EDSAC (Electronic Delay Storage Automatic Calculator)**. This computer used mercury delay lines for memory storage and vacuum tubes for logical operations.*

*Finally, in 1951, the **Eckert–Mauchly Computer Corporation** manufactured **UNIVAC (Universal Automatic Computer)**. The successful implementation of UNIVAC marked the real beginning of the commercial computer era and widespread use of computers.*

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1.2 COMPUTER GENERATIONS

The development of computers is commonly divided into different generations based on the major technological advancements used in their construction. Each generation introduced new hardware technologies, improved speed, reduced size, increased reliability, and enhanced user interaction.

1. **First Generation – Vacuum tubes**
2. **Second Generation – Transistors**
3. **Third Generation – Integrated Circuits**
4. **Fourth Generation – Microprocessors**
5. **Fifth Generation – Artificial Intelligence**

First Generation Computers (1940–1956): Vacuum Tubes

The first generation computers were based on **vacuum tube (thermionic valve) technology**. Vacuum tubes were used for circuitry, while **magnetic drums** were used as primary memory. A magnetic drum is a cylindrical device coated with magnetic material used to store data and programs.

Input was given using **punched cards and paper tapes**, and output was produced in the form of **printed reports**. These computers were extremely large and consumed huge amounts of electrical power.



Examples

- ENIAC
- EDVAC
- UNIVAC

Characteristics of First Generation Computers

- Based on vacuum tube technology
- Very large in size and occupied entire rooms
- Generated excessive heat and required cooling systems
- Consumed high power
- Non-portable and expensive
- Programming was done in machine language

Second Generation Computers (1956–1963): Transistors

Second generation computers replaced vacuum tubes with **transistors**, which were made from semiconductor materials such as **germanium and silicon**. A transistor is a small electronic device with three terminals that performs amplification and switching functions using very little power.

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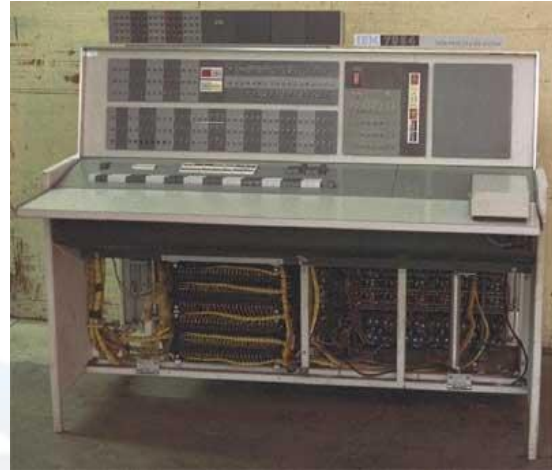
Because transistors were smaller, computers became **smaller, faster, cheaper, more reliable, and energy-efficient**. Magnetic core memory was used as primary memory, while magnetic disks were used for secondary storage. However, punched cards were still used for input and printouts for output.

Examples

- PDP-8
- IBM 1401
- IBM 7090

Characteristics of Second Generation Computers

- Based on transistor technology
- Smaller and more reliable than first generation computers
- Produced less heat
- Consumed less power
- Supported assembly language and early high-level languages



Third Generation Computers (1964–Early 1970s): Integrated Circuits

The third generation of computers introduced **Integrated Circuits (ICs)**. An IC is a single silicon chip that contains many electronic components such as transistors, resistors, and capacitors fabricated together.

Integrated circuits replaced individually wired transistors, making computers **smaller, faster, more reliable, and more efficient**. During this generation, users began interacting with computers through **keyboards and monitors** instead of punched cards. Operating systems were also introduced.

Examples

- NCR 395
- B6500

Characteristics of Third Generation Computers

- Based on integrated circuit (IC) technology
- Reduced computational time from microseconds to nanoseconds
- Smaller size with improved performance
- Use of high-level programming languages increased
- Better input/output devices and operating systems



Fourth Generation Computers (1970–Present): Microprocessors

The fourth generation computers are based on **microprocessor technology**, where the entire CPU is placed on a single integrated circuit chip. This development was made possible due to **Large Scale Integration (LSI)** and **Very Large Scale Integration (VLSI)** technologies.

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LSI allowed thousands of transistors on a single chip, while VLSI enabled hundreds of thousands. Later, **Ultra Large Scale Integration (ULSI)** placed millions of components on a single chip. These advancements made computers **compact, powerful, reliable, affordable, and user-friendly**.

Examples

- Apple II (Apple)
- Altair 8800
- CRAY-1

Characteristics of Fourth Generation Computers

- Microprocessor-based systems
- Very small in size and portable
- Use of graphical user interface (GUI) and pointing devices
- High processing speed and large storage capacity
- Networking enabled communication and resource sharing



Fifth Generation Computers (Present and Beyond): Artificial Intelligence

The fifth generation of computers focuses on **Artificial Intelligence (AI)**. These computers are designed to learn from experience, reason like humans, and solve complex problems. Research in this area began in the early 1990s.

Fifth generation systems use **Super Large Scale Integration (SLSI)** chips that contain millions of electronic components on a single chip.



Characteristics of Fifth Generation Computers

- Intelligent and self-learning systems
- Capable of decision-making and problem-solving
- Use of AI and machine learning technologies
- High speed and accuracy
- Human-computer interaction using natural language

1.3 Overview of Computer System

A computer system can be understood as a coordinated environment in which different elements work together to transform raw data into meaningful information. It is not just a machine, but a complete system that combines physical devices, logical instructions, and human interaction.

At a conceptual level, a computer system follows a structured cycle:

☞ **Input → Processing → Output → Storage**

- Input represents raw facts or data given to the system
- Processing involves transforming data using instructions
- Output presents the processed information
- Storage retains data and results for future use

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Thus, a computer system acts as an information processing unit that supports decision-making and problem-solving in various fields.

Characteristics of computer

The characteristics of computers define their nature and operational strength. These are not just features, but fundamental qualities that distinguish computers from human effort:

1. Speed as a Processing Capability

A computer performs operations at an extremely high rate, enabling it to handle large volumes of data within seconds. This makes it suitable for time-critical applications.

2. Accuracy as Logical Precision

Computers operate based on predefined instructions, ensuring precise results. The correctness of output depends on the correctness of input and program logic.

3. Diligence as Consistent Performance

Computers do not suffer from fatigue or loss of concentration. They maintain uniform performance regardless of workload or repetition.

4. Automation as Self-Execution

Once instructions are provided, a computer executes tasks automatically without requiring continuous human guidance.

5. Storage as Information Retention

A computer has the ability to store vast amounts of data and retrieve it efficiently. This supports long-term data management and quick access.

6. Versatility as Functional Flexibility

A single computer system can perform multiple types of tasks across different domains, such as education, business, entertainment, and research.

7. Reliability as Dependable Operation

Computers produce consistent and dependable results when properly programmed and maintained.

Components of a Computer System

1. Hardware (Physical Layer)

Hardware forms the tangible structure of the computer system. It provides the platform on which all operations take place.

- **Input Unit:** Acts as the entry point for data into the system
- **Central Processing Unit (CPU):** Performs processing and decision-making
 - **ALU:** Handles calculations and logical comparisons
 - **Control Unit:** Directs the flow of operations within the system
- **Memory Unit:** Stores data, instructions, and results
- **Output Unit:** Communicates processed information to the outside world

*Conceptually, hardware can be seen as the **body of the computer system**.*

2. Software (Logical Layer)

Software represents the set of instructions that guide the hardware. It acts as an interface between the user and the machine.

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- **System Software:** Manages hardware resources and system operations
- **Application Software:** Performs specific user-oriented tasks

Conceptually, software functions as the **intelligence or brain logic** of the system.

3. Users (Human Element)

Users are an integral part of the computer system. They provide input, design instructions, and interpret output.

Conceptually, users act as the **decision-makers and controllers** of the system.

◆ Integrated Working of a Computer System

A computer system operates as a **coordinated unit**:

- Hardware provides the infrastructure
- Software provides instructions
- Users provide direction and purpose

Together, they form a **functional system that converts data into useful information**.

1.4 Types of Computers

Computers can be classified into different types based on their **working principle, size, and processing capacity**.

1. Classification Based on Working Principle

a) . Analog Computers

Analog computers work with **continuous data** such as temperature, pressure, speed, voltage, and current. Instead of performing calculations using numbers, they measure physical quantities and represent them through electrical or mechanical signals. The results obtained from analog computers are usually **approximate**, not exact. These computers are mainly used in scientific, engineering, and industrial applications where continuous data is involved. Examples of their applications include **weather forecasting, flight simulation, speedometers, and process control systems**.

b). Digital Computers

Digital computers operate on **discrete data** and use the **binary number system (0 and 1)** to perform calculations. They process data using arithmetic and logical operations and produce **accurate and reliable results**. Digital computers are easy to program, store large amounts of data, and are highly versatile. Because of these advantages, they are the most widely used type of computers today. Examples of digital computers include **desktop computers, laptops, tablets, smartphones, and servers**, which are commonly used in homes, offices, schools, and industries.

c). Hybrid Computers

Hybrid computers combine the features of both **analog and digital computers**. In these systems, the analog part is used to handle continuous data, while the digital part performs precise calculations and logical operations. This combination provides both **speed and accuracy**. Hybrid computers are widely used in **medical equipment** such as **ECG machines**,

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CT scanners, and ICU monitoring systems, as well as in scientific research and industrial applications where real-time data processing and accurate results are required.

2. Classification Based on Size and Processing Capacity

a) Super Computers

*A **supercomputer** is the fastest and most powerful type of computer designed to perform extremely complex calculations at very high speeds. Supercomputers are measured in terms of **FLOPS (Floating Point Operations Per Second)**. Any computer performing below one gigaflop per second is not considered a supercomputer.*

Supercomputers use multiple CPUs working in parallel to achieve very high processing speeds, ranging from hundreds to thousands of MFLOPS. They are used in scientific and engineering applications such as weather forecasting, aerodynamics, space research, plasma physics, and nuclear research.

They are also widely used in the entertainment and advertising industries.

*Examples of supercomputers include **CRAY-3, Cyber 205, and PARAM.***

b) Mainframe Computers

*A **mainframe computer** is a very powerful computer designed to handle large volumes of data and support multiple users simultaneously. It consists of high-end processors, large memory capacity, and extensive storage systems.*

Mainframe computers allow centralized data storage and enable users at different locations to access and process information efficiently. They are commonly used by large organizations, banks, government agencies, and for scientific applications.

*Examples of mainframe computers include **IBM E5000, VAX 8000, and CDC 6600.***

c) Mini Computers

*A **minicomputer** is a medium-sized digital computer whose processing speed and storage capacity are greater than those of microcomputers but less than those of mainframe computers. Minicomputers are generally multi-user systems and are used in interactive applications.*

They are widely used in industries, research organizations, colleges, and universities. High-performance workstations with advanced graphics and input/output capabilities are examples of minicomputers.

*Examples include **PDP-11, IBM 8000 series, and VAX 7500.***

d) Micro Computers

*A **microcomputer** is a small, low-cost digital computer that uses a **microprocessor** as its central processing unit. It usually consists of a microprocessor, memory (storage unit), input devices, and output devices. These components may be integrated on a single chip or mounted on one or more printed circuit boards (PCBs).*

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Examples of microcomputers include **IBM-PC**, **Pentium 100**, **Pentium 200**, and **Apple Macintosh**. Microcomputers include **desktop computers**, **laptops**, and **hand-held devices** such as **PDAs (Personal Digital Assistants)**.

i. Desktop Computers

A **desktop computer**, also known as a **personal computer (PC)**, is designed for stand-alone use by a single user. A typical desktop computer consists of a system unit, monitor, keyboard, mouse, internal hard disk storage, and other peripheral devices. Desktop computers are commonly used in homes, offices, and educational institutions.

Major manufacturers of desktop computers include **Apple**, **IBM**, **Dell**, and **Hewlett-Packard**.

ii. Laptop Computers

A **laptop computer** is a portable computer that can be easily carried from one place to another. It contains all the basic components of a desktop computer, such as the CPU, memory, storage, keyboard, and display, integrated into a single compact unit. The main advantage of a laptop is portability, which allows users to work anytime and anywhere, especially while traveling.

iii. Hand-Held Computers

A **hand-held computer**, also known as a **Personal Digital Assistant (PDA)**, is a small computer that can be comfortably held in one hand or carried in a pocket. PDAs are compact portable devices, slightly larger than calculators, and are used for basic computing tasks such as note-taking and scheduling.

Examples of PDAs include **Apple Newton**, **Casio Cassiopeia**, and **Franklin eBookMan**.

1.5 Input & Output Devices

Input Devices

Input devices are the hardware devices that allow users to enter data, instructions, text, images, audio, and video into a computer system. These devices convert the input into machine-readable form so that the computer can process it. Input devices form the first stage of the Input–Process–Output (IPO) cycle and help in effective interaction between the user and the computer.

Types of Input Devices

1. Keyboard

The keyboard is the most commonly used input device.

It is used to enter text, numbers, and commands into the computer.

It consists of alphanumeric keys, function keys, control keys, special keys, and a numeric keypad.

A standard keyboard contains about 101–104 keys.

It allows fast and accurate data entry

Input Devices of Computer



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and is widely used in offices, schools, and homes.

2. Mouse

The mouse is a pointing device used to control the movement of the cursor on the screen. It helps in selecting menu options, opening files, resizing windows, and dragging objects. Common mouse actions include left click, right click, double click, and drag-and-drop. It is mainly used in graphical user interface (GUI) based applications and improves working speed.

3. Scanner

A scanner converts printed documents and images into digital format. Scanned data can be edited using OCR (Optical Character Recognition) software. It is used in documentation, publishing, banking, and educational institutions. Scanners help in storing paper documents electronically and sharing them easily.

4. Light Pen

A light pen is a pen-shaped input device. It is used to point, draw, or select objects directly on the computer screen. It works by detecting light from the display screen. Light pens are mainly used in computer-aided design (CAD) and graphic applications.

5. Joystick

A joystick is used to control the movement of objects on the screen. It consists of a vertical stick mounted on a base and usually has control buttons. It is commonly used in video games, flight simulators, and training systems. A joystick provides better control and accuracy compared to the keyboard in gaming.

6. Microphone

A microphone is used to input audio and voice commands into the computer. It converts sound waves into electrical signals. It is used in voice recognition systems, online meetings, video conferencing, and multimedia applications. Microphones support hands-free computing and are helpful for physically challenged users.

7. Webcam

A webcam captures live images and videos and acts as a video input device. It is used for video conferencing, online education, live streaming, and security purposes. Integrated webcams are commonly available in laptops, while external webcams offer better quality. Webcams play an important role in modern communication.

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Output Devices

Output devices are the hardware devices used to **display or produce the results** of processed data from a computer system. These devices convert machine-readable information into **human-readable form** such as text, images, sound, and video. Output devices form the **final stage of the Input–Process–Output (IPO) cycle**.

Types of Output Devices

1. Monitor

A monitor is the most commonly used output device.

It displays information in visual form such as text, images, and videos.

It is also known as a Visual Display Unit (VDU).

Monitors are available in different types such as CRT, LCD, and LED.

They are widely used in homes, offices, and educational institutions.



2. Printer

A printer is an output device used to produce **hard copy output** on paper.

It prints text and graphics generated by the computer.

Printers are commonly used in offices, schools, and banks.

Examples of printers include inkjet printers, laser printers, and dot matrix printers.

3. Plotter

A plotter is a special output device used to produce **large-scale drawings**.

It is mainly used to print maps, charts, graphs, and engineering designs.

Plotters are commonly used in architecture, engineering, and construction fields.

They provide high accuracy and precision in output.

4. Speakers

Speakers are audio output devices used to produce sound from the computer.

They convert electrical signals into sound waves.

Speakers are used for music, voice output, alerts, and multimedia applications.

They are commonly used in presentations, entertainment, and online meetings.

5. Projector

A projector is an output device that displays computer output on a **large screen or wall**.

It is commonly used for presentations, classrooms, seminars, and meetings.

Projectors help in displaying text, images, and videos to a large audience.

They are widely used in educational institutions and corporate offices.

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1.6 BASIC COMPUTER ORGANIZATION

The block diagram of a computer system consists of **three main functional units**. Each functional unit performs specific operations to make the computer system work efficiently.

Block Diagram of Computer System

The block diagram of a computer system consists of the following three major units:

- a) **Input Unit**
- b) **Central Processing Unit (CPU)**
- c) **Output Unit**

These units work together to perform the **Input–Process–Output (IPO) cycle**.

Working of a Computer System (IPO Cycle)

1. Data and instructions are entered into the computer through the **input unit**.
2. The input unit converts the data into machine-readable form and sends it to memory.
3. The **CPU** processes the data using instructions stored in memory.
4. The processed results are stored temporarily or permanently in memory.
5. The **output unit** displays the final result to the user.

(a) Input Unit

The input unit is used to **enter data, instructions, and commands** into the computer system.

Functions of Input Unit:

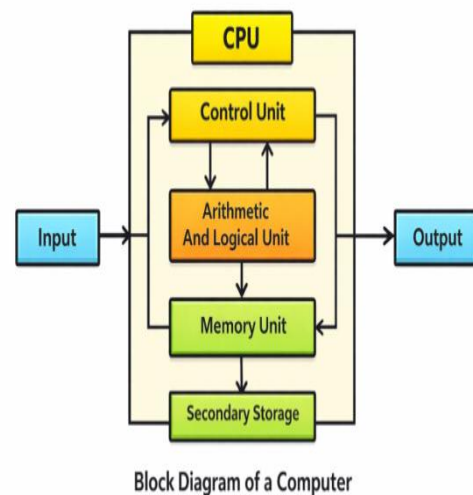
- Accepts data and instructions from the outside world
- Converts input data into a form that the computer can understand
- Supplies the converted data to the computer system for processing
- Sends information or commands to the computer

The data received from the input unit is **stored in main memory** and then processed by the CPU.

Common Input Devices:

- Keyboard
- Mouse
- Light Pen
- Joystick
- OCR (Optical Character Recognition)
- MICR (Magnetic Ink Character Recognition)
- OMR (Optical Mark Recognition)
-

(b) Central Processing Unit (CPU)



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The Central Processing Unit is the **brain of the computer**. It performs all processing activities and controls the working of all units.

Functions of CPU:

- Performs all calculations and logical decisions
- Controls and coordinates all units of the computer
- Interprets and executes program instructions
- Stores data temporarily and handles external requests

The CPU is divided into the following sub-units:

- Control Unit (CU)**
- Arithmetic and Logical Unit (ALU)**
- Memory Unit**
 - Primary Storage
 - Secondary Storage

(i) Control Unit (CU)

The control unit directs the computer to **carry out program instructions**.

Functions of Control Unit:

- Controls the flow of data between memory and ALU
- Instructs the input unit where to store data in memory
- Fetches instructions from primary memory
- Decodes instructions to determine required operations
- Controls execution of instructions

The control unit uses registers to manage and coordinate operations.

Examples include reading data from the keyboard or adding two numbers.

(ii) Arithmetic and Logical Unit (ALU)

The ALU performs all **arithmetic and logical operations**.

Functions of ALU:

- Arithmetic operations: addition, subtraction, multiplication, division
- Logical operations: comparisons such as less than, equal to, greater than
- Takes decisions based on logical conditions

After performing operations, the results are transferred to the memory unit.

(iii) Memory Unit

The memory unit stores **data, instructions, intermediate results, and final output**. It is also known as **main memory or primary memory**.

Memory holds data required by the CPU during processing and safeguards information temporarily or permanently.

Memory is classified into:

1. **Primary Storage**
2. **Secondary Storage**

(1) Primary Storage

Primary storage is also called **main memory**.

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Characteristics:

- *Stores programs currently being executed*
- *Stores input data and intermediate results*
- *Provides very fast access to data*
- *Also known as RAM, system memory, or internal memory*
- *Installed on the motherboard*
- *Built using integrated circuits*
- *Access time is in nanoseconds*

(2) Secondary Storage

Secondary storage is also called **auxiliary memory**.

Characteristics:

- *Stores programs, documents, and databases permanently*
- *Slower and cheaper than primary memory*
- *Data must be transferred to primary memory before execution*
- *Used to save results after program execution*

Examples:

- *Hard disk*
- *Magnetic disks and tapes*
- *Floppy diskette*
- *Zip diskette*

(c) Output Unit

The output unit provides the **results of processing** to the user.

Functions of Output Unit:

- *Displays processed information*
- *Acts as a communication medium between user and computer*
- *Converts binary output into human-readable form*

Since computers work in binary format, the output unit converts results into text, images, or sound that users can understand.

Common Output Devices:

- *Visual Display Unit (VDU) / Monitor*
- *Printer*
- *Plotter*
- *Computer Output Microfilm*

1.7 MEMORY

Memory is an **internal storage area** of a computer used to store **data, instructions, and programs**, either **temporarily or permanently**. Memory plays a vital role in the functioning of a computer system because all processing requires data and instructions to be available in memory.

Computer memory is broadly divided into **two main categories**:

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I. Primary Memory

II. Secondary Memory

When the **main memory (primary memory)** holds instructions and data during program execution, the **secondary memory (auxiliary memory)** stores data and programs that are not currently in use and provides **long-term storage**.

Classification of Computer Memory

I. PRIMARY MEMORY

Primary memory is the **only memory directly accessed by the CPU**. The CPU continuously reads instructions stored in primary memory and executes them.

Any data that has to be processed by the CPU must first be stored in primary memory. Data transfer takes place through the **system bus**.

Primary memory is **fast**, but has **limited storage capacity**.

Primary memory is of **two types**:

- a) **RAM**
- b) **ROM**

a). RAM (Random Access Memory)

RAM is a **temporary or volatile memory**, which means data stored in RAM is lost when the power supply is switched off.

- Data and programs currently being used by the CPU are stored in RAM
- Information is loaded into RAM from secondary storage (hard disk)
- Any memory location can be accessed directly if its address is known
- RAM provides **high-speed access** to data

Types of RAM:

1. SRAM (Static Random Access Memory)

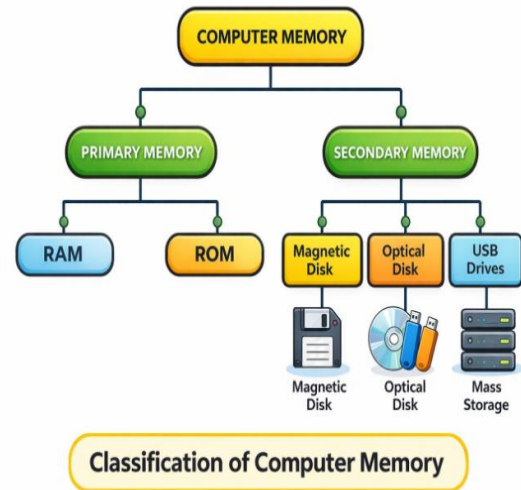
SRAM is a type of RAM that **stores data as long as power is supplied** and does not require refreshing.

It is very **fast and reliable**, but expensive and has low storage capacity.

SRAM is mainly used as **cache memory** in computers.

2. DRAM (Dynamic Random Access Memory)

DRAM is a type of RAM that **stores data temporarily** and needs to be refreshed continuously.



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It is **slower than SRAM** but cheaper and has higher storage capacity.
DRAM is commonly used as **main memory** in computers.

2. ROM (Read Only Memory)

ROM is a **permanent or non-volatile memory**.

The data stored in ROM is provided by the manufacturer and **cannot be modified by the user**.

- Stores essential system instructions (booting information)
- Retains data even when power is turned off

Types of ROM:

1. PROM (Programmable Read Only Memory)

PROM is a type of ROM that is **programmed only once** after manufacturing.

The user can write data into PROM using a special device called a PROM programmer.

Once programmed, the data **cannot be erased or modified**.

It is used where permanent data storage is required.

2. EPROM (Erasable Programmable Read Only Memory)

EPROM is a ROM in which stored data can be **erased and reprogrammed**.

Erasing is done by exposing the memory chip to **ultraviolet (UV) light**.

After erasing, new data can be written into the memory.

It is commonly used during system development and testing.

3. EEPROM (Electrically Erasable Programmable Read Only Memory)

EEPROM is a ROM that can be **erased and reprogrammed electrically**.

It does not need to be removed from the computer for erasing.

Data can be erased **byte by byte**, making it faster and more flexible.

It is widely used in modern electronic devices such as BIOS chips.

SECONDARY MEMORY

Secondary memory is also called **auxiliary memory**.

It is **slower and cheaper** than primary memory and is **not directly accessed by the CPU**.

Data from secondary memory must be transferred to primary memory before processing.

Secondary memory is **non-volatile**, meaning data is retained even when power fails.

It is used to store **large amounts of data, programs, and information**.

Types of Secondary Storage Devices

1. Magnetic Disks

Magnetic disks are made of rigid metal or plastic coated with magnetic material.

- Both surfaces of the disk are used for storage
- Provide **direct access** to data
- Used in small as well as large computer systems

Types of Magnetic Disks:

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- **Floppy Disk**
- **Hard Disk**

2. Magnetic Tape

Magnetic tape is a **serial access storage medium**.

- Stores large volumes of data at low cost
- Made of plastic (Mylar) coated with magnetic material
- Data is read or written sequentially
- Used mainly for backups

The tape is moved from one spool to another similar to an audio cassette.

3. Optical Drives

Optical storage devices use **laser technology** to read and write data.

- Can store large amounts of data (up to several GBs)
- Reliable and widely used

Types of Optical Storage:

- CD-ROM
- DVD-ROM
- CD-Recordable
- CD-Rewritable
- Photo-CD

4. USB Flash Drives

USB flash drives are **removable, rewritable, and portable** storage devices.

- Very small in size and lightweight
- High storage capacity (up to hundreds of GBs)
- Faster and more reliable than floppy disks
- Powered directly through USB port

USB flash drives have replaced floppy disks and CDs in modern systems.

5. Mass Storage Devices

Mass storage devices are used to store **huge volumes of data permanently**.

- Can store data in **trillions of bytes**
- Used in large organizations, banks, colleges, and libraries

Examples:

- Disk arrays
- Automated tape libraries
- CD-ROM jukebox

Advantages of Computer Memory

- Enables fast data processing
- Stores programs and instructions
- Supports multitasking
- Allows long-term data storage

Cache Memory

Cache memory is a **special high-speed memory** used to increase the processing speed of a computer.

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It is placed **between the CPU and the main memory (RAM)** and stores **frequently used instructions and data**.

When the CPU needs data, it first checks the cache memory. If the data is available in cache (called a cache hit), it is accessed very quickly. If not (called a cache miss), the data is fetched from main memory and stored in cache for future use.

Cache memory **reduces the access time** of data and minimizes the load on main memory, thereby improving overall system performance.

Features of Cache Memory

- Very high access speed
- Located close to or inside the CPU
- Stores frequently used data and instructions
- Smaller in size compared to RAM
- More expensive than main memory

Levels of Cache Memory

- **L1 Cache** – Located inside the CPU, fastest and smallest
- **L2 Cache** – Located near the CPU, larger but slower than L1
- **L3 Cache** – Shared among processor cores, larger but slower than L1 and L2

Advantages of Cache Memory

- Improves CPU performance
- Reduces data access time
- Increases overall system efficiency

Operating System

An Operating System (OS) is a system software that acts as an interface between the user and the computer hardware. It manages the hardware resources of a computer system and provides a suitable environment in which application programs can be executed. In simple terms, an operating system makes the computing power of a computer system available to users by efficiently controlling and coordinating the use of hardware resources.

Another definition of an operating system is that it is a collection of programs that control the execution of application software. It consists of a set of processes that remain permanently or temporarily resident in the main memory of the computer. The operating system ensures that system resources such as the CPU, memory, and input/output devices are used in a consistent, reliable, and user-friendly manner

Kernel and Shell

An operating system is broadly divided into two main components, namely the kernel and the shell.

Kernel

The kernel is the core component of the operating system. It directly interacts with the computer hardware and is responsible for managing the internal operations of the system. The main functions of the kernel include:

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- *Process management*
- *Memory management*
- *File system management*
- *Device and input/output management*

The kernel runs continuously while the system is operating and provides essential services required by other parts of the operating system.

Shell

The shell is the outer layer of the operating system that interacts with the user. It acts as a command interpreter, accepting commands from the user and translating them into instructions that can be understood and executed by the kernel. The concepts of kernel and shell are commonly associated with UNIX-based operating systems.

User Interaction with Operating System

Users interact with the operating system through:

- *Command Line Interface (CLI)*
- *Graphical User Interface (GUI)*

By providing these interfaces, the operating system simplifies human interaction with computer hardware. It acts as a bridge between application programs and physical devices, thereby making computer systems easier to use and more efficient.

Functions of Operating System (6 Types)

An operating system performs various functions to manage the computer system efficiently.

The major functions of an operating system are as follows.

1. Process Management

Process management refers to the creation, scheduling, execution, and termination of processes. The operating system allocates CPU time to processes and ensures proper coordination among them.

2. Memory Management

Memory management involves the allocation and deallocation of main memory to programs. The operating system keeps track of memory usage and ensures that processes do not interfere with each other.

3. File Management

File management is the function of organizing and maintaining files and directories. The operating system provides methods to create, delete, read, write, and protect files.

4. Device Management

Device management controls input and output devices such as keyboards, printers, and disk drives. The operating system uses device drivers to manage communication between hardware devices and application programs.

5. Security and Protection

Security and protection ensure that system resources and data are protected from unauthorized access. The operating system provides authentication and access control mechanisms.

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6. User Interface Management

The operating system provides a user interface that allows users to interact with the computer system. This may be in the form of a Command Line Interface (CLI) or a Graphical User Interface (GUI)

Types of Operating System:

Operating systems are classified based on the method of processing, time management, and resource sharing. The major types of operating systems are explained below.

1. Batch Operating System

A Batch Operating System is an operating system in which jobs having similar requirements are grouped together and executed as a batch. There is no interaction between the user and the computer during the execution of jobs. The jobs are processed one after another.

Characteristics:

- No user interaction
- Long turnaround time
- High CPU utilization

Example: Early mainframe operating systems

2. Time Sharing Operating System

A Time Sharing Operating System allows multiple users to access the computer system simultaneously. The CPU time is divided into small time slices, and each user is given a time slice in a cyclic manner. This provides fast response to users.

Characteristics:

- Interactive system
- Quick response time
- Supports multitasking

Examples: UNIX, Linux

3. Real Time Operating System (RTOS)

A Real Time Operating System is designed to process data and respond to events within a strictly defined time limit. The correctness of the system depends not only on the result produced but also on the time at which the result is produced.

Applications:

- Aircraft control systems
- Medical equipment
- Industrial process control

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4. Distributed Operating System

A Distributed Operating System manages a collection of independent computers and makes them appear to the user as a single unified system. Resources and processes are distributed across multiple machines but are managed in a coordinated manner.

Characteristics:

- *Single-system image*
- *Resource sharing*
- *Improved reliability*

5. Network Operating System (NOS)

A Network Operating System is an operating system that is designed to manage and support networked computers. It provides services such as file sharing, printer sharing, user authentication, and security management.

Examples: Windows NT, Novell NetWare

1.9 Booting Process

Booting is the process of starting a computer system and loading the operating system into the main memory (RAM). When the computer is powered on or restarted, a series of operations are performed to make the system ready for use. This sequence of operations is known as the booting process.

Types of Booting

1. Cold Booting

Cold booting refers to the process of starting the computer from a completely powered-off state.

In this type of booting, all hardware components are initialized and tested before the operating system is loaded.

Characteristics:

- *Computer is switched on from power-off state*
- *Full hardware check is performed*

Also called hard booting

2. Warm Booting

Warm booting refers to the process of restarting the computer without turning off the power. The operating system is reloaded, but hardware initialization is minimal compared to cold booting.

Characteristics:

- *Computer is restarted*
- *Faster than cold booting*

Also called soft booting

Steps in the Booting Process

Booting is the process of switching on the computer and loading the operating system into the main memory. During booting, the computer performs a sequence of operations to check hardware, load system files, and prepare the system for user interaction.

The booting process consists of six main steps:

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- 1. BIOS and Setup Program**
- 2. Power-On Self-Test (POST)**
- 3. Operating System Loads**
- 4. System Configuration**
- 5. System Utility Loads**
- 6. User Authentication**

Step 1: BIOS and Setup Program

- ROM (Read Only Memory) is a permanent memory that stores essential instructions.
- BIOS (Basic Input/Output System) is a part of system software stored in ROM.
- BIOS contains instructions that help the computer to perform basic input and output operations.
- When the computer is switched on, BIOS is loaded into main memory.
- The Setup Program is a special program that allows the user to configure hardware settings.
- The setup program can be accessed only when BIOS information is displayed on the screen.

Step 2: Power-On Self-Test (POST)

- POST (Power-On Self-Test) is a series of tests performed by the BIOS.
- It checks the proper functioning of:
 - Main memory
 - Input/output devices
 - Disk drives
 - Hard disk
- If any error is detected:
 - The computer produces beep sounds
 - An error message may appear on the monitor

Step 3: Operating System Loads

- After POST, the BIOS searches for the operating system.
- The search location is determined by settings stored in CMOS (Complementary Metal Oxide Semiconductor).
- Once found, the operating system kernel is loaded into main memory.
- Control of the computer is transferred from BIOS to the operating system.

Step 4: System Configuration

- The operating system configures the system using the registry.
- Registry is a database that stores information about:
 - Hardware
 - Peripheral devices
 - Installed software
- Peripheral devices such as printers, keyboards, and mouse are configured.
- Device drivers (utility programs that help hardware function properly) are loaded into memory.

Step 5: System Utility Loads

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- Various system utilities are loaded into memory to support system operation.
- Examples include:
 - Volume control
 - Antivirus software
 - Hardware management utilities

Step 6: User Authentication

- The final step is user authentication or login.
- The user provides:
 - Username
 - Password
- After successful authentication, the user interface (GUI or CLI) appears.
- The computer system is now ready for user interaction.

1.10 DOS (Disk Operating System)

DOS (Disk Operating System) is a **single-user, single-tasking operating system** that uses a **command line interface (CLI)** to interact with the user. It helps users to manage files, directories, and disk operations by typing commands at the command prompt.

DOS was one of the earliest operating systems used on personal computers. It controls disk storage, executes programs, and allows users to communicate with the computer hardware through text commands.

Internal Commands

Internal commands are the commands that are **built into the operating system** and stored as part of a system file called **COMMAND.COM** (in MS-DOS) or **CMD.EXE** (in Windows).

When an internal command is typed, **MS-DOS executes it immediately** because these commands are **loaded into main memory (RAM) during booting**. They are always available as long as the command prompt is active and **do not exist as separate files on the disk**.

All internal commands are part of the **command interpreter (shell)**.

