PERIYAR UNIVERSITY

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CENTRE FOR DISTANCE AND ONLINE EDUCATION

(CDOE)

B.Sc - COMPUTER SCEINCE

SEMESTER - IV

SKILL ENHANCEMENT COURSE (SEC):

OFFICE AUTOMATION

(Candidates admitted from 2024 onwards)

PERIYAR UNIVERSITY

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)

B.Sc Computer Science 2024 admission onwards

SKILL ENHANCEMENT COURSE (SEC)

Office Automation

Prepared by:

Centre for Distance and Online Education (CDOE)

Periyar University, Salem – 11.

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Unit I: Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS– UNIX–Windows. Introduction to Programming Languages.
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Unit III: Spreadsheets: Excel– opening, entering text and data, formatting, navigating; Formulas– entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction t o data analytics.
Unit IV: Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of datafiles; Understanding Programming environment in DBMS; Developing menu drive applications in query language (MS–Access).
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UNIT – I

BASIC OF COMPUTER SYSTEM

UNIT 1 - BASIC OF COMPUTER SYSTEM
Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS– UNIX–Windows. Introduction to Programming Languages.

UNIT OBJECTIVES

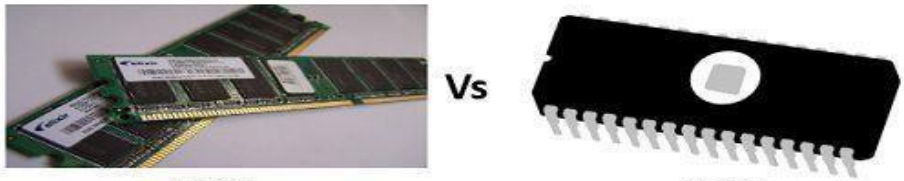
- This unit aims to provide a comprehensive understanding of the various input and output (I/O) devices integral to a computer system.
- Learners will explore different input units, and output units
- Learners will have a thorough knowledge of the functionalities and types of these devices, enabling them to appreciate their roles in enhancing computer system interactions and performance.
- It explores the distinctions and purposes of system software, such as operating systems and utility programs, alongside programming languages.

1.1 MEMORY UNIT

1.1.1 Primary Storage

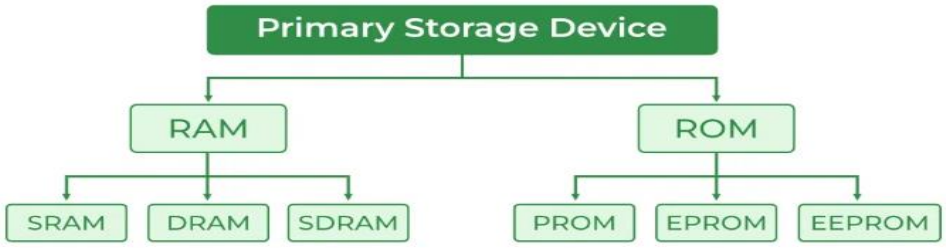
RAM (Random Access Memory)

- The primary storage is referred to as Random Access Memory (RAM) because it is possible to randomly select and use any location of the memory directly to store and retrieve data.
- It takes same time to any address of the memory as the first address It is also called read/write memory.
- The storage of data and instructions inside the primary storage is temporary. It disappearsfrom RAM as soon as the power to the computer is switched off.
- The memories, which lose their content on failure of power supply, are known as volatile memories. So now we can say that RAM is volatile memory.



A RAM constitutes the internal memory of the CPU for storing data, program and program result. It is read/write memory. It is called random access memory (RAM). Since access time in RAM is independent of the address to the word that is, each storage location inside the memory is as easy to reach as other location & takes the same amount of time. It canreach into the memory at random & extremely fast but can also be quite expensive.

RAM is volatile, i.e. data stored in it is lost when we switch off the computer or if thereis a power failure. Hence a backup uninterruptible power system (UPS) is often used with computers. RAM is small both in terms of its physical size and in the amount of data it can hold.



Static RAM (SRAM)

The word static indicates that the memory retains its contents as long as power remains applied. However, data is lost when the power gets down due to volatile nature. SRAM chips use a matrix of 6-transistors and no capacitors. Static RAM is used as cache memory needs to be veryfast and small.

Dynamic RAM (DRAM)

DRAM, unlike SRAM, must be continually refreshed in order for it to maintain the data. This is done by placing the memory on a refresh circuit that rewrites the data several hundred times per second. DRAM is used for most system memory because it is cheap and small. All DRAMs are made up of memory cells.

ROM (Read Only Memory)

There is another memory in computer, which is called Read Only Memory (ROM). Again it is the ICs inside the PC that form the ROM. The storage of program and data in the ROM is permanent. The ROM stores some standard processing programs supplied by the manufacturers to operate the personal computer. The ROM can only be read by the CPU but it cannot be changed. The basic input/output program is stored in the ROM that examines and initializes various equipment attached to the PC when the switch is turned ON. The memories, which do not loose their content on failure of power supply, are known as non-volatile memories. ROM is non-volatile memory. ROM stands for Read-Only Memory. It is a non-volatile memory that is used to stores important information which is used to operate the system.

PROM (Programmable read-only memory)

PROM is a form of digital memory. In this type of ROM, each bit is locked by a fuse or anti-fuse. The data stored in it are permanently stored and cannot be changed or erasable. Itis used in low-level programs such as firmware or microcode.

EPROM (Erasable programmable read-only memory)

EPROM also called EROM, is a type of PROM but it can be reprogrammed. The data stored in EPROM can be erased and reprogrammed again by ultraviolet light. Reprogrammed of it is limited. Before the era of EEPROM and flash memory, EPROM was used in microcontrollers.

EEPROM (Electrically erasable programmable read-only memory)

EEPROM (also E2PROM) stands for Electrically Erasable Programmable Read-Only Memory and is a type of non-volatile memory used in computers, integrated in microcontrollersfor smart cards and remote keyless system, and other electronic devices to store relatively small amounts of data but allowing individual bytes to be erased and reprogrammed.

Let's Sum Up

RAM (Random Access Memory) and ROM (Read-Only Memory) are essential types of primary storage in computers. RAM provides fast, temporary storage for data and program instructions during operation, while ROM retains crucial firmware and instructions that remain intact even when the computer is powered off, ensuring essential functions like booting up and system initialization.

1.1.2 Secondary Storage

Magnetic Tapes

Magnetic tape is a type of secondary storage medium that uses a thin, magnetically coated ribbon of plastic to store digital data. It is one of the oldest forms of data storage and has been used for decades in various industries for its reliability, durability, and cost-effectiveness. Despite advancements in storage technology, magnetic tapes continue to be used today, particularly for long-term archival and backup purposes.

Magnetic Disk

A magnetic disk is a type of secondary storage device that uses magnetic storage to store and retrieve digital data. It consists of one or more thin circular disks coated with a magnetic material, typically iron oxide. Magnetic disks are a fundamental component of many computer systems and are used for both internal and external storage purposes

Hard Disk

Hard Disk is a storage device (HDD) that stores and retrieves data using magnetic storage. It is a non-volatile storage device that can be modified or deleted n number of times without any problem. Most computers and laptops have HDDs as their secondary storage device. It is actually a set of stacked disks, just like phonograph records. In every hard disk, the data is recorded electromagnetically in concentric circles or we can say track present on the hard disk, and with the help of a head just like a phonograph arm(but

fixed in a position) to read the information present on the track. The read-write speed of HDDs is not so fast but decent. It ranges from a few GBs to a few and more TB.

Floppy Disks

Floppy Disk is also known as a floppy diskette. It is generally used on a personal computer to store data externally. A Floppy disk is made up of a plastic cartridge and secured with a protective case. Nowadays floppy disk is replaced by new and effective storage devices like USB, etc.