Characteristics of Internal Commands

- Stored in memory during system startup
- Executed immediately
- No separate program file on disk
- Faster than external commands

Command	Purpose	Example	Output / Result
CLS	Clears the command prompt screen	C:\>CLS	Screen is cleared and only the command prompt appears
DIR	Displays files and directories in the current folder	C:\>DIR	Shows list of files, folders, date, size, and free space
COPY	Copies one or more files from one location to	C:\>COPY A.TXT D:\	1 file(s) copied

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	<i>another</i>		
DEL	<i>Deletes one or more files</i>	<i>C:\>DEL A.TXT</i>	<i>File is deleted (no output if successful)</i>
REN	<i>Renames a file</i>	<i>C:\>REN OLD.TXT NEW.TXT</i>	<i>File name is changed (no confirmation message)</i>
CD / CHDIR	<i>Changes the current working directory</i>	<i>C:\>CD DATA</i>	<i>Prompt changes to C:\DATA></i>
MD / MKDIR	<i>Creates a new directory</i>	<i>C:\>MD STUDENT</i>	<i>New directory is created</i>
RD / RMDIR	<i>Removes an empty directory</i>	<i>C:\>RD STUDENT</i>	<i>Directory is removed</i>
TYPE	<i>Displays the contents of a text file</i>	<i>C:\>TYPE INFO.TXT</i>	<i>Contents of INFO.TXT are displayed on screen</i>
DATE	<i>Displays or sets the system date</i>	<i>C:\>DATE</i>	<i>Current system date is shown</i>
TIME	<i>Displays or sets the system time</i>	<i>C:\>TIME</i>	<i>Current system time is shown</i>
VOL	<i>Displays the disk volume label and serial number</i>	<i>C:\>VOL</i>	<i>Volume label and serial number are displayed</i>
SET	<i>Displays or sets environment variables</i>	<i>C:\>SET</i>	<i>List of environment variables is displayed</i>
EXIT	<i>Exits the Command Prompt</i>	<i>C:\>EXIT</i>	<i>Command Prompt window closes</i>

External Commands

External commands are commands that are **not stored in memory** and are **not part of COMMAND.COM**. These commands are stored on the disk as **separate program files** and are loaded into memory **only when executed**.

External commands are used to perform **advanced and disk-related operations**. These commands usually have file extensions such as **.COM, .EXE, or .BAT**.

Characteristics of External Commands

- Stored on disk
- Loaded into memory only when required
- Require separate program files
- Slower than internal commands

Command	Purpose / Function	Example	Output / Result
FORMAT	<i>Formats a disk or drive for use</i>	<i>C:\>FORMAT D:</i>	<i>Disk formatted message is displayed</i>
CHKDSK	<i>Checks a disk and displays status report</i>	<i>C:\>CHKDSK</i>	<i>Disk status and error report shown</i>
XCOPY	<i>Copies files and directories</i>	<i>C:\>XCOPY C:\DATA</i>	<i>Files copied and count</i>

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	<i>including subdirectories</i>	<i>D:\DATA /S</i>	<i>displayed</i>
TREE	<i>Displays directory structure in tree format</i>	<i>C:\>TREE</i>	<i>Tree-like directory structure shown</i>
DELTREE	<i>Deletes a directory along with all its contents</i>	<i>C:\>DELTREE TEMP</i>	<i>Directory and all files deleted</i>
DISKCOPY	<i>Copies the contents of one disk to another</i>	<i>C:\>DISKCOPY A: B:</i>	<i>Disk copy progress message displayed</i>
DISKCOMP	<i>Compares the contents of two disks</i>	<i>C:\>DISKCOMP A: B:</i>	<i>Message shows whether disks match</i>
ATTRIB	<i>Changes file attributes (Read-only, Hidden, System)</i>	<i>C:\>ATTRIB +R FILE.TXT</i>	<i>File attribute updated successfully</i>
FIND	<i>Searches for a specific text string in a file</i>	<i>C:\>FIND "DOS" FILE.TXT</i>	<i>Lines containing the searched word displayed</i>
SORT	<i>Sorts data in ascending order</i>	<i>C:\>SORT < NAMES.TXT</i>	<i>Sorted output displayed</i>
MOVE	<i>Moves files or directories from one location to another</i>	<i>C:\>MOVE A.TXT D:\</i>	<i>1 file(s) moved</i>
PRINT	<i>Sends a text file to the printer</i>	<i>C:\>PRINT FILE.TXT</i>	<i>File sent to printer</i>

1.11 GUI (Graphical User Interface)

GUI (Graphical User Interface) is a type of user interface that allows users to interact with a computer system using graphical elements such as windows, icons, menus, buttons, and pointers, instead of typing commands.

In a GUI-based system, users perform tasks by clicking, dragging, and selecting graphical objects with a mouse or other pointing devices. GUI makes computer usage easy, intuitive, and user-friendly, especially for beginners.

Difference between CUI and GUI

<i>Basis</i>	<i>CUI (Character User Interface)</i>	<i>GUI (Graphical User Interface)</i>
<i>Definition</i>	<i>CUI is a user interface in which interaction is done using text or character-based commands.</i>	<i>GUI is a user interface in which interaction is done using graphical elements such as icons, menus, and windows.</i>
<i>Mode of Interaction</i>	<i>Users interact by typing commands through the keyboard.</i>	<i>Users interact by clicking, dragging, and selecting graphical objects.</i>
<i>User Skill</i>	<i>Requires knowledge of</i>	<i>Does not require command</i>

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Requirement	<i>command syntax and system commands.</i>	<i>knowledge; easy for beginners to use.</i>
Input Devices	<i>Keyboard is the primary input device.</i>	<i>Mouse, touchpad, touchscreen, and keyboard are used.</i>
Ease of Use	<i>Less user-friendly and difficult to learn.</i>	<i>Highly user-friendly and easy to learn.</i>
Error Handling	<i>Errors occur mainly due to incorrect command syntax.</i>	<i>Errors are minimized because most operations are selection-based.</i>
Visual Representation	<i>Limited visual output; text-based interface only.</i>	<i>Rich visual output with icons, windows, buttons, and graphics.</i>
System Resource Usage	<i>Requires less memory and processing power.</i>	<i>Requires more memory and processing power.</i>
Speed of Operation	<i>Faster for experienced users who know commands well.</i>	<i>Slightly slower due to graphical processing.</i>
Examples	<i>MS-DOS, UNIX Shell</i>	<i>Windows, macOS, Linux GUI</i>

1.12 Wild Card Characters

Wild card characters are **special symbols** used in operating systems such as **DOS** to represent **one or more unknown characters** in file names or file extensions. They are mainly used with file-handling commands like **DIR, COPY, DEL, and REN** to perform operations on **multiple files at a time**.

Using wild card characters reduces the need to specify exact file names and makes file management faster and easier.

Purpose of Wild Card Characters

- To select a group of files with similar names
- To perform file operations on multiple files simultaneously
- To save time and reduce user effort
- To minimize typing errors

Types of Wild Card Characters

DOS supports **two types** of wild card characters:

a) Asterisk (*) Wild Card

The **asterisk (*)** represents **any number of characters**, including zero characters. It can replace part of a file name, an entire file name, or a file extension.

Usage of Asterisk (*)

1. Matching any file extension

C:\>DIR *.*

Output: Displays all files in the current directory.

2. Matching a specific extension

C:\>DIR *.TXT

Output: Displays all text files.

3. Matching file names starting with a specific letter

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C:\>DEL A*

Output: Deletes all files starting with the letter A.

4. Copying multiple files

C:\>COPY *.DOC D:\

Output: Copies all DOC files to drive D.

b. Question Mark (?) Wild Card

The **question mark (?)** represents **exactly one character**. It is used when the exact character in a file name is unknown but the length of the name is known.

Usage of Question Mark (?)

1. Matching one unknown character

C:\>DIR FILE?.TXT

Output: Displays FILE1.TXT, FILE2.TXT, but not FILE10.TXT.

2. Matching unknown starting character

C:\>DIR ?ATA.DOC

Output: Displays DATA.DOC, BATA.DOC.

3. Matching fixed-length names

C:\>DEL TEMP?.*

Output: Deletes files like TEMP1.TXT, TEMP2.DOC.

1.13 Virus and Hackers

With the rapid growth of computer usage and internet connectivity, computer systems are increasingly exposed to various security threats. Among these threats, **computer viruses** and **hackers** pose serious risks to data integrity, system reliability, and user privacy.

Computer Virus

A **computer virus** is a **self-replicating malicious program** that infects a computer system by attaching itself to legitimate software or files. Once activated, it spreads from one system to another and performs harmful actions such as corrupting data, altering programs, or degrading system performance.

A computer virus usually requires **user interaction**, such as opening an infected file or running an infected program, to activate and spread.

Characteristics of Computer Virus

- Self-replicating in nature
- Attaches itself to host programs or files
- Spreads without user awareness
- Can damage data and software
- Affects system speed and stability

Types of Computer Virus

1. Boot Sector Virus

A boot sector virus infects the **boot sector** of storage devices such as hard disks or USB drives. It activates when the computer system starts and can prevent the system from booting properly.

2. File (Program) Virus

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This virus attaches itself to **executable files** such as .EXE or .COM. When the infected program is executed, the virus becomes active and spreads to other files.

3. Macro Virus

A macro virus infects documents that contain **macros**, especially word processing and spreadsheet files. These viruses spread through email attachments and shared documents.

4. Polymorphic Virus

A polymorphic virus changes its **code structure** each time it infects a new system. This makes detection difficult, as the virus does not have a fixed signature.

5. Stealth Virus

A stealth virus hides its presence by masking file size changes and system modifications. It tricks antivirus software by showing false information.

6. Multipartite Virus

A multipartite virus infects **multiple parts of a system**, such as both the boot sector and executable files, making it difficult to remove.

Hackers

A **hacker** is an individual who uses technical knowledge and skills to gain **unauthorized access** to computer systems, networks, or data. Hackers exploit system vulnerabilities to bypass security controls. Their activities may be legal or illegal depending on intent and authorization.

Objectives of Hackers

- Unauthorized access to systems
- Data theft or manipulation
- System disruption or damage
- Testing system security
- Promoting political or social agendas

Types of Hackers

1. White Hat Hackers

White hat hackers are **ethical professionals** who legally test computer systems to identify security weaknesses. They help organizations strengthen security measures.

2. Black Hat Hackers

Black hat hackers are malicious individuals who illegally break into systems to steal data, damage resources, or disrupt services for personal or financial gain.

3. Grey Hat Hackers

Grey hat hackers operate between ethical and unethical practices. They may access systems without permission but usually do not intend to cause serious harm.

4. Script Kiddies

Script kiddies are inexperienced hackers who use pre-written hacking tools without understanding the underlying techniques. Their actions can still cause serious damage.

5. Hacktivists

Hactivists use hacking techniques to promote political, religious, or social causes. Their activities often involve website defacement or data leaks.

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1.14 Cryptography and Cryptology

With the growth of digital communication and online transactions, protecting information from unauthorized access has become essential. **Cryptography and cryptology** play a vital role in ensuring **data security, confidentiality, and integrity** in computer systems and networks.

Cryptography

Cryptography is the science of **protecting information** by transforming readable data (plaintext) into an unreadable form (ciphertext) using mathematical techniques and algorithms. The main purpose of cryptography is to ensure that information is accessible only to authorized users.

In cryptography, the original message is encrypted before transmission and decrypted at the receiving end using a secret key.

Cryptology

Cryptology is the broader field that deals with **both cryptography and cryptanalysis**. It includes:

- **Cryptography** – creating secure communication techniques
- **Cryptanalysis** – breaking or analyzing encrypted messages

Thus, cryptology is the **study of secure communication systems as a whole**.

Objectives of Cryptography

- **Confidentiality** – Prevents unauthorized access to data
- **Integrity** – Ensures data is not altered during transmission
- **Authentication** – Verifies the identity of users
- **Non-repudiation** – Prevents denial of sent or received messages

Types of Encryption

Encryption is the process of converting plaintext into ciphertext. Based on key usage, encryption is classified into two main types.

Symmetric Key Encryption

Symmetric key encryption is an encryption technique in which **the same secret key** is used for both **encryption and decryption** of data. The sender encrypts the message using the key, and the receiver uses the **same key** to decrypt it. This method is fast and efficient but requires **secure sharing of the secret key**.

Examples: AES, DES

Asymmetric Key Encryption

Asymmetric key encryption is an encryption technique in which **two different keys** are used: a **public key** for encryption and a **private key** for decryption. The public key is shared openly, while the private key is kept secret. This method provides higher security and solves the key distribution problem.

Examples: RSA, ECC

1.15 Windows Operating System

A **Windows operating system** is a **Graphical User Interface (GUI)** based operating system that allows users to interact with the computer using windows, icons, menus, and pointers. It

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provides an easy and efficient environment for executing programs, managing files, and controlling system resources.

1. Using Start Menu

The **Start Menu** is the central access point in the Windows operating system. It provides quick access to applications, system settings, and power options.

Functions of Start Menu

- Launch installed applications
- Access system settings
- Search for files and programs
- Shut down, restart, or log out of the system

The Start Menu simplifies program execution and system navigation.

2. Control Panel

The **Control Panel** is a system utility that allows users to **view and modify system settings**. It provides tools to configure both hardware and software components of the computer.

Functions of Control Panel

- Manage user accounts
- Configure display and sound settings
- Install or remove software
- Manage devices such as printers and scanners
- Change system date, time, and region

Control Panel helps users customize and maintain the system efficiently.

3. Using Multiple Windows

Using multiple windows means working with **more than one application or file window at the same time**. Each application runs in its own window.

Advantages of Multiple Windows

- Enables multitasking
- Allows easy switching between applications
- Improves productivity

Users can resize, minimize, maximize, or arrange windows on the screen.

4. Customizing Desktop

The **desktop** is the main screen that appears after logging into the operating system. Customizing the desktop allows users to change its appearance and behavior according to their preferences.

Desktop Customization Options

- Change background (wallpaper)
- Add or remove icons
- Change themes and colors
- Adjust screen resolution
- Configure taskbar or dock

Desktop customization improves usability and user experience.

5. Windows Accessories

Windows Accessories are built-in utility programs provided with the operating system to perform common tasks.

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Examples of Windows Accessories

- **Notepad** – Simple text editor
- **Calculator** – Performs arithmetic calculations
- **Paint** – Drawing and image editing tool
- **WordPad** – Basic word processing
- **Snipping Tool** – Screen capture utility

These accessories help users perform basic computing tasks easily.



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UNIT – II: Word Processing

2.1 MS Word

Microsoft Word is a word processing software developed by **Microsoft**. It is a part of the Microsoft Office suite. MS Word is used to create, edit, format, store, and print text-based documents. With the help of MS Word, users can prepare professional documents such as letters, applications, reports, resumes, notices, and forms. It provides various features like text editing, font and paragraph formatting, spell check and grammar check, inserting tables and pictures, mail merge, and AutoCorrect. Due to its user-friendly interface and powerful tools, MS Word is widely used in offices, educational institutions, and business organizations.

MS Word is Part of Microsoft Office

MS Word is a part of the **Microsoft Office** family software developed by **Microsoft**.

Microsoft Office is a collection of application programs designed to perform different types of office work.

The main components of the Microsoft Office family are:

1. **Microsoft Word** – Used for word processing and document creation
2. **Microsoft Excel** – Used for spreadsheet preparation and calculations
3. **Microsoft Access** – Used for database management
4. **Microsoft PowerPoint** – Used for creating presentations

All these applications together make Microsoft Office a powerful and widely used office productivity suite.

Uses of MS Word

1. MS Word is used to create various types of documents such as letters, applications, reports, resumes, and notices.
2. It is used for editing text easily by inserting, deleting, copying, and moving text without retyping the entire document.
3. MS Word helps in formatting documents by changing font type, font size, font color, alignment, and spacing.
4. It is used to create tables for organizing data in rows and columns.
5. MS Word allows users to insert pictures, charts, symbols, and shapes into documents.
6. It provides spell check and grammar check facilities to prepare error-free documents.
7. MS Word is used to save documents for future reference and retrieve them when required.
8. It helps in printing documents with different print settings such as page range and number of copies.
9. MS Word supports mail merge for preparing multiple letters, certificates, and envelopes.
10. MS Word is widely used in offices, educational institutions, and business organizations for documentation purposes.

How to Start MS Word

To start **MS Word**, follow the steps given below:

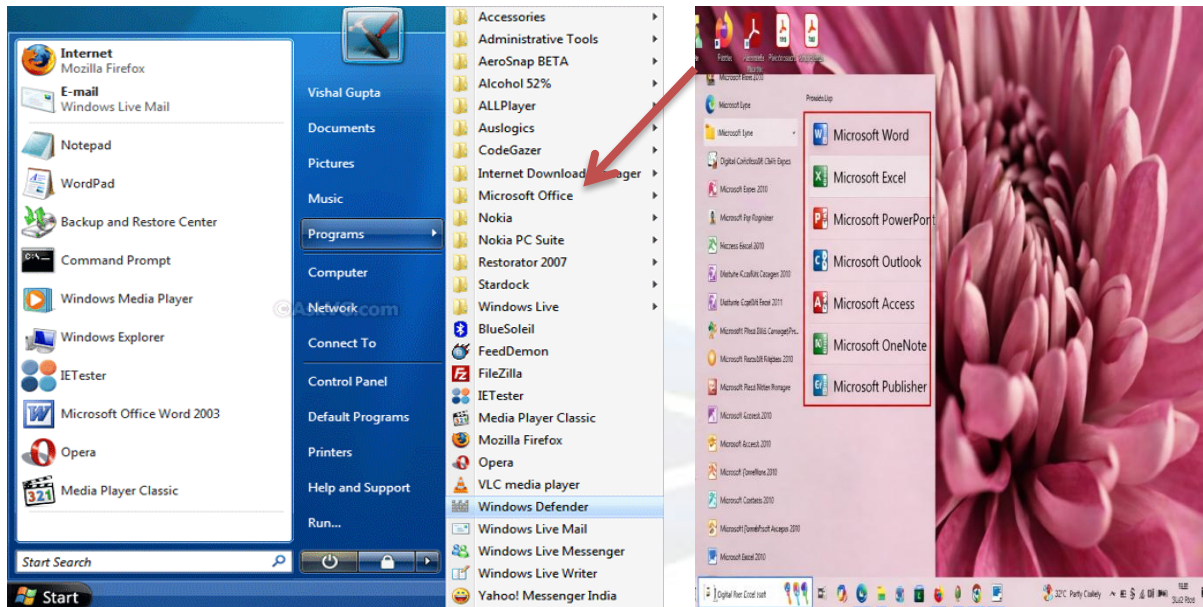
1. Click on the **Start** button on the taskbar.

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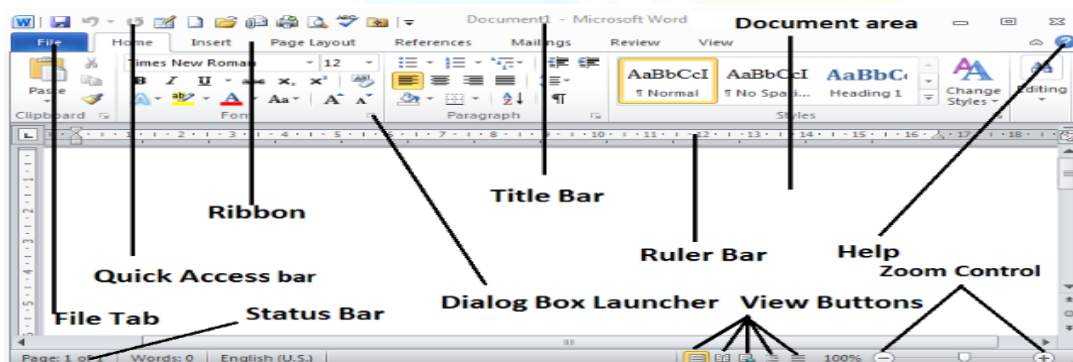
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2. Click **All Programs**.
3. Select **Microsoft Office** from the list.
4. Click on **Microsoft Office Word 2007 / 2010**.

After following these steps, the Microsoft Word window opens and you can begin your work.



Start → All Programs → Microsoft Office → Microsoft Office Word Open



Various Window Elements of MS Word

- **The Title Bar** displays the name of the document and the MS Word application, helping users identify the active file and manage multiple open documents easily.
- **The Menu Bar** provides organized access to all commands such as File, Edit, View, Insert, and Format, allowing users to perform document-related operations efficiently through drop-down menus.
- **Toolbars** offer shortcut icons that save time by reducing repeated menu navigation and provide quick access to frequently used commands.
- **The Workspace** is the main area used for creating, editing, and formatting documents where text, images, and tables are entered and modified.

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- **The Ruler Bar** helps in setting margins, tabs, and paragraph alignment accurately, ensuring proper layout and formatting of the document.
- **The Insertion Point** shows the exact position where text will be entered and moves automatically as the user types or edits content.
- **Scroll Bars** allow easy navigation through large documents vertically and horizontally, enabling users to view different parts of the document smoothly.
- **The Status Bar** displays important information like page number, cursor position, line and column number, and document status, helping users monitor their work.
- **The Task Pane** provides quick access to commonly used tools and options by grouping related features for user convenience.
- **The Selection Bar** helps in selecting text quickly without dragging the mouse and is especially useful for selecting lines, paragraphs, or the entire document.

Features (or) Characteristics of a Word Processor

Microsoft Word is a powerful word processing software developed by Microsoft. It is widely used in education, offices, publishing, and business environments for preparing professional documents. MS Word provides a wide range of tools for document creation, editing, formatting, automation, collaboration, and publishing.

1. Document Creation and File Management

MS Word enables users to create new documents using blank pages or predefined templates. Documents can be opened, saved, renamed, and stored in multiple formats such as DOCX, DOC, PDF, and RTF. This flexibility ensures compatibility and easy document sharing.

2. Advanced Text Editing

The software offers efficient editing tools such as cut, copy, paste, undo, redo, find, and replace. These features allow quick modification of content without retyping the entire document. AutoCorrect and AutoText further minimize typing errors and improve productivity.

3. Font and Character Formatting

MS Word allows users to change font type, font size, and font color, and apply effects such as bold, italic, underline, superscript, subscript, and strikethrough. These formatting options enhance readability and visual emphasis.

4. Paragraph and Page Formatting

Paragraph formatting features include alignment, indentation, line spacing, bullets, numbering, borders, and shading. Page formatting options such as margins, page orientation, columns, headers, footers, page numbering, and watermarks help structure documents in a professional manner.

5. Styles, Themes, and Templates

Styles and themes ensure consistent formatting across long documents. Templates provide ready-made layouts for resumes, reports, letters, and forms, saving time and maintaining uniformity.

6. Tables and Data Presentation

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MS Word allows the creation and editing of tables to organize data into rows and columns. Users can insert or delete rows and columns, merge or split cells, apply table styles, and perform basic calculations.

7. Graphics, Charts, and Multimedia

Users can insert pictures, clipart, shapes, charts, SmartArt, symbols, equations, and WordArt. These elements enhance visual appeal and help present information clearly and effectively.

8. Proofing and Language Tools

MS Word includes spell check, grammar check, thesaurus, word count, and multilingual support. These tools help users create accurate, error-free, and well-written documents.

9. Mail Merge Facility

Mail Merge is used to generate multiple personalized documents by combining a main document with a data source. It is widely used for letters, certificates, labels, and envelopes.

10. Macros and Automation

Macros enable automation of repetitive tasks by recording a sequence of commands. This feature saves time, increases efficiency, and reduces manual errors.

11. Collaboration and Review Features

MS Word supports collaborative work through comments, track changes, document comparison, and version control. These features are especially useful in academic and professional teamwork.

12. Security and Document Protection

Documents can be protected using passwords and restricted editing permissions. This ensures data security and prevents unauthorized access or modifications.

13. Printing and Output Options

The software provides advanced printing features such as print preview, page range selection, layout control, and exporting documents to PDF format.

14. Web Publishing and Hyperlinks

Documents can be prepared for web publishing, and hyperlinks can be added to web pages, email addresses, files, or other application programs.

15. User-Friendly Interface

The Ribbon interface organizes commands into tabs and groups, making MS Word easy to learn and efficient to use for both beginners and advanced users.

2.2 Menu Bar in MS Word

*In MS Word 2010, the traditional menu bar used in earlier versions is replaced by the **Ribbon interface**.*

*The Ribbon is a horizontal strip located at the **top of the Word window**. It organizes commands into **tabs**, making them easier to find and use.*

*Each tab on the Ribbon contains **groups of related commands**. This arrangement helps users perform tasks quickly without searching through long menus.*

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Main Tabs of the Ribbon (Menu Bar) in Word 2010:

- **File Tab**
Used for file-related operations such as creating a new document, opening an existing document, saving, printing, and closing documents. This tab opens the Backstage View.
- **Home Tab**
Contains commands for basic editing and formatting, including font style, font size, paragraph alignment, bullets, and styles.
- **Insert Tab**
Used to insert objects like tables, pictures, shapes, charts, headers, footers, and symbols into the document.
- **Page Layout Tab**
Provides options to change page settings such as margins, orientation, size, columns, and themes.
- **References Tab**
Used for managing references like table of contents, footnotes, citations, captions, and index.
- **Mailings Tab**
Helps in creating mail merge documents, envelopes, and labels.
- **Review Tab**
Used for proofreading tasks such as spelling and grammar check, comments, and track changes.
- **View Tab**
Allows users to change document views, zoom level, and window arrangement.

Opening Word Processor

A **Word Processor** is application software used to create, edit, format, save, and print text documents.

Common examples are **MS Word** and **LibreOffice Writer**.

Starting MS Word

1. Click on the **Start** button.
2. Click **All Apps / All Programs**.
3. Select **Microsoft Office**.
4. Click **Microsoft Word**.
5. MS Word opens with a **blank document** or **start screen**.



File Tab in MS Word – Functions and Features

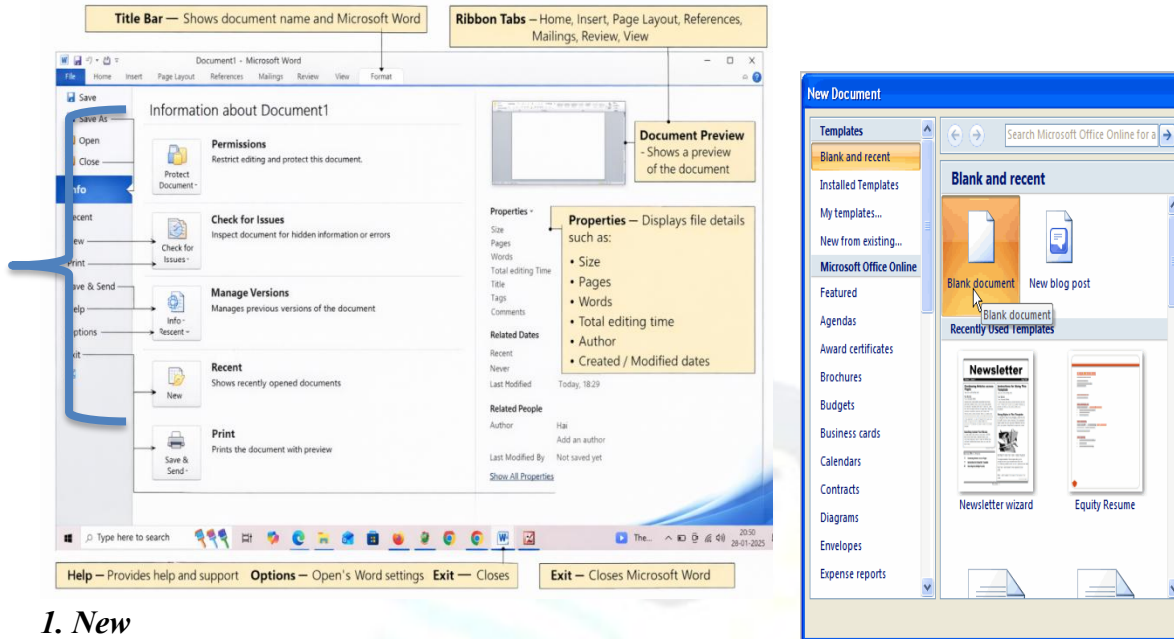
The **File Tab** is an essential component of the Microsoft Word interface. It is located at the **top-left corner** of the Word window. When the File Tab is selected, it opens the **Backstage View**, which provides a centralized area for managing documents and application settings.

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Unlike other tabs that focus on editing and formatting content, the File Tab deals with **file management and document control operations**.

Functions of the File Tab



1. New

The **New** option is used to create a new document. Users can choose a **blank document** or select from a variety of **built-in templates** such as letters, resumes, reports, brochures, and forms. Templates help save time and ensure professional formatting.

2. Open

The **Open** option allows users to access existing documents stored on the computer, external storage devices, or network locations. It also displays a list of **recently opened files**, enabling quick access to frequently used documents.

3. Save

The **Save** option stores the current document using the same file name and location. It updates the document with the latest changes and helps prevent data loss during document editing.

4. Save As

The **Save As** option is used to save the document with a **different name, new location, or different file format**. This option is useful for creating backup copies or converting documents into formats such as PDF or RTF.

5. Info

The **Info** option displays detailed information about the document, including file size, author name, creation date, and permissions. It also provides tools to **protect the document**, check for compatibility issues, inspect hidden data, and manage document versions.

6. Recent

The **Recent** option shows a list of **recently opened documents and folders**. This feature improves productivity by allowing users to reopen files quickly without searching through directories.

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7. Print

The **Print** option is used to print documents. It provides a **print preview** along with settings such as printer selection, page orientation, number of copies, page range, and layout options, ensuring accurate and efficient printing.

8. Save & Send / Share

This feature allows users to **share documents** through email or online platforms. Documents can be sent as attachments or saved to cloud storage. It also enables users to send files in different formats.

9. Help

The **Help** option provides access to help documentation, tutorials, and online support resources. It assists users in learning features and troubleshooting problems while working in MS Word.

10. Options

The **Options** command opens the **Word Options dialog box**, where users can customize Word settings. Options include display preferences, proofing tools, save settings, language selection, and advanced configuration options.

11. Exit

The **Exit** option closes the active document and exits the MS Word application completely. It ensures that all open files are properly closed.

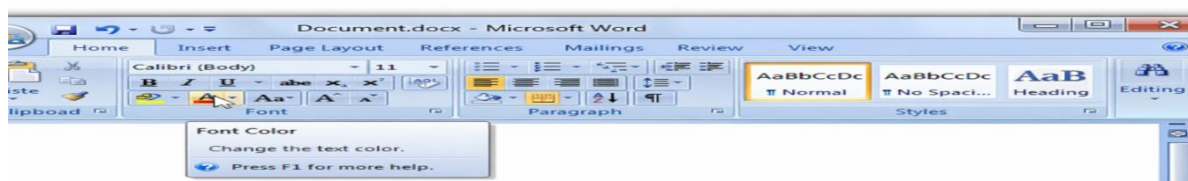
Importance of the File Tab

- Acts as the **central control panel** for document management
- Helps in creating, saving, printing, sharing, and protecting documents
- Provides access to application settings and customization
- Improves efficiency and document safety

Home Tab in MS Word

The **Home Tab** is the **default tab** in Microsoft Word and is automatically displayed when a document is opened. It contains the most commonly used commands required for **text entry, editing, and formatting**. The Home Tab plays a vital role in document preparation, as almost all basic operations are performed using this tab.

The commands in the Home Tab are grouped logically into **Clipboard, Font, Paragraph, Styles, and Editing** groups. Each group is designed to handle a specific set of functions, making document editing simple and efficient.



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The Home menu is the default menu in MS Word.

It is used for typing, editing, formatting, and arranging text.

*The **Home Menu** contains:*

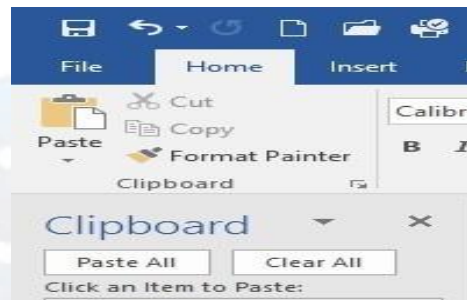
- 1. Clipboard Group**
- 2. Font Group**
- 3. Paragraph Group**
- 4. Styles Group**
- 5. Editing Group**

1. Clipboard Group

The Clipboard Group is used to cut, copy, paste text and formatting.

Options in Clipboard Group:

- 1. Paste*
- 2. Cut*
- 3. Copy*
- 4. Format Painter*



1.1 Paste

- *Inserts copied or cut text into the document.*

Steps to Paste Text:

- 1. Open Microsoft Word.*
- 2. Copy or cut the text.*
- 3. Place the cursor at the required position.*
- 4. Click on the Home Tab.*
- 5. Click on Paste.*

Example:

Pasting copied text from one paragraph to another.

1.2 Cut

- *Removes selected text and places it on the clipboard.*

Steps to Cut Text:

- 1. Select the text.*
- 2. Click on Cut in the Clipboard Group.*

Example:

Moving a paragraph to another place.

1.3 Copy

- *Copies selected text without removing it.*

Steps to Copy Text:

- 1. Select the text.*
- 2. Click on Copy.*

Example:

Copying a heading to use again.

1.4 Format Painter

- *Copies formatting like font style, size, and color.*

Steps to Use Format Painter:

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1. Select formatted text.
2. Click on Format Painter.
3. Drag over the text to apply formatting.

Example:

Applying same heading style to another heading.

2. Font Group

The Font Group is used to change the style, size, and appearance of text in a document.

Steps to Use Font Group in MS Word

1. Open Microsoft Word.
2. Type the text or select the text you want to format.
3. Click on the Home Tab.
4. In the Font Group, choose the required option such as font style, size, or formatting.
5. The selected text will change according to the chosen option.

Steps to Change Font Style

1. Select the text.
2. Click on the Font Name box (for example: Calibri).
3. Choose the required font style (Arial, Times New Roman, etc.).



Steps to Change Font Size

1. Select the text.
2. Click on the Font Size box.
3. Select the required size (12, 14, 16, etc.).

Steps to Apply Bold, Italic, and Underline

1. Select the text.
2. Click on:
 - Bold (B) to make text dark
 - Italic (I) to slant text
 - Underline (U) to underline text

Steps to Change Font Color

1. Select the text.
2. Click on the Font Color button.
3. Choose the required color.

Steps to Use Format Highlight (Text Highlight Color)

1. Select the text.
2. Click on Text Highlight Color.
3. Choose a color to highlight the text.

Steps to Clear Formatting

1. Select the formatted text.
2. Click on Clear Formatting in the Font Group.
3. The text will return to normal style.

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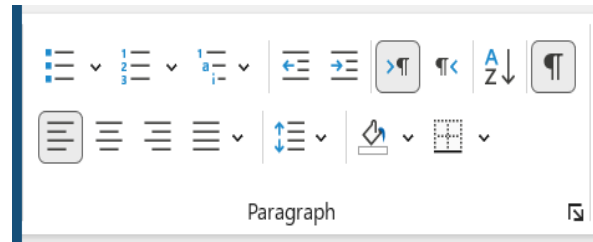
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3. Paragraph Group

The Paragraph Group is used to format paragraphs by controlling alignment, indentation, spacing, and lists.

Steps to Use Paragraph Group in MS Word

1. Open Microsoft Word.
2. Type the text or select the paragraph you want to format.
3. Click on the Home Tab.
4. In the Paragraph Group, choose the required option.
5. The selected paragraph will be formatted accordingly.



Steps to Apply Alignment

1. Select the paragraph.
2. Click on one of the alignment buttons:
 - Align Left – aligns text to the left
 - Center – aligns text to the center
 - Align Right – aligns text to the right
 - Justify – aligns text evenly on both sides

Steps to Apply Bullets

1. Select the text or paragraph.
2. Click on the Bullets button.
3. The selected text will appear as a bulleted list.

Steps to Apply Numbering

1. Select the text or paragraph.
2. Click on the Numbering button.
3. Numbers will be added to each line.

Steps to Change Line Spacing

1. Select the paragraph.
2. Click on Line and Paragraph Spacing.
3. Choose spacing such as 1.0, 1.5, or 2.0.

Steps to Change Indentation

1. Select the paragraph.
2. Click on:
 - Increase Indent to move text right
 - Decrease Indent to move text left

Steps to Add Borders and Shading

1. Select the paragraph.
2. Click on Borders.
3. Choose the required border style or shading.

4. Styles Group

The **Styles Group** is used to **apply pre-designed text styles** to headings and paragraphs. It helps in creating **professional and well-structured documents**.