Optical disks

Optical disks are storage media that use optical technology to read and write data. They consist of a flat, circular disc made of a polycarbonate substrate coated with a reflective layer and protected by a clear plastic cover. Optical discs store data as microscopic pits and lands on the surface of the disc, which are read by a laser beam.

Compact Disks

- **CD:** It is known as Compact Disc. It contains tracks and sectors on its surface to store data. It is made up of polycarbonate plastic and is circular in shape. CD can store data up to 700MB. It is of two types.
  - **CD-R:** It stands for Compact Disc read-only. In this type of CD, once the data is written can not be erased. It is read-only.
  - **CD-RW:** It stands for Compact Disc Read Write. In this type of CD, you can easily write or erase data multiple times.
- **DVD:** It is known as Digital Versatile Disc. DVDs are circular flat optical discs used to store data. It comes in two different sizes one is 4.7GB single-layer discs and another one is 8.5GB double-layer discs. DVDs look like CDs but the storage capacity of DVDs is more than as compared to CDs. It is of two types:

Flash Drives

Flash drives, also known as thumb drives, pen drives, or memory sticks, are portable data storage devices that use flash memory for data storage. They were introduced in the late 1990s and quickly became one of the most popular forms of removable storage. USB flash drives are available in a wide range of capacities, from a few megabytes to multiple terabytes. Common capacities include 4 GB, 8 GB, 16 GB, 32 GB, 64 GB, and 128 GB.

Comparison Summary

Feature	Primary Storage	Secondary Storage
Volatility	Volatile (data lost when power off)	Non-volatile (data retained when power off)
Speed	Very fast	Slower
Capacity	Limited (GB range)	Large (TB or PB range)
Examples	RAM, Cache	HDDs, SSDs, Optical Discs, External Drives
Use Cases	Active processes, running applications	Long-term data storage, backups, data transfer

Let's Sum Up

Secondary storage devices like floppy disks, SSDs, hard disks, and magnetic disks play crucial roles in storing and retrieving data in computers. They vary in capacity, speed, and durability, offering diverse options to meet the needs of different computing tasks, from archival storage to high-speed data access in modern computing environments.

Check your Progress

1. Which of the following is an example of primary storage?

A) Hard Disk Drive (HDD)
B) Random Access Memory (RAM)
C) Solid State Drive (SSD)
D) USB Flash Drive

Answer: B) Random Access Memory (RAM)

2. Which type of primary storage is commonly used to store the BIOS firmware?

A) RAM
B) Cache Memory
C) ROM
D) Virtual Memory

Answer: C) ROM

3. Which of the following is considered as primary storage?

A) Hard disk
B) RAM
C) CD-ROM
D) DVD

Answer: B) RAM

4. What is the main purpose of secondary storage?

A) To provide temporary data storage
B) To store data permanently
C) To perform calculations
D) To execute programs

Answer: B) To store data permanently

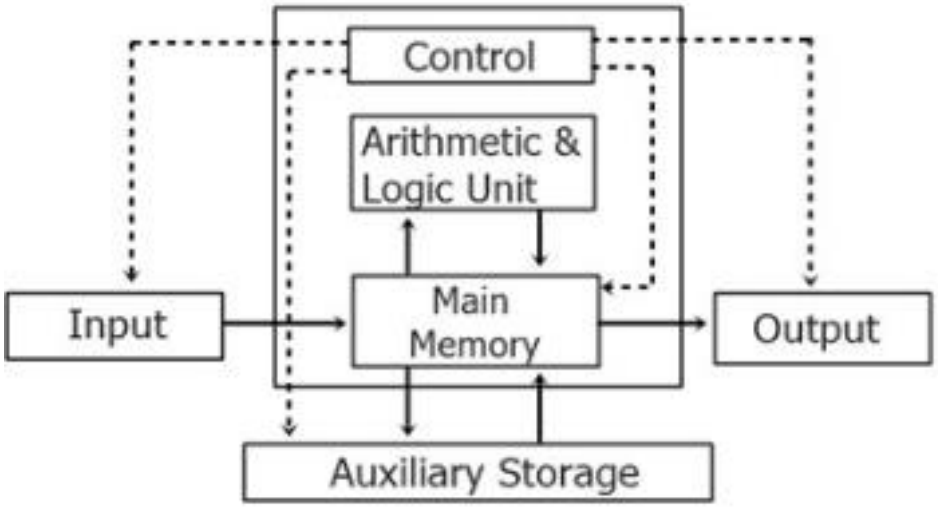
5. Which of the following devices is an example of secondary storage?

A) Cache memory
B) USB flash drive
C) Processor registers
D) Video RAM

Answer: B) USB flash drive

1.2 CPU

A block diagram of a computer typically outlines the major components and their interconnections. Here's a basic block diagram illustrating the key components of a computer system:



Block Diagram of Computer

Input Devices: Devices such as keyboard, mouse, touchpad, or touch screen that allow users to interact with the computer system by providing input.

Central Processing Unit (CPU): The brain of the computer, responsible for executing instructions, performing calculations, and controlling the overall operation of the system.

Memory (RAM): Temporary storage that holds data and instructions that the CPU needs to access quickly. Random Access Memory (RAM) allows for fast read and write operations but is volatile (loses data when power is off).

Arithmetic Logic Unit (ALU): The part of the CPU that performs arithmetic and logical operations, such as addition, subtraction, AND, OR, etc.

Control Unit: Manages the execution of instructions, fetches instructions from memory, decodes them, and coordinates the operation of the other CPU components.

Cache Memory: High-speed memory located within or close to the CPU that stores frequently accessed data and instructions, speeding up access times.

Storage Devices: Devices such as Hard Disk Drives (HDDs), Solid State Drives (SSDs), or Flash drives used for long-term storage of data and programs.

Let's Sum Up

The CPU, or Central Processing Unit, is the brain of a computer, responsible for executing instructions and processing data. It consists of arithmetic and logic units that

handle calculations and decision-making, crucially determining the speed and efficiency of a computer's operations.

1.3 INPUT UNITS: KEYBOARD

Keyboard is the most common and very popular input device which helps to input data to the computer. The layout of the keyboard is like that of traditional typewriter, although there are some additional keys provided for performing additional functions.

Keyboard

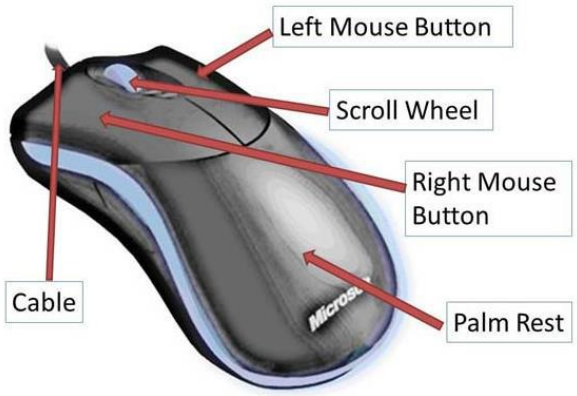
Keyboards are of two sizes 84 keys or 101/102 keys, but now keyboards with 104 keys or 108 keys are also available for Windows and Internet.

Key Types	Description
Typing Keys	These keys include the letter keys (A-Z) and digit keys (09) which generally give the same layout as that of typewriters.
Numeric Keypad	It is used to enter the numeric data or cursor movement. Generally, it consists of a set of 17 keys that are laid out in the same configuration used by most adding machines and calculators.
Function Keys	The twelve function keys are present on the keyboard which is arranged in a row at the top of the keyboard. Each function key has a unique meaning and is used for some specific purpose.
Control keys	These keys provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).

Special Purpose Keys	Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

1.4 MOUSE

Mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed.



Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer. Most mice are now optical which means they use a laser to detect and track movement across the surface. Mice can be wired or wireless.

Mouse operations

- Click: pressing and releasing a button.
- (left) Single-click: clicking the main button.
- (left) Double-click: clicking the button two times in quick succession counts as a different gesture than two separate single clicks.
- (left) Triple-click: clicking the button three times in quick succession counts as a different gesture than three separate single clicks. Triple clicks are far less common in traditional navigation.

- Right-click: clicking the secondary button, or clicking with two fingers. (This brings a menu with different options depending on the software)
- Middle-click: clicking the tertiary button.
- Drag and drop: pressing and holding a button, then moving the mouse without releasing.

1.5 SCANNERS AND ITS TYPES

A scanner is an input device that scans documents such as photographs and pages of text. When a document is scanned, it is converted into a digital format. This creates an electronic version of the document that can be viewed and edited on a computer.

Most scanners are flatbed devices, which mean they have a flat scanning surface. This is ideal for photographs, magazines, and various documents. Most flatbed scanners have a cover that lifts up so that books and other bulky objects can also be scanned. Another type of scanner is a sheet-fed scanner, which can only accept paper documents. While sheet-fed scanners cannot scan books, some models include an automatic document feeder, or ADF, which allows multiple pages to be scanned in sequence.

Types of Computer Scanners

- Sheet fed scanner - scans paper by feeding it into the scanner
- Handheld scanner - scans text and images by dragging the device over the page you want to scan
- Card scanner - designed to scan business cards

Prominent features of a scanner include:

Reliability - Unlike certain forms of data transmission, scanning involves only transfer of hard images to digital forms. The role of the end-user is limited in case of scanning. And as they are not dependent on two-way communication, they can also help in storing important information or transmitting important information.

Efficiency - Modern scanners are built for efficiency and speed. And it comes with ease of use as well as convenience.

Quality - Scanning ensures the best resolution possible for digital images. Compared to fax machines, which may find it difficult to reproduce the accurate details, scanners can reproduce images with high resolution and precisions. They are quite useful for photography and engineering arenas.

Cost saving-One of the biggest advantage of scanning is the replacement of physical files/forms with digital ones. Along with saving physical space, which has to be used for storage, there are also environmental benefits by using scanner.

Let's Sum Up

Input devices are essential components of computer systems that enable users to interact and input data. They encompass a variety of tools such as keyboards, mice, scanners, and touchscreens, each designed to facilitate different forms of input. These devices translate physical actions or data into signals that computers can process, making them fundamental to user interaction and data entry in both personal and professional computing environments.

Check your Progress

1. Which of the following is not an input device?

A) Keyboard
B) Mouse
C) Monitor
D) Scanner

Answer: C) Monitor

2. Which input device is primarily used to enter textual information into a computer?

A) Joystick
B) Keyboard
C) Microphone
D) Touchpad

Answer: B) Keyboard

3. Which of the following input devices is commonly used for gaming?

A) Stylus
B) Light Pen
C) Joystick
D) Webcam

Answer: C) Joystick

4. What type of input device is a touchscreen?

A) Optical device
B) Biometric device
C) Pointing device
D) Scanning device

Answer: C) Pointing device

5. Which input device is used to capture video images in real-time?

A) Scanner
B) Digital Camera
C) Webcam
D) Trackball

Answer: C) Webcam

1.6 OUTPUT UNITS: MONITORS

Monitor is the most commonly used output device used to display results of processing. Pictures on monitor are formed with picture elements called PIXEL.

1.6.1 CLASSIFICATION OF MONITORS

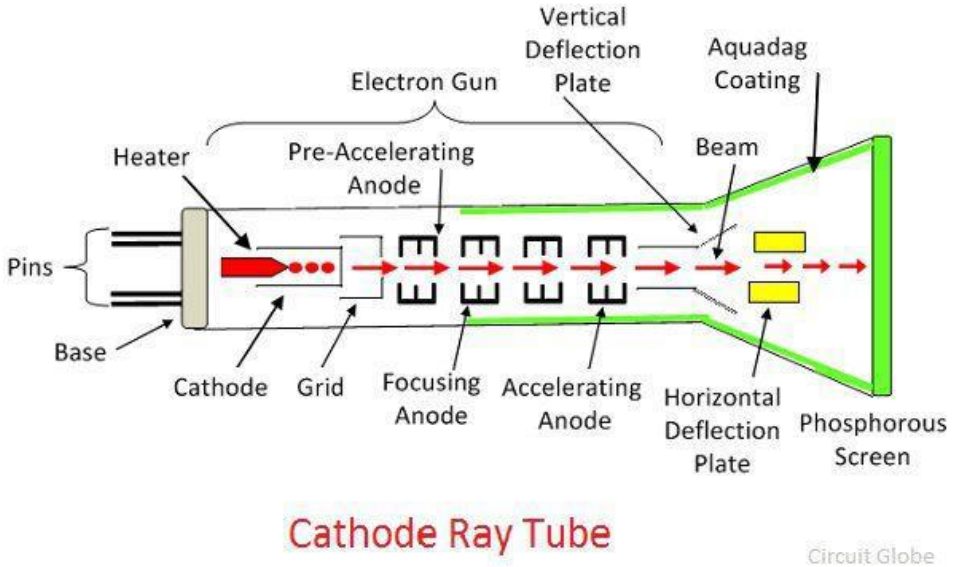
CRT Monitor: CRT is Cathode Ray Tube is a big size and takes up a lot of desk space. It uses cathode ray tube to display video and graphics on the screen.

LCD Monitor: LCD is Liquid Crystal Display uses a special type of liquid crystal to display video and graphics on the screen. It consumes very less power than CRT monitor. It is very lighter and more portable than the CRT monitor.

LED Monitor: LED is Light Emitting Diodes. LED is the advance application of LCD. The LED monitor consumes lesser power.

Digital Monitor: A digital display that uses liquid crystal cells that change reflectivity in an applied electric field; used for portable computer displays and watches etc. active matrix screen. a type of LCD screen used for some portable computers; there is a separate circuit for each pixel.

Analog Monitor: An analog monitor is a monitor capable of accepting continuously varying or analog signals from the video adapter for an infinite range of different colors. The majority of all CRT monitors are analog monitors and all flat-panel displays are digital.



1.6.2 CHARACTERISTICS OF MONITOR

Size	The most important aspect of a monitor is its size. Screen sizes are measured in diagonal inches, the distance from one corner to another opposite corner diagonally.
Resolution	The resolution of a monitor indicates how density the pixels are packed. Pixel is short for picture element.
Band Width	The amount of data that can be transmitted in a fixed amount of time. For digital devices, the band width is usually expressed in bits or bytes per second (bps). For analog devices it is expressed in cycle per second or Hertz (Hz).
Refresh Rate	Display monitors must be refresh many times per second. The refresh rate determines how many times per seconds the screen is to be red drawn. The refresh rate of a monitor is measured in Hertz. The faster the refreshers, the less the monitor flickers.
Interlacing	It is a technique in which instead of scanning the image one line at a time, it scans alternately i.e. alternate lines are scanned at each pass.
Dot per Inch	It is measured for the actual sharpness of the on screen image. This depends on both the resolution & the size of the image. Practical experience shows that a smaller screen has a sharper image at the same resolution than does a large screen.
Dot Pitch	A measurement that indicates the vertical distance between each pixel on a display screen. It is measured in millimetre.
Storage	The Computer has an in-built memory where it can store a large amount of data.

1.7 PRINTERS

Printers are used to produce hard copy output. They print processing results on paper. Printers are divided into two main categories: Impact Printers & Non-Impact printers.

1.7.1 IMPACT PRINTERS AND ITS TYPES

Impact printers print the characters by striking them on the ribbon, which is then pressed on the paper. These printers are of two types like, Dot Matrix Printer and Daisy Wheel Printer.

1.7.2 DOT MATRIX PRINTER

A dot matrix printer is an impact printer that creates characters and images by striking a print head, which contains a grid of small pins, against an ink ribbon to transfer ink onto paper. This process forms patterns of dots that collectively represent text and graphics. Known for their robustness and ability to print on multi-part forms and carbon copies, dot matrix printers are often used in environments where continuous, reliable printing is required, such as in warehouses, retail settings, and logistics.