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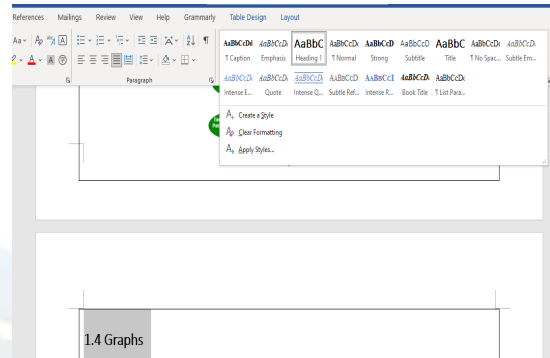
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Steps to Use Styles Group in MS Word

1. Open **Microsoft Word**.
2. Type the text or **select the text** to which you want to apply a style.
3. Click on the **Home Tab**.
4. In the **Styles Group**, select the required style.
5. The selected text will change according to the chosen style.

Common Styles Available

- **Normal** – Default text style
- **Heading 1** – Main heading
- **Heading 2** – Sub-heading
- **Heading 3** – Sub-sub heading
- **Title** – Document title



Steps to Apply a Heading Style

1. Select the heading text.
2. Click on **Heading 1** or **Heading 2** in the Styles Group.
3. The text will be formatted automatically.

Steps to Change or Modify a Style

1. Right-click on the required style.
2. Click on **Modify**.
3. Change font, size, or color.
4. Click **OK**.

Uses of Styles Group

- Gives a **uniform look** to the document
- Saves time in formatting
- Helps in creating **Table of Contents**
- Improves document readability

5. Editing Group

The **Editing Group** is used to **search, replace, and select text** in a document.

It helps in **quick editing and correction** of large documents.

Options in Editing Group

The Editing Group contains:

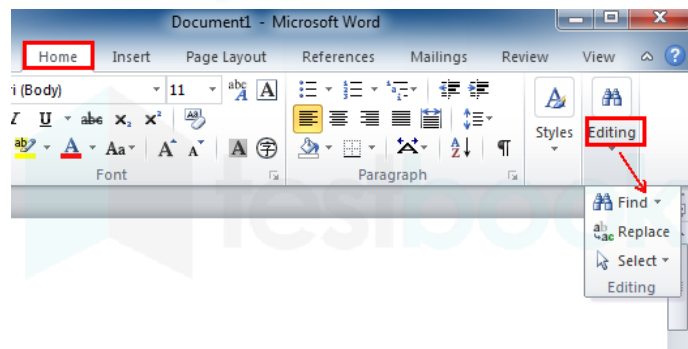
1. **Find**
2. **Replace**
3. **Select**

5.1 Find

Find is used to search for a specific word or phrase in a document.

Steps to Use Find:

1. Open **Microsoft Word**.
2. Click on the **Home Tab**.
3. In the **Editing Group**, click on **Find**.



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4. Type the word you want to search.
5. MS Word will highlight the matching words.

Example:

Finding the word “**computer**” in a long document.

5.2 Replace

- **Replace** is used to change one word or phrase into another word.

Steps to Use Replace:

1. Click on the **Home Tab**.
2. In the **Editing Group**, click on **Replace**.
3. Type the word to be replaced in **Find what** box.
4. Type the new word in **Replace with** box.
5. Click **Replace** or **Replace All**.

Example:

Replacing “**colour**” with “**color**”.

5.3 Select

- **Select** is used to select text or objects in a document.

Steps to Use Select:

1. Click on the **Home Tab**.
2. Click on **Select** in the Editing Group.
3. Choose one option:
 - **Select All**
 - **Select Objects**
 - **Select Text with Similar Formatting**

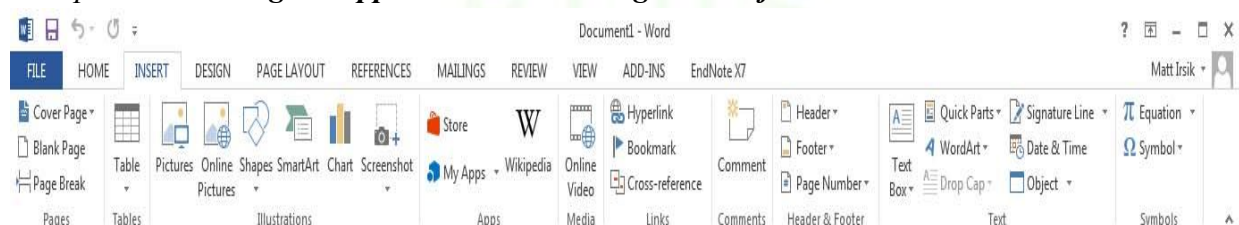
Example:

Selecting the entire document using **Select All**.

INSERT MENU

The **Insert Tab** in Microsoft Word is used to **add different elements** into a document such as pages, tables, pictures, symbols, headers, footers, and more.

It helps in **enhancing the appearance** and **adding extra information** to the document.



MAIN GROUPS IN INSERT TAB

The Insert Tab is divided into the following groups:

1. **Pages**
2. **Tables**
3. **Illustrations**
4. **Links**
5. **Header & Footer**

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6. Text

7. Symbols

1. PAGES GROUP

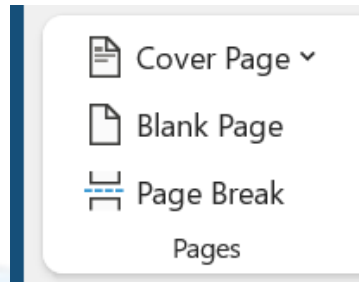
The **Pages Group** in the **Insert Tab** of Microsoft Word is used to **insert and manage pages** in a document.

It helps users add **new pages, cover pages, and control page flow**.

Options in Pages Group

The Pages Group contains:

1. Cover Page
2. Blank Page
3. Page Break



1.1 Cover Page

- A **Cover Page** is the first page of a document.
- It usually contains the **title, author name, date, and subject**.
- MS Word provides **pre-designed cover page templates**.
- Used in **projects, reports, and assignments**.

Steps to Insert a Cover Page:

1. Open **Microsoft Word**.
2. Click on the **Insert Tab**.
3. In the **Pages Group**, click on **Cover Page**.
4. A list of **pre-designed cover page templates** will appear.
5. Select any **cover page design**.
6. The selected cover page will be inserted at the **beginning of the document**.
7. Replace the sample text with your **own details**.

1.2 Blank Page

- Inserts a **new blank page** at the cursor position.
- Useful when starting a **new chapter** or section.

Steps to Insert a Blank Page

1. Place the cursor where you want a new page.
2. Click on the **Insert Tab**.
3. Click on **Blank Page** in the Pages Group.

1.3 Page Break

- Moves the text after the cursor to the **next page**.
- It is used to control page layout without pressing Enter many times.
- Helps in **proper formatting** of documents.

How to Insert a Page Break

1. Place the cursor at the required position.
2. Click on the **Insert Tab**.
3. Click on **Page Break**.

(Shortcut key: Ctrl + Enter)

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2. TABLES GROUP

- A **table** is used to arrange data in **rows and columns**.
- Helps in presenting information clearly and neatly.
- Tables are commonly used for **marks lists, timetables, and records**.

Options in Table:

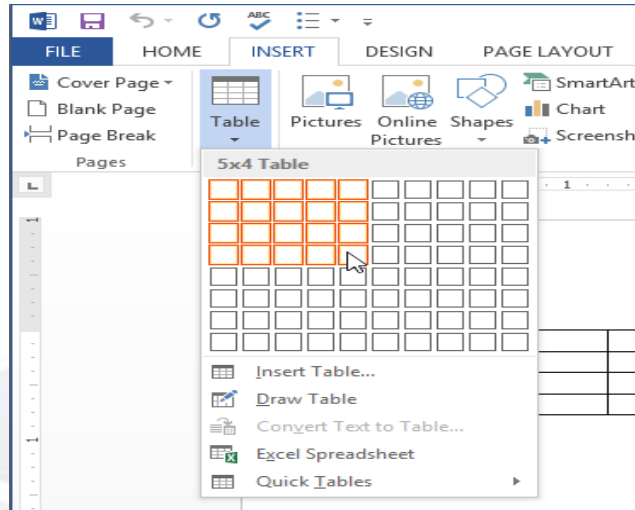
- **Insert Table**
- **Draw Table**
- **Convert Text to Table**
- **Excel Spreadsheet**
- **Quick Tables**

Insert Table

This option is used to **create a table** by selecting the number of **rows and columns**.

How to Insert a Table

1. Click on the **Insert Tab**.
2. Click on **Table**.
3. Drag the mouse over the grid to select rows and columns.
4. Click to insert the table.



Draw Table

The **Draw Table** option allows users to **draw a table manually** using the mouse. Creating **customized tables** with different cell sizes

How to Use Draw Table

1. Click on **Insert Tab** → **Table**.
2. Select **Draw Table**.
3. Use the mouse to draw rows and columns.

Convert Text to Table

This option converts **existing text** into a table format.

How to Convert Text to Table

1. Select the text.
 2. Click **Insert Tab** → **Table**.
 3. Choose **Convert Text to Table**.
 4. Set rows and columns.
 5. Click **OK**.
- Quickly organizing list data into tables

Excel Spreadsheet

This option inserts an **Excel worksheet** into the Word document.

- Performing calculations
- Working with formulas and functions

Quick Tables

Quick Tables are **pre-designed table templates**.

Use

- Calendars

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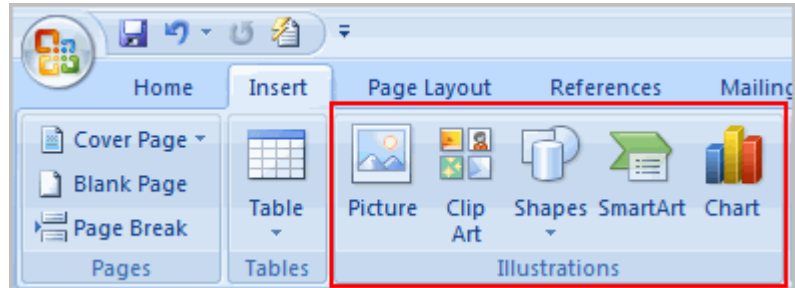
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- Timetables
- Forms

3 .ILLUSTRATIONS GROUP

The **Illustrations Group** in Microsoft Word is used to **insert visual elements** into a document. These elements make the document **attractive, informative, and easy to understand.**

Illustrations are mainly used in **projects, reports, charts, diagrams, and presentations**



3.1 Pictures

- Inserts pictures from the **computer.**
- Used to make documents **attractive and informative.**
- Commonly used in **presentations, brochures, and reports.**

How to Insert a Picture

1. Click on the **Insert Tab.**
2. Click on **Pictures.**
3. Select the image from the computer.
4. Click **Insert.**

The picture will be inserted into the document.

3.3 Shapes

- Inserts shapes such as **lines, arrows, rectangles, circles.**
- Used for **diagrams, flowcharts, and drawings.**

How to Insert Shapes

1. Click **Insert Tab** → **Shapes.**
2. Select the required shape.
3. Draw it using the mouse.

The shape is added to the document.

3.4 SmartArt

- Used to insert **graphical representations** of information.
- Helpful for **processes, hierarchies, cycles, and relationships.**

How to Insert SmartArt

Steps:

1. Click on the **Insert Tab.**
2. Click on **SmartArt.**
3. The **Choose a SmartArt Graphic** window appears.
4. Select the required SmartArt type.
5. Click **OK.**
6. Enter text in the SmartArt boxes.

➡ SmartArt graphic is inserted.

3.5 Chart

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- Used to represent data in **graphical form**.
- Types of charts include:
 - Column Chart
 - Pie Chart
 - Line Chart
 - Bar Chart
- Makes data **easy to understand and analyze**.

How to Insert a Chart

Steps:

1. Open **MS Word**.
2. Click on the **Insert Tab**.
3. Click on **Chart**.
4. Select the chart type (Column, Pie, Line, etc.).
5. Click **OK**.
6. Enter data in the Excel sheet that opens.
7. Close the Excel sheet.

➡ The chart is displayed in the document.

3.6 Screenshot

- Inserts screenshots of **open windows**.
- Useful for **tutorials and documentation**.

How to Insert Screenshot

Steps:

1. Open **the window** you want to capture.
2. Open **MS Word**.
3. Click on the **Insert Tab**.
4. Click on **Screenshot**.
5. Select the available window OR choose **Screen Clipping**.
6. Drag to select the required area.

➡ Screenshot is inserted into the document.

4. LINKS GROUP

4.1 Hyperlink

Meaning of Hyperlink

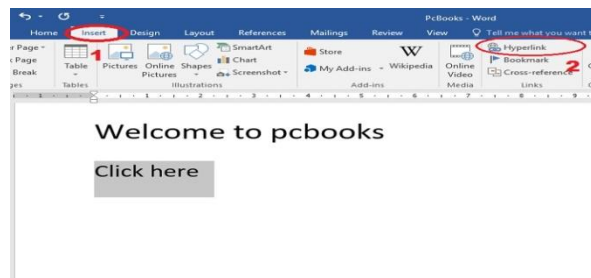
A **Hyperlink** is a **clickable link** that connects one document to another location.

When we click on a hyperlink, it opens a **web page, email address, another file, or a place within the same document**.

Hyperlinks are commonly used to provide **quick access to additional information**.

Types of Hyperlinks in MS Word

A hyperlink can link to:



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1. *An existing file or web page*
2. *A place in the same document*
3. *An email address*
4. *A new document*

How to Create a Hyperlink in MS Word

1. *Open Microsoft Word.*
2. *Type the text or **select the word/sentence** that you want to convert into a hyperlink.*
3. *Click on the **Insert Tab**.*
4. *In the **Links Group**, click on **Hyperlink**.*
(Shortcut key: Ctrl + K)
5. *The **Insert Hyperlink** dialog box will appear.*
6. *Choose the required option:*
 - *Existing File or Web Page*
 - *Place in This Document*
 - *Email Address*
7. *Enter the **website address (URL)** or select the required file.*
8. *Click on the **OK** button.*

➡ *The selected text will now appear as a **blue, underlined hyperlink**.*

Example

If the text “Open Google” is linked with

<https://www.google.com>,

*clicking on it will open the **Google website**.*

4.2 Bookmark

Meaning of Bookmark

*A **Bookmark** is used to **mark a specific location** in a Microsoft Word document.*

*It allows users to **quickly move to an important place** in the same document.*

*Bookmarks are mainly useful in **large documents** such as reports, projects, and books.*

How to Insert a Bookmark in MS Word

1. *Open Microsoft Word.*
2. *Place the **cursor** at the location where you want to insert the bookmark.*
3. *Click on the **Insert Tab**.*
4. *In the **Links Group**, click on **Bookmark**.*
5. *The **Bookmark dialog box** will appear.*
6. *Type a **name for the bookmark** (no spaces allowed).*
7. *Click on the **Add** button.*

➡ *The bookmark is created at the selected location.*

How to Use (Go to) a Bookmark

1. *Click on the **Insert Tab**.*
2. *Click on **Bookmark** in the Links Group.*
3. *Select the required **bookmark name** from the list.*
4. *Click on **Go To**.*

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➡ The cursor will move to the bookmarked location.

4.3 Cross-reference

A **Cross-reference** is used to **refer to another part of the same document**.

It allows users to link text to **headings, tables, figures, footnotes, bookmarks, or numbered items**.

When the referenced item changes, the cross-reference can be **updated automatically**.

Purpose of Cross-reference

- To connect related content within the document
- To avoid repeating information
- To improve navigation and clarity

Types of Cross-references in MS Word

A cross-reference can refer to:

- Headings
- Tables
- Figures
- Bookmarks
- Numbered items

How to Insert a Cross-reference in MS Word

1. Open **Microsoft Word**.
2. Place the **cursor** where you want to insert the cross-reference.
3. Click on the **Insert Tab**.
4. In the **Links Group**, click on **Cross-reference**.
5. The **Cross-reference dialog box** will appear.
6. Select the **Reference type** (Heading, Table, Figure, etc.).
7. Choose the **item** you want to refer to.
8. Click on the **Insert** button.
9. Click **Close**.

➡ The cross-reference is inserted into the document.

How to Update a Cross-reference

1. Right-click on the cross-reference.
2. Click **Update Field**.

➡ The reference will be updated automatically.

5. HEADER & FOOTER GROUP

The **Header & Footer Group** in Microsoft Word is used to insert information that appears **repeatedly on every page** of a document.

This group helps in maintaining **consistency and professional formatting**.

Options in Header & Footer Group

The Header & Footer Group contains:

1. Header
2. Footer

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3. Page Number

5.1 Header

A Header is the area at the **top of each page** of a document.

It is used to display information such as **document title, chapter name, author name, or logo.**

How to Insert a Header in MS Word

1. Open **Microsoft Word**.
2. Click on the **Insert Tab**.
3. In the **Header & Footer Group**, click on **Header**.
4. Choose a **header style** from the list.
5. Type the required text in the header area.
6. Click **Close Header and Footer**.

Example of Header

Header text:

Computer Fundamentals – Chapter 2

This text will appear at the **top of every page**.

5.2 Footer

A Footer is the area at the **bottom of each page** of a document.

It is commonly used to display **page numbers, dates, footnotes, or copyright information.**

How to Insert a Footer in MS Word

1. Click on the **Insert Tab**.
2. Click on **Footer** in the **Header & Footer Group**.
3. Select a **footer style**.
4. Enter the required text.
5. Click **Close Header and Footer**.

Example of Footer

Footer text:

Prepared by Computer Department

This text appears at the **bottom of every page**.

5.3 Page Number

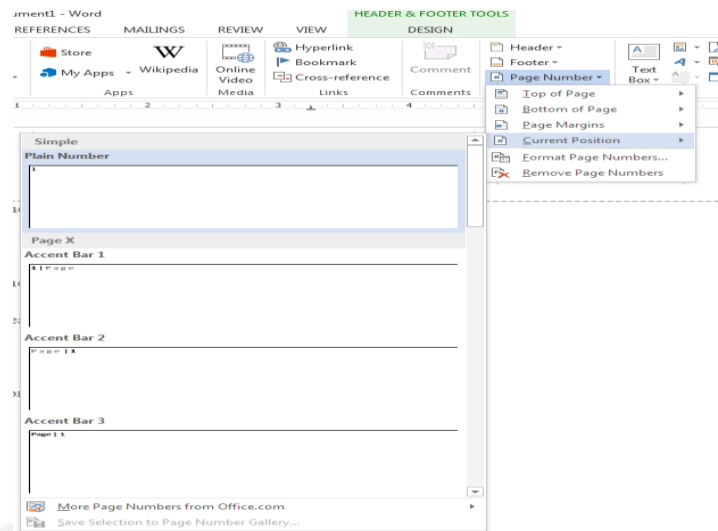
Page Number is used to automatically number the pages in a document.

It helps in **easy reference and navigation**.

How to Insert Page Number

(Step-by-Step)

1. Click on the **Insert Tab**.
2. Click on **Page Number**.
3. Choose the position:
 - Top of Page



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- Bottom of Page
- 4. Select a page number style.

Example of Page Number

Page numbers like 1, 2, 3... will appear automatically on all pages.

6. TEXT GROUP

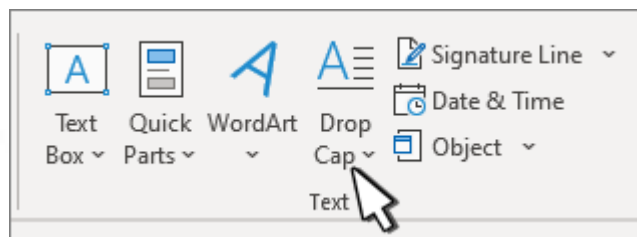
The **Text Group** in the **Insert Tab** of Microsoft Word is used to insert **text-related elements and special text effects** into a document.

It helps in adding **decorative text, reusable content, and additional text objects**.

Options in Text Group

The Text Group contains the following options:

1. Text Box
2. Quick Parts
3. WordArt
4. Drop Cap
5. Signature Line
6. Date & Time
7. Object



6.1 Text Box

A **Text Box** is a movable container that holds text.

It allows users to place text **anywhere in the document**.

How to Insert a Text Box

1. Open **Microsoft Word**.
2. Click on the **Insert Tab**.
3. In the **Text Group**, click on **Text Box**.
4. Choose a built-in text box style or select **Draw Text Box**.
5. Type the required text inside the text box.

Example

A text box is used to highlight **Important Notes** in a project.

6.2 Quick Parts

Quick Parts are **reusable pieces of content** such as text, headers, or fields.

They help save time by reusing frequently used content.

How to Insert Quick Parts

1. Click on the **Insert Tab**.
2. Click on **Quick Parts**.
3. Select the required content from the list.

Example

Inserting a saved **company address** using Quick Parts.

6.3 WordArt

WordArt is used to create **decorative and stylish text** with special effects.

How to Insert WordArt

1. Click on the **Insert Tab**.
2. Click on **WordArt**.

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3. Select a WordArt style.
4. Type the text.

Example

Using WordArt for a **project title**.

6.4 Drop Cap

A **Drop Cap** is a large capital letter at the **beginning of a paragraph**.

It is commonly used in **books and magazines**.

How to Insert Drop Cap

1. Click inside the paragraph.
2. Click on the **Insert Tab**.
3. Click on **Drop Cap**.
4. Choose **Dropped** or **In Margin**.

Example

The first letter of a paragraph appears larger than the rest.

6.5 Signature Line

A **Signature Line** is used to insert a **digital signature placeholder** in a document.

How to Insert Signature Line

1. Click on the **Insert Tab**.
2. Click on **Signature Line**.
3. Enter signer details.
4. Click **OK**.

Example

Used in **official letters and agreements**.

6.6 Date & Time

Meaning of Date & Time

This option inserts the **current date and time** into the document.

How to Insert Date & Time

1. Click on the **Insert Tab**.
2. Click on **Date & Time**.
3. Select a format.
4. Click **OK**.

Example

Inserting the date in a **letter or report**.

6.7 Object

The **Object** option is used to insert files from **other applications** like Excel or PDF.

How to Insert Object

1. Click on the **Insert Tab**.
2. Click on **Object**.
3. Choose **Create New** or **Create from File**.
4. Click **OK**.

Example

Inserting an **Excel chart** into Word.

7. SYMBOLS GROUP

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The **Symbols Group** in the **Insert Tab** of Microsoft Word is used to insert **special characters and mathematical equations** into a document.

This group is mainly used in **mathematical, scientific, technical, and legal documents**.

Options in Symbols Group

The Symbols Group contains the following options:

1. Equation
2. Symbol

7.1 Equation

The **Equation** option is used to insert **mathematical equations and formulas** into a document.

It provides built-in mathematical symbols and structures.

How to Insert an Equation

1. Open **Microsoft Word**.
2. Click on the **Insert Tab**.
3. In the **Symbols Group**, click on **Equation**.
4. Choose a **built-in equation** or select **Insert New Equation**.
5. Type the required mathematical formula.

Example

Equation:

$$(a + b)^2 = a^2 + 2ab + b^2$$

Uses of Equation

- Mathematics assignments
- Science formulas
- Engineering documents

7.2 Symbol

The **Symbol** option is used to insert **special symbols** that are not available on the keyboard.

Examples include: ©, ®, ₹, €, Ω, ±

How to Insert a Symbol

1. Click on the **Insert Tab**.
2. Click on **Symbol** in the Symbols Group.
3. Select a symbol from the list or click **More Symbols**.
4. Choose the required symbol.
5. Click **Insert**, then **Close**.

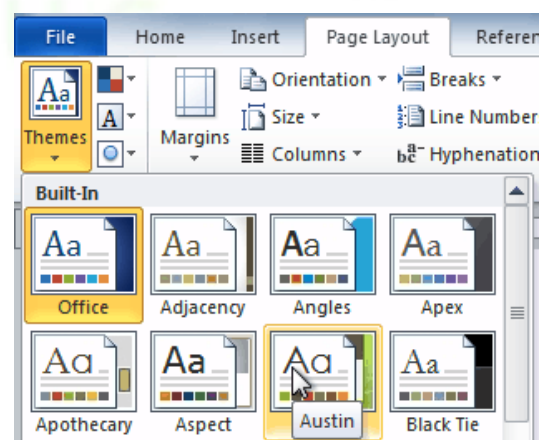
Example

Symbol: ₹ (Indian Rupee Symbol)

MS WORD – PAGE LAYOUT MENU

The **Page Layout Tab** in Microsoft Word is used to **control the appearance and layout of pages** in a document.

It helps in setting **page size, margins, orientation, spacing, and alignment** to create a well-formatted document.



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MAIN GROUPS IN PAGE LAYOUT TAB

The Page Layout Tab is divided into the following groups:

1. **Themes**
2. **Page Setup**
3. **Page Background**
4. **Paragraph**
5. **Arrange**

1. Themes

A **Theme** in Microsoft Word is a **pre-designed set of colors, fonts, and visual effects** that is applied to the entire document.

Themes help maintain a **uniform and professional appearance** throughout the document.

Components of a Theme

A theme consists of:

1. **Theme Colors** – control text, background, and object colors
2. **Theme Fonts** – control heading and body text fonts
3. **Theme Effects** – control visual effects for shapes and graphics

How to Apply a Theme in MS Word

1. Open Microsoft Word.
2. Click on the **Page Layout Tab**.
3. In the **Themes Group**, click on **Themes**.
4. A list of available themes will appear.
5. Select the required **theme**.

➡ The selected theme is applied to the **entire document**.

2. Page Setup

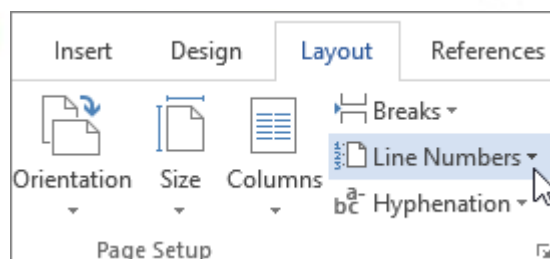
Page Setup is a group in the **Page Layout Tab** of Microsoft Word that is used to **set the size, orientation, margins, and layout of a page**.

It helps in preparing documents for **proper viewing and printing**.

Options in Page Setup Group

The Page Setup Group includes:

1. **Margins**
2. **Orientation**
3. **Size**
4. **Columns**
5. **Breaks**



2.1 Margins

Meaning

Margins are the blank spaces around the edges of a page (top, bottom, left, and right).

How to Set Margins

1. Click **Page Layout Tab**.
2. Click on **Margins**.
3. Choose a preset margin or click **Custom Margins**.

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2.2 Orientation

Orientation defines the direction of the page.

Types:

- **Portrait** (vertical)
- **Landscape** (horizontal)

How to Change Orientation

1. Click **Page Layout Tab** → **Orientation**.
2. Select **Portrait** or **Landscape**.

2.3 Size

The **Size** option is used to select the **paper size** of the document.

Examples:

- A4
- Letter
- Legal

How to Change Page Size

1. Click **Page Layout Tab** → **Size**.
2. Select the required paper size.

2.4 Columns

Columns divide text into **vertical sections** on a page.

How to Apply Columns

1. Select the text.
2. Click **Page Layout Tab** → **Columns**.
3. Choose One, Two, Three, or More Columns.

2.5 Breaks

Breaks control how text moves from one page or section to another.

Types:

- **Page Break**
- **Section Break**

How to Insert Breaks

1. Click **Page Layout Tab** → **Breaks**.
2. Select the required break type.

Line Numbers

Line Numbers are numbers that appear **beside each line of text** in a document.

They help in **easy identification and reference** of specific lines.

Line numbers are commonly used in **legal documents, scripts, and academic papers**.

Types of Line Numbering in MS Word

MS Word provides the following line numbering options:

1. **Continuous**
2. **Restart Each Page**
3. **Restart Each Section**
4. **Suppress for Current Paragraph**

How to Add Line Numbers in MS Word

1. Open **Microsoft Word**.

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2. Click on the **Page Layout Tab**.
3. In the **Page Setup Group**, click on **Line Numbers**.
4. Select one of the options:
 - **Continuous**
 - **Restart Each Page**
 - **Restart Each Section**

➡ Line numbers will appear on the left side of the text.

How to Remove Line Numbers

Steps:

1. Click **Page Layout Tab** → **Line Numbers**.
2. Select **None**.

Hyphenation

Hyphenation is the process of **breaking long words at the end of a line using a hyphen (-)**. It helps in maintaining **proper text alignment** and improves the **appearance of paragraphs**. Hyphenation prevents large gaps between words, especially in **justified text**.

Types of Hyphenation in MS Word

MS Word provides the following types of hyphenation:

1. **Automatic**
2. **Manual**
3. **None (to remove hyphenation)**

How to Apply Hyphenation in MS Word (Step-by-Step)

1. Open **Microsoft Word**.
2. Click on the **Page Layout Tab**.
3. In the **Page Setup Group**, click on **Hyphenation**.
4. Choose one option:
 - **Automatic**
 - **Manual**

➡ Hyphenation will be applied to the document.

How to Remove Hyphenation

Steps:

1. Click **Page Layout Tab** → **Hyphenation**.
2. Select **None**.

Example

Without hyphenation:

Informational

With hyphenation:

Infor-

mational

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3. Page Background

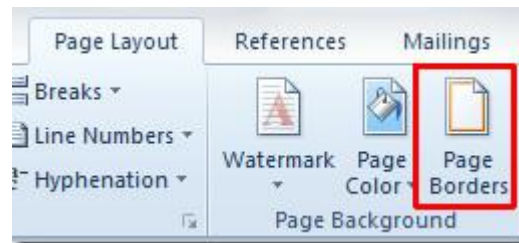
The **Page Background** group in Microsoft Word is used to **change the appearance of the page** by adding **watermarks, background colors, and page borders**.

It helps make documents **attractive and visually appealing**.

Options in Page Background Group

The Page Background Group includes:

1. Watermark
2. Page Color
3. Page Borders



3.1 Watermark

A **Watermark** is light text or an image that appears **behind the main content** of the document.

It is commonly used to show document status such as **Confidential, Draft, or Sample**.

How to Insert a Watermark

1. Open **Microsoft Word**.
2. Click on the **Page Layout Tab**.
3. In the **Page Background Group**, click on **Watermark**.
4. Select a built-in watermark or choose **Custom Watermark**.

Example

Watermark text: **CONFIDENTIAL**

3.2 Page Color

Meaning of Page Color

The **Page Color** option is used to change the **background color** of the page

How to Apply Page Color

1. Click on the **Page Layout Tab**.
2. Click on **Page Color**.
3. Choose a color from the color palette.

Example

Applying a **light blue background** to a certificate.

3.3 Page Borders

Page Borders add a **border around the page**.

How to Add Page Borders

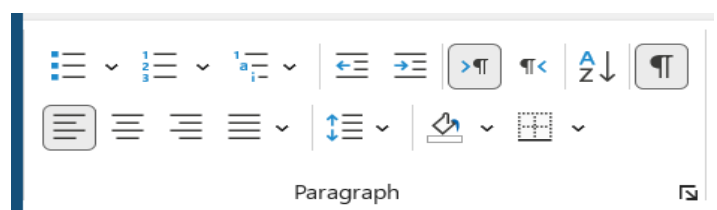
1. Click on the **Page Layout Tab**.
2. Click on **Page Borders**.
3. Select border style, color, and width.
4. Click **OK**.

Example

Using page borders for **certificates and invitations**.

Paragraph Group

The **Paragraph Group** in the **Page Layout Tab** of Microsoft Word is used to **control**



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paragraph formatting.

It helps in setting **indentation and spacing** of paragraphs to improve **readability and layout**.

Options in Paragraph Group

The Paragraph Group contains:

1. Indent (Left and Right)
2. Spacing (Before and After)

Indent

Indent controls the distance of text from the **left and right margins** of the page.

How to Set Indent

1. Open **Microsoft Word**.
2. Click on the **Page Layout Tab**.
3. In the **Paragraph Group**, enter values in:
 - **Left Indent**
 - **Right Indent**

➡ The paragraph moves inward or outward from the margins.

Example

Setting a **left indent** for quotations in a document.

Spacing

Spacing controls the **space before and after paragraphs**.

How to Set Spacing

1. Click on the **Page Layout Tab**.
2. In the **Paragraph Group**, enter values in:
 - **Before**
 - **After**

➡ Extra space is added between paragraphs.

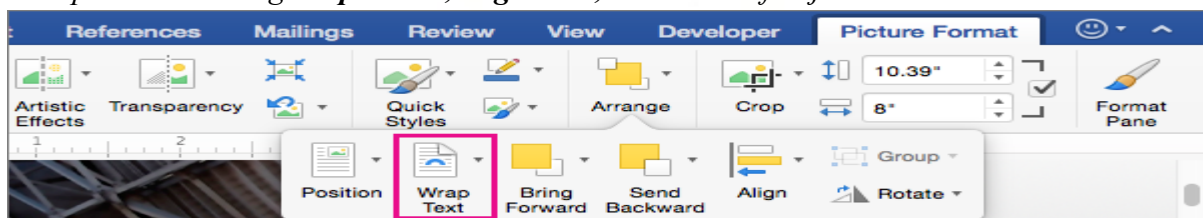
Example

Adding space between paragraphs in a **report** to improve clarity.

5.Arrange Group

The **Arrange Group** in the **Page Layout Tab** of Microsoft Word is used to **manage and organize objects** such as **pictures, shapes, charts, and text boxes**.

It helps in controlling the **position, alignment, and order** of objects in a document.



Options in Arrange Group

The Arrange Group contains the following options:

1. Position
2. Wrap Text
3. Bring Forward
4. Send Backward

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5. *Align*
6. *Group*
7. *Rotate*

1. Position

Position is used to place an object at a **specific location** on the page.

How to Use Position

1. Select the object.
2. Click **Page Layout Tab** → **Position**.
3. Choose the required position.

2. Wrap Text

Wrap Text controls how text flows **around an object**.

How to Use Wrap Text

1. Select the object.
2. Click **Wrap Text**.
3. Choose an option (Square, Tight, Behind Text, etc.).

3. Bring Forward

Moves the selected object **in front of other objects**.

1. Select the object.
2. Click **Bring Forward**.

4. Send Backward

Moves the selected object **behind other objects**.

1. Select the object.
2. Click **Send Backward**.

5. Align

Aligns objects properly on the page.

1. Select objects.
2. Click **Align**.
3. Choose alignment option.

6. Group

Group combines multiple objects into **one unit**.

Steps

1. Select multiple objects.
2. Click **Group**.

7. Rotate

Rotate is used to rotate or flip objects.

1. Select the object.
2. Click **Rotate**.
3. Choose rotation option.

Example

*Aligning images and text boxes in a **project cover page**.*

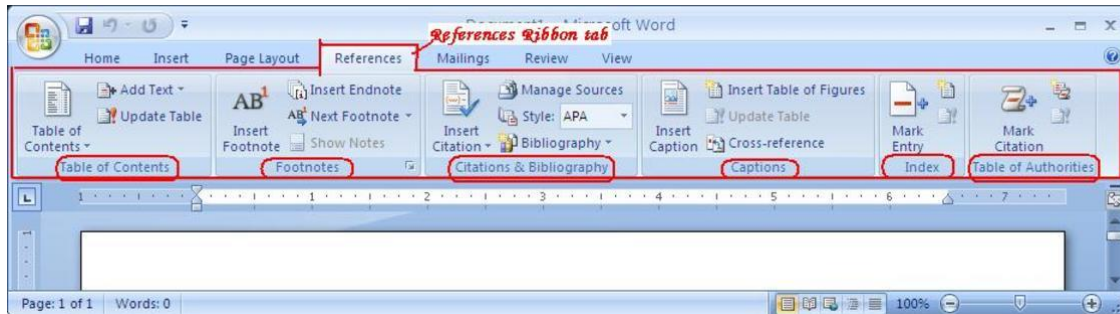
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REFERENCE MENU – MS Word

The Reference menu is used to add references, citations, captions, footnotes, and indexes in a document.

It is mainly used in projects, reports, research papers, and books.



The Reference Menu contains the following groups:

1. **Table of Contents Group**
2. **Footnotes Group**
3. **Citations & Bibliography Group**
4. **Captions Group**
5. **Index Group**
6. **Table of Authorities Group**

1. Table of Contents Group

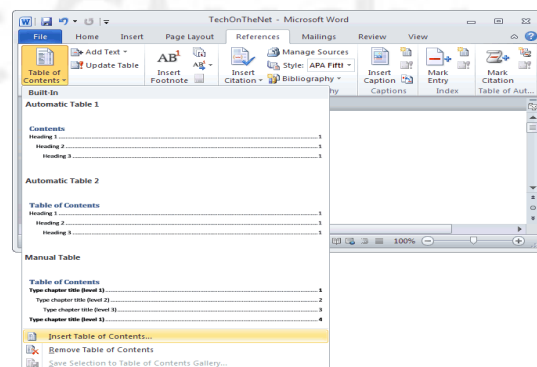
The Table of Contents Group is used to create an automatic list of headings in a document. It shows headings along with their page numbers, making the document easy to navigate.

Options in Table of Contents Group:

- Table of Contents
- Add Text
- Update Table

Steps to Insert Table of Contents

1. Click on the References Tab.
2. Click on Table of Contents.
3. Select any built-in Table of Contents style.
4. The Table of Contents will be inserted automatically.



Example

Document Headings:

- Introduction (Heading 1)
- Types of Computers (Heading 1)

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- *Uses of Computers (Heading 1)*

Table of Contents Created:

Introduction 1

Types of Computers 3

Uses of Computers 6

Use of Table of Contents Group

- *Helps readers find topics quickly*
- *Automatically updates page numbers*
- *Saves time in long documents*
- *Commonly used in projects and reports*

2. Footnotes Group

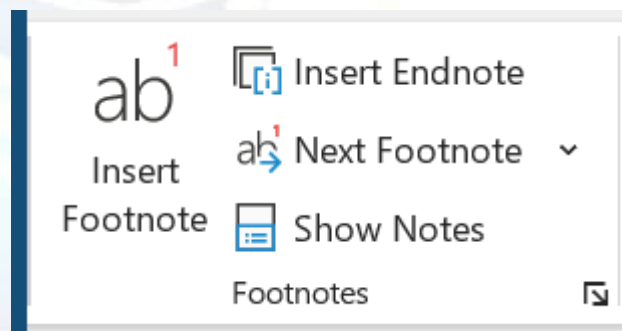
The Footnotes Group is available in the References Tab.

It is used to add extra information or explanations at the bottom of a page or at the end of the document.

Options in Footnotes Group

The Footnotes Group contains:

1. *Insert Footnote*
2. *Insert Endnote*
3. *Next Footnote*
4. *Show Notes*



2.1 Insert Footnote

A Footnote provides additional information at the bottom of the same page.

Steps to Insert a Footnote:

1. *Place the cursor after the word or sentence.*
2. *Click on the References Tab.*
3. *In the Footnotes Group, click on Insert Footnote.*
4. *MS Word adds a number and moves the cursor to the bottom of the page.*
5. *Type the footnote text.*

Example (Footnote)

Text in document:

Computer is an electronic device¹

Footnote at bottom of page:

¹ An electronic device that processes data.

2.2 Insert Endnote

- *An Endnote provides extra information at the end of the document.*

Steps to Insert an Endnote:

1. *Place the cursor after the text.*

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2. Click on References Tab.
3. Click on Insert Endnote.
4. Type the endnote text at the end of the document.

2.3 Next Footnote

- Used to move the cursor to the next footnote or endnote in the document.

2.4 Show Notes

- Displays all footnotes or endnotes for editing and review.

3. Citations & Bibliography Group

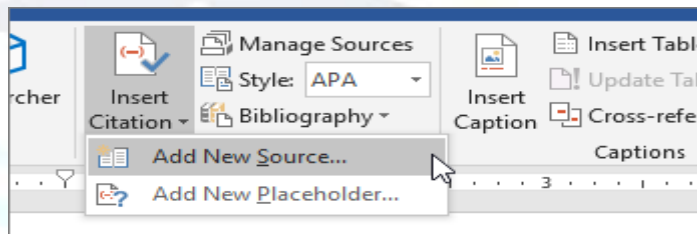
The Citations & Bibliography Group is available in the References Tab.

It is used to mention sources of information used in a document and to create a bibliography automatically.

Options in Citations & Bibliography Group

The Citations & Bibliography Group contains:

1. Insert Citation
2. Manage Sources
3. Style
4. Bibliography



3.1 Insert Citation

- Used to add a reference source (book, website, journal, etc.) in the document.

Steps to Insert a Citation:

1. Place the cursor where the citation is needed.
2. Click on the References Tab.
3. Click on Insert Citation.
4. Click Add New Source.
5. Select the source type (Book, Website, Journal, etc.).
6. Enter the required details.
7. Click OK.

Example (Citation)

Text in document:

Computer science is a fast-growing field (Smith, 2020).

3.2 Manage Sources

- Used to view, edit, copy, or delete sources.
 1. Click on Manage Sources.
 2. Modify or manage the list of sources.
 3. Click OK.

3.3 Style

- Used to select the citation format.

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Common Styles:

- APA
 - MLA
 - Chicago
1. Click on Style.
 2. Choose the required citation style.

3.4 Bibliography

- Used to insert a list of all sources at the end of the document.

Steps to Insert Bibliography:

1. Place the cursor at the end of the document.
2. Click on Bibliography.
3. Select a built-in bibliography style.

Example (Bibliography)

Smith, J. (2020). *Introduction to Computers*.
New York: ABC Publishers.

4. Captions Group

The Captions Group is available in the References Tab.

It is used to add labels and numbers to tables, figures, pictures, and charts.

The Captions Group contains:

1. Insert Caption
2. Insert Table of Figures
3. Cross-reference

4.1 Insert Caption

- Insert Caption is used to add a label with a number to an object.

Steps to Insert a Caption:

1. Select the picture, table, or chart.
2. Click on the References Tab.
3. In the Captions Group, click on Insert Caption.
4. Choose a label (Figure, Table, or Equation).
5. Click OK.

Example (Caption)

Below a picture:

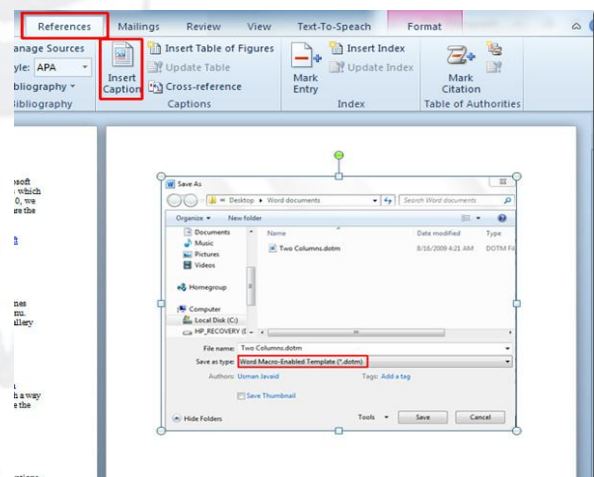
Figure 1: Parts of Computer

Below a table:

Table 1: Student Marks List

4.2 Insert Table of Figures

- Used to create a list of all captions in the document.
1. Place the cursor where you want the table.



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2. Click on Insert Table of Figures.
3. Click OK.

4.3 Cross-reference

- Used to refer to a captioned object in the document.

Steps:

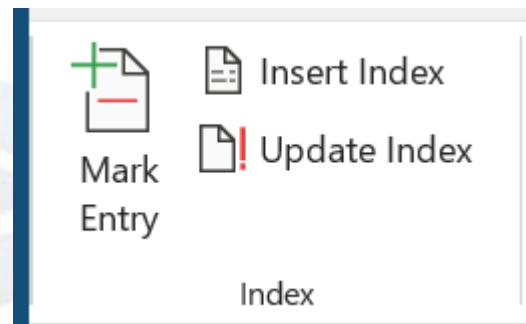
1. Place the cursor where reference is needed.
2. Click on Cross-reference.
3. Select Figure / Table / Equation.
4. Click Insert.

Example (Cross-reference)

Refer Figure 1 for Parts of Computer.

5. Index Group

The Index Group is available in the References Tab. It is used to mark important words or topics and create an alphabetical index at the end of a document.



Options in Index Group

The Index Group contains:

1. Mark Entry
2. Insert Index

5.1 Mark Entry

- Mark Entry is used to mark a word or phrase that should appear in the index.

Steps to Mark an Entry:

1. Select the word or phrase in the document.
2. Click on the References Tab.
3. In the Index Group, click on Mark Entry.
4. Click Mark or Mark All.

Example (Mark Entry)

Text in document:

Computer is an electronic device.

- Select the word Computer
- Click Mark Entry

➡ The word Computer is marked for the index.

5.2 Insert Index

- Insert Index is used to create an index list using the marked entries.

Steps to Insert Index:

1. Place the cursor at the end of the document.
2. Click on the References Tab.
3. Click on Insert Index.
4. Choose the index format.
5. Click OK.

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Example (Index Output)

Computer 2

Hardware 5

Software 8

6. Table of Authorities Group

The **Table of Authorities Group** is available in the **References Tab**.

It is mainly used in **legal documents** to list **cases, statutes, and other legal references** along with page numbers.

1. Mark Citation

2. Insert Table of Authorities

6.1 Mark Citation

- **Mark Citation** is used to mark legal references such as **case names or laws**.

Steps to Mark a Citation:

1. Select the legal text (case name or law).
2. Click on the **References Tab**.
3. In the **Table of Authorities Group**, click **Mark Citation**.
4. Choose the category (Case, Statute, etc.).
5. Click **Mark** or **Mark All**.

Example (Mark Citation)

Text in document:

Kesavananda Bharati vs State of Kerala

➡ Marked as a **Case** citation.

6.2 Insert Table of Authorities

- **Insert Table of Authorities** creates a list of all marked citations.

Steps to Insert Table of Authorities:

1. Place the cursor where the table is required (usually end of document).
2. Click on the **References Tab**.
3. Click **Insert Table of Authorities**.
4. Choose the required format.
5. Click **OK**.

Example (Table of Authorities Output)

Cases

Kesavananda Bharati vs State of Kerala 12

Maneka Gandhi vs Union of India 18

Uses of Table of Authorities Group

- Used in **legal and law-related documents**
- Lists cases and laws **alphabetically**
- Shows **page numbers** automatically
- Saves **time** in legal documentation

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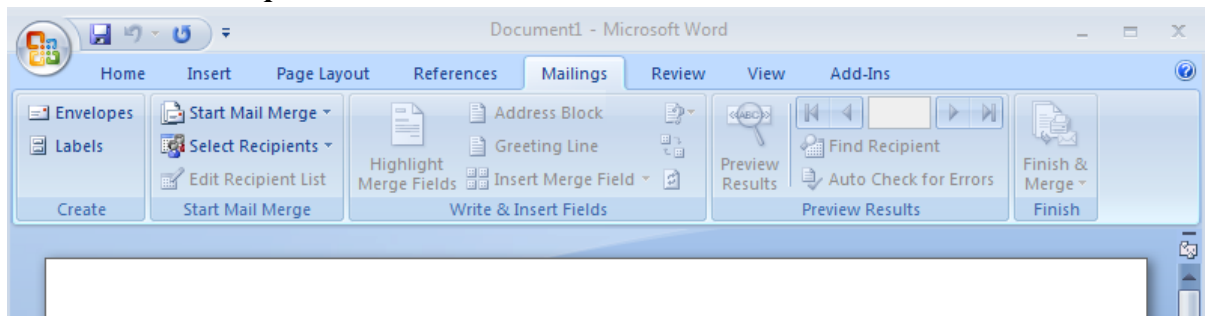
MAILINGS MENU – MS Word

The **Mailings menu** is used to **create letters, envelopes, labels, and perform Mail Merge**. It is mainly used to send the same document to many people with different names and addresses.

Options in Mailings Menu

The Mailings Menu contains the following groups:

1. **Create Group**
2. **Start Mail Merge Group**
3. **Write & Insert Fields Group**
4. **Preview Results Group**
5. **Finish Group**



1. Create Group

The **Create Group** is available in the **Mailings Tab**.

It is used to **create Envelopes and Labels** for mailing purposes.

Options in Create Group:

1. **Envelopes**
2. **Labels**

1.1 Envelopes

Envelopes are used to print **recipient and sender addresses** on envelopes.

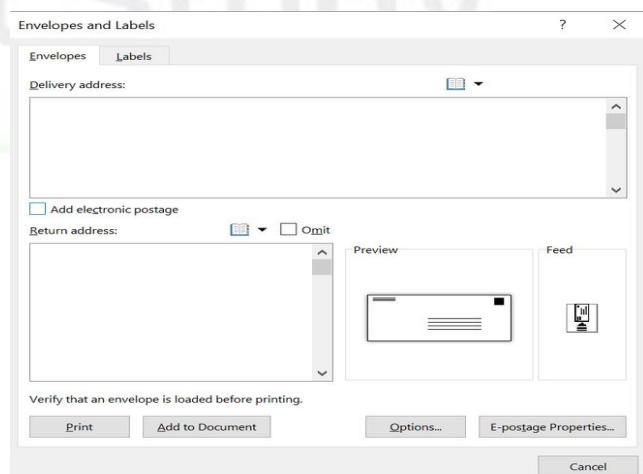
Steps to Create an Envelope:

1. **Open Microsoft Word.**
2. **Click on the Mailings Tab.**
3. **In the Create Group, click on Envelopes.**
4. **The Envelopes and Labels dialog box will appear.**
5. **Enter the Delivery Address and Return Address.**
6. **Click on Print or Add to Document.**

Example (Envelope):

Printing an envelope with:

- **To: Student Name, College Address**



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- From: School Office

1.2 Labels

Labels are used to print **multiple addresses** on a single page.

Steps to Create Labels:

1. Click on the **Mailings Tab**.
2. In the **Create Group**, click on **Labels**.
3. Enter the address in the Address box.
4. Choose label size and type.
5. Click **Print** or **New Document**.

Example (Labels):

Creating address labels for:

- Students
- Employees
- Customers

2. Start Mail Merge Group

The **Start Mail Merge Group** is available in the **Mailings Tab**. It is used to **begin the mail merge process** and connect a document with a **list of recipients**.

Options in Start Mail Merge Group

The Start Mail Merge Group contains:

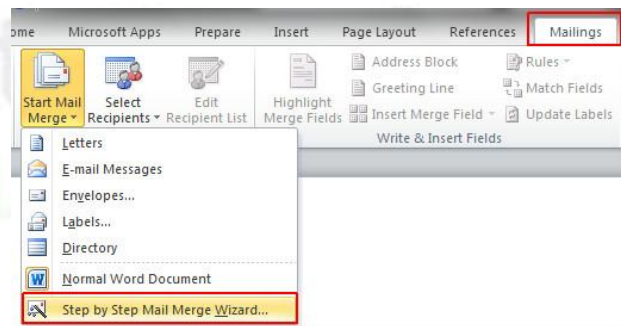
1. **Start Mail Merge**
2. **Select Recipients**
3. **Edit Recipient List**

2.1 Start Mail Merge

- Used to choose the **type of document** for mail merge.

Steps:

1. Click on the **Mailings Tab**.
2. Click on **Start Mail Merge**.
3. Select the required option:
 - Letters
 - E-mail Messages
 - Envelopes...
 - Labels
 - Directory
 - Normal Word Document
 - Step by Step Mail Merge Wizard...



2.2 Select Recipients

- Used to select the **address list** for mail merge.

Steps:

1. Click on **Select Recipients**.
2. Choose one option:
 - Type a New List
 - Use an Existing List
 - Choose from Outlook Contacts

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2.3 Edit Recipient List

- Used to **edit, sort, or filter** recipient details.

Steps:

1. Click on **Edit Recipient List**.
2. Select or deselect recipients.
3. Click **OK**.

Example

Sending a **circular letter** to students:

- Same letter content
- Different **names and addresses**

➔ Start Mail Merge → Letters

➔ Select Recipients → Student list

4. Write & Insert Fields Group

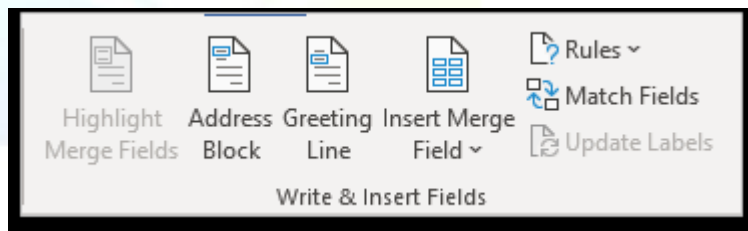
The **Write & Insert Fields Group** is available in the **Mailings Tab**.

It is used to **insert variable information** such as names, addresses, and greetings into a mail merge document.

Options in Write & Insert Fields Group

The Write & Insert Fields Group contains:

1. **Highlight Merge Fields**
2. **Address Block**
3. **Greeting Line**
4. **Insert Merge Field**
5. **Rules**
6. **Match Fields**
7. **Update Labels**



3.1 Address Block

Inserts a complete **address** (name, street, city, pin code).

Steps:

1. Place the cursor where the address is required.
2. Click on the **Mailings Tab**.
3. Click **Address Block**.
4. Choose the format and click **OK**.

Example:

Ramesh Kumar

Hyderabad

Telangana – 500001

3.2 Greeting Line

Inserts a **salutation** in the document.

Steps:

1. Place the cursor at the greeting position.
2. Click on **Greeting Line**.

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3. Select greeting format (Dear Mr./Ms.).
4. Click **OK**.

Example:

Dear Mr. Ramesh,

3.3 Insert Merge Field

Inserts individual fields like **Name, Address, Roll No, etc.**

Steps:

1. Place the cursor where field is needed.
2. Click **Insert Merge Field**.
3. Select the required field.

Example:

Dear «FirstName»,

3.4 Highlight Merge Fields

Highlights all merge fields for easy identification.

3.5 Rules

Used to apply **conditions** (If...Then...Else).

3.6 Match Fields

Matches document fields with data source fields.

3.7 Update Labels

Updates all labels when creating address labels.

Example (Use)

Sending letters to students:

Dear «StudentName»,

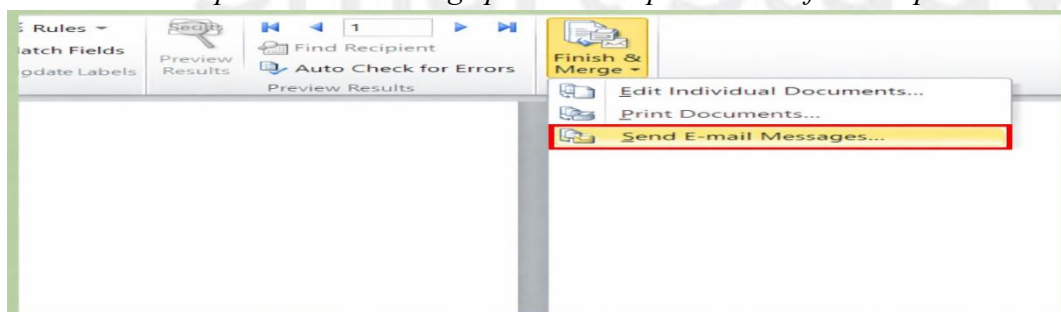
Your roll number is «RollNo».

Each student gets a **personalized letter**.

5. Finish Group

The Finish Group is available in the Mailings Tab.

It is used to complete the mail merge process and produce the final output.



Options in Finish Group

The Finish Group contains:

1. **Finish & Merge**

5.1 Finish & Merge

- Used to finalize the merged document.

Steps to Finish Mail Merge:

1. Click on the Mailings Tab.

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2. Click on Finish & Merge.
3. Choose one option:
 - Edit Individual Documents
 - Print Documents
 - Send E-mail Messages
 -

REVIEW MENU – MS Word

The Review menu is used to check spelling and grammar, add comments, track changes, and protect documents.

It is mainly used while reviewing and editing documents.

Options in Review Menu

The Review Menu contains the following groups:

1. **Proofing Group**
2. **Language Group**
3. **Comments Group**
4. **Tracking Group**
5. **Changes Group**
6. **Compare Group**
7. **Protect Group**

1. Proofing Group

The **Proofing Group** is available in the **Review Tab**.

It is used to check spelling mistakes, grammatical errors, synonyms, and word count in a document.

Options in Proofing Group

The Proofing Group contains:

1. **Spelling & Grammar**
2. **Research**
3. **Thesaurus**
4. **Word Count**

1.1 Spelling & Grammar

Checks the document for spelling and grammar mistakes.

Steps to Use Spelling & Grammar:

1. Click on the **Review Tab**.
2. Click on **Spelling & Grammar**.
3. MS Word highlights errors.
4. Choose **Change, Ignore, or Add to Dictionary**.

Example:

Correcting “teh” to “the”.

1.2 Research

Provides **reference information** such as meanings and explanations.

Steps:

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1. Select a word.
2. Click on **Research**.
3. View related information in the research pane.

Example:

Finding information about the word Computer.

1.3 Thesaurus

Used to find **synonyms** (similar words).

Steps:

1. Select a word.
2. Click on **Thesaurus**.
3. Choose a suitable synonym.

Example:

Replacing “big” with “large”.

1.4 Word Count

Shows the **number of pages, words, characters, paragraphs, and lines**.

Steps:

1. Click on **Word Count**.
2. View the word count dialog box.

Example:

Checking word limit for an exam answer or project.

The **Language Group** is available in the **Review Tab**.

It is used to **translate text** and **set the proofing language** for spelling and grammar.

2. Language Group

Options in Language Group

The Language Group contains:

1. **Translate**
2. **Set Proofing Language**

2.1 Translate

Used to translate **selected text or the entire document** into another language.

Steps to Use Translate:

1. Select the text (or leave blank to translate whole document).
2. Click on the **Review Tab**.
3. Click on **Translate**.
4. Choose the required language.
5. View the translated text.

Example:

Translating English text into Hindi or Telugu.

2.2 Set Proofing Language

Used to set the **language for spelling and grammar checking**.

Steps to Set Proofing Language:

1. Select the text.
2. Click on the **Review Tab**.

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3. Click on **Set Proofing Language**.
4. Choose the required language.
5. Click **OK**.

Example:

Setting proofing language to **English (UK)**.

The **Comments Group** is available in the **Review Tab**.

It is used to **add notes, suggestions, or remarks** to a document **without changing the main text**.

3. Comments Group

Options in Comments Group

The Comments Group contains:

1. **New Comment**
2. **Delete**
3. **Previous**
4. **Next**

3.1 New Comment

Used to **add a new comment** to selected text.

Steps to Insert a Comment:

1. Select the word or sentence.
2. Click on the **Review Tab**.
3. Click on **New Comment**.
4. Type the comment in the margin.

Example:

Comment added by teacher:

“Explain this point in detail.”

3.2 Delete Comment

Used to **remove a comment** from the document.

Steps:

1. Click on the comment.
2. Click on **Delete**.

3.3 Previous and Next

Used to **move between comments** in the document.

- **Previous** – Goes to previous comment
- **Next** – Goes to next comment

4. Tracking Group

The Tracking Group is available in the **Review Tab**.

It is used to record all changes made to a document, such as insertions, deletions, and formatting changes.

Options in Tracking Group

The Tracking Group contains:

1. **Track Changes**
2. **Balloons**

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3. *Display for Review*
4. *Show Markup*

4.1 Track Changes

Track Changes records every edit made to the document.

Steps to Turn On Track Changes:

1. *Click on the Review Tab.*
2. *Click on Track Changes.*
3. *Start editing the document.*
4. *All changes will be highlighted.*

Example:

- *Added text → shown in color*
- *Deleted text → shown with a line through it*

4.2 Balloons

Balloons show changes and comments in the page margin.

Steps:

1. *Click on Balloons.*
2. *Choose:*
 - *Show Revisions in Balloons*
 - *Show All Revisions Inline*

4.3 Display for Review

Controls how tracked changes are displayed.

Options:

- *Final Showing Markup*
- *Final*
- *Original Showing Markup*
- *Original*

Example:

Viewing the document with or without change marks.

4.4 Show Markup

Used to choose which types of changes to display.

Options:

- *Comments*
- *Insertions and Deletions*
- *Formatting*
- *Reviewers*

5. Changes Group

The Changes Group is available in the Review Tab.

It is used to accept or reject the changes made in a document when Track Changes is turned on.

 *Options in Changes Group*

The Changes Group contains:

1. *Accept*

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2. *Reject*
3. *Previous*
4. *Next*

5.1 Accept

Accept is used to keep the tracked change in the document.

Steps to Accept a Change:

1. *Click on the Review Tab.*
2. *Select the tracked change.*
3. *Click on Accept.*
4. *The change becomes permanent.*

Example:

Accepting a corrected spelling suggested by a teacher.

5.2 Reject

Reject is used to remove the tracked change.

Steps to Reject a Change:

1. *Select the tracked change.*
2. *Click on Reject.*
3. *The document returns to its original text.*

Example:

Rejecting an unnecessary sentence.

5.3 Previous and Next

Used to move between tracked changes.

- *Previous – Goes to the previous change*
- *Next – Goes to the next change*

6. Compare Group

The Compare Group is available in the Review Tab.

It is used to compare two versions of a document and identify the differences between them.

Options in Compare Group

The Compare Group contains:

1. *Compare*
2. *Combine*

6.1 Compare

Compare is used to compare an original document with a revised document.

Steps to Compare Documents:

1. *Click on the Review Tab.*
2. *Click on Compare.*
3. *Select Compare...*
4. *Choose the Original document.*
5. *Choose the Revised document.*
6. *Click OK.*

➡ *MS Word shows all differences as tracked changes.*

Example (Compare)

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- Original file: Project_V1.docx
- Revised file: Project_V2.docx

➔ Word highlights:

- Added text
- Deleted text
- Formatting changes

6.2 Combine

Combine is used to merge changes from multiple reviewers into one document.

Steps to Combine Documents:

1. Click on Review Tab.
2. Click on Compare.
3. Select Combine...
4. Choose the documents.
5. Click OK.

7. Protect Group

The **Protect Group** is available in the **Review Tab**.

It is used to **protect a document from unwanted changes** and to **restrict editing**.

Options in Protect Group

The Protect Group contains:

1. **Protect Document**

7.1 Protect Document

Protect Document is used to **restrict editing, formatting, or access** to a document.

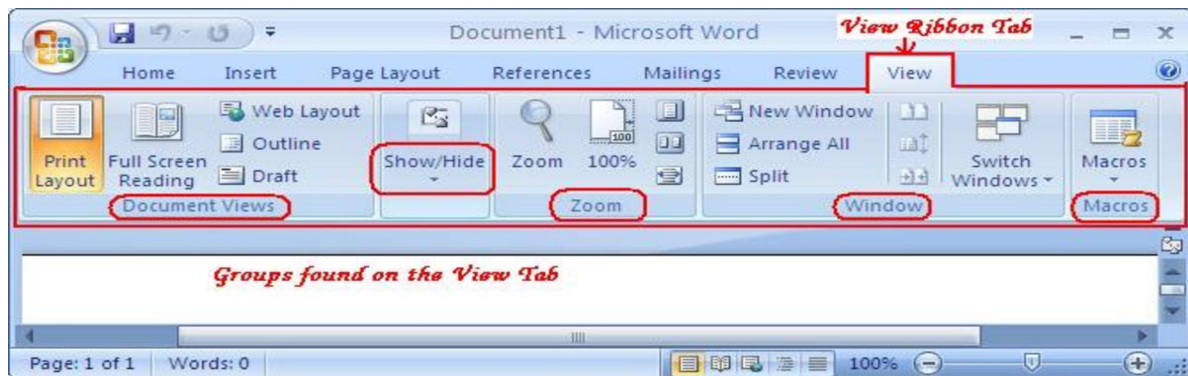
Steps to Protect a Document:

1. Open the document in **Microsoft Word**.
2. Click on the **Review Tab**.
3. In the **Protect Group**, click on **Protect Document**.
4. Choose **Restrict Editing**.
5. Select the required restriction (for example, read-only).
6. Set a **password** (optional).
7. Click **OK**.

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VIEW MENU – MS Word 2010



The **View Menu** is used to control how a document is displayed on the screen.

It helps users to **read, edit, zoom, navigate, and manage document windows.**

The View Menu does not change the document content, only its appearance on the screen.

Options in View Menu

The **View Menu** contains the following groups:

1. **Document Views Group**
2. **Show Group**
3. **Zoom Group**
4. **Window Group**
5. **Macros Group**

1. Document Views Group

The **Document Views Group** is the first main group in the View Menu.

It is used to **change the way a document is viewed.**

✎ Options in Document Views Group

The Document Views Group contains:

1. **Print Layout**
2. **Full Screen Reading**
3. **Web Layout**
4. **Outline**
5. **Draft**

1.1 Print Layout

- Displays the document exactly as it will appear when printed.
- Shows margins, headers, footers, columns, and page breaks.

Use:

Used for final editing and printing.

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1.2 Full Screen Reading

- *Displays the document in full-screen reading mode.*
- *Editing tools are hidden for better readability..*

1.3 Web Layout

- *Displays the document as it would appear on a web page.*
- *Pages appear continuous without page breaks.*

1.4 Outline

- *Displays document structure using headings and sub-headings.*
- *Allows easy rearrangement of sections.*

1.5 Draft

- *Displays only text without headers, footers, or graphics.*
- *Faster view for typing and editing.*

2. Show Group

*The **Show Group** controls which helpers are visible on the screen.*

Options in Show Group

1. **Ruler**
2. **Gridlines**
3. **Navigation Pane**

2.1 Ruler

- *Shows horizontal and vertical rulers..*

2.2 Gridlines

- *Displays gridlines on the page.*
- *Gridlines are not printed.*

2.3 Navigation Pane

- *Displays headings, pages, and search results.*

3. Zoom Group

*The **Zoom Group** is used to **increase or decrease document size on the screen.***

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 Options in Zoom Group

1. **Zoom**
2. **100%**
3. **One Page**
4. **Two Pages**
5. **Page Width**

4. Window Group

The **Window Group** is used to manage **multiple document windows**.

 Options in Window Group

1. **New Window**
2. **Arrange All**
3. **Split**
4. **View Side by Side**
5. **Switch Windows**

5. Macros Group

The **Macros Group** is used to **record, view, and run macros**.

Option in Macros Group

1. **Macros**

Smart Study
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UNIT – III: Worksheet / Spreadsheet

Microsoft Excel

Microsoft Excel is a spreadsheet application used to enter, arrange, calculate, and analyse data in a structured table format. It helps users work efficiently with numbers as well as text by providing tools for automatic calculation, data organisation, and visual presentation.

A spreadsheet stores information in the form of a grid made up of rows and columns.

- *Rows are numbered as 1, 2, 3, ...*
- *Columns are named using letters such as A, B, C, ...*

*The point where a row and a column meet is called a **cell**.*

Each cell has a unique address formed by combining the column letter and row number.

For example:

- *A1 means column A and row 1*
- *C5 means column C and row 5*

Data entered in a cell can be:

- *Text (such as names or labels)*
- *Numbers (such as marks or amounts)*
- *Formulas (instructions to perform calculations)*

Excel is mainly used for working with numerical data because it can perform calculations automatically. Users can add, subtract, multiply, divide, find averages, totals, percentages, and many other results without doing manual calculations.

In addition to calculations, Excel provides features to:

- *Sort and filter information*
- *Create charts and graphs*
- *Format data neatly*
- *Analyse large datasets*
- *Automate repeated tasks*

Although spreadsheets were first designed for accounting work, today they are used in many areas such as education, business management, research, budgeting, record keeping, and data analysis.

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Because data is arranged in a clear table structure and calculations are instant, Excel makes handling large amounts of information fast, accurate, and organised.

1.Applications and Uses of a Worksheet

A worksheet is a working page in a spreadsheet where information is entered in the form of rows and columns. It is designed to store data in an organised table and to perform calculations on that data quickly and accurately.

Worksheets are very useful when dealing with numbers, lists, and records because they allow the user to change data and instantly see the updated results.

1. Performing Calculations

A worksheet can carry out calculations like totals, averages, and percentages automatically. When a value is changed, the result updates on its own. This avoids manual calculation and reduces mistakes. It is useful for marks, bills, and expense records.

2. Data Organisation

Data is stored in rows and columns to form a neat table. This structure makes large information easy to read and manage. Users can quickly find and update any entry. It is helpful for maintaining lists of people or items.

3. Financial Management

Worksheets are used to prepare budgets and maintain accounts. They can track income, expenses, and balances accurately. Salary sheets and profit reports can be created easily. This supports better financial planning.

4. Data Analysis

Data can be arranged in order or filtered to show selected records. Users can compare values and find important results. It helps identify highest, lowest, or specific data quickly. This improves decision making.

5. Creating Charts and Graphs

Numbers can be converted into visual charts for clear presentation. Graphs make trends and comparisons easy to understand. They are useful in reports and presentations. Visual data saves time in explanation.

6. Record Keeping

Regular information can be stored and updated whenever needed. Examples include attendance, stock, and mark registers. Data remains organised and easy to modify. Old records can also be preserved safely.

7. Planning and Scheduling

Worksheets help prepare timetables and work plans. Tasks can be arranged by date or time. Changes can be made quickly without rewriting. This supports proper time management.

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8. Statistical Work

Built-in tools can find averages, totals, and other statistical values. These features help in surveys and research. Large data sets can be studied easily. Accurate results are produced in less time.

9. Automation of Tasks

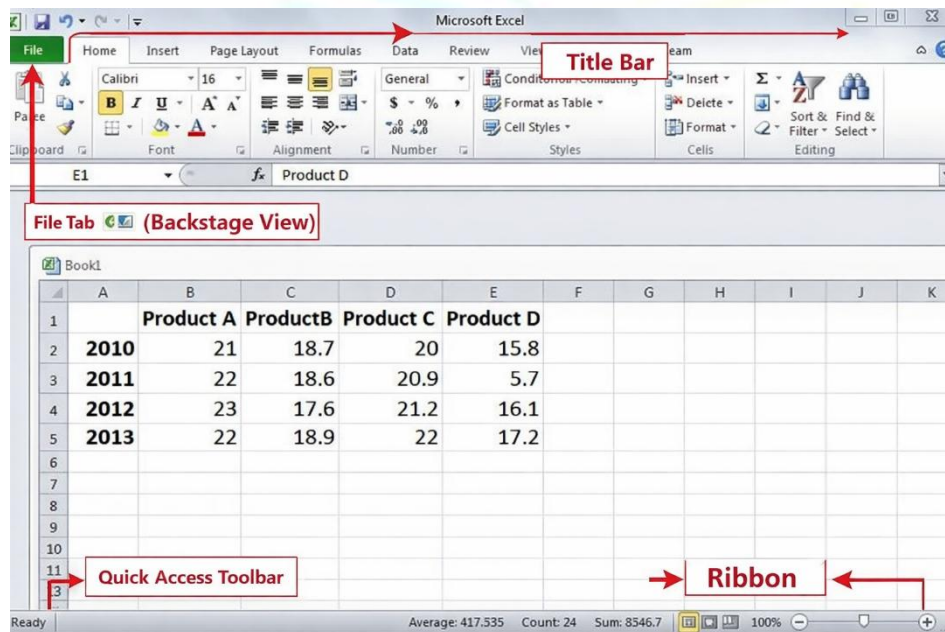
Once a formula is written, it can be copied to many cells. The same calculation is then applied to different data automatically. This saves effort and ensures consistency. It is useful for tax or interest calculation.