1.7.3 DAISY WHEEL PRINTERS

Daisy wheel printers are impact printers that produce high-quality text by striking a wheel-shaped print head, known as a daisy wheel, against an ink ribbon to print characters on paper. Each "petal" of the daisy wheel contains a single character, and the wheel spins to position the correct character before it strikes. Commonly used in the 1970s and 1980s, these printers were known for their precision and ability to produce crisp, typewriter-like text, making them popular for professional and office use.

Characteristics of Impact Printers are the following –

- Very low consumable costs
- Very noisy
- Useful for bulk printing due to low cost
- There is physical contact with the paper to produce an image

These printers print with striking of hammers or pins on ribbon.

1.7.4 NON-IMPACT PRINTERS AND ITS TYPES

Non-impact printers print the characters without using the ribbon. These printers print a complete page at a time, thus they are also called as Page Printers. These printers do not use striking mechanism for printing. They use electrostatic and laser technology. Quality and speed of these printers is better than Impact printers. These printers are of two types namely Laser printer and Inkjet Printer.

1.7.5 LASER PRINTERS

Laser printers are a ubiquitous technology in modern offices and homes, offering fast and high-quality printing solutions. Utilizing a laser beam to create an electrostatic image on a rotating drum, they employ toner, a fine powder, to transfer the image onto paper through a process of electro statically charged rollers. The paper is then fused with heat to produce crisp, smudge-resistant prints. Laser printers excel in handling large volumes of text documents and graphics with sharp detail and consistent output. Their efficiency, speed, and relatively low cost per page make them ideal for businesses and individuals seeking reliable printing solutions.

1.7.6 INKJET PRINTERS

Inkjet printers represent a ubiquitous technology in modern printing, employing microscopic droplets of ink to produce high-quality prints. These printers work by propelling tiny droplets of ink onto paper, creating text, images, or graphics with precision and vibrancy. They are favored for their versatility, capable of producing everything from documents to photographs with impressive detail and color accuracy. Inkjet printers find extensive use in homes, offices, and commercial settings due to their affordability, ease of use, and ability to produce both black-and-white and color outputs.

Characteristics of Non-impact Printers

- Faster than impact printers
- They are not noisy
- High quality
- Supports many fonts and different character size

Let's Sum Up

Output devices are essential components of computer systems that convert processed data into human-readable form. Common types include monitors, which display visual information, printers for producing hard copies of documents or images, and speakers that output audio signals. Each device serves a specific purpose in conveying information to users, enhancing the usability and interaction with digital data.

Check your Progress

1. Which of the following is an output device?

A) Keyboard
B) Scanner
C) Monitor
D) Mouse

Answer: C) Monitor

2. What is the primary function of a printer?

A) To input text and images into the computer
B) To display information on the screen
C) To store data in a digital format
D) To produce a hard copy of digital documents

Answer: D) To produce a hard copy of digital documents

3. Which output device is used to project images and videos onto a large screen?

A) Monitor
B) Printer
C) Projector
D) Plotter

Answer: C) Projector

4. Which of the following is a characteristic of a plotter?

A) It displays images on a screen

B) It prints text documents

C) It produces high-quality graphics on paper

D) It is used to input drawings

Answer: **C) It produces high-quality graphics on paper**

5. Which output device is most commonly used for displaying textual and graphical information in real-time?

A) Speaker

B) Monitor

C) Plotter

D) Printer

Answer: B) Monitor

1.8 OPERATING SYSTEM

An operating system is a program that acts as an interface between the software and the computer hardware. It is an integrated set of specialized programs used to manage over all resources and operations of the computer. It is specialized software that controls and monitors the execution of all other programs that reside in the computer, including application programs and other system software.

Examples of computer operating systems

- Microsoft Windows 10
- ApplemacOS
- Ubuntu Linux
- Google Android
- iOS

1.9 DOS (DISK OPERATING SYSTEM)

DOS is a family of operating systems, primarily known for MS-DOS (Microsoft Disk Operating System), developed by Microsoft. It was popular during the 1980s and early 1990s, especially on IBM PC-compatible computers.

User Interface: DOS primarily features a command-line interface (CLI) where users interact with the system by typing commands. It lacks a graphical user interface (GUI) found in modern operating systems.

Functionality: DOS provides basic file management, disk utilities, and limited multitasking capabilities. It is a single-user, single-tasking operating system, meaning it can run only one program at a time.

Legacy: Although largely obsolete for mainstream computing, DOS remains influential in the history of personal computing and embedded systems. Some DOS-based applications and games are still in use today.

1.10 WINDOWS

Windows is a family of graphical operating systems developed by Microsoft. It dominates the desktop and laptop market, offering various versions tailored to different use cases, including home, professional, and server environments. User Interface: Windows features a graphical user interface (GUI) characterized by windows, icons, menus, and pointers (WIMP). Users interact with the system using mouse and keyboard inputs.

Functionality: Windows provides a wide range of features and capabilities, including multitasking, multi-user support, networking, device management, multimedia support, and a vast ecosystem of software applications.

Versions: Windows has evolved through numerous versions over the years, with notable releases such as Windows 95, Windows XP, Windows 7, Windows 10, and Windows 11. Each version introduces new features, improvements, and changes to the user interface and underlying architecture.

1.11 UNIX/LINUX

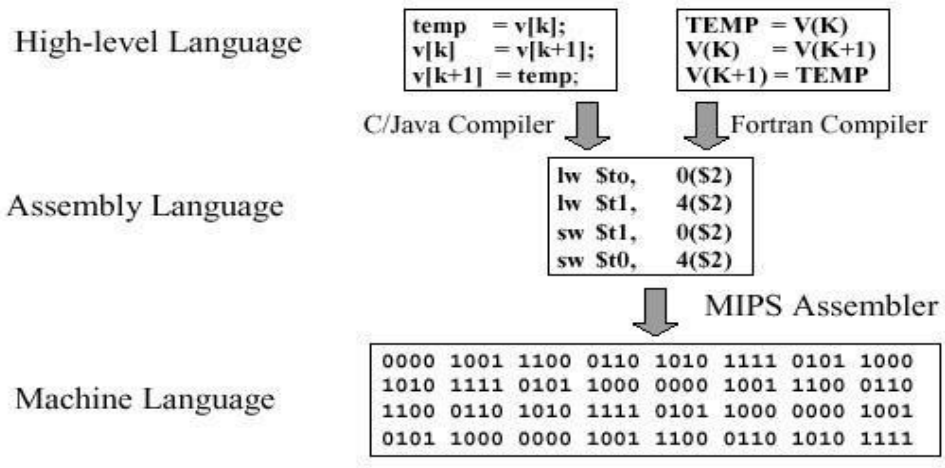
Unix and its open-source variant Linux are powerful, multi-user, multitasking operating systems known for their stability, security, and flexibility. Unix was developed in the late 1960s, while Linux was created in the early 1990s by Linus Torvalds.User Interface: Unix/Linux systems offer both command-line interface (CLI) and graphical user interface (GUI) options. The CLI, accessed through a terminal, provides powerful text-based tools and utilities, while the GUI, such as GNOME or KDE, offers a desktop environment similar to Windows.

Let's Sum Up

Operating systems (OS) serve as crucial software that manage computer hardware and provide a user interface. Windows and macOS are prominent commercial OSs known for their user-friendly interfaces and broad software compatibility. Linux, an open-source OS, offers robust customization and is widely used in server environments due to its stability and security features. DOS, though largely obsolete, laid foundational principles for modern OS development, influencing subsequent systems with its command-line interface and simplicity.

1.12 PROGRAMMING LANGUAGES

A programming language is a set of commands, instructions, and other syntax use to create a software program. Languages that programmers use to write code are called "high-level languages." This code can be compiled into a "low-level language," which is recognized directly by the computer hardware.