10. Data Sharing and Collaboration

A worksheet can be shared with many users at the same time. Different people can view or edit the data together. Updates appear for everyone instantly. This makes teamwork and group projects easier.

2. Main Parts of the Excel Window

Microsoft Excel 2010 provides a user-friendly interface to create and manage worksheets. Some important parts at the top of the Excel window are the **File tab**, **Quick Access Toolbar**, **Title Bar**, and **Ribbon**. Each part has a special purpose.



1. File Tab (Backstage View)

In Excel 2010, the old Microsoft Office Button is replaced by the **File tab**. When you click the File tab, a full-screen menu called **Backstage View** opens. It is used for file management tasks such as:

- New workbook
- Open existing file
- Save and Save As

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- **Print**
- **Close**
- **Options and settings**

It helps the user manage files and program settings in one place.

2. Quick Access Toolbar

This is a small toolbar next to the File tab.

*It contains commonly used commands like **Save, Undo, and Redo.***

You can customize it by adding more commands.

It saves time because these buttons are always visible.

3. Title Bar

The Title Bar is at the very top of the Excel window.

*It shows the **name of the current workbook**, for example:*

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After saving, it shows the new file name.

It also contains the window control buttons (Minimize, Maximize, Close).

4. Ribbon

The Ribbon is located below the Title Bar and Quick Access Toolbar.

It is the main command area of Excel.

It is divided into tabs such as:

- *Home*
- *Insert*
- *Page Layout*
- *Formulas*
- *Data*
- *Review*
- *View*

Each tab has groups of related tools (for example Clipboard, Font, Alignment in the Home tab).

The Ribbon makes it easy to find and use Excel features without memorizing commands.

File Menu in a Spreadsheet

The File menu is used to manage workbook files in a spreadsheet application.

It contains commands for creating, opening, saving, printing, and closing files.

When the File option is selected, the main working area is replaced by a special screen that shows all file management tools together.

This menu is mainly used for handling the workbook itself rather than editing the data inside the worksheet.

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New

This command is used to begin completely new work in Excel. It creates a fresh, empty workbook with blank worksheets that are ready for data entry and calculations. It is helpful when starting a new task without using any previous data.

Example: You click **New** to create a workbook for preparing this month's household budget.

Open

This command is used to bring an already saved workbook back into Excel so that it can be viewed or edited again. It allows you to continue unfinished work stored on the computer or other devices.

Example: You click **Open** to continue editing the file StudentMarks.xlsx created last week.

Save

This command stores the latest changes made in the current workbook. It protects your work from being lost due to power failure or accidental closing of the program. If the file was saved earlier, it simply updates the same file.

Example: After correcting some marks, you click **Save** to keep the updated data.

Save As

This command saves the workbook as a new file with a different name, format, or storage location. The original file remains unchanged, which is useful for keeping multiple versions.

Example: You use **Save As** to save Budget.xlsx as Budget_2026.xlsx.

Print

This command prepares the worksheet for printing and shows how it will look on paper before sending it to the printer. You can adjust page settings such as margins and orientation.

Example: You click **Print** to get a hard copy of the attendance sheet for records.

Close

This command closes only the current workbook while keeping the Excel program open. If any changes are not saved, Excel asks whether to save them first.

Example: You click **Close** after finishing the sales report to open another workbook.

Recent

This command displays a list of recently opened files so they can be accessed quickly without searching through folders. It is useful when working repeatedly on the same documents.

Example: You reopen yesterday's salary sheet directly from the **Recent** list.

Info

This command shows important details about the workbook and provides protection options. It can be used to restrict editing or check the file for issues.

Example: You use **Info** to protect the worksheet so others cannot modify formulas.

Options

This command opens the Excel settings window where default behaviours can be changed.

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Users can customise appearance, saving rules, and editing preferences.

Example: You open **Options** to change the default font size for all new worksheets.

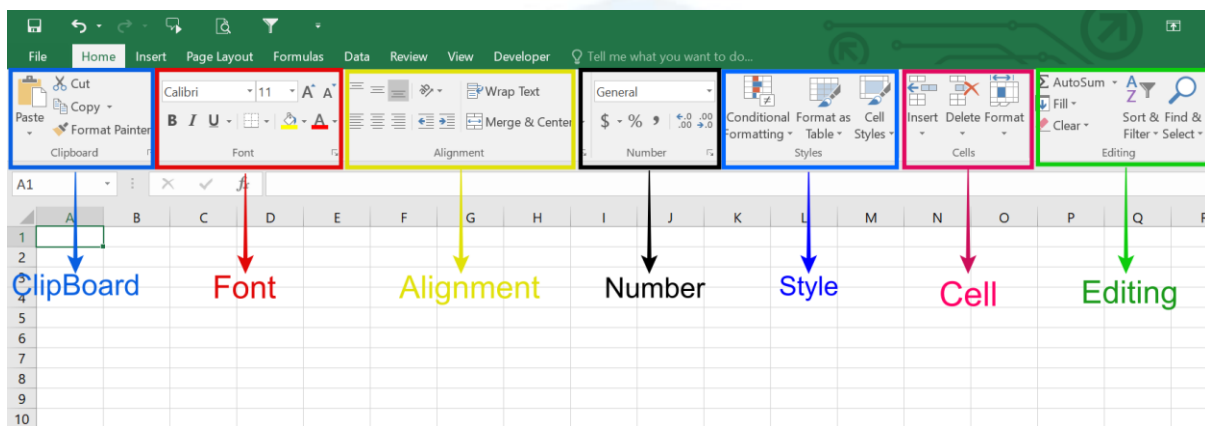
Exit

This command completely closes the Excel application along with all open workbooks. Excel will ask to save any unsaved work before closing.

Example: After completing all spreadsheet tasks, you click **Exit** to close Excel.

Home Menu in Excel

The Home menu is the default tab that appears when Excel is opened. It contains the most frequently used commands for editing and formatting data. Using this menu, users can copy and paste data, change fonts, align text, format numbers, and insert or delete cells.



Clipboard Group

This group is used to move or copy data from one place to another. It includes commands like Cut, Copy, and Paste, and also Format Painter to copy formatting.

Example: You copy marks from one column and paste them into another sheet using Copy and Paste.

Steps to use Copy and Paste :

1. Click and drag the mouse to select the cells that contain the data.
2. Go to the **Home** tab on the Ribbon.
3. In the **Clipboard** group, click the **Copy** button.
4. Move the cursor to the cell where you want to paste the data.
5. Click that destination cell once to select it.
6. Again go to the **Clipboard** group.
7. Click the **Paste** button.
8. The copied data will appear in the new location.

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Font Group

This group controls the appearance of text inside cells. You can change font style, size, colour, and apply bold, italic, or underline.

Example: You make the heading “Student Marks” bold and blue to make it stand out.

Steps to change font style and colour (detailed):

1. Select the cell or cells that contain the text.
2. Go to the **Home** tab.
3. In the **Font** group, click the **Font Name** drop-down list.
4. Choose the required font (for example Arial).
5. Click the **Font Size** drop-down list and choose a size.
6. Click the **Bold (B)** button if you want bold text.
7. Click the **Font Colour** button.
8. Select the desired colour from the palette

Alignment Group

This group is used to change the position of text in a cell. It can align text left, right, or centre and also adjust vertical position and text rotation.

Example: You centre the column headings so they look neat and balanced.

Steps to centre align text (detailed):

1. Select the cells that contain the headings.
2. Go to the **Home** tab.
3. In the **Alignment** group, find the alignment buttons.
4. Click the **Center** button.
5. The selected text will move to the middle of the cell.

Number Group

This group formats how numbers are displayed, such as currency, percentage, or date. It does not change the value, only the display style.

Example: You format salary values as Currency to show the rupee symbol.

Steps to apply currency format (detailed):

1. Select the cells that contain the salary numbers.
2. Go to the **Home** tab.

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3. In the **Number** group, click the **Number Format** drop-down list.
4. Choose **Currency** from the list.
5. The numbers will now display with a currency symbol.

Styles Group

This group provides ready-made formatting options for cells. It includes conditional formatting, table styles, and cell styles.

Example: You apply a coloured style to highlight marks greater than 90.

Steps to apply a cell style (detailed):

1. Select the cells you want to format.
2. Go to the **Home** tab.
3. In the **Styles** group, click **Cell Styles**.
4. A list of styles will appear.
5. Click on the required style.
6. The selected cells will change to the chosen format.

Cells Group

This group is used to insert, delete, or format rows, columns, and cells. It helps manage the worksheet structure.

Example: You insert a new row to add details of another student.

Steps to insert a new row (detailed):

1. Click the row number where you want the new row.
2. Go to the **Home** tab.
3. In the **Cells** group, click the **Insert** button.
4. Choose **Insert Sheet Rows**.
5. A new blank row will appear above the selected row.

Editing Group

This group contains tools for finding, replacing, and sorting data. It also includes AutoSum for quick calculations.

Example: You use AutoSum to quickly calculate the total marks of all students.

Steps to use AutoSum (detailed):

1. Click the empty cell just below the column of numbers.

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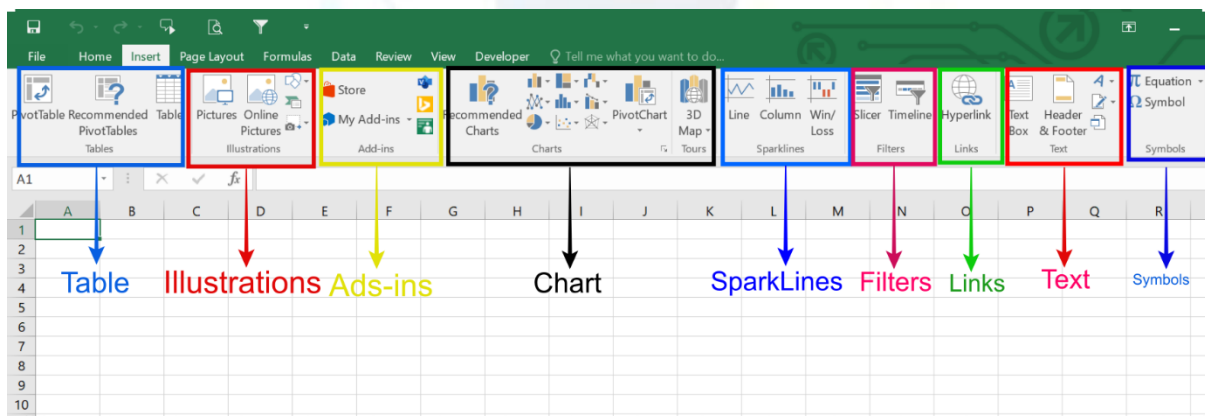
2. Go to the **Home** tab.
3. In the **Editing** group, click the **AutoSum** (Σ) button.
4. Excel will automatically select the range of numbers above.
5. Check that the selected range is correct.
6. Press **Enter**.
7. The total will be displayed in the selected cell.

Insert Menu in Excel

The Insert tab is used to add new objects and extra features into a worksheet.

It helps convert normal data into visual and interactive form such as tables, charts, pictures, and links.

By using this tab, the worksheet becomes more organised, clear, and attractive.



The **Insert Menu (Insert Tab)** in MS Excel is used to insert various objects into a worksheet. The main options of the Insert menu are organized into different **groups** as follows:

1. **Tables**
2. **Illustrations**
3. **Charts**
4. **Sparklines**
5. **Filters**
6. **Links**
7. **Text**
8. **Symbols**

Tables Group

The Tables group in the Insert tab is used to organise and analyse data in a structured and powerful way. It provides two main tools: **Table** for organising normal data and **PivotTable**

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for creating summary reports. These features help manage large data easily without writing complex formulas.

- **Table** – Converts a selected data range into a formatted Excel table.
- **PivotTable** – Summarizes and analyzes large amounts of data.

Table

The Table option converts a normal data range into a formatted Excel table. After conversion, each column gets a heading with filter and sort buttons. When new data is typed directly below the table, it automatically becomes part of the table. This makes sorting, filtering, and formatting very easy and accurate.

For example, if a worksheet contains student names and marks, converting it into a table allows the user to quickly filter only the students who scored above 80 or sort the marks from highest to lowest.

steps to create a Table

1. Open the worksheet that contains your data.
2. Click and drag the mouse to select the complete data range, including column headings.
3. Go to the top Ribbon and click the **Insert** tab.
4. In the **Tables** group, locate and click the **Table** button.
5. A dialog box named **Create Table** will appear.
6. Check that the shown cell range matches your selected data.
7. If your first row contains headings, tick the option **My table has headers**.
8. Click the **OK** button.
9. Excel converts the selected data into a coloured table.
10. Notice small drop-down arrows appear in each column heading.
11. Click any drop-down arrow to sort or filter the data.

To sort data inside the table

1. Click the drop-down arrow in the required column heading.
2. Choose **Sort Smallest to Largest** or **Sort Largest to Smallest**.
3. The rows will rearrange based on that column.

To filter data inside the table

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1. Click the drop-down arrow in the column heading.
2. Remove the tick marks from the values you do not want to see.
3. Click **OK**.
4. Only the selected records will be displayed.

Example: City-wise Monthly Temperature Table

	A	B	C	D	E	F	G
1	City	Jan	Feb	Mar	Apr	May	Jun
2	Berstow	80	84	84	97	95	98
3	California City	78	86	84	96	98	102
4	Cinco	83	86	86	97	95	103
5	Hesperia	78	85	87	98	97	102
6	Lancaster	78	85	86	99	95	101
7	Mojave	82	85	86	98	96	99
8	Palmdale	81	84	85	97	95	101
9	Ridgecrest	81	87	87	97	96	98
10	Rosamond	82	86	88	99	97	101
11	Santa Clarita	79	85	87	95	96	103

PivotTable

The PivotTable option creates a summary report from large data. It automatically calculates totals, counts, or averages and displays them in an organised format. It is mainly used for analysis and comparison without changing the original data.

For example, from a long sales list containing product names and amounts, a PivotTable can quickly show the total sales for each product.

steps to create a PivotTable

1. Open the worksheet that contains the data.
2. Click any one cell inside the data list (do not select the whole range).
3. Click the **Insert** tab on the Ribbon.
4. In the **Tables** group, click **PivotTable**.
5. A dialog box named **Create PivotTable** will open.
6. Ensure the correct data range is shown in the Table/Range box.
7. Under “Choose where you want the PivotTable report to be placed”, select **New Worksheet**.
8. Click the **OK** button.
9. A new blank sheet will open showing an empty PivotTable layout.
10. On the right side, a **PivotTable Field List** panel will appear.
11. Drag the required field name (for example **Product Name**) into the **Rows** area.

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12. Drag another field (for example **Sales Amount**) into the **Values** area.

13. Excel automatically displays the total sales for each product.

PivotTable – Simple Example (Student Result)

Source Data: Student Examination Result Table

Sr.No	Name	Maths	English	Biology	Computer	Total	Obtained	Percentage (%)
1	Rahul	85	78	82	90	400	335	83.75
2	Sneha	92	88	79	86	400	345	86.25
3	Arjun	70	75	68	72	400	285	71.25
4	Kavya	88	90	84	91	400	353	88.25
5	Rohit	76	69	73	78	400	296	74.00
6	Meena	81	85	80	83	400	329	82.25

PivotTable Result (Student-wise Total Marks):

Name	Sum of Obtained
Rahul	335
Sneha	345
Arjun	285
Kavya	353
Rohit	296
Meena	329

Insert Tab – Illustrations Group

The Illustrations group in the Insert tab is used to add visual objects to a worksheet. These objects include pictures, shapes, SmartArt graphics, and screenshots. They help make the worksheet more attractive and easier to understand by using images and diagrams along with data.

- **Pictures** – Inserts pictures from the computer.
- **Online Pictures** – Inserts pictures from online sources.
- **Shapes** – Inserts lines, arrows, rectangles, circles, etc.
- **SmartArt** – Inserts graphical representations of information.
- **Screenshot** – Inserts screenshots of open windows.

Steps to Use Illustrations Group

1. Open **MS Excel 2010** and select the worksheet.

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2. Click on the **Insert** tab on the Ribbon.
3. Go to the **Illustrations Group**.
4. Choose the required option:
 - **Picture**
 - **Shapes**
 - **SmartArt**
 - **Screenshot**
5. Select the required file, shape, diagram, or window.
6. Click **Insert** or draw/select as needed.
7. The selected illustration appears on the worksheet.
8. Move the illustration by dragging it.
9. Resize the illustration using corner handles.
10. Format the illustration if required using **Format tools**.

Example 1: Student Marks Report

- A **Picture** (school logo) is inserted at the **top of the worksheet** to represent the institution.
- A **Shape (Arrow)** is used to **point to the highest marks**, highlighting important data.
- **SmartArt** is used to show the **evaluation process** clearly as **Test → Assignment → Result**.
- A **Screenshot** of a **calculator window** is inserted to show how **total marks are calculated**.

Charts Group

The Charts group in the Insert tab is used to represent numerical data in graphical form. Charts make it easier to compare values, understand patterns, and show increases or decreases in data. Instead of reading many numbers in cells, a chart presents the same information visually.

Main Chart Types

- **Column Chart** – Compares values using vertical bars.
- **Bar Chart** – Compares values using horizontal bars.
- **Line Chart** – Shows trends or changes over time.
- **Pie Chart** – Shows parts of a whole as percentages.
- **Area Chart** – Displays magnitude of change over time.
- **Scatter (X, Y) Chart** – Shows relationship between two variables.
- **Other Charts** – Stock, Radar, Doughnut, etc.

Steps to Insert Any Type of Chart in MS Excel 2010 (Exam Style)

1. Enter the required data in the worksheet with proper **headings**.

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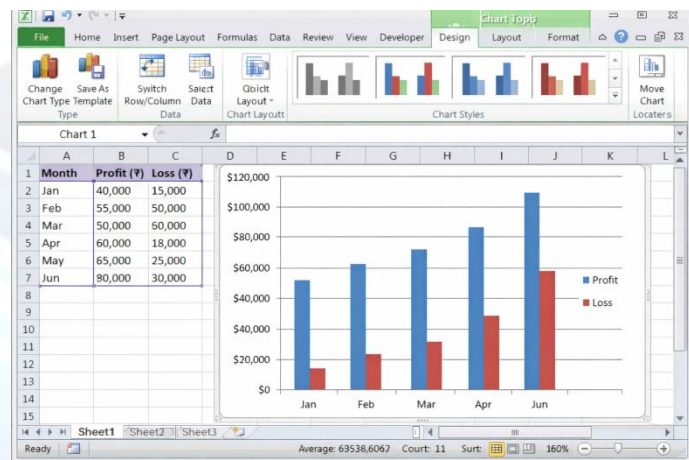
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2. Select the **entire data range** that you want to represent in the chart.
3. Click on the **Insert** tab on the Ribbon.
4. Go to the **Charts Group**.
5. Select the required **chart type** (Column, Bar, Line, Pie, Area, etc.).
6. Choose a suitable **chart subtype** from the list.
7. Excel automatically inserts the chart into the worksheet.
8. Use **Chart Tools** → **Design, Layout, and Format** tabs to modify chart style, title, axis labels, and colors.
9. Move or resize the chart if required.

Example

Monthly Profit and Loss Data

Month	Profit (₹)	Loss (₹)
January	40,000	15,000
February	55,000	20,000
March	50,000	18,000
April	60,000	25,000
May	65,000	30,000
June	80,000	35,000



Steps to Insert a Chart

1. Enter the data in the worksheet (for example, Month, Profit, and Loss).
2. Select the **entire data range** including headings.
3. Click on the **Insert** tab on the Ribbon.
4. In the **Charts Group**, choose the required chart type (e.g., **Column Chart**).
5. Select a chart subtype such as **Clustered Column**.
6. Excel automatically inserts the chart into the worksheet.
7. Use **Chart Tools** → **Design, Layout, and Format** tabs to modify chart style, title, and labels.

4. Sparklines Group

The **Sparklines** group in MS Excel is used to display **small charts inside a single cell** to show data trends quickly and clearly. Sparklines are useful for compact data analysis without creating full-sized charts. The Sparklines group contains **three types**: **Line**, **Column**, and **Win/Loss** sparklines.

- **Line Sparkline** shows the **trend of data** such as increase or decrease using a small line.
- **Column Sparkline** shows **comparison of values** using vertical bars.

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- **Win/Loss Sparkline** shows only **positive or negative performance** (such as profit or loss), ignoring the exact values.

Steps to Insert Sparklines in MS Excel (Line / Column / Win-Loss)

Note: The steps are the same for all three types of Sparklines.

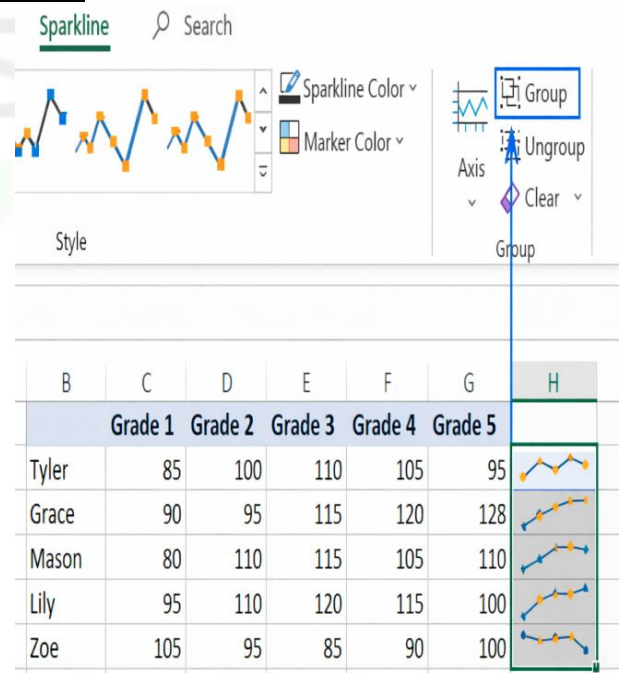
1. Enter the data in the worksheet (for example, monthly sales data).
2. Select the **cell** where you want to insert the sparkline.
3. Click on the **Insert** tab on the Ribbon.
4. In the **Sparklines** group, click on **Line**, **Column**, or **Win/Loss**.
5. The **Create Sparklines** dialog box appears.
6. Select the **Data Range** (cells containing the values).
7. Select the **Location Range** (cell where the sparkline should appear).
8. Click **OK**.
9. The sparkline appears inside the selected cell.

Example: Steps to Insert Spark lines -Student Grades Table

Student Name	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Tyler	85	100	110	105	95
Grace	90	95	115	120	128
Mason	80	110	115	105	110
Lily	95	110	120	115	100
Zoe	105	95	85	90	100

1. Enter the data in the worksheet (for example, grades or sales data).
2. Select the cell(s) where you want to display the sparklines.
3. Click on the **Insert** tab on the Ribbon.
4. In the **Sparklines** group, click **Line**.
5. The **Create Sparklines** dialog box appears.
6. Select the **Data Range** (cells containing values).
7. Select the **Location Range** (cells for sparklines).
8. Click **OK**.

5. Filters Group



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The **Filters Group** in **MS Excel 2010** is used to **filter and analyze data easily**, especially when working with **PivotTables**. It provides visual tools that allow users to select and view required data without using complex filter commands.

The **Filters Group** contains the following options:

Slicer:

A **Slicer** is a graphical filtering tool in MS Excel that provides **interactive buttons** to filter data easily. It is mainly used with **PivotTables** to quickly view selected data.

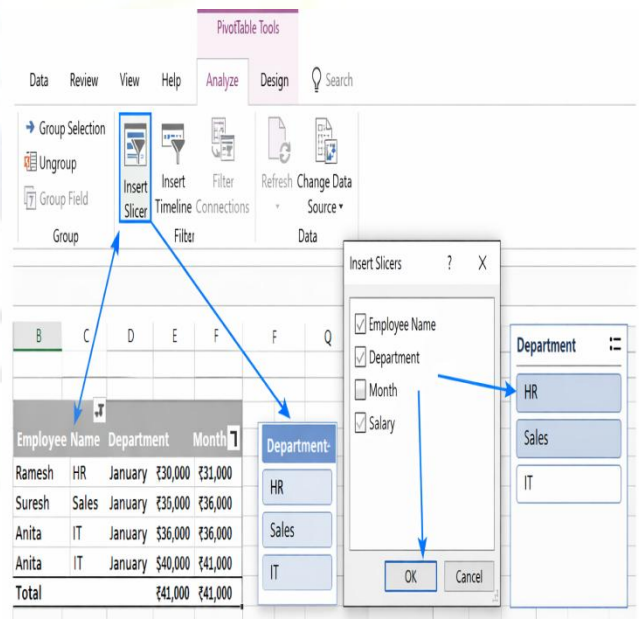
Timeline:

A **Timeline** is a filtering tool used to filter **date-based data** in PivotTables. It allows users to filter data by **year, quarter, month, or day**.

Steps to Use Filters Group (Slicer / Timeline)

Note: The following steps are **common for both Slicer and Timeline**. Timeline is used only when the PivotTable contains **date fields**.

1. Open **MS Excel 2010** and open the worksheet that contains a **PivotTable**.
2. Click anywhere inside the **PivotTable** to activate PivotTable tools.
3. Click on the **Insert** tab on the Ribbon.
4. In the **Filters** group, select **Slicer** or **Timeline**.
5. The **Insert Slicers** or **Insert Timelines** dialog box appears.
6. Select the required field:
 - For **Slicer** – choose fields like Product, Region, or Category.
 - For **Timeline** – choose the Date field.
7. Click the **OK** button.
8. The **Slicer or Timeline control** appears on the worksheet.
9. Click slicer buttons or drag the timeline bar to filter the PivotTable data.
10. The PivotTable updates automatically based on the selected filter.



Description

A PivotTable contains **Employee Name**, **Department**, **Month**, and **Salary** details.

Explanation

A **Slicer** is inserted for the **Department** field. Clicking **HR**, **Sales**, or **IT** shows salary details only for that department. This makes department-wise analysis simple and fast.

Example: Steps to Insert Slicer (Employee Salary Data)

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Emplo yee Name	Departme nt	Month	Salary (₹)
Rames h	HR	January	30,000
Suresh	Sales	January	35,000
Anita	IT	January	40,000
Rames h	HR	February	31,000
Suresh	Sales	February	36,000
Anita	IT	February	41,000

1. Enter **Employee Name, Department, Month, and Salary** data in the worksheet.
2. Create a **PivotTable** from the data.
3. Click anywhere inside the **PivotTable**.
4. Go to **PivotTable Tools → Analyze** tab.
5. Click **Insert Slicer** in the Filters group.
6. In the **Insert Slicers** dialog box, select **Department** (or Employee Name).
7. Click **OK**.
8. A **Slicer** appears on the worksheet.
9. Click **HR, Sales, or IT** to view salary details for that department only.

Timeline:

A **Timeline** is a visual filtering tool in MS Excel used to filter **date-based data** in PivotTables. It allows users to select a specific **year, quarter, month, or day** to view data for that time period easily.

6. Links Group

The **Links Group** in MS Excel 2010 is used to create **links to other locations** such as web pages, files, email addresses, or different worksheets. It helps in **easy navigation and quick access** to related information.

Hyperlink

A **Hyperlink** is an option in the Links Group that connects a cell to a **website, document, email address, or another place in the same workbook**. By clicking the hyperlink, the user can directly open the linked location.

Steps to Insert Hyperlink (Links Group) in MS Excel 2010

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **cell** where you want to insert the hyperlink.

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3. Click on the **Insert** tab on the Ribbon.
4. In the **Links Group**, click **Hyperlink**.
5. The **Insert Hyperlink** dialog box appears.
6. Select the type of link:
 - **Existing File or Web Page**
 - **Place in This Document**
 - **Email Address**
7. Enter the **address or location** of the link.
8. Click **OK**.
9. The hyperlink is inserted in the selected cell.

Example:

You can insert a hyperlink to open a **website** or to move to another **worksheet** in the same workbook.

7. Text Group

The **Text Group** in MS Excel 2010 is used to insert and format **text-related objects** in a worksheet. It helps in adding headings, labels, decorative text, and external objects for better presentation.

Options in the Text Group

- **Text Box** – Inserts a text box.
- **Header & Footer** – Adds header and footer to the worksheet.
- **WordArt** – Inserts decorative text.
- **Signature Line** – Inserts a digital signature line.
- **Object** – Inserts objects like Word files or other applications.

Steps to Insert Text Box

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Text Group**, click **Text Box**.
4. Drag the mouse on the worksheet to draw the text box.
5. Type the required text inside the text box.

Example:

A text box is used to write the heading **“Student Marks Report”** on the worksheet.

Steps to Insert Header & Footer

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.

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3. In the **Text Group**, click **Header & Footer**.
4. Excel switches to **Page Layout** view.
5. Click inside the header or footer area and type the text.

Example:

Header and Footer are used to add **page numbers and date** in a printed report.

Steps to Insert WordArt

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Text Group**, click **WordArt**.
4. Select a WordArt style from the gallery.
5. Type the required text.

Example:

WordArt is used to display the title **“Annual Result Sheet”** attractively.

Steps to Insert Signature Line

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Text Group**, click **Signature Line**.
4. The **Signature Setup** dialog box appears.
5. Enter the signer details and click **OK**.

Example:

A signature line is inserted for the **Principal’s signature** on a marks sheet.

Steps to Insert Object

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Text Group**, click **Object**.
4. Select **Create from File**.
5. Choose the required file and click **OK**.

Example:

A **Word document** containing instructions is inserted into the worksheet.

8. Symbols Group

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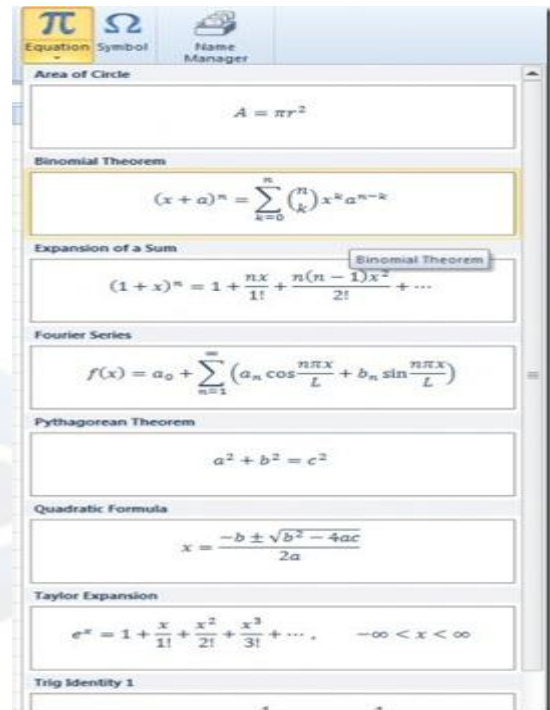
The **Symbols Group** in MS Excel 2010 is used to insert **mathematical equations and special symbols** into a worksheet. It is mainly useful in **mathematical, scientific, and technical documents**.

Steps to Insert Equation

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Symbols Group**, click **Equation**.
4. Choose a built-in equation or select **Insert New Equation**.
5. Type the required mathematical equation.

Example:

An equation such as $x^2 + y^2 = z^2$ can be inserted using the Equation option.

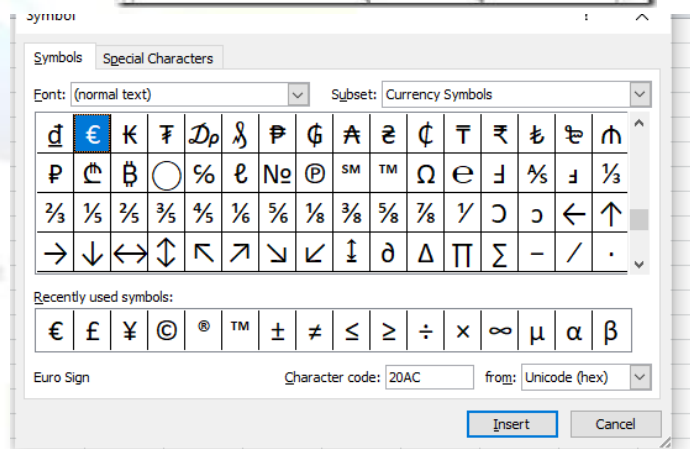


Steps to Insert Symbol

1. Open **MS Excel 2010** and select the worksheet.
2. Click on the **Insert** tab.
3. In the **Symbols Group**, click **Symbol**.
4. The **Symbol** dialog box appears.
5. Select the required symbol or character.
6. Click **Insert**, then **Close**.

Example:

Special symbols like ₹, ©, ±, α can be inserted into a worksheet using the Symbol option.



Page Layout Menu in Excel

The **Page Layout** tab in MS Excel is used to **control the appearance and printing** of a worksheet.

It helps in setting **page size, margins, orientation, scaling, and layout options** so that the worksheet prints neatly.

By using this tab, the worksheet becomes **well-formatted, properly aligned, and professional in print view**.

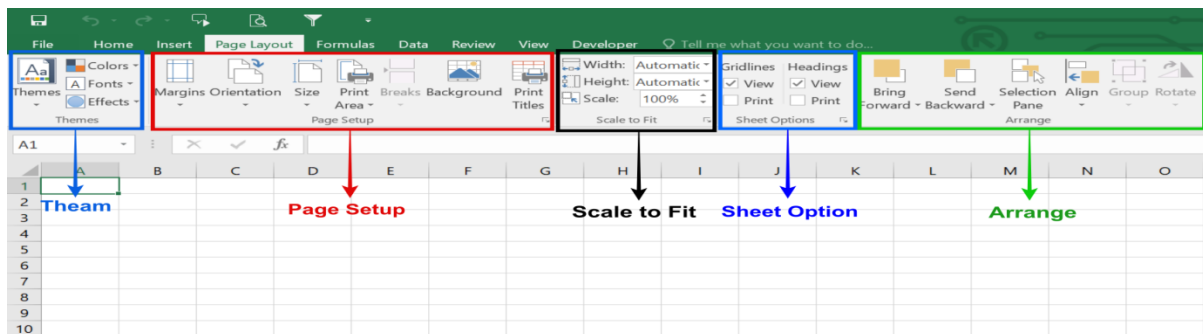
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The **Page Layout Menu (Page Layout Tab)** in MS Excel is used to manage page design and print settings.

The main options of the Page Layout menu are organized into different groups as follows:

1. **Themes**
2. **Page Setup**
3. **Scale to Fit**
4. **Sheet Options**
5. **Arrange**



1. Themes (Page Layout Tab – MS Excel)

The **Themes** group in MS Excel is used to apply a **pre-designed look** to the entire worksheet. It helps in changing the **overall appearance** of a worksheet by applying a combination of colors, fonts, and effects.