1.12.1 MACHINE LANGUAGE

Machine language is the lowest-level programming language that computers can understand and execute directly. It consists of binary code, represented by combinations of 0s and 1s, which correspond to specific instructions that the computer's CPU (Central Processing Unit) can execute. Each instruction in machine language corresponds to a specific operation that the CPU can perform, such as arithmetic calculations, data movement, or control flow. In machine language, a simple instruction might be represented as a sequence of binary digits like "10110010," which the CPU interprets as a specific operation.

Characteristics:

- Low-Level: Directly manipulates hardware components and registers.
- Machine-Dependent: Instructions are specific to the CPU architecture.
- Difficult to Read and Write: Composed of binary digits, making it challenging for humans to understand and write directly.
- Fast Execution: Executes directly by the CPU with minimal translation or interpretation overhead.

1.12.2 ASSEMBLY LANGUAGE

Assembly language is a low-level programming language that provides a symbolic representation of machine language instructions. It uses mnemonic codes to represent machine instructions, making it easier for humans to read and write compared to machine language. Assembly language instructions are mnemonic representations of machine language instructions. Each mnemonic corresponds to a specific machine instruction. Instead of writing binary code directly, programmers write assembly language code using mnemonics like "MOV" for move, "ADD" for addition, etc.

Characteristics:

- Human-Readable: Uses mnemonic codes and symbols that are easier for humans to understand compared to binary code.
- Platform-Specific: Assembly language instructions are specific to the CPU architecture and platform.
- Low-Level: Provides direct control over hardware components and registers.

- Assembler Required: Assembly code needs to be translated into machine code using an assembler before it can be executed by the CPU.
- Close to Hardware: Allows programmers to access and manipulate hardware resources directly, offering fine-grained control.

1.12.3 HIGH LEVEL LANGUAGE

A high-level language is a computer programming language that isn't limited by the computer, designed for a specific job, and is easier to understand. It is more like human language and less like machine language. However, for a computer to understand and run a program created with a high-level language, it must be compiled into machine language. High-level languages are,

- BASIC
- C
- C++
- COBOL
- FORTRAN
- Java
- Pascal Perl
- PHP
- Python
- Rub
- Visual Basic

Let's Sum Up

Programming languages can be broadly categorized into low-level and high-level languages. Low-level languages, such as assembly and machine code, are closer to the hardware and provide more control but are complex and harder to understand. High-level languages, like Python, Java, and C++, are more abstract, user-friendly, and efficient for developers, allowing them to write code that is easier to read, maintain, and debug.

Check your Progress

1. Which of the following is considered a low-level programming language?

A) Python
B) Assembly language
C) Java
D) C++

Answer: B) Assembly language

2. High-level programming languages are preferred over low-level languages because:

A) They provide direct hardware control.

B) They are more abstract and easier to read, write, and maintain.

C) They are more complex and less user-friendly.

D) They are slower and less efficient for developers.

Answer: B) They are more abstract and easier to read, write, and maintain.

3. Which statement is true regarding low-level languages?

A) They are closer to human languages.

B) They are easier to debug and maintain.

C) They offer more control over hardware.

D) They are generally slower to execute than high-level languages.

Answer: C) They offer more control over hardware.

4. Which of the following is NOT a high-level programming language?

A) Python

B) C++

C) Java

D) Machine code

Answer: D) Machine code

5. Which of these is considered a high-level programming language?

A) Assembly

B) Machine code

C) Python

D) Binary code

Answer: C) Python

1.13 Unit Summary

- Input and output (I/O) devices facilitate communication between users and computers, enabling data entry and presentation of results.
- These include keyboards, terminals, pointing devices, scanners, voice recognition systems, vision input systems, and touch screens, allowing users to input data through various means.
- Monitors display visual output, while printers, including impact and non-impact printers, produce physical copies of data. Plotters create large-scale graphical outputs.
- Primary storage, like RAM and ROM, is volatile and directly accessible by the CPU, while secondary storage, such as magnetic disks and optical disks, is non-volatile and used for long-term storage.
- These are examples of different operating systems, each with its own features, user interfaces, and functionalities, catering to various user needs and preferences.

1.14 Glossary

- GUI - Graphical User Interface
- CRT - Cathode Ray Tube
- LCD - Liquid Crystal Display
- LED - Light Emitting Diodes
- RAM - Random Access Memory
- ROM - Read Only Memory
- PROM - Programmable Read-Only Memory
- EPROM - Erasable Programmable Read-Only Memory
- EEPROM - Electrically Erasable Programmable Read-Only Memory
- CD - Compact Disc
- DVD - Digital Versatile Disc
- DOS - Disk Operating System
- GUI - Graphical User Interface

1.15 Self-Assessment Questions

1. Describe any five input devices.
2. Explain how a computer mouse works.

3. Explain various types of scanners.
4. Describe monitors and its types.
5. Write a brief note on different types of printers.
6. Classify operating systems

1.16 Activity: " Identify and Categorize Devices "

Objective: Understand and categorize different types of devices.

Instructions:

- Create a table listing the following devices: Keyboard, Mouse, Scanner, Monitor, Printer.
- Categorize each as an input or output device.
- Explain the primary function of each device in relation to the CPU.

Output Example:

Device	Type	Function
Keyboard	Input	Allows user to input data and commands to the CPU
Monitor	Output	Displays visual output from the CPU
...	...	...

1.17 References and Suggested Readings

1. Anoop Mathew, S. Kavitha Murugeshan (2009), — Fundamental of Information Technology‖, Majestic Books.
2. Alexis Leon, Mathews Leon, Fundamental of Information Technology, 2nd Edition.
3. Bhardwaj Sushil Puneet Kumar, Fundamental of Information Technology
4. A Ravichandran , Fundamentals of Information Technology, Khanna Book Publishing

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UNIT - I COMPLETED

UNIT – II

WORD PROCESSING

UNIT II - Word Processing
Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers, and footers, numbering, printing–Preview, options, merge.

UNIT OBJECTIVES

- This unit aims to understand the fundamental operations of word processing, including opening, saving, and closing documents in Microsoft Word.
- Learners will explore proficiency in editing text using various tools and formatting options, including font styles, sizes, colors, and alignment, as well as the use of bullets for list formatting.
- Learners will utilize the spell checker tool in Microsoft Word to identify and correct spelling errors in documents effectively.

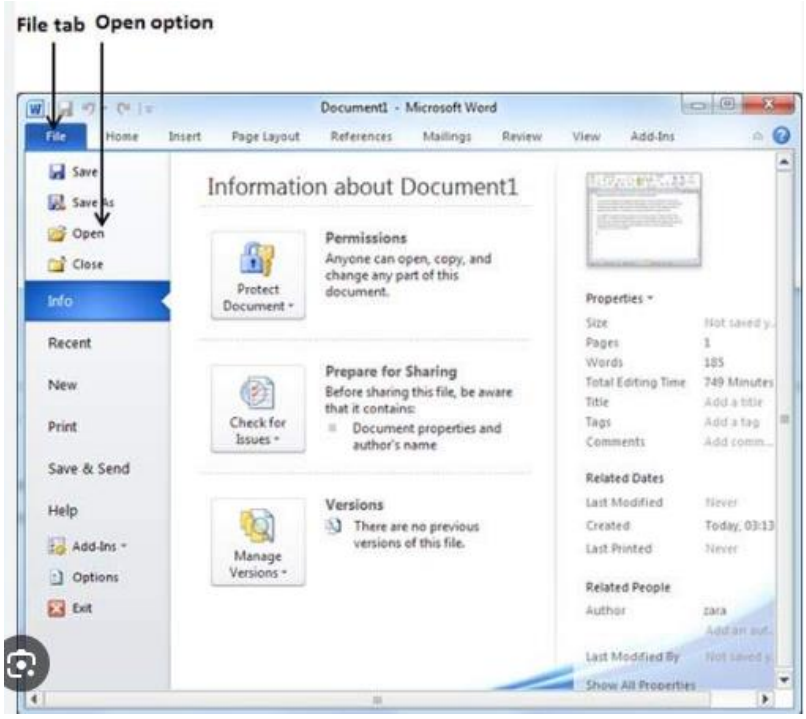
2.1 WORD PROCESSING

Word processing refers to the creation, editing, formatting, and printing of documents using a computer program, typically referred to as a word processor. The primary goal of word processing software is to facilitate the efficient production of written documents, ranging from simple letters and memos to complex reports and manuscripts. Popular word processing programs include Microsoft Word, Google Docs, Apple Pages, and LibreOffice Writer. These programs offer various features such as spell-check, grammar-check, formatting options, templates, and collaboration tools, making it easier for users to create professional-looking documents.