Using themes makes the worksheet **uniform, professional, and visually attractive**.

Options in Themes Group

- **Themes** – Applies a complete theme design to the worksheet.
- **Colors** – Changes the color scheme used in the workbook.
- **Fonts** – Changes the font style for headings and body text.
- **Effects** – Changes visual effects applied to shapes and charts.

Common Steps to Apply a Theme

1. Open **MS Excel** and select the required worksheet.
2. Click on the **Page Layout** tab on the Ribbon.
3. Go to the **Themes** group.
4. Click on **Themes, Colors, Fonts, or Effects** as required.
5. Choose an option from the displayed list.
6. The selected design style is applied to the entire worksheet.
7. Save the workbook to keep the applied theme settings.

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Example:

While preparing a **Student Result Sheet**, a user applies a **Theme** from the **Page Layout** tab. After applying the theme:

- **Colors** change the table and chart color scheme,
- **Fonts** change the heading and text style,
- **Effects** add visual styles to shapes and charts.

Page Setup (Page Layout Tab – MS Excel)

The **Page Setup** group in MS Excel is used to **control how a worksheet is arranged and printed**.

It helps in setting **page size, margins, orientation, and print area** so that the worksheet prints neatly and correctly.

Options in Page Setup Group

- **Margins** – Sets space around the page (Top, Bottom, Left, Right).
- **Orientation** – Sets page direction (**Portrait** or **Landscape**).
- **Size** – Selects paper size (A4, Letter, etc.).
- **Print Area** – Selects a specific area to print.
- **Breaks** – Inserts or removes page breaks.
- **Background** – Adds a background image to the worksheet.
- **Print Titles** – Repeats rows or columns on every printed page.

Common Steps to Use Page Setup

1. Open **MS Excel** and select the worksheet.
2. Click on the **Page Layout** tab.
3. Go to the **Page Setup** group.
4. Select the required option (Margins, Orientation, Size, etc.).
5. Apply the settings and preview before printing.

Example:

Setting **Landscape orientation** and **A4 size** while printing a wide student marks report.

Scale to Fit (Page Layout Tab – MS Excel)

The **Scale to Fit** group in MS Excel is used to **adjust the worksheet size** so that it fits properly on the printed page.

It helps in scaling the worksheet to **one page or a specific number of pages** without changing the actual data.

Options in Scale to Fit Group

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- **Width** – Fits the worksheet to a selected number of pages horizontally.
- **Height** – Fits the worksheet to a selected number of pages vertically.
- **Scale** – Increases or decreases the size of the worksheet (percentage).

Common Steps to Use Scale to Fit

1. Open **MS Excel** and select the worksheet.
2. Click on the **Page Layout** tab.
3. Go to the **Scale to Fit** group.
4. Set the required **Width, Height, or Scale** values.
5. Preview the worksheet before printing.

Example:

Scaling a large student result sheet to **fit on one page** for printing.

Sheet Options (Page Layout Tab – MS Excel)

The **Sheet Options** group in MS Excel is used to **show or hide worksheet elements** while working on the sheet and while printing.

It mainly controls the display of **gridlines and headings**.

Options in Sheet Options Group

- **Gridlines** – Shows or hides gridlines on the worksheet and in print.
- **Headings** – Shows or hides row numbers and column letters.

Common Steps to Use Sheet Options

1. Open **MS Excel** and select the worksheet.
2. Click on the **Page Layout** tab.
3. Go to the **Sheet Options** group.
4. Check or uncheck **View** or **Print** under Gridlines or Headings.
5. The selected option is applied to the worksheet.

Example:

Hiding gridlines while printing a **final student marks report** to make it look clean and professional.

5. Arrange (Page Layout Tab – MS Excel)

The **Arrange** group in MS Excel is used to **manage and organize objects** such as pictures, shapes, charts, and SmartArt on a worksheet.

It helps in **aligning, ordering, rotating, and grouping objects** for a neat and clear layout.

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Options in Arrange Group

- **Bring Forward / Send Backward** – Changes the order of overlapping objects.
- **Align** – Aligns objects (left, right, center, top, bottom).
- **Group / Ungroup** – Groups multiple objects to move or resize them together.
- **Rotate** – Rotates or flips objects.

Common Steps to Use Arrange

1. Select the picture, shape, or chart on the worksheet.
2. Click on the **Page Layout** tab.
3. Go to the **Arrange** group.
4. Choose the required option (Align, Group, Rotate, etc.).
5. The selected arrangement is applied to the object.

Example:

Aligning a **logo and chart** neatly at the top of a report using the Arrange group.

Formulas Menu in Excel

The **Formulas** tab in MS Excel is used to **perform calculations and data analysis** in a worksheet.

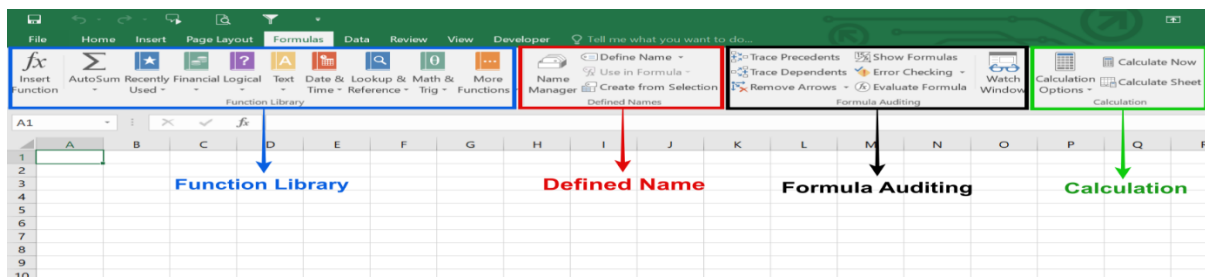
It helps in applying **mathematical, logical, statistical, and financial calculations** easily using built-in functions.

By using this tab, calculations become **faster, accurate, and error-free**.

The **Formulas Menu (Formulas Tab)** in MS Excel is used to **create, manage, and audit formulas and functions**.

The main options of the Formulas menu are organized into different groups as follows:

1. **Function Library**
2. **Defined Names**
3. **Formula Auditing**
4. **Calculation**



1. Function Library (Formulas Tab – MS Excel)

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The **Function Library** in MS Excel is used to **insert built-in functions** easily into a worksheet.

It helps users perform **calculations and data analysis** without writing long formulas manually, making work **fast and accurate**.

Main Categories in Function Library

- **AutoSum** – Quickly adds common functions like **SUM, AVERAGE, COUNT, MAX, MIN**.
- **Financial** – Functions related to money and accounts (e.g., **PMT, FV**).
- **Logical** – Performs logical tests (e.g., **IF, AND, OR**).
- **Text** – Works with text data (e.g., **LEFT, RIGHT, CONCATENATE**).
- **Date & Time** – Handles dates and time (e.g., **TODAY, NOW**).
- **Lookup & Reference** – Finds values in tables (e.g., **VLOOKUP, HLOOKUP**).
- **Math & Trig** – Performs mathematical calculations (e.g., **ROUND, ABS**).
- **More Functions** – Includes **Statistical, Engineering, Information** functions.

Common Steps to Use Function Library

1. Select the **cell** where the result is required.
2. Click the **Formulas** tab.
3. Go to the **Function Library** group.
4. Choose the required function category.
5. Select the function and enter the arguments.
6. Press **Enter** to get the result.

Common Example Table (Used for All Functions)

A (Name)	B (Marks)	C (Fees ₹)	D (Date)
Rahul	85	2000	01-01-2025
Sneha	92	2500	05-01-2025
Arjun	70	1800	10-01-2025
Kavya	88	2200	15-01-2025
Rohit	76	2100	20-01-2025

Function Library – Functions with Formula and Output (Table Format)

Category	Function	Formula Used	Output / Result
AutoSum	SUM	=SUM(B2:B6)	Total marks = 411
	AVERAGE	=AVERAGE(B2:B6)	Average marks = 82.2
	COUNT	=COUNT(B2:B6)	Number of students = 5

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	MAX	=MAX(B2:B6)	Highest marks = 92
	MIN	=MIN(B2:B6)	Lowest marks = 70
Financial	PMT	=PMT(10%,1,-2000)	Payment = 2200
	FV	=FV(10%,1,0,-2000)	Future value = 2200
Logical	IF	=IF(B2>=75,"Pass","Fail")	Result = Pass
	AND	=AND(B2>=75,B2<=100)	TRUE
	OR	=OR(B2>=90,B2<60)	FALSE
Text	LEFT	=LEFT(A2,2)	Ra
	RIGHT	=RIGHT(A2,2)	ul
	CONCATENATE	=CONCATENATE(A2,"Student")	Rahul Student
Date & Time	TODAY	=TODAY()	Current date
	NOW	=NOW()	Current date & time
	DAYS	=DAYS(TODAY(),D2)	Days from given date
Lookup & Reference	VLOOKUP	=VLOOKUP("Sneha",A2:B6,2,FALSE)	Marks = 92
Math & Trig	ROUND	=ROUND(B2,0)	85
	ABS	=ABS(B2-90)	5
More Functions	COUNTIF	=COUNTIF(B2:B6,">=80")	3 students
	ISNUMBER	=ISNUMBER(B2)	TRUE

2. Defined Names

The **Defined Names** group in MS Excel is used to **assign a meaningful name to a cell, range of cells, constant, or formula.**

Using defined names makes formulas **easy to understand, read, and manage**, especially in large worksheets.

Options in Defined Names Group

- **Define Name** – Creates a new name for a cell or range.
- **Name Manager** – Views, edits, or deletes defined names.
- **Use in Formula** – Inserts a defined name into a formula.
- **Create from Selection** – Automatically creates names from row or column headings.

Common Steps to Use Defined Names

1. Select the cell or range of cells.
2. Click on the **Formulas** tab.
3. Go to the **Defined Names** group.
4. Click **Define Name**.
5. Enter the name and click **OK**.
6. Use the name in formulas as required.

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Example (Using Defined Names)

Assume:

Marks are entered in cells **B2:B6**.

- Define the name **TotalMarks** for the range **B2:B6**.
- Formula using defined name:
=SUM(TotalMarks) → **411**

Explanation:

Instead of writing =SUM(B2:B6), using =SUM(TotalMarks) makes the formula **clear and meaningful**.

Calculation (Formulas Tab – MS Excel)

The **Calculation** group in MS Excel is used to **control how and when formulas are calculated** in a worksheet.

It helps users manage **automatic or manual recalculation** of formulas, especially in large workbooks.

Options in Calculation Group

- **Calculation Options** – Sets the calculation mode (**Automatic, Automatic Except for Data Tables, or Manual**).
- **Calculate Now** – Recalculates all formulas in the entire workbook immediately.
- **Calculate Sheet** – Recalculates formulas only in the active worksheet.

Common Steps to Use Calculation Options

1. Click on the **Formulas** tab.
2. Go to the **Calculation** group.
3. Click **Calculation Options**.
4. Choose **Automatic** or **Manual** as required.
5. Use **Calculate Now** or **Calculate Sheet** to update results.

Example

If a worksheet contains many formulas and data changes frequently, setting **Calculation Options** → **Manual** allows the user to update values first and then click **Calculate Now** to recalculate all formulas at once.

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Very Frequently Asked Long Questions

1. *Explain the applications and uses of a worksheet. Give examples of spreadsheet software.*
2. *Describe the different types of cell references in a spreadsheet with examples.*
3. *Explain relative, absolute, and mixed cell references with suitable formulas.*
4. *How do you create and edit a worksheet? Explain the steps.*
5. *Explain various types of charts in a spreadsheet and how to create a chart.*
6. *What are functions and formulae in spreadsheets? Explain with examples.*
7. *Explain sorting and filtering of data in a worksheet.*
8. *Describe data validation and its uses in spreadsheets.*
9. *Explain number formatting options in a spreadsheet.*
10. *Write short notes on:*
 - *Macros*
 - *Data consolidation*

Frequently Asked Medium Questions

1. *What are the uses of spreadsheets?*
2. *Explain the File menu in a spreadsheet.*
3. *Explain the Edit menu and its options.*
4. *What is a cell? How do you edit and delete cell data?*
5. *Write the steps to enter and edit numbers in a worksheet.*
6. *What is a chart? List different types of charts.*
7. *Explain any five commonly used spreadsheet functions (SUM, AVERAGE, MAX, MIN, COUNT).*
8. *What is the difference between a formula and a function?*
9. *Explain sorting of data with an example.*
10. *Explain filtering of data with an example.*

Very Important Short Questions (2 Marks)

1. *Define worksheet/spreadsheet.*
2. *Give two examples of spreadsheet software.*

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3. *What is a cell reference?*
4. *What is relative reference?*
5. *What is absolute reference?*
6. *What is mixed reference?*
7. *Define chart.*
8. *What is a macro?*
9. *What is data validation?*
10. *What is data consolidation?*



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UNIT – IV: Presentation, Internet & Multimedia

1. Microsoft PowerPoint

Microsoft PowerPoint is a presentation application software developed by Microsoft. It is included in the Microsoft Office suite of programs. PowerPoint is used to create, edit, and display presentations in the form of slides. A presentation is a group of slides arranged in a proper order to explain information or ideas to an audience.

Each slide in PowerPoint is like a digital page. A user can add different types of content on a slide such as text, pictures, shapes, tables, charts, SmartArt diagrams, audio, and video. By combining these elements, the information becomes more clear, visual, and easy to understand.

PowerPoint is widely used in education and business.

- Teachers use it to explain lessons in classrooms.
- Students use it to present projects, assignments, and seminars.
- Office workers and companies use it to present reports, plans, and proposals in meetings.

PowerPoint provides many design tools to make slides attractive. It includes ready-made slide designs called **Themes**. A theme changes the background, colours, fonts, and overall look of the slides. Users can also change text style by adjusting font type, size, colour, alignment, and spacing. Pictures, icons, and shapes can be inserted to support the text and improve understanding.

Special visual effects can also be added:

- **Animations** are effects applied to text or objects to make them move or appear in a special way on the same slide.
- **Transitions** are effects used when moving from one slide to the next slide during the slideshow.

After creating the slides, the presentation can be shown in **Slide Show mode**. In this mode, each slide appears one by one on the full screen of a computer or projector. This helps the presenter explain the topic step by step to the audience in an organised manner.

A PowerPoint presentation contains many slides, and each slide can include:

- Text
- Pictures
- Shapes
- Charts and graphs

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- *Tables*
- *Audio and video*
- *Animations and slide transitions*

These slides are displayed one after another during the presentation.

Main features of Microsoft PowerPoint

1. *Create and design slides easily*
2. *Add and format text (font, colour, size, style)*
3. *Insert pictures, icons, shapes, and diagrams*
4. *Create tables and charts to show data*
5. *Add audio and video clips*
6. *Apply animation effects to objects*
7. *Apply transition effects between slides*
8. *Run the slideshow in full screen view*
9. *Save, print, and share presentations*

Example of a simple presentation

- *Slide 1: Title – “Internet”*
- *Slide 2: Definition of Internet*
- *Slide 3: Uses of Internet with suitable images*
- *Slide 4: Conclusion or summary*

2. Menus and Toolbars in Microsoft PowerPoint

Microsoft PowerPoint 2010 uses a modern command system called the **Ribbon** instead of the old drop-down menus and toolbars. The Ribbon is placed at the top of the PowerPoint window and contains all the tools required to create, edit and present slides. It is designed to organise commands in a clear and logical way so that users can find features quickly.

The Ribbon is divided into several **tabs**. Each tab represents a type of task, such as editing text, inserting objects, or running the slide show. Inside every tab, commands are arranged into smaller sections known as **groups**. Each group holds related buttons and options.

This structure helps the user perform work step by step without confusion, because similar tools are kept together.

The main Ribbon tabs in PowerPoint 2010 are:

1. Home Tab

This tab is used for common editing and formatting work. It provides tools to create

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new slides, change fonts and text size, apply bold or italic style, align text, create bullet lists, and draw shapes.

2. **Insert Tab**

This tab allows the user to add extra items to a slide. Using this tab, pictures, tables, charts, shapes, text boxes, audio and video clips can be inserted.

3. **Design Tab**

This tab is used to change the overall look of the presentation. It includes ready-made themes, colour combinations, fonts and background styles.

4. **Transitions Tab**

This tab contains effects that control how one slide changes to the next during the slide show.

5. **Animations Tab**

This tab is used to give movement to text and objects on a slide, such as making items appear one by one.

6. **Slide Show Tab**

This tab is used to start, control and set up the presentation in full screen mode.

7. **Review Tab**

This tab provides tools for checking spelling, adding comments and making corrections.

8. **View Tab**

This tab changes how the presentation is displayed on the screen, such as Normal view, Slide Sorter view and Notes view.

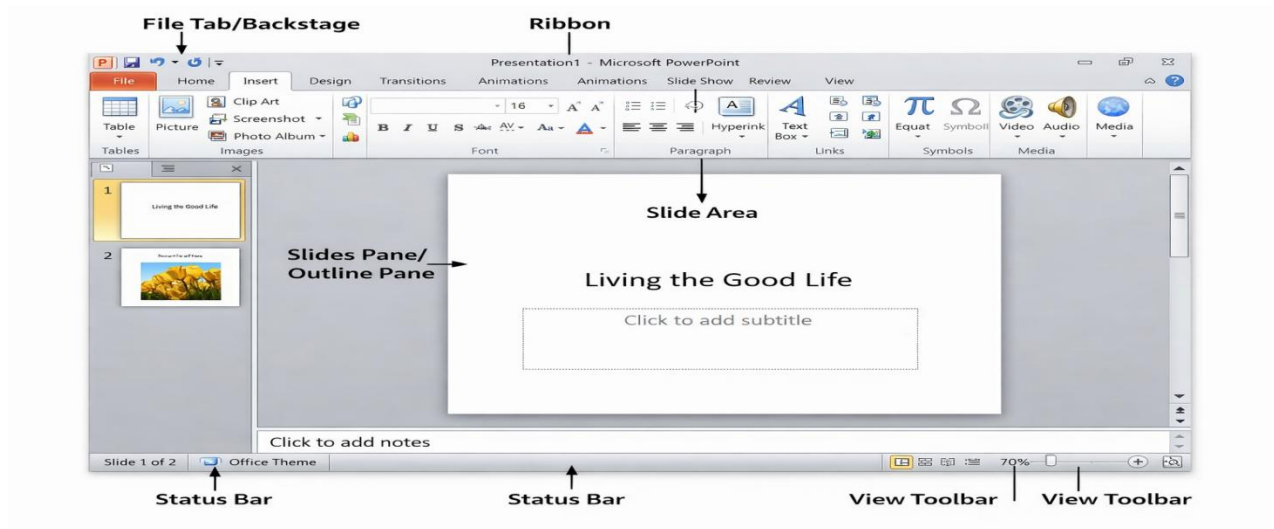
*In addition to the Ribbon, PowerPoint 2010 includes a small **Quick Access Toolbar** at the top left corner of the window. It contains frequently used commands like Save, Undo and Redo. Users can customise this toolbar by adding their own commonly used commands.*

*Sometimes extra tabs appear when a specific object is selected on a slide. For example, selecting a picture shows Picture Tools, and selecting a chart shows Chart Tools. These are called **contextual tabs**, and they provide special options only for the selected item.*

In summary, the Ribbon and its tabs replace traditional menus and toolbars in PowerPoint 2010. They organise all commands into clear groups, making it easier to create and manage presentations in an efficient way.

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Steps to Open Microsoft PowerPoint 2010

1. Click the **Start** button on the bottom left corner of the desktop screen.
2. Click on **All Programs** from the Start menu.
3. Scroll down and find the folder **Microsoft Office**.
4. Click on the **Microsoft Office** folder to open it.
5. Click on **Microsoft PowerPoint 2010** from the list.
6. The PowerPoint 2010 window will open on the screen.
7. A new blank presentation with a **Title Slide** will appear automatically, ready to use.

Another Method to Open Microsoft PowerPoint 2010

1. Click on the **Start** button.
2. In the search box at the bottom of the Start menu, type **PowerPoint**.
3. Wait for the search results to appear.
4. Click on **Microsoft PowerPoint 2010** from the results list.
5. The PowerPoint 2010 program will open.
6. A new blank presentation will appear on the screen.

Steps

- Open **MS Excel 2010** and open the worksheet that contains a **PivotTable**.
- Click anywhere inside the **PivotTable** to activate PivotTable tools.
- Click on the **Insert** tab on the Ribbon.
- In the **Filters** group, select **Slicer** or **Timeline**.
- The **Insert Slicers** or **Insert Timelines** dialog box appears.
- Select the required field:
- For **Slicer** – choose fields like Product, Region, or Category.

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- For **Timeline** – choose the **Date field**.
- Click the **OK** button.
- The **Slicer or Timeline control** appears on the worksheet.
- Click slicer buttons or drag the timeline bar to filter the PivotTable data.
- The PivotTable updates automatically based on the selected filter.

Introduction to MS PowerPoint

Microsoft PowerPoint is a **presentation graphics program** developed by Microsoft. It is a component of the **Microsoft Office** suite of application software. PowerPoint is used to create and deliver presentations in the form of **electronic slides**.

A presentation consists of a sequence of slides that may include **text, images, graphics, charts, audio, video, and animation effects**. These slides are displayed on a computer screen or projected onto a large screen to communicate information effectively to an audience.

Purpose of Microsoft PowerPoint

The main purpose of Microsoft PowerPoint is to help users **present ideas, information, and data in a clear and attractive manner**. It enables the presenter to combine visual elements with spoken explanation for better understanding.

Features of Microsoft PowerPoint

Microsoft PowerPoint provides several features, such as:

- Creation of slides using **blank layouts or templates**
- Formatting of text and slides
- Insertion of pictures, tables, charts, audio, and video
- Use of animation and transition effects
- Slide show facilities for presentation delivery

Uses of Microsoft PowerPoint

Microsoft PowerPoint is commonly used in:

- Educational institutions for teaching and learning
- Business organizations for meetings and reports
- Seminars, conferences, and workshops
- Training programs and project presentations

Advantages of Microsoft PowerPoint

- Easy to use and user-friendly

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- *Saves time by using ready-made templates*
- *Improves visual appeal of presentations*
- *Helps in effective communication of information*
- *Supports multimedia elements*

Role of Presentations in Education

In the field of education, presentation software plays an important role in the teaching–learning process.

- *Teachers use presentations to explain complex topics with the help of diagrams, images, and animations.*
- *Students use presentations for seminars, assignments, and project work.*
- *Multimedia elements help in improving attention, understanding, and retention of concepts.*
- *Presentations support interactive learning through visuals, bullet points, and structured content.*

Thus, presentation software makes learning more effective, engaging, and learner-friendly.

Role of Presentations in Business

In business organizations, presentations are an essential communication tool.

- *Used in meetings, conferences, and corporate discussions*
- *Helpful in presenting company profiles, business plans, and strategies*
- *Used for sales promotion, marketing analysis, and financial reports*
- *Enables decision-making by presenting data through charts and graphs*

Professional presentations help businesses communicate ideas clearly, persuade clients, and create a strong impact.

Role of Presentations in Communication

Presentation software plays a vital role in professional and organizational communication.

- *Helps speakers convey messages clearly to large audiences*
- *Supports effective public speaking with visual support*

Reduces misunderstanding by presenting information in a structured format

Enhances communication during seminars, workshops, and conferences

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The **Ribbon** in MS PowerPoint consists of several tabs such as **Home, Insert, Design, Animations, Slide Show, Review, and View**. These tabs contain commands related to different tasks.

When objects such as pictures, shapes, drawings, audio, or video are inserted into a slide, **additional contextual tabs** appear on the Ribbon. These tabs provide options to modify the style and appearance of the selected objects.

When the pointer is placed over any command on the Ribbon, PowerPoint displays a **brief description or tooltip** explaining that command. The Ribbon is fully visible only when the screen resolution is at least **1024 × 768 pixels** and the PowerPoint window is maximized.

Home Tab

The **Home tab** is the default tab displayed when PowerPoint is opened. It contains commonly used commands such as **Cut, Copy, Paste**, text formatting options, and paragraph alignment tools.

It also includes commands to **add new slides, change slide layouts, and delete slides**. The Home tab groups commands into **Clipboard, Slides, Font, Paragraph, Drawing, and Editing** sections.

Insert Tab

The **Insert tab** is used to insert elements such as **tables, pictures, charts, diagrams, text boxes, audio, video, hyperlinks, and media clips** into slides. It also provides options to add **headers and footers**.

Design Tab

The **Design tab** controls the overall appearance of slides. It allows users to apply **themes, background styles, color schemes, and fonts**, helping maintain consistency across slides.

Animations Tab

The **Animations tab** is used to apply **animation effects** to text and objects on slides. It also controls the timing and behavior of animations and slide transitions.

Slide Show Tab

The **Slide Show tab** contains commands to run and control the presentation. By default, the slide show starts from the **first slide** and ends at the **last slide**. The presentation can be stopped at any time using the **Esc key**.

Review Tab

The **Review tab** provides tools for **spelling and grammar checking, adding comments, and reviewing slides**. These tools are similar to those available in other MS Office applications.

View Tab

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The **View tab** is used to change the display mode of slides. It allows users to view slides in different modes suitable for **editing, rearranging, or presenting**. Slides can also be viewed with or without **Notes pages**, which are visible only to the presenter.

Step-by-Step Procedure for Creating a Presentation

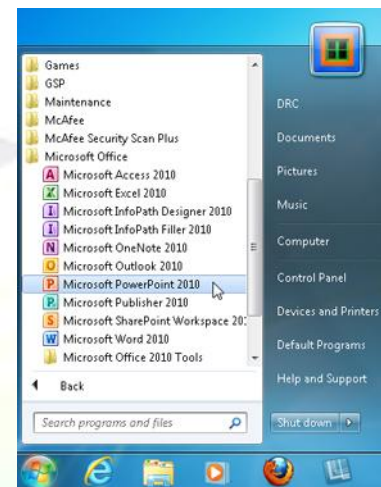
To work with any application, it must first be **started (launched)**. Microsoft PowerPoint 2010 can be started using the Start menu in Windows Vista or Windows 7.

Steps to Start PowerPoint

Click the **Start** button.

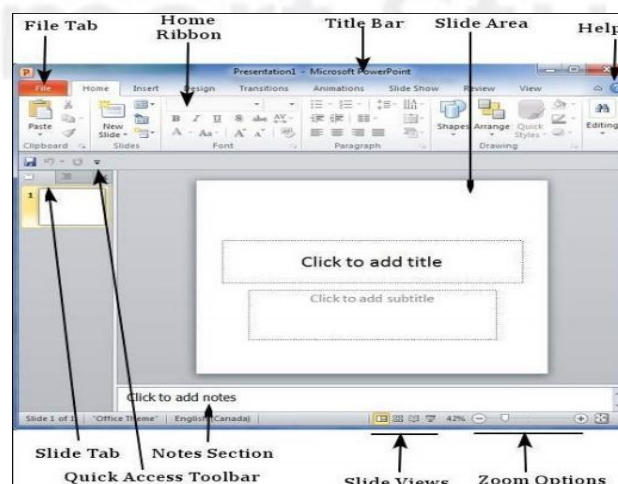
The **Start menu** appears on the screen.

1. Click **All Programs**.
The left pane displays a list of programs installed on the computer.
2. Click **Microsoft Office**.
The Microsoft Office applications list opens.
3. Select **Microsoft PowerPoint 2010**.
The **PowerPoint 2010** program window appears.



Other Ways to Launch PowerPoint 2010

- Click the **Start** button and type **PowerPoint** in the **Search box**.
- From the search results, click **Microsoft PowerPoint 2010** to launch the program.



Creating a Presentation Using Templates

Meaning of Templates

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*A **template** is a pre-designed presentation layout that includes predefined **backgrounds, color schemes, font styles, slide layouts, and design elements**. Templates help maintain consistency and save time.*

Steps to Create a Presentation Using Templates

1. *In the New Presentation dialog box, select a **template category** from the left pane.*
2. *Templates of similar type are grouped together under category names.*
3. *When a category is selected, its templates appear as **thumbnail images** in the middle pane.*
4. *Select a suitable template by clicking on it.*
5. *A **preview of the selected template** is displayed in the right pane.*
6. *Click the **Create** button to open the new presentation.*

*The presentation opens with ready-made slides following the **style and structure** defined by the selected template.*

Editing a Template-Based Presentation

- *Enter text in title and content placeholders*
- *Add or delete slides using the **Home tab***
- *Insert images, charts, tables, audio, and video*
- *Apply animations and transitions if required*

Advantages of Using Templates

- *Saves time and effort*
- *Ensures uniform design across slides*
- *Ideal for beginners*
- *Produces professional-looking presentations*

Creating a Presentation Manually (Blank Presentation)

Meaning of Manual Presentation

*A manual presentation is created from a **blank slide** without using any predefined template. The user designs the entire presentation according to requirements.*

Steps to Create a Manual Presentation

1. *In the New Presentation dialog box, select **Blank Presentation**.*

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2. Click the **Create** button.
3. The first slide appears with **Title** and **Subtitle** placeholders.
4. Enter the title and subtitle text in the dotted placeholder boxes.
5. Add new slides using **Home** → **New Slide**.
6. Choose appropriate layouts such as Title and Content, Comparison, or Blank.
7. Manually format text, background, fonts, and colors.
8. Insert required objects such as images, charts, tables, audio, and video.

Formatting in Manual Presentation

- Text formatting using **Font and Paragraph** groups
- Slide design using background colors and themes
- Object formatting and alignment
- Applying animations and slide transitions

Advantages of Manual Creation

- Complete design flexibility
- Custom layout and formatting
- Suitable for experienced users
- Better control over presentation appearance

Adding and Managing Slides

After creating the presentation:

- Slides can be added, deleted, or rearranged
- Content can be edited anytime
- Slide views like Normal View and Slide Sorter View help in organizing slides

Saving the Presentation

After completing the presentation:

- Click **File** → **Save** or press **Ctrl + S**
- Enter file name and select storage location
- Save in appropriate format such as **.pptx**, **.ppt**, or **PDF**

Home Tab in MS PowerPoint

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The Home tab is the default and most frequently used tab in MS PowerPoint. It appears automatically when PowerPoint is opened and contains commands that are commonly required while creating and editing slides. The Home tab helps users manage slides, format text, arrange objects, and edit content efficiently.

The Home tab contains the most commonly used commands in PowerPoint. Its main options (groups) are:

- 1. Clipboard – Cut, Copy, Paste, Format Painter**
- 2. Slides – New Slide, Layout, Reset, Delete**
- 3. Font – Font type, size, Bold, Italic, Underline, Font color**
- 4. Paragraph – Bullets, numbering, alignment, line spacing, indent**
- 5. Drawing – Shapes, shape styles, arrange, align, rotate**
- 6. Editing – Find, Replace, Select**

1. Clipboard Group

Description

*The Clipboard Group is used to **transfer text or objects from one place to another** within a slide or between different slides. It helps avoid retyping and ensures formatting consistency.*

Functions

- **Cut:** Removes the selected text or object and stores it temporarily on the clipboard.
- **Copy:** Duplicates the selected text or object and stores it on the clipboard.
- **Paste:** Inserts the clipboard content at the selected location.
- **Format Painter:** Copies formatting such as font style, size, color, and effects and applies it to another text or object.

Steps (Covering All Options)

1. Select the text or object on a slide.
2. Click **Cut** or **Copy** from the Clipboard group.
3. Move the cursor to the desired location.
4. Click **Paste** to insert the content.
5. Use **Format Painter** to apply the same formatting to other text or objects.

Real-Time Example

While preparing a seminar presentation, a student copies a formatted heading from the first slide and pastes it into other slides to maintain uniform heading style throughout the presentation.

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2. Slides Group

Description

The Slides Group is used to **create, organize, modify, and remove slides** in a presentation. It helps manage the structure and flow of the presentation.

Functions

- **New Slide:** Inserts a new slide into the presentation.
- **Layout:** Changes the arrangement of placeholders on a slide.
- **Reset:** Restores the slide to its default layout and formatting.
- **Delete:** Removes the selected slide.

Steps

1. Click the **Home** tab.
2. Select the slide you want to modify.
3. Click **New Slide** to insert a new slide.
4. Click **Layout** and select a suitable layout.
5. Click **Reset** to undo layout and formatting changes.
6. Click **Delete** to remove unwanted slides.

Example

During a project presentation, a student adds new slides for objectives, changes layouts for charts, resets wrongly formatted slides, and deletes duplicate slides.

3. Font Group

Description

The Font Group is used to **change the appearance of text** to improve readability and visual impact.

Functions

- Font type and font size
- **Bold, Italic, Underline**
- Font color and text highlight
- Change text case (upper/lower)

Steps

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1. *Select the text in a slide.*
2. *Choose the required font style and size.*
3. *Apply Bold, Italic, or Underline.*
4. *Change font color or highlight text if needed.*

Example

A presenter enlarges the slide title, applies bold formatting, and uses a contrasting color to make headings stand out clearly for the audience

4. Paragraph Group

Description

*The Paragraph Group controls **text alignment, bullets, spacing, and indentation**, helping organize content neatly.*

Functions

- *Bullets and numbering*
- *Text alignment (left, center, right)*
- *Line spacing*
- *Increase or decrease indent*

Steps

1. *Select the paragraph text.*
2. *Click **Bullets** or **Numbering** to organize points.*
3. *Set appropriate text alignment.*
4. *Adjust line spacing and indentation.*

Example

Lecture points are converted into bullet lists with proper indentation to clearly show main points and subpoints.

5. Drawing Group

Description

*The Drawing Group is used to **insert and format shapes and visual objects**, which help explain concepts visually.*

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Functions

- *Insert shapes (rectangle, circle, arrow, etc.)*
- *Shape fill, outline, and effects*
- *Align, arrange, rotate, and group objects*

Steps (Covering All Options)

1. Click **Shapes** and select a shape.
2. Draw the shape on the slide.
3. Apply color, outline, or effects.
4. Arrange, align, or group multiple shapes.

Real-Time Example

Flowcharts are created using arrows and rectangles to explain a process or system clearly.

6. Editing Group

Description

The Editing Group is used to **search, replace, and select text or objects** in a presentation.

Functions

- **Find:** Searches for specific text.
- **Replace:** Replaces one word with another throughout the presentation.
- **Select:** Selects text or objects.

Steps

1. Click **Find** and enter the word to search.
2. Click **Replace** to substitute text.
3. Use **Select** to choose objects or text.

Real-Time Example

Before final submission, a student replaces the word “Seminar” with “Workshop” in all slides.

Insert Tab – Main Groups (MS PowerPoint)

The **Insert tab** in MS PowerPoint is divided into the following **main groups**:

1. **Tables Group** – Used to insert tables with rows and columns.

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2. **Images Group** – Used to insert pictures, online images, and screenshots.
3. **Illustrations Group** – Used to insert shapes, SmartArt, and charts.
4. **Links Group** – Used to insert hyperlinks to websites, files, or slides.
5. **Text Group** – Used to insert text boxes, WordArt, headers, footers, date, and slide numbers.
6. **Media Group** – Used to insert audio and video files into slides.

Tables Group (Insert Tab in MS PowerPoint)

The **Tables Group** in the **Insert tab** is used to **insert and organize data in tables** within a slide. Tables help present information clearly using **rows and columns**, making comparison and understanding easy.

Options in Tables Group

- **Table** – Used to insert a table by selecting the required number of rows and columns.