2.1.1 OPEN WORD DOCUMENT

To open a document in word processing software, you usually have several options:

- **File Menu:** Many word processors have a "File" menu at the top left corner of the interface. Clicking on this menu and selecting "Open" will usually allow you to browse your computer's files and select the document you want to open.

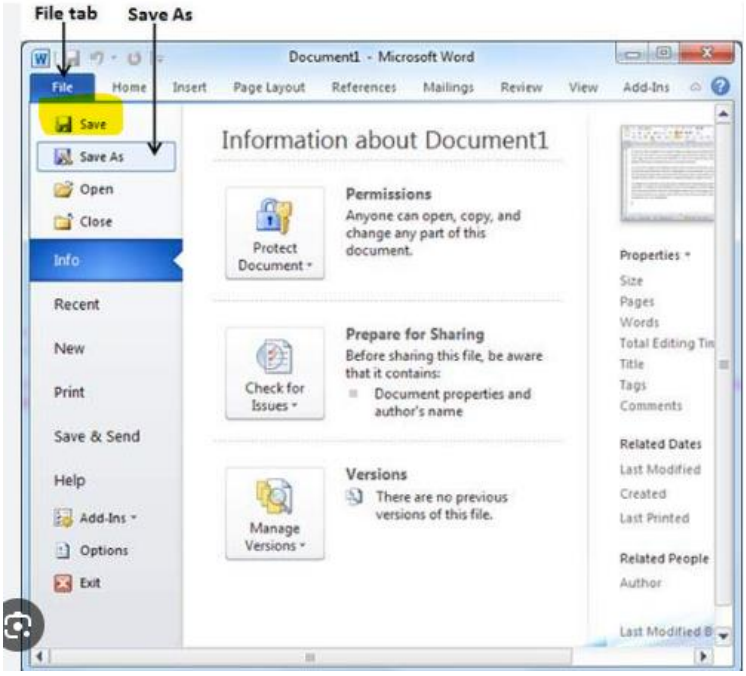


- **Keyboard Shortcut:** Most word processors also support keyboard shortcuts for opening documents. Common shortcuts include Ctrl + O (on Windows) or Command + O (on Mac) to open a new document.

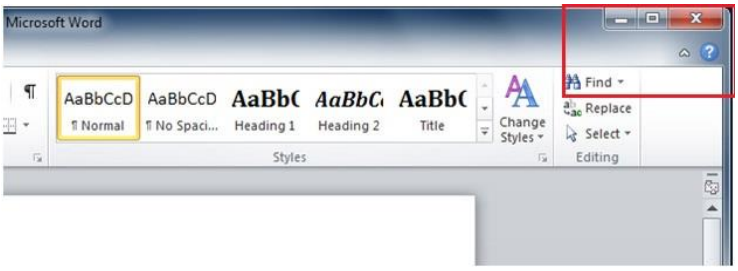
2.1.2 SAVE AND CLOSE WORD DOCUMENT

Saving a document is crucial to preserve your work and ensure you can access it later. Here's how it's typically done:

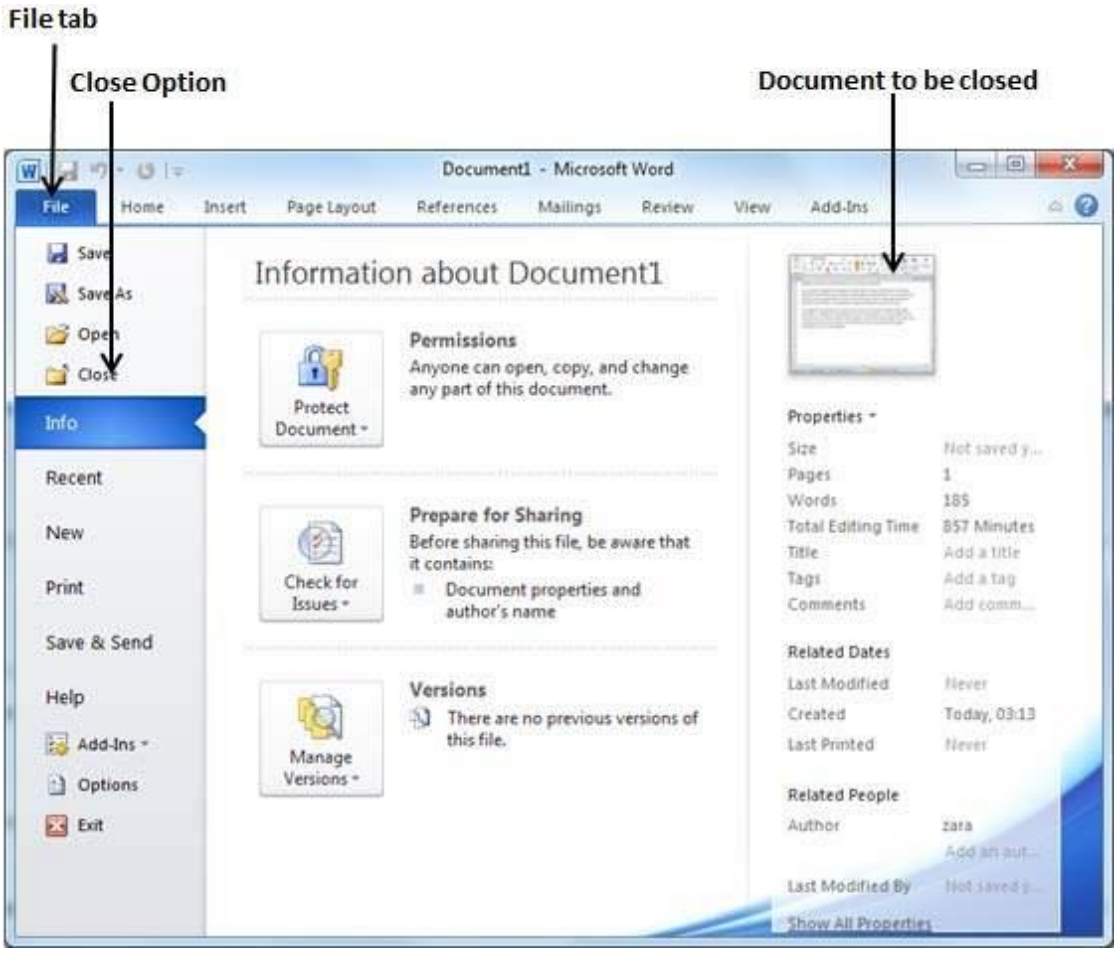
- **File Menu:** Similar to opening a document, you can usually find the "Save" option under the "File" menu. Clicking "Save" will save your document with its current name and location.
- **Save As:** If you want to save the document with a different name or in a different location, you can choose the "Save As" option. This allows you to specify a new name and location for the document.



- Keyboard Shortcut: Keyboard shortcuts like Ctrl + S (on Windows) or Command + S (on Mac) are commonly used to quickly save a document.
- **File Menu:** Like opening and saving, you can typically find an option to close the document under the "File" menu. Selecting "Close" will close the active document.
- **Close Button:** Many word processors have a close button (usually an "X" icon) in the top-right corner of the window. Clicking this button will also close the document.



- **Keyboard Shortcut:** Some word processors support keyboard shortcuts for closing documents, often using Ctrl + W (on Windows) or Command + W (on Mac).

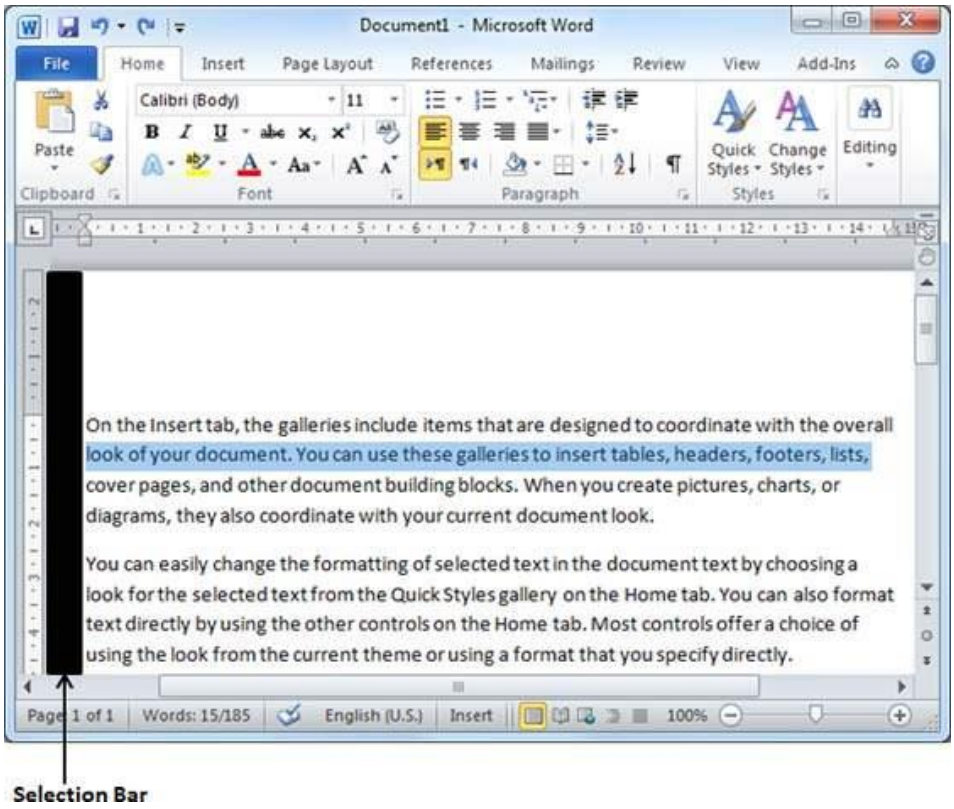


Let's Sum Up

In Microsoft Word, the fundamental operations of opening, saving, and closing documents are essential for creating and managing files. Opening allows users to access existing documents, saving preserves changes and ensures data integrity, while closing ends the editing session, maintaining document organization and security.

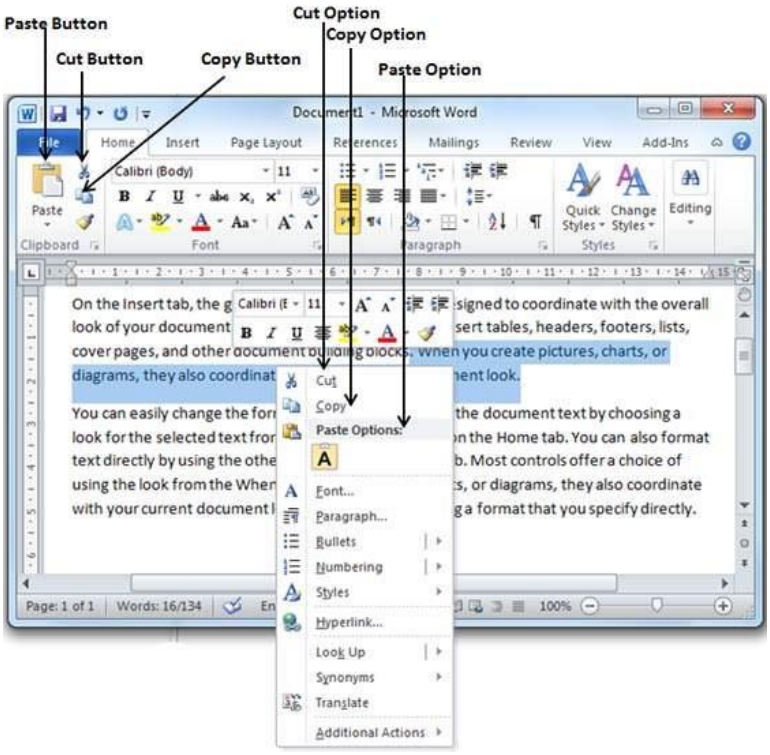
2.2 EDITING TEXT

Before you can edit text, you often need to select it. This can be done by clicking and dragging the mouse cursor over the text you want to select or by using keyboard shortcuts like Shift + Arrow keys to extend the selection.



2.2.1 BASIC TEXT EDITING

- **Typing:** Simply start typing to add new text to your document.
- **Deleting:** Use the Backspace key to delete text to the left of the cursor, and the Delete key to delete text to the right of the cursor.
- **Cut, Copy, and Paste:** These actions allow you to move or duplicate text within the document or between documents.
    - **Cut (Ctrl + X):** Removes the selected text from its original location and places it in the clipboard.
    - **Copy (Ctrl + C):** Copies the selected text to the clipboard without removing it from its original location.
    - **Paste (Ctrl + V):** Inserts the contents of the clipboard at the cursor position.



Let's Sum Up

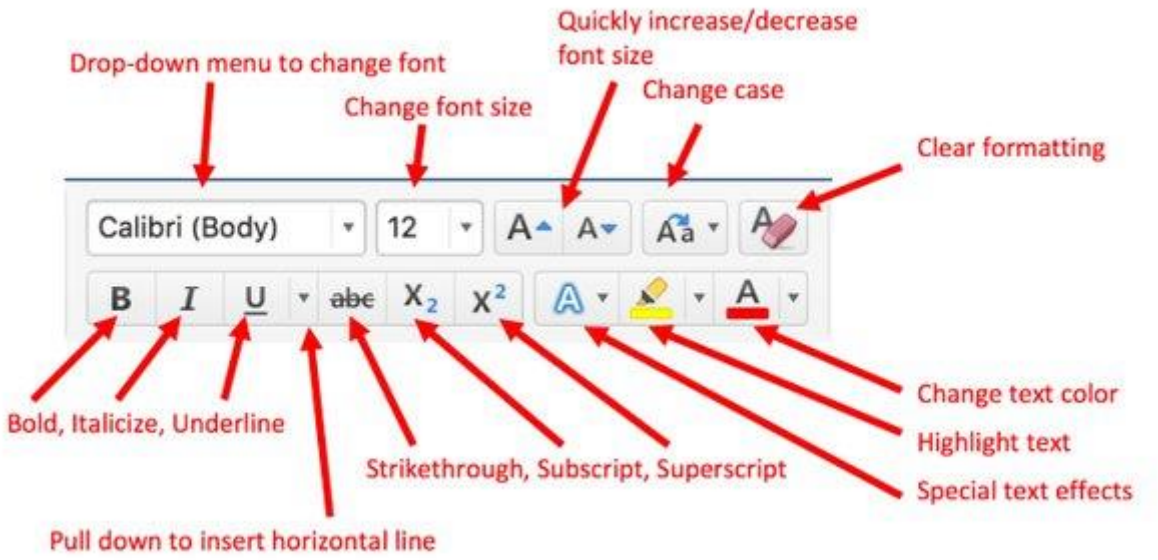
MS Word provides powerful tools for editing documents, offering features like track changes, formatting options, and collaboration tools that streamline the editing process. Its user-friendly interface and comprehensive functionality make it indispensable for creating and refining professional documents efficiently.