Explanation

A table consists of **cells**, arranged in rows and columns, where text or numbers can be entered. After inserting a table, PowerPoint provides additional **Table Tools** to format the table, such as applying styles, adding borders, shading, and adjusting row or column size.

Steps to Insert a Table

1. Click the **Insert** tab.
2. Click **Table** in the Tables group.
3. Select the number of rows and columns from the grid.
4. Click to insert the table and enter data.

Simple Example

A table is used in a presentation to display **student names and marks** in separate columns for clear comparison.

The **Images Group** in the **Insert tab** is used to **insert visual elements** into slides. Images make presentations more attractive, meaningful, and easy to understand.

Options in Images Group

- **Pictures** – Inserts images stored on the computer.
- **Online Pictures / Clip Art** – Inserts images from online sources.
- **Screenshot** – Inserts a snapshot of an open window or part of the screen.

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Explanation

Images help convey ideas visually and improve audience engagement. After inserting an image, it can be resized, moved, cropped, and formatted using picture tools.

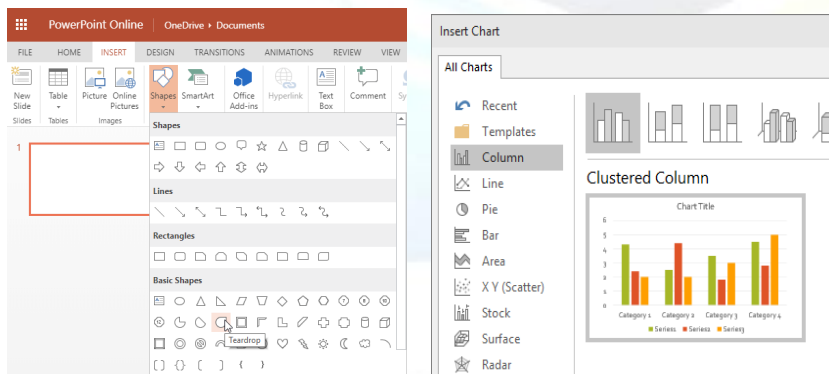
Steps to Insert Images

1. Click the **Insert** tab.
2. Click **Pictures** or **Online Pictures**.
3. Select the required image.
4. Click **Insert** to place it on the slide.

Simple Example

In a company presentation, product images are inserted to clearly show features to customers.

Illustrations Group (Insert Tab in MS PowerPoint)



The **Illustrations Group** in the **Insert** tab is used to **visually represent information** using diagrams, drawings, and graphical objects. It helps explain concepts clearly and attractively.

Options in Illustrations Group

- **Shapes** – Used to insert drawing shapes such as rectangles, circles, arrows, and lines.
- **SmartArt** – Used to insert diagrams that represent processes, hierarchies, relationships, and cycles.
- **Chart** – Used to insert graphical representations of data like bar, pie, and line charts.

Explanation

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Illustrations help transform complex information into simple visual form. Shapes are useful for diagrams, SmartArt for structured concepts, and charts for data analysis.

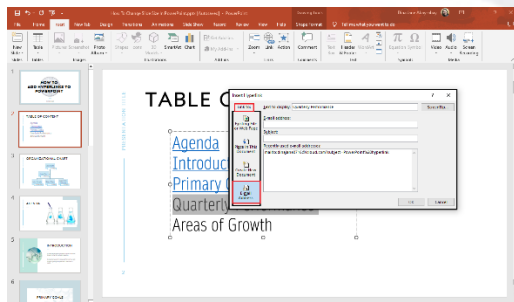
Steps to Use Illustrations

1. Click the **Insert** tab.
2. Choose **Shapes**, **SmartArt**, or **Chart**.
3. Select the required type.
4. Insert and format the illustration on the slide.

Simple Example

*A flowchart created using **SmartArt** explains the steps of a system or process.*

Links Group (Insert Tab in MS PowerPoint)



*The **Links Group** in the **Insert tab** is used to **connect slides with external or internal resources**. It helps make presentations interactive and easy to navigate.*

Option in Links Group

- **Hyperlink** – Used to link text or objects to a **website, another slide, a file, or an email address**.

Explanation

Hyperlinks allow the presenter to move quickly from one slide to another or open external resources directly during a presentation. This is especially useful for demonstrations and interactive presentations.

Steps to Insert a Hyperlink

1. Select the text or object on the slide.
2. Click the **Insert** tab.
3. Click **Hyperlink** in the **Links** group.

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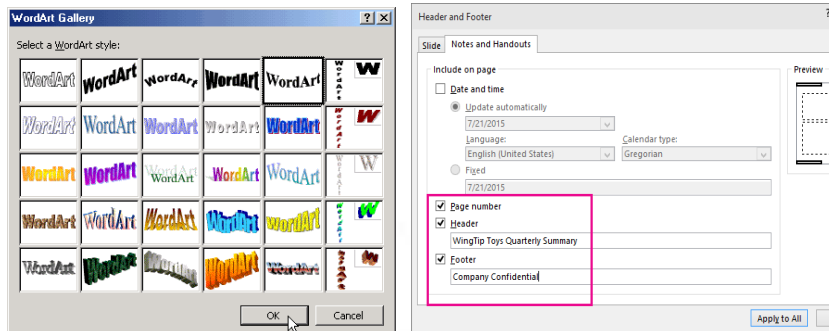
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4. Enter the web address or choose a slide/file.
5. Click **OK**.

Simple Example

In a seminar presentation, a hyperlink is added to open a **college website** directly from the slide.

Text Group (Insert Tab in MS PowerPoint)



The **Text Group** in the **Insert tab** is used to **add and format different types of text elements** on slides. It helps in inserting additional text, decorative text, and slide information.

Options in Text Group

- **Text Box** – Used to insert text anywhere on a slide.
- **WordArt** – Used to insert decorative and stylish text.
- **Header & Footer** – Used to add date, time, slide number, and footer text.
- **Date & Time** – Inserts the current date and time on slides.
- **Slide Number** – Inserts slide numbers automatically.

Explanation

The **Text Group** allows users to place text freely on slides and enhance its appearance. Headers, footers, and slide numbers help maintain consistency and professionalism in presentations.

Steps to Use Text Group

1. Click the **Insert** tab.
2. Choose **Text Box**, **WordArt**, or **Header & Footer**.
3. Enter the required text or select options.
4. Apply formatting as needed.

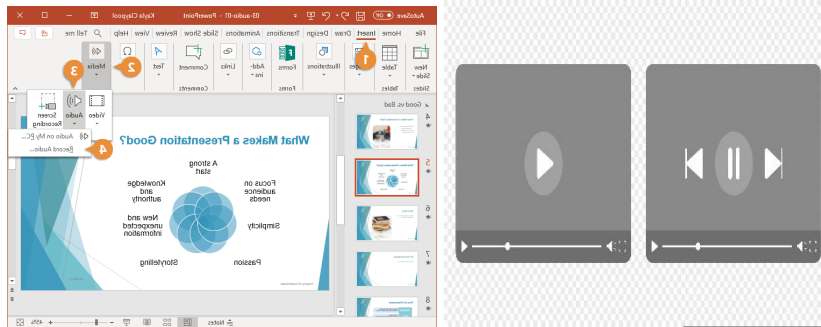
Simple Example

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A footer with **date and slide number** is added to all slides of a project presentation.

Media Group (Insert Tab in MS PowerPoint)



The **Media Group** in the **Insert** tab is used to **insert multimedia elements** such as audio and video into slides. Multimedia makes presentations more engaging, interactive, and effective.

Options in Media Group

- **Audio** – Used to insert sound files such as narration or music.
- **Video** – Used to insert video clips from the computer or online sources.

Explanation

Audio and video elements help explain concepts better than text alone. PowerPoint allows users to control playback settings such as start time, volume, and looping.

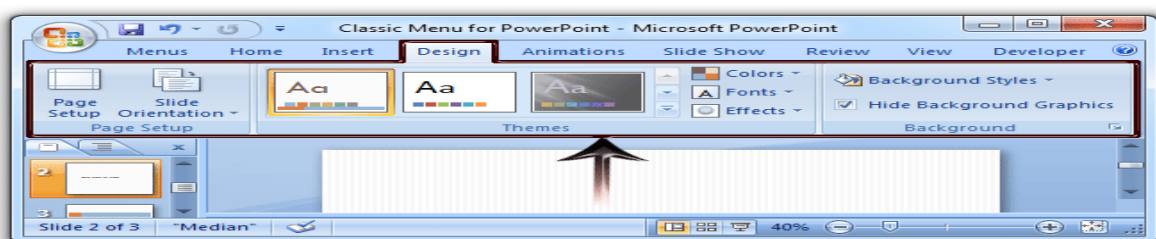
Steps to Use Media Group

1. Click the **Insert** tab.
2. Click **Audio** or **Video**.
3. Select the required media file.
4. Click **Insert** and adjust playback options.

Simple Example

A training presentation includes a short **instructional video** to demonstrate a procedure.

Design Tab (MS PowerPoint)



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The **Design tab** in MS PowerPoint is used to **control the overall appearance and layout of slides**. It helps in applying consistent design, colors, fonts, and background styles across the entire presentation, giving it a professional look.

Main Groups in the Design Tab

1. **Themes Group** – Used to apply pre-designed themes that control the overall look of slides.
2. **Variants Group** – Used to modify the selected theme by changing colors, fonts, and effects.
3. **Slide Size Group** – Used to set slide dimensions and orientation such as Standard or Widescreen.
4. **Background Group** – Used to change the background color, picture, or style of slides.

Themes Group (Design Tab in MS PowerPoint)

The **Themes Group** in the **Design tab** is used to apply **pre-designed themes** to a presentation.

Explanation

A **theme** is a combination of **background design, color scheme, font style, and visual effects**. Applying a theme ensures a **consistent and professional appearance** across all slides in a presentation.

Themes can be applied to:

- All slides in a presentation
- Selected slides only

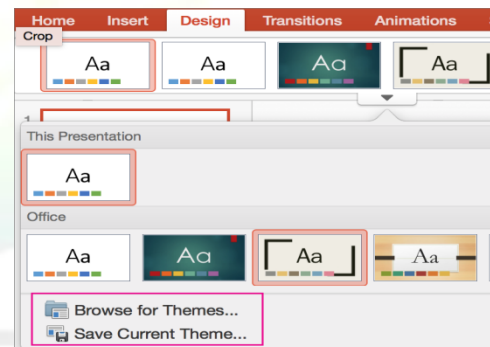
Steps to Apply a Theme

1. Click the **Design** tab.
2. Select a theme from the **Themes gallery**.
3. The selected theme is applied to the presentation.

Simple Example

Applying a formal theme to a seminar presentation to maintain uniform design on all slides.

Variants Group (Design Tab in MS PowerPoint)



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The **Variants Group** in the **Design** tab is used to **modify the selected theme** without changing it completely.

Explanation

The Variants Group allows users to change the **color scheme, font style, and visual effects** of the applied theme. This helps customize the appearance of slides while keeping the same basic theme design.



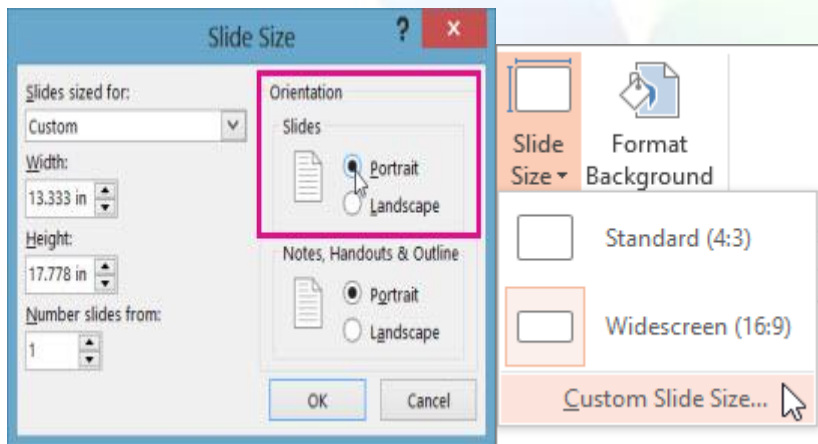
Steps to Use Variants Group

1. Click the **Design** tab.
2. Select a theme from the Themes group.
3. Choose a suitable option from the **Variants Group** to change colors, fonts, or effects.

Simple Example

Changing the color variant of a theme to match an organization's logo.

Slide Size Group (Design Tab in MS PowerPoint)



The **Slide Size Group** in the **Design** tab is used to **set the size and orientation of slides** in a presentation.

Explanation

The Slide Size Group allows users to choose the **dimensions of slides** based on the display device or presentation requirement. PowerPoint mainly provides **Standard (4:3)** and **Widescreen (16:9)** slide sizes. It also allows users to define a **custom slide size**.

Options Available

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- **Standard (4:3)** – Suitable for older monitors and projectors
- **Widescreen (16:9)** – Suitable for modern screens and projectors
- **Custom Slide Size** – Allows users to set specific width and height

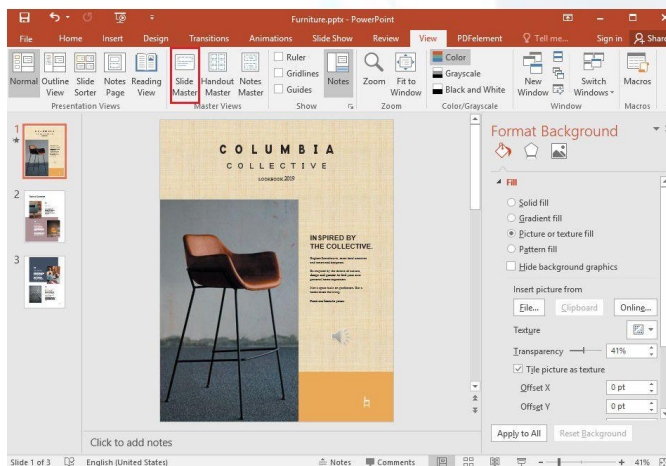
Steps to Use Slide Size Group

1. Click the **Design** tab.
2. Click **Slide Size**.
3. Select **Standard**, **Widescreen**, or **Custom Slide Size**.
4. Apply the selected size to the presentation.

Simple Example

Choosing **Widescreen (16:9)** format for a presentation displayed on a modern projector.

Background Group (Design Tab in MS PowerPoint)



The **Background Group** in the **Design** tab is used to **change the background appearance of slides** to improve readability and visual appeal.

Explanation

The Background Group allows users to apply different background styles such as **solid colors, gradients, pictures, textures, or patterns**. Background settings can be applied to **a single slide or all slides** in the presentation, helping maintain a consistent look.

Options Available

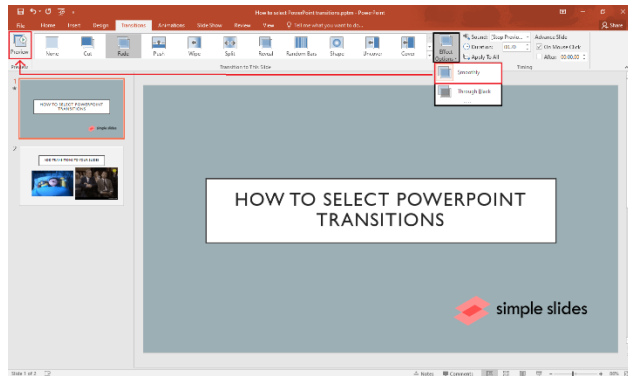
- **Background Styles** – Applies predefined background styles
- **Format Background** – Allows detailed background settings like solid fill, gradient fill, picture fill, or texture fill
- **Apply to All** – Applies the selected background to all slides

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Steps to Use Background Group

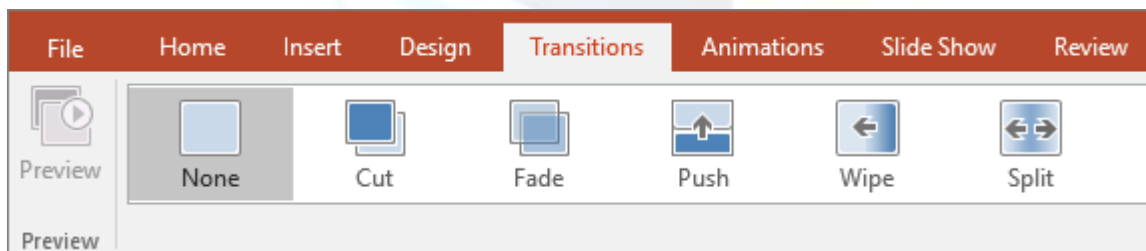
1. Click the **Design** tab.
2. Click **Format Background** in the Background group.
3. Choose the required background option (color, gradient, picture, or texture).
4. Click **Apply to All** to use the same background for all slides.



Simple Example

Applying a light-colored background to all slides so that text is clearly visible during a classroom presentation.

Transitions Tab (MS PowerPoint)



The **Transitions tab** in MS PowerPoint is used to **control how one slide changes to the next during a slide show**. Transitions add visual effects between slides, making the presentation smoother and more attractive.

Main Groups in the Transitions Tab

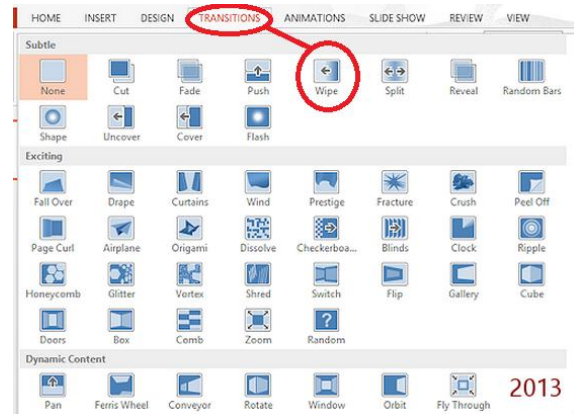
- **Preview Group** – Used to preview the selected slide transition effect.
- **Transition to This Slide Group** – Used to apply different transition effects to slides.
- **Effect Options Group** – Used to change the direction or style of the selected transition.
- **Timing Group** – Used to control transition duration, sound, and slide advance settings.

Preview Group (Transitions Tab in MS PowerPoint)

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- The **Preview Group** in the **Transitions** tab is used to **preview the selected transition effect** before applying it to the slide.
- **Explanation**
- It allows the user to see how the chosen transition will look when moving from one slide to another. This helps in selecting an appropriate transition without running the entire slide show.
- **Simple Example**
- Clicking the **Preview** button to see how a **Fade** transition appears between two slides.

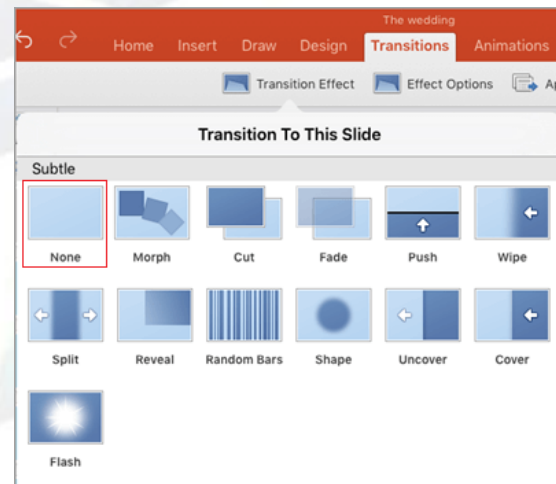


Transition to This Slide Group (Transitions Tab in MS PowerPoint)

The **Transition to This Slide Group** in the **Transitions** tab is used to **apply transition effects to the selected slide**.

Explanation

This group provides various transition effects such as **Fade, Push, Wipe, Split, Reveal, and Zoom**. These effects control how the current slide appears when the presentation moves from the previous slide. The selected transition can be applied to **one slide or all slides**.



Steps to Use

1. Select the slide in the Slides Pane.
2. Click the **Transitions** tab.
3. Choose a transition effect from the **Transition to This Slide** group.
4. Click **Apply to All** if the same effect is required for all slides.

Simple Example

Applying a **Fade** transition to each slide in a seminar presentation for smooth slide changes.

Effect Options Group (Transitions Tab in MS PowerPoint)

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The **Effect Options Group** in the **Transitions tab** is used to **modify the style or direction of the selected transition effect**.

Explanation

This group allows users to change how a transition behaves. Depending on the transition selected, effect options may include **direction (from left, right, top, bottom)** or **variation in style**. These options help customize transitions without changing the main effect.

Steps to Use

1. Select the slide.
2. Choose a transition from **Transition to This Slide** group.
3. Click **Effect Options**.
4. Select the required direction or style.

Simple Example

Changing a **Wipe** transition direction from left-to-right to top-to-bottom.

Timing Group (Transitions Tab in MS PowerPoint)

The **Timing Group** in the **Transitions tab** is used to **control when and how long a slide transition occurs**.



Explanation

The Timing Group allows users to set:

- **Duration** – Controls the speed of the transition effect.
- **Sound** – Adds a sound effect during the slide transition.
- **Advance Slide** – Sets whether the slide changes **on mouse click** or **automatically after a specified time**.

These options help control the flow and pace of the presentation.

Steps to Use

1. Select the slide.
2. Click the **Transitions** tab.
3. Set the **Duration** time.

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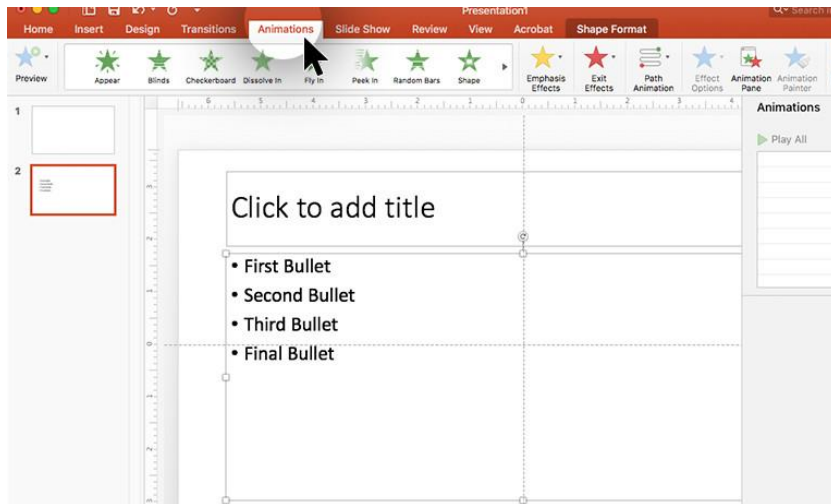
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4. Choose a **Sound** if required.
5. Select **On Mouse Click** or **After** and set the time.

Simple Example

Setting slides to advance automatically every 5 seconds during a photo slideshow.

Animations Group (Animations Tab in MS PowerPoint)



The **Animations Group** in the **Animations tab** is used to **apply motion and visual effects to text and objects on a slide**. Animations control **how objects appear, move, emphasize, or exit** during a slide show, helping present content step by step.

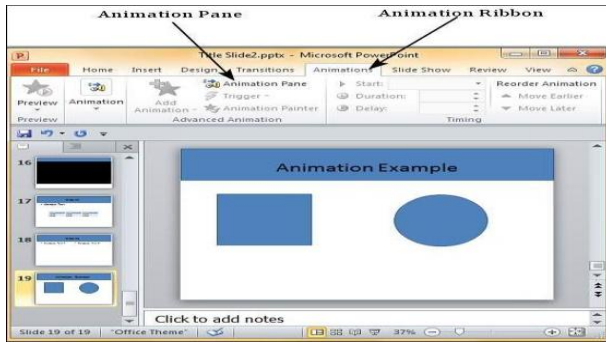
Main Groups in the Animations Tab

- **Preview Group** – Used to preview the animation effects applied to objects on a slide.
- **Animation Group** – Used to apply animation effects such as entrance, emphasis, exit, and motion paths.
- **Advanced Animation Group** – Used to add, manage, copy, and control multiple animations using tools like Animation Pane and Animation Painter.
- **Timing Group** – Used to control the start, duration, and delay of animation effects.
- **Preview Group (Animations Tab in MS PowerPoint)**



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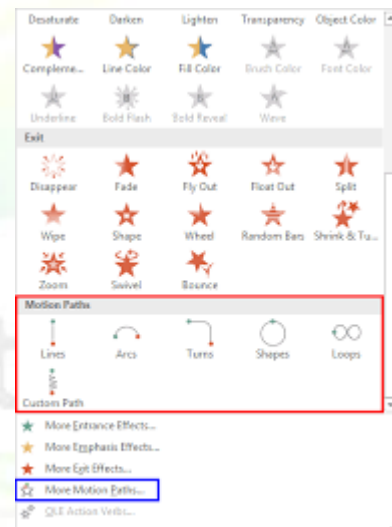
- The **Preview Group** in the **Animations** tab is used to **preview the animation effects** applied to text or objects on the current slide.
- **Explanation**
- It allows users to quickly see how animations will play—**without starting the full slide show**—so they can verify the order, timing, and appearance of effects.
- **Simple Example**
- Click **Preview** to check how bullet points appear one by one after adding an entrance animation.

Animation Group (Animations Tab in MS PowerPoint)

The **Animation Group** in the **Animations** tab is used to **apply animation effects** to selected text or objects on a slide.

Explanation

This group provides ready-made animation effects that control **how an object appears, behaves, or disappears** during a slide show. Animations help present content step by step and focus audience attention.



Types of Animations Available

- **Entrance** – Makes objects appear on the slide (e.g., Fade, Fly In).
- **Emphasis** – Highlights objects already on the slide (e.g., Pulse, Spin).
- **Exit** – Makes objects leave the slide (e.g., Fly Out, Disappear).
- **Motion Paths** – Moves objects along a defined path.

Steps to Use Animation Group

1. Select the text or object on the slide.
2. Click the **Animations** tab.
3. Choose an animation from the **Animation Group** gallery.

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4. Preview the effect to confirm.

Simple Example

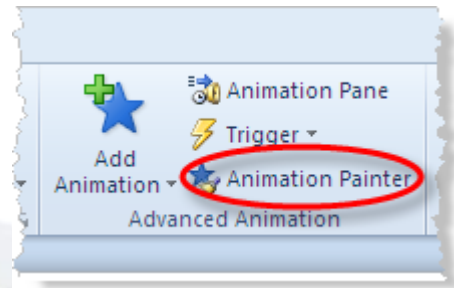
Applying a **Fly In** entrance animation to bullet points so they appear one after another during a lecture.

Advanced Animation Group (Animations Tab in MS PowerPoint)

The **Advanced Animation Group** in the **Animations** tab is used to **add, manage, copy, and control multiple animations** applied to objects on a slide.

Explanation

When a slide contains more than one animated object, the **Advanced Animation Group** helps in **organizing the order, timing, and interaction** of animations. It provides greater control compared to basic animation options.



Options in Advanced Animation Group

- **Add Animation** – Adds additional animation effects to the same object.
- **Animation Pane** – Displays all animations on the slide and allows changing their order and timing.
- **Trigger** – Starts an animation when a specific object is clicked.
- **Animation Painter** – Copies animation effects from one object and applies them to another.

Steps to Use Advanced Animation Group

1. Select the object with animation.
2. Click the **Animations** tab.
3. Use **Add Animation** to apply more effects.
4. Open **Animation Pane** to manage order and timing.
5. Use **Animation Painter** to copy animations if required.

Simple Example

In a training presentation, the **Animation Pane** is used to make bullet points appear one after another, and a **Trigger** is used to start an animation when a button is clicked.

Timing Group (Animations Tab in MS PowerPoint)

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The Timing Group in the Animations tab is used to control when an animation starts, how long it runs, and any delay before it begins.

Explanation

The Timing Group helps synchronize animations with speech or other effects. It ensures animations play in the correct order and at the right speed.

Options in Timing Group

- **Start** – Sets when the animation begins (On Click, With Previous, After Previous).
- **Duration** – Controls the speed (how long the animation lasts).
- **Delay** – Sets a waiting time before the animation starts.

Steps to Use

1. Select the animated object.
2. Go to the **Animations** tab.
3. Choose a **Start** option.
4. Set **Duration** and **Delay** as required.
5. Click **Preview** to check the effect.

Simple Example

*Setting bullet points to appear **After Previous** with a **0.5-second delay** so points appear smoothly during explanation.*

Slide Show Tab (MS PowerPoint)



The Slide Show tab is used to run, control, and customize the presentation while delivering it to an audience. It provides options to start the slide show, set timings, rehearse, and configure how the presentation is displayed.

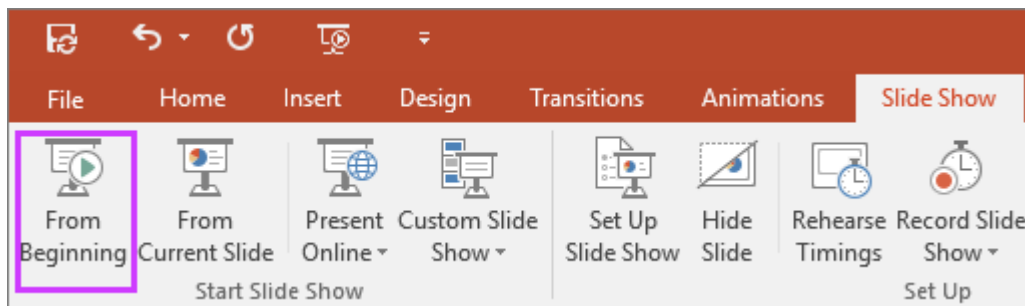
Main Groups in the Slide Show Tab

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1. **Start Slide Show Group** – Used to start the presentation from the beginning or from the current slide.
2. **Set Up Group** – Used to configure slide show settings such as hiding slides, rehearsing timings, and recording narration.
3. **Monitors Group** – Used to select display options like Presenter View and monitor settings.

Start Slide Show Group (Slide Show Tab in MS PowerPoint)



The **Start Slide Show Group** in the **Slide Show** tab is used to **begin the presentation and control how it starts**.

Explanation

This group allows the presenter to start the slide show either from the **first slide** or from the **currently selected slide**. It is useful while presenting or when checking a specific part of the presentation.

Options Available

- **From Beginning** – Starts the slide show from the first slide.
- **From Current Slide** – Starts the slide show from the selected slide.
- **Custom Slide Show** – Allows presenting selected slides only.

Steps to Use

1. Click the **Slide Show** tab.
2. Choose **From Beginning** or **From Current Slide**.
3. The slide show starts in full-screen mode.

Simple Example

During a classroom presentation, the teacher uses **From Current Slide** to continue the presentation after a break.

Set Up Group (Slide Show Tab in MS PowerPoint)

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The **Set Up Group** in the **Slide Show** tab is used to **configure and customize** how the slide show runs.

Explanation

This group allows the presenter to control the behavior of the slide show, such as **which slides are shown, how slides advance, and whether narration and timings are used**. It is especially useful for rehearsing and automating presentations.

Options Available

- **Set Up Slide Show** – Controls slide show type, loop options, and slide range.
- **Hide Slide** – Hides the selected slide during the slide show without deleting it.
- **Rehearse Timings** – Allows practicing the presentation and recording slide timings.
- **Record Slide Show** – Records narration, ink, and timings for the presentation.

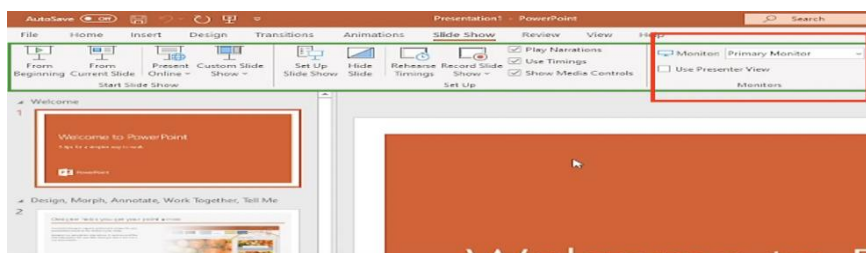
Steps to Use

1. Click the **Slide Show** tab.
2. Choose an option from the **Set Up Group**.
3. Adjust required settings (timings, narration, slide range).
4. Save the presentation if changes are made.

Simple Example

A student uses **Rehearse Timings** to practice a seminar presentation and automatically set slide timings.

Monitors Group (Slide Show Tab in MS PowerPoint)



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The **Monitors Group** in the **Slide Show** tab is used to **control how the presentation is displayed on one or more screens during a slide show**.

Explanation

This group lets the presenter choose the display monitor and enable **Presenter View**, which shows speaker notes, slide thumbnails, and controls on the presenter's screen while the audience sees only the slides.

Options Available

- **Presenter View** – Shows notes and tools on the presenter's screen.
- **Monitor** – Selects which screen/projector displays the slide show.
- **Resolution** (where available) – Adjusts display resolution for clarity.

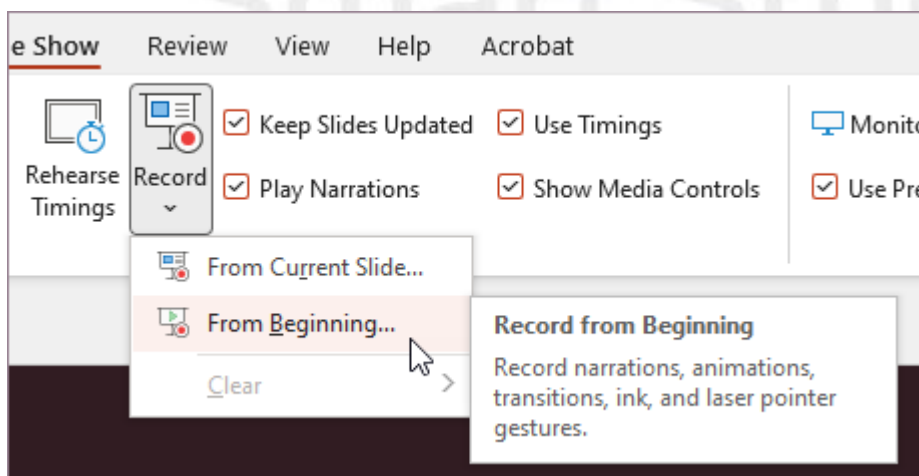
Steps to Use

1. Click the **Slide Show** tab.
2. In the **Monitors Group**, enable **Presenter View** if required.
3. Select the target **Monitor** for the slide show.
4. Start the slide show.

Simple Example

During a conference, the presenter uses **Presenter View** on a laptop to read notes while slides are displayed on a projector for the audience.

Record Tab (MS PowerPoint)



The **Record** tab in MS PowerPoint is used to **record presentations** by capturing **narration (audio), slide timings, ink annotations, and screen activity**. It helps create self-running or shareable presentations.

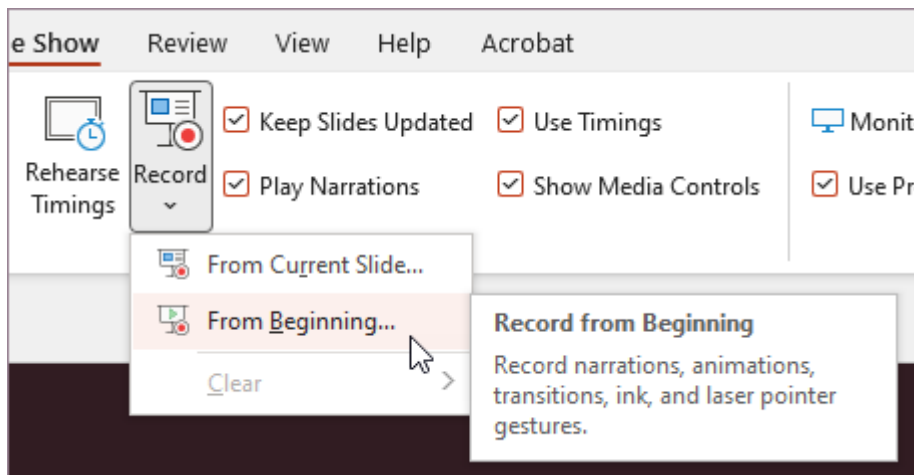
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Main Groups in the Record Tab

1. **Record Group** – Used to record slide show narration, timings, and ink from the beginning or current slide.
2. **Screen Recording Group** – Used to record on-screen activities and insert the recording into slides.
3. **Audio Group** – Used to record or manage audio narration for slides.
4. **Ink Group** – Used to draw, highlight, or annotate on slides during recording.