2.3 FORMATTING TEXT

Formatting text in Microsoft Word involves adjusting the appearance of the text to enhance readability, emphasize key points, and create a visually appealing document. Here are the main aspects and tools for formatting text in MS Word:

1. Font and Font Size

- **Changing Font**: Select the text you want to change, go to the "Home" tab, and choose a font from the "Font" drop-down menu.
- **Changing Font Size**: Select the text, go to the "Home" tab, and choose a size from the "Font Size" drop-down menu or type a size directly.



2. Font Styles

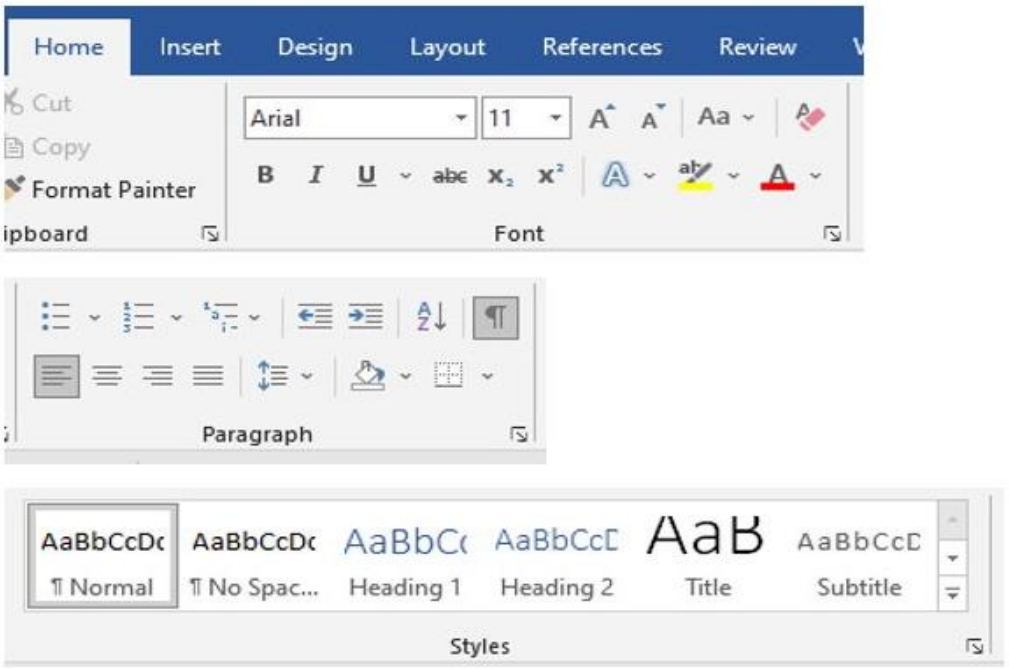
1. **Bold, Italic, Underline**: Select the text and click on the "B" (Bold), "I" (Italic), or "U" (Underline) buttons in the "Home" tab.
2. **Strikethrough**: Select the text, and click the "Strikethrough" button in the "Home" tab.
3. **Subscript and Superscript**: Select the text, and click the "Subscript" (X_2) or "Superscript" (X^4) buttons.

3. Font Color and Highlighting

- **Font Color**: Select the text, go to the "Home" tab, click on the "Font Color" button (an A with a colored underline), and choose a color.
- **Text Highlighting**: Select the text, go to the "Home" tab, click the "Text Highlight Color" button, and choose a highlight color.

4. Paragraph Formatting

- **Alignment**: Select the text and choose alignment options from the "Paragraph" group in the "Home" tab: Left, Center, Right, or Justify.
- **Line Spacing**: Select the text, click on the "Line and Paragraph Spacing" button in the "Home" tab, and choose a spacing option.
- **Indentation**: Adjust the left and right indentation using the indent markers on the ruler or through the "Paragraph" dialog box.



5. Lists

- **Bulleted and Numbered Lists**: Select the text, go to the "Home" tab, and click the "Bullets" or "Numbering" buttons.
- **Multilevel Lists**: Use the "Multilevel List" button to create hierarchical lists.

6. Styles

- **Applying Styles**: Use predefined styles to ensure consistency. Go to the "Home" tab and select a style from the "Styles" gallery.
- **Modifying Styles**: Right-click on a style in the "Styles" gallery and choose "Modify" to change its formatting.

7. Themes

- **Applying Themes**: Go to the "Design" tab and choose a theme that applies a coordinated set of fonts, colors, and effects to the entire document.
- **Customizing Themes**: Modify theme colors, fonts, and effects in the "Design" tab to create a custom look.

8. Text Effects

- **WordArt**: Insert decorative text using WordArt. Go to the "Insert" tab, click "WordArt," and choose a style.
- **Text Effects**: Apply effects like shadow, reflection, glow, or 3D effects from the "Text Effects" menu in the "Home" tab.

9. Columns

- **Creating Columns**: Split text into columns by selecting the text, going to the "Layout" tab, and clicking the "Columns" button.

10. Headers and Footers

- **Adding Headers and Footers**: Go to the "Insert" tab, click on "Header" or "Footer," and choose a style. Add text, dates, or page numbers.

11. Page Setup

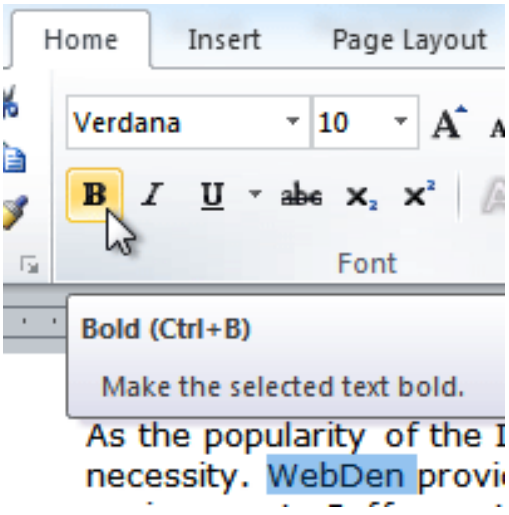
- **Margins**: Adjust page margins from the "Layout" tab by clicking the "Margins" button.
- **Orientation**: Change the page orientation to portrait or landscape from the "Layout" tab.

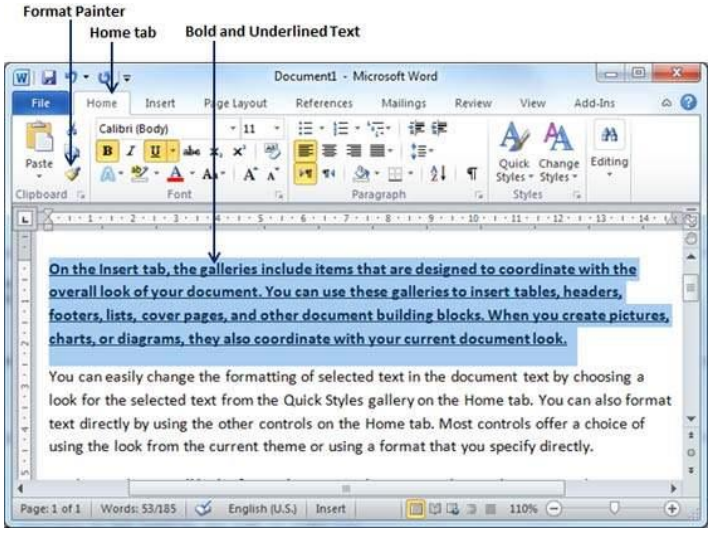
12. Tables

- **Inserting Tables**: Go to the "Insert" tab, click "Table