Record Group (Record Tab in MS PowerPoint)



The **Record Group** in the **Record tab** is used to **record a presentation with narration, slide timings, and ink annotations**.

Explanation

This group lets the presenter record audio (voice), capture the time spent on each slide, and add ink marks while presenting. The recording can start **from the beginning** of the presentation or **from the current slide**.

Options Available

- **Record From Beginning** – Starts recording from the first slide.
- **Record From Current Slide** – Starts recording from the selected slide.

Steps to Use

1. Click the **Record** tab.
2. Choose **Record From Beginning** or **Record From Current Slide**.
3. Speak into the microphone and move through slides.
4. Stop recording and save the presentation.

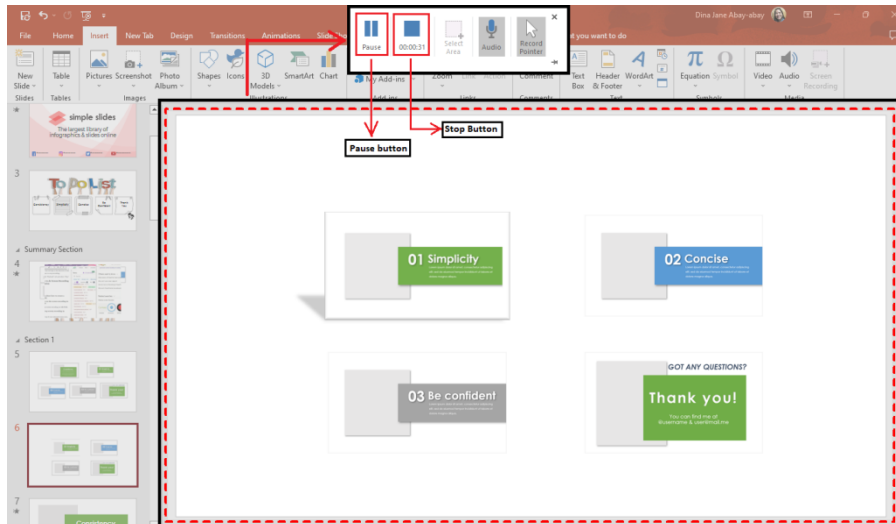
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Simple Example

A teacher records narration for an online lesson starting from the first slide so students can watch it later.

Screen Recording Group (Record Tab in MS PowerPoint)



The **Screen Recording Group** in the **Record tab** is used to **record on-screen activity** and insert it directly into a slide as a video.

Explanation

This group allows users to capture **steps performed on the screen**, including mouse movements and system audio. It is useful for creating **demonstrations, tutorials, and software walkthroughs** within a presentation.

Steps to Use

1. Click the **Record** tab.
2. Click **Screen Recording**.
3. Select the screen area to record.
4. Click **Record** and perform the on-screen actions.
5. Stop recording; the video is inserted into the slide automatically.

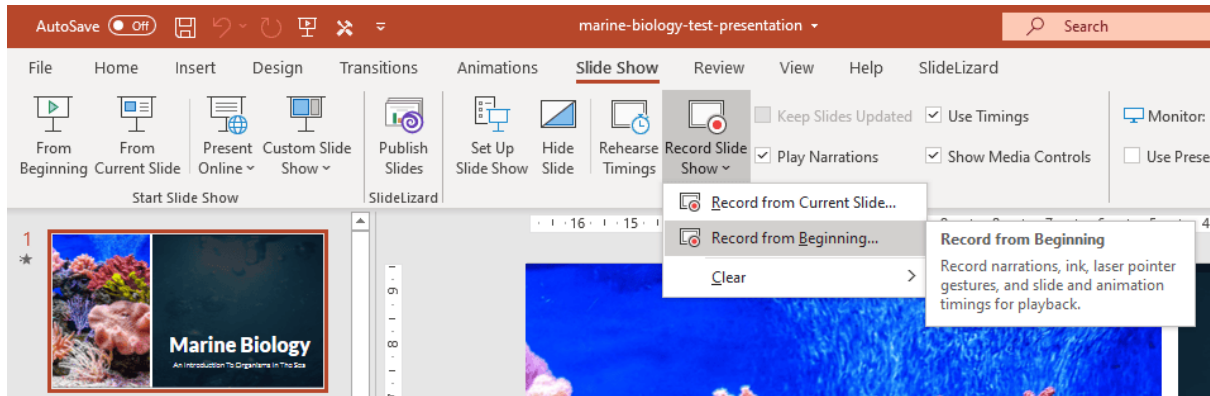
Simple Example

Recording the steps of using a software application and embedding the video into a training presentation.

Audio Group (Record Tab in MS PowerPoint)

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*The **Audio Group** in the **Record** tab is used to record, insert, and manage audio narration in a presentation.*

Explanation

*This group allows the presenter to add **voice narration** to slides. Audio can be recorded directly using a microphone or managed for playback during the slide show. Audio narration helps explain slide content clearly without the presenter being physically present.*

Options Available

- **Record Audio** – Records voice narration for a slide or presentation.
- **Playback Controls** – Adjusts how and when the audio plays (automatically or on click).

Steps to Use

1. Click the **Record** tab.
2. Click **Record Audio** in the Audio Group.
3. Speak into the microphone to record narration.
4. Stop recording and save the audio.
5. Adjust playback settings if required.

Simple Example

A student records voice explanations for each slide of a project presentation so it can be submitted as a self-explanatory presentation.

Ink Group (Record / Slide Show Recording in MS PowerPoint 2010)

*The **Ink Group** is used to draw, write, or highlight on slides using digital ink while recording or presenting a slide show.*

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Explanation

*Ink tools allow the presenter to **annotate slides in real time**—for example, to underline key points or circle important items. These annotations can be **recorded along with narration and timings** and played back during the slide show.*

Options in the Ink Group

- **Pen** – Draws freehand lines on slides.
- **Highlighter** – Highlights text or areas transparently.
- **Eraser** – Removes ink annotations.
- **Ink Color/Thickness** – Changes color and width of ink.

Steps to Use

1. Start **Record Slide Show** (or run the slide show).
2. Choose **Pen** or **Highlighter** from Ink tools.
3. Draw or highlight on the slide.
4. Use **Eraser** to remove ink if needed.
5. Stop recording and save the presentation.

Simple Example

*While recording an online lecture, a teacher uses the **Highlighter** to mark key formulas on a slide.*

Review Tab (MS PowerPoint 2010)

*The **Review tab** in **MS PowerPoint 2010** is used to **check errors, add comments, translate text, and review slides** before finalizing a presentation. It helps improve **accuracy, clarity, and collaboration**.*

Main Groups in the Review Tab

*The **Review tab** in **MS PowerPoint 2013** consists of the following **main groups**:*

1. **Proofing Group** – Used to check spelling, grammar, thesaurus, research, and translation of slide content.
2. **Language Group** – Used to set the proofing language and translate selected text into other languages.
3. **Comments Group** – Used to add, edit, delete, and navigate comments in slides for review and collaboration.

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4. **Compare Group** – Used to compare and merge different versions of a presentation.
5. **Accessibility Group** – Used to check accessibility issues and make presentations usable for people with disabilities.

Proofing Group

The **Proofing Group** in the **Review tab** of **MS PowerPoint 2013** is used to **check and improve the correctness of slide content**.

Explanation

The Proofing Group helps users find and correct **spelling and grammar errors**, improve word choice, and obtain reference information. It ensures the presentation content is **accurate, clear, and professional**.

Options in the Proofing Group

- **Spelling** – Checks spelling mistakes in the presentation.
- **Thesaurus** – Suggests synonyms for selected words.
- **Research** – Provides reference information for selected text.
- **Translate** – Translates selected text into another language.

Steps to Use

1. Click the **Review** tab.
2. Click **Spelling** or another proofing option.
3. Review and apply suggested corrections.

Simple Example

Running **Spelling Check** to correct errors before submitting a seminar presentation.

Language Group (Review Tab in MS PowerPoint 2013)

The **Language Group** in the **Review tab** of **MS PowerPoint 2013** is used to **set and manage the language of text** in a presentation.

Explanation

This group allows users to choose the **proofing language** so that spelling and grammar are checked according to the selected language. It also helps in **translating text** into other languages.

Options in the Language Group

- **Set Proofing Language** – Selects the language used for spell checking.

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- **Translate** – Translates selected text into another language.

Steps to Use

1. Select the text on the slide.
2. Click the **Review** tab.
3. Choose **Set Proofing Language** or **Translate**.
4. Select the required language and apply.

Simple Example

Setting the proofing language to **English (India)** so spelling and grammar are checked correctly.

Research (Review Tab in MS PowerPoint 2013)

The **Research** option in the **Review** tab is used to **find reference information** about selected text directly within PowerPoint.

Explanation

The Research tool provides quick access to **dictionary meanings, synonyms, translations, and reference sources** without leaving the presentation. It opens a **Research pane** where related information is displayed for the selected word or phrase.

What Research Provides

- Dictionary definitions
- Thesaurus (synonyms and related words)
- Translation and reference information (depending on settings/services)

Steps to Use Research

1. Select a word or phrase on a slide.
2. Click the **Review** tab.
3. Click **Research**.
4. View related information in the Research pane.

Simple Example

Selecting the word “Globalization” and using **Research** to check its meaning while preparing a seminar slide.

Translate (Review Tab in MS PowerPoint 2013)

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The **Translate** option in the **Review tab** is used to **convert selected text from one language to another** directly within PowerPoint.

Explanation

Translate helps users prepare **multilingual presentations** by translating words or sentences without leaving the application. The translated text appears in a **translation pane**, from where it can be copied and used on the slide.

Steps to Use Translate

1. Select the text on the slide.
2. Click the **Review** tab.
3. Click **Translate**.
4. Choose the target language.
5. Copy and insert the translated text if required.

Simple Example

Translating slide content from **English to Telugu** for a regional audience.

View Tab (MS PowerPoint 2010 / 2013)

The **View tab** in MS PowerPoint is used to **change how slides and presentation elements are displayed on the screen**. It provides different views for **creating, editing, organizing, and reviewing** presentations.

Main Groups in the View Tab

1. **Presentation Views Group** – Used to switch between different slide views such as Normal, Slide Sorter, Reading View, and Slide Show.
2. **Master Views Group** – Used to edit Slide Master, Handout Master, and Notes Master for uniform design.
3. **Show Group** – Used to show or hide rulers, gridlines, and guides for alignment.
4. **Zoom Group** – Used to zoom in or out of slides and fit slides to the window.
5. **Window Group** – Used to manage multiple presentation windows and switch between them.

Presentation Views Group (View Tab in MS PowerPoint)

The **Presentation Views Group** in the **View tab** is used to **change the way slides are displayed on the screen** while creating, editing, or presenting a presentation.

Explanation

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Different views help users work efficiently depending on the task—editing content, arranging slides, or delivering the presentation.

Options in Presentation Views Group

- **Normal View** – Used to create and edit slides.
- **Slide Sorter View** – Displays all slides as thumbnails for easy rearrangement.
- **Reading View** – Shows slides in a window for previewing animations and transitions.
- **Slide Show View** – Displays slides in full-screen mode for presentation.

Steps to Use

1. Click the **View** tab.
2. Select the required view from the **Presentation Views Group**.

Simple Example

Using **Slide Sorter View** to change the order of slides before presenting.

Master Views Group (View Tab in MS PowerPoint)

The **Master Views Group** in the **View tab** is used to **control the overall design, layout, and formatting** of slides, handouts, and notes in a presentation.

Explanation

Master views allow users to make **global changes** that apply to **all slides** or printed materials at once. This ensures **consistency** in fonts, colors, backgrounds, headers, and footers throughout the presentation.

Options in Master Views Group

- **Slide Master** – Used to set common layout, font style, background, and placeholders for all slides.
- **Handout Master** – Used to design the layout and appearance of printed handouts.
- **Notes Master** – Used to format the notes pages used by the presenter.

Steps to Use

1. Click the **View** tab.
2. Click **Slide Master**, **Handout Master**, or **Notes Master**.
3. Make required formatting changes.

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4. Close the Master View to apply changes to the presentation.

Simple Example

Changing the font style in **Slide Master** so that all slides use the same font automatically.

Show Group (View Tab in MS PowerPoint)

The **Show Group** in the **View tab** is used to **display or hide on-screen aids** that help align and position objects accurately on slides.

Explanation

These aids do **not appear during the slide show**; they are only for editing and design. Turning them on helps maintain neat alignment and consistent spacing.

Options in the Show Group

- **Ruler** – Displays horizontal and vertical rulers to measure and align objects.
- **Gridlines** – Shows a grid on the slide to align objects evenly.
- **Guides** – Displays movable guide lines for precise placement of objects.

Steps to Use

1. Click the **View** tab.
2. In the **Show Group**, check or uncheck **Ruler**, **Gridlines**, or **Guides** as needed.
3. Drag guides to position objects accurately.

Simple Example

Using **Gridlines** and **Guides** to align images and text boxes evenly on a slide.

Zoom Group (View Tab in MS PowerPoint)

The **Zoom Group** in the **View tab** is used to **change the magnification level of slides** while working on a presentation.

Explanation

Zoom options help users **view slides more clearly** by zooming in to edit small details or zooming out to see the entire slide layout.

Options in the Zoom Group

- **Zoom** – Opens a dialog box to set a specific zoom percentage.
- **100%** – Displays the slide at its actual size.

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- **Fit to Window** – Fits the entire slide within the PowerPoint window.

Steps to Use

1. Click the **View** tab.
2. Choose **Zoom, 100%, or Fit to Window**.
3. Adjust the zoom level as required.

Simple Example

Zooming in to edit small text or icons clearly on a slide.

Window Group (View Tab in MS PowerPoint)

The **Window Group** in the **View tab** is used to **manage multiple PowerPoint windows and presentations** at the same time.

Explanation

This group helps users work efficiently when **more than one presentation is open**. It allows viewing, arranging, and switching between different presentation windows.

Options in the Window Group

- **New Window** – Opens another window of the same presentation.
- **Arrange All** – Displays all open PowerPoint windows side by side.
- **Switch Windows** – Switches between different open presentations.

Steps to Use

1. Click the **View** tab.
2. Go to the **Window Group**.
3. Select **New Window, Arrange All, or Switch Windows** as required.

Simple Example

Using **Arrange All** to compare two presentations side by side while editing.

B. History of the Internet

The origin of the Internet goes back to the 1960s. During that time, researchers in the United States wanted a way to connect computers in different universities so that research data could be shared quickly.

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*This led to the creation of an early network called **ARPANET** in 1969. It successfully showed that distant computers could exchange information by sending data in small parts called packets.*

*In 1971, a method to send **electronic mail (e-mail)** was developed, which made person-to-person communication possible over networks. After this, scientists worked on creating standard communication rules so that different networks could understand each other. These rules later became known as **TCP/IP**.*

*By the early 1980s, TCP/IP became the common standard for network communication and the word **Internet** began to be used for the growing global network. During this period, systems were also created to give computers easy names, known as the **Domain Name System (DNS)**.*

All these developments slowly expanded the network and prepared the foundation for modern Internet use.

Internet

*The **Internet** is a worldwide system that connects many computer networks together. It allows computers and digital devices in different places to communicate and share information. This communication happens using common technical rules called **protocols**, mainly TCP/IP.*

*Because it joins many separate networks into one large system, the Internet is often described as a “**network of networks**.” It includes private, public, educational, business and government networks. These networks are connected using different technologies such as cables, wireless signals and optical fibre.*

The Internet does not have one central computer or one single owner. Instead, information is stored on millions of computers around the world. When a user accesses data, it travels through many connected networks until it reaches the required computer and returns the result.

The Internet supports many services such as websites, e-mail, file transfer, online communication, and multimedia sharing.

1.Services/ Uses / Benefits of the Internet

Communication

The Internet makes communication very fast and easy. People can send emails, chat messages, and make voice or video calls to anyone in the world within seconds. This helps families, friends, students, and businesses stay connected even when they are far apart.

Information and Learning

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The Internet provides a huge amount of information on every subject. Students and teachers can search for notes, articles, tutorials, and research materials. It supports online classes and self-learning, making education available to everyone.

Online Services and Banking

Many daily tasks can be done online such as paying bills, transferring money, booking tickets, and filling application forms. Internet banking saves time and allows users to manage their accounts safely from home.

Business and Shopping

The Internet helps people buy and sell products online. Businesses can advertise, communicate with customers, and provide services through websites. Online shopping allows users to compare prices and order items easily.

Entertainment

Users can watch movies, listen to music, play games, and stream videos online. The Internet provides unlimited entertainment choices anytime and anywhere.

Social Connection

Through social platforms, people can share messages, photos, and ideas with others. It helps build communities and maintain relationships across the world.

File Sharing and Collaboration

Documents, images, and videos can be shared instantly over the Internet. This is very useful for office work, group projects, and teamwork where many people need to work on the same files.

Remote Work and Meetings

The Internet allows people to work from home and attend online meetings. This supports flexible working and connects teams located in different cities or countries.

Access to News and Updates

People can read the latest news, weather reports, and live updates at any time. Information is updated quickly, so users always get current details.

Time and Cost Saving

By doing many activities online, people save travel time and money. Tasks that once took hours can now be completed in minutes using the Internet.

2. World Wide Web (WWW)

*The **World Wide Web (WWW)**, commonly known as the **Web**, is an information system that allows*



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people to view and share digital content over the Internet. It consists of a very large collection of **web pages** and **websites** stored on computers called **web servers**. These pages are connected to each other through special links so that users can easily move from one page to another.

The Web is only a part of the Internet. The Internet provides the global network connection, while the Web uses that connection to display information in the form of pages. Because of the Web, users can open and read documents, view images, watch videos, listen to audio, and use many online services through a simple graphical interface.

Each web page has a unique address called a **URL (Uniform Resource Locator)**. By typing this address in a web browser, a user can open the required page from anywhere in the world. A group of related pages stored under one main address is called a **website**.

Web pages are created using **HTML (HyperText Markup Language)**. HTML allows the page to include text, headings, images, tables, forms, audio, video, and links to other pages. Because pages can link to each other, the information on the Web forms a large connected network, which is why it is called the “Web.”

Structure of the Web

The structure of the World Wide Web is based on three main components:

1. Web Servers

These are powerful computers that store websites and web pages. When a user asks for a page, the server sends that page to the user's computer.

2. Web Browsers

A browser is a program used to open and view web pages. It reads the data received from the server and shows it in a readable and user-friendly form.

3. Internet Connection

The Internet acts as the communication path between the user's device and the web server. It carries the request from the user and returns the response from the server.

Web pages are connected to each other by **hyperlinks**. These links allow users to move from one page to another simply by clicking. Because of these links, information on the Web forms a network of connected pages, like a web.

Many related web pages together form a **website**. Websites can be used for:

- Information and education
- Entertainment
- Communication and social sharing
- Business and online services

Today, the Web is one of the most important tools of the Information Age and is used by billions of people every day.

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Working Method of the Web

The Web works through a step-by-step communication process between the browser and the server.

- 1. The user opens a browser and enters a URL.*
- 2. The browser sends a request over the Internet to the correct web server.*
- 3. This request follows a standard communication rule called **HTTP (HyperText Transfer Protocol)**.*
- 4. The web server receives the request and finds the required web page.*
- 5. The server sends the page data back to the browser.*
- 6. The browser reads the data and displays the page on the screen.*

When the user clicks a hyperlink, the same process happens again for the new page. This request-and-response cycle is repeated every time a new page is opened.

This method is very fast, so users can move smoothly from one page to another without delay.

Features of the World Wide Web (WWW)

1. Global Acces

The World Wide Web can be accessed from anywhere in the world using the Internet. A user in any country can open and view web pages stored on servers located in another country. This global reach makes information sharing possible without geographical limits.

2. Hyperlink Navigation

Web pages are connected to each other through hyperlinks. These clickable links allow users to move easily from one page to another related page. Because of hyperlinks, information on the Web forms a large connected network that is simple to explore.

3. Multimedia Support

The Web is not limited to plain text. It can display images, audio, video, animations and graphics along with text. This multimedia feature makes learning, communication and entertainment more interesting and effective.

4. User Friendly Interface

Web pages are displayed through web browsers in a clear and readable format. Users do not need technical knowledge to use the Web. Simple clicking and typing are enough to browse and access information.

5. Distributed Information System

Information on the Web is stored on many different web servers around the world. There is no single storage location. This distributed nature improves speed, availability and reliability of information.

6. Easy and Fast Information Retrieval

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Users can quickly find required information by entering a web address or using search engines. Pages open within seconds, which saves time and makes information access very convenient.

7. Interactive Communication

The Web allows two-way interaction between users and websites. People can fill forms, post comments, send messages, upload files and use online tools directly from web pages.

8. Dynamic and Updatable Content

Web content can be changed and updated at any time by website owners. This ensures that users always get the latest news, data and information.

9. Platform Independence

The Web works on different devices and operating systems such as computers, laptops, tablets and smartphones. Any device with a browser and Internet connection can access web pages.

10. Support for Online Services

The Web is used to provide many online services such as education, shopping, banking, booking tickets and accessing government services. It has become an essential platform for daily digital activities.

3. Internet Service Provider (ISP)

An **Internet Service Provider (ISP)** is an organization or company that provides Internet access to users. It connects individual computers and local networks to the global Internet. Without an ISP, a user cannot go online or use Internet-based services.

The ISP supplies the physical connection and network facilities required for communication over the Internet. When a device connects through an ISP, it is given a unique identification number called an **IP address**. This address allows the device to send and receive data correctly across the worldwide network.

Whenever a user opens a website, sends an email, downloads a file, or makes an online call, the data travels from the user's device to the ISP and then to other networks on the Internet. In this way, the ISP acts as a gateway between the user and the global Internet.

Uses and Functions of an Internet Service Provider (ISP)

1. Providing Internet Access

The most important use of an ISP is to give users access to the Internet. It creates the connection that allows computers and mobile devices to go online and communicate with other systems around the world.

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2. Enabling Web Browsing

Through the ISP connection, users can open websites and view web pages. All browsing requests pass through the ISP's network before reaching web servers on the Internet.

3. Supporting Online Communication

An ISP makes it possible to send emails, use chat services, and make voice or video calls. Without the ISP's data transfer service, these communications cannot happen.

4. Allowing File Transfer

Users can download files from the Internet and upload their own files to online platforms. The ISP carries these files between the user and remote servers.

5. Providing IP Addresses

Every device needs a unique identification number on the Internet. The ISP assigns an IP address so that the device can send and receive data correctly.

6. Routing Internet Traffic

The ISP directs data along the correct path across different networks. This routing ensures that information reaches the correct destination quickly and accurately.

7. Managing Speed and Bandwidth

ISPs control how fast data moves and how much data can be used at a time. This management helps provide a stable and smooth Internet experience for many users.

8. Offering Domain Name Service (DNS)

When a user types a website name, the ISP translates that name into a numerical IP address. This allows the browser to locate and open the correct website.

9. Providing Technical and Security Support

ISPs help users solve connection problems and may offer protection against harmful traffic, spam, and network attacks.

10. Maintaining Network Infrastructure

The ISP manages and maintains cables, routers, and servers so that the Internet service remains active and reliable at all times.

4. Web Browser

*A **web browser** is a **software program** used to open and view information on the **World Wide Web**. It works like a bridge between the **user** and the **web server**. With a web browser, a person can open **web pages**, visit **websites**, and use many **online services** on the Internet.*

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*When a user types a website **address (URL)** into the browser, the browser sends a **request** to the correct web server through the Internet. The server then sends back the **web page data**. The browser reads this data and shows the page on the screen in a clear and easy-to-read form.*

*In simple words, a web browser helps users **search, open, and read** information available on the Internet.*

*Some popular web browsers are **Google Chrome, Mozilla Firefox, Microsoft Edge, Safari, and Opera**.*

Uses and Functions of a Web Browser

1. Opening Websites

A web browser is mainly used to open and view different websites. By typing the website address (URL) in the address bar, the browser connects to the web server and displays the required web page on the screen.

2. Searching Information

The browser helps users search for information on any topic. By entering keywords in the search bar, users can quickly find articles, images, videos, and other online resources.

3. Displaying Web Pages

A web browser reads the data received from a web server and displays it in a clear and graphical form. It can show text, pictures, audio, and videos in an easy-to-understand layout.

4. Navigating Between Pages

Browsers allow users to move from one web page to another using hyperlinks. They also provide back, forward, and refresh buttons to make navigation simple and smooth.

5. Downloading Files

With the help of a web browser, users can download files such as documents, images, music, videos, and software from the Internet to their device.

6. Uploading Files

Browsers allow users to upload files to websites. This is useful for sending documents, uploading photos, submitting assignments, or sharing files online.

7. Using Online Services

A web browser is used to access many online services such as email, online shopping, banking, ticket booking, and filling online forms.

8. Saving Favourite Sites

Users can save important or frequently visited websites as bookmarks. This helps in opening those websites quickly without typing the address again.

9. Keeping Browsing History

The browser stores a record of websites visited by the user. This history helps users reopen previously visited pages easily.

10. Providing Security and Privacy

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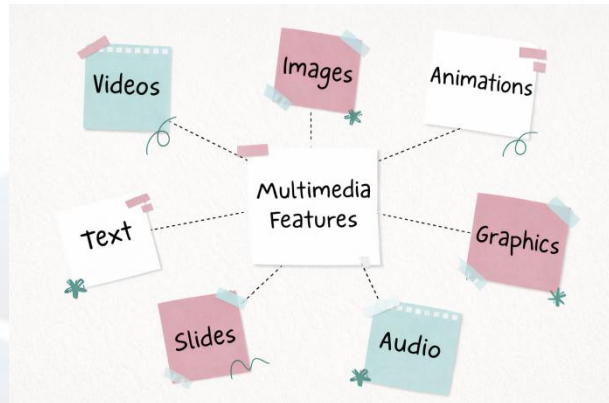
Web browsers protect users by warning them about unsafe or fake websites. They also provide private browsing modes to help keep personal information safe.

C. Multimedia

Definition of Multimedia

Multimedia is the presentation of information using more than one type of media at the same time. It combines **text, images, graphics, sound, animation, and video** with the help of a computer or other digital devices. By using multiple forms of content together, multimedia makes information more clear, attractive, and easy to understand.

When the user can control how and when each element is shown, it is called **interactive multimedia**. When different multimedia elements are connected through links that allow the user to move from one part to another, it is known as **hypermedia**.



Characteristics of Multimedia

- Multimedia delivers information by combining different media elements such as **written text, pictures, graphics, audio, animation, and video** using a computer or electronic device.
- Developing multimedia requires a mix of **creative thinking, technical knowledge, proper organization, and planning skills** to produce effective and attractive content.
- Multimedia presentations may run in a fixed, step-by-step order (**linear**) or may allow the user to choose their own path and interact with the content (**non-linear or interactive**).
- Multimedia can use an organized system of links that connect related parts of the content, enabling easy movement between them; this linked structure is called **hypermedia**.
- It allows **user interaction**, such as clicking buttons, selecting options, and controlling the speed or order of viewing.
- Multimedia content is stored and processed in **digital form**, which makes it easy to copy, edit, and share.
- It improves **attention and understanding** by presenting information through both sound and visuals.
- Multimedia can be used on different devices like **computers, tablets, and mobile phones**.
- It supports **integration of various software tools** such as graphics editors, audio editors, and video editors.

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- Well-designed multimedia makes learning and communication more **engaging, clear, and memorable**.

Uses of Multimedia

Multimedia is used whenever people interact with digital information through a computer or electronic device.

- In **education**, it is used for online classes, tutorials, and presentations.
- In **entertainment**, it is used in movies, music, and video games.
- In **business**, it is used for product demonstrations and training.
- In **advertising**, it is used to attract customers through visuals and sound.
- In **communication**, it helps explain ideas more clearly than text alone.

Components of Multimedia

Multimedia is created by combining several basic elements. Each element plays an important role in presenting information clearly and attractively. The main components of multimedia are **Text, Graphics, Audio, Video, and Animation**.

1. Text

Text is the basic and most commonly used element in any multimedia application. It is used to present titles, headings, descriptions, instructions, and detailed information. Different **fonts, sizes, colours, and styles** are used to make the text clear and visually appealing. Well-designed text helps the user understand the content quickly. Too much plain text can be boring, so it is often supported by other multimedia elements to improve readability.

2. Graphics

Graphics include pictures, drawings, charts, diagrams, and photographs. They are used to explain ideas visually instead of using long paragraphs of text. Graphics make the presentation more attractive and easier to understand.

There are two main types of graphics:

Bitmap Graphics (Raster Images)

These are real images captured from cameras or scanners. They are made of tiny dots called pixels. Bitmap images show fine details and colours but usually need more storage space and are harder to edit without losing quality.

Vector Graphics

These are created using lines, shapes, and mathematical formulas inside the computer. They use less memory and can be resized or edited easily without losing clarity. Vector graphics are commonly used for logos, diagrams, and illustrations.

3. Audio

Audio refers to sound used in multimedia, such as **speech, music, narration, and sound effects**. It adds life to the content and improves understanding. Spoken explanations are very

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useful in teaching and training. Music and sound effects can create mood and attract attention.

Sound in the real world is continuous and is called **analog sound**. Computers convert this sound into **digital audio** so it can be stored, edited, and played back. Digital audio files can be easily copied and shared.

4. Video

Video shows **moving pictures along with sound**. It is one of the most powerful multimedia elements because it can present real-life events and actions in a short time. Videos are used for demonstrations, lectures, advertisements, and tutorials.

Digital video needs large storage space and high processing power, especially when used on the Internet. However, it can be edited, cut, and combined with other media. Video files can be stored on a computer and shared through networks while maintaining good quality.

5. Animation

Animation is the technique of creating the feeling of movement by showing many still images one after another. It is useful for explaining processes, showing changes over time, and attracting attention. Animations make presentations more lively and interesting.

Animations can be simple, like moving text or icons, or complex, like cartoon characters and simulations. Because of its visual appeal, animation is widely used in education, games, advertisements, and presentations.

6. IT Security

IT Security refers to the protection of computers, networks, and data from unauthorized access, damage, or misuse. It ensures that information remains safe, private, and available only to the right users. IT security uses methods such as passwords, encryption, antivirus software, and firewalls. It is important in multimedia and Internet use to protect digital files, prevent hacking, and keep personal and organizational data secure.

1.Applications of Multimedia

Multimedia is used in many fields to present information in a clear, attractive and interactive way. By combining text, images, sound, animation and video, it improves communication, learning and decision making.

Multimedia in Business

In modern offices, multimedia is used for communication, training and presentations. Companies use video meetings, voice mail and email to connect teams working in different places. Multimedia presentations are used for employee training, product demonstrations and group discussions. It also helps in storing and managing office records in digital form.

Multimedia in Marketing and Advertising

Multimedia is widely used to promote products and services. Advertisements use pictures, animation, video clips and sound effects to attract customers. Colourful banners, moving text

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and background music make advertisements more appealing and memorable, which increases product sales.

Multimedia in Entertainment

The entertainment industry uses multimedia in movies, music videos, animation films and video games. Special effects, sound tracks and visual graphics create an enjoyable experience for viewers and players. Streaming videos and online games are also examples of multimedia entertainment.

Multimedia in Education

In education, multimedia makes learning more interesting and easy to understand. Interactive lessons, educational games, animations and digital libraries help students learn better. Teachers use presentations with pictures, audio and video to explain complex topics clearly.

Multimedia in Banking

Banks use multimedia displays to provide information about services, schemes and interest rates. ATM screens, online banking websites and mobile banking apps use graphics and sound to guide users. Multimedia helps customers understand financial services easily.

Multimedia in Hospitals

Hospitals use multimedia systems to monitor patients in real time. Medical images, reports and vital signs are shown on computer screens for doctors. Multimedia is also used for medical training and for consulting experts through live video during surgeries.

Multimedia as Teaching Aids

Multimedia teaching tools motivate students through audio-visual support. Interactive tutorials and simulations allow learners to practice and understand concepts. These tools create an engaging learning environment and improve knowledge retention.

Multimedia in Communication Services

With modern technology, multimedia services are available at home through the Internet. These include digital TV, video on demand, online shopping, video calls, online banking and interactive games. Digital newspapers, magazines and multimedia libraries are also easily accessible.

Multimedia in Training and Presentations

Organizations use multimedia presentations to explain ideas and plans clearly. Charts, videos and animations make presentations more effective and professional.

Multimedia in Public Information Systems

Airports, railway stations and shopping centres use multimedia screens to show announcements, directions and advertisements. These displays combine text, graphics and sound to inform people quickly and clearly.

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PRESENTATION (MS PowerPoint / LibreOffice Impress)

1. *Explain the applications of presentation software. Describe the role of presentations in education, business, and communication.*
2. *Describe the menus and toolbars (Ribbon) of MS PowerPoint / LibreOffice Impress. Explain the functions of important tabs with suitable examples.*
3. *Explain the step-by-step procedure for creating a presentation. How can a presentation be created using templates and manually?*
4. *What are slides? Explain the methods of adding, editing, and deleting slides in a presentation.*
5. *Explain different types of slides available in presentation software. Describe their uses with examples.*
6. *What is Slide Show? Explain how to run, control, and end a slide show in a presentation.*
7. *Explain various slide views available in presentation software. Discuss the importance of each view.*
8. *Describe formatting options available in presentation software. Explain text formatting, slide formatting, and background design.*
9. *Explain the procedure for inserting objects in slides. Discuss insertion of images, tables, audio, video, and charts.*
10. *What are charts? Explain different types of charts and the steps involved in inserting charts into slides.*
11. *Explain Custom Animation and Slide Transitions. How do they enhance the effectiveness of a presentation?*
12. *Explain the process of saving, opening, and closing a presentation. Mention different file formats used in presentation software.*
13. *Define Internet. Explain various services available on the Internet.*
14. *Explain the World Wide Web (WWW). Describe its components and working.*
15. *What is an Internet Service Provider (ISP)? Explain the types of ISPs with examples.*
16. *Define a web browser. Explain the features and functions of popular web browsers.*
17. *Explain the steps involved in browsing the Internet. Discuss the use of URLs, hyperlinks, and search engines.*
18. *Explain the advantages and limitations of Internet services.*

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19. Define multimedia. Explain the applications of multimedia in different fields.
20. Explain the components of multimedia. Describe text, images, graphics, audio, and video in detail.
21. Differentiate between images and graphics. Explain their role in multimedia applications.
22. Explain the importance of audio and video in multimedia presentations.
23. Describe multimedia systems and their characteristics.
24. Define IT Security. Explain the need for IT security in modern computing.
25. Explain common security threats in information technology systems.
26. Describe various methods used to protect computer systems and data.
27. Explain the role of antivirus software and firewalls in IT security.
28. What is data security? Explain methods used for securing data and information.
29. Explain safe practices for secure Internet usage.

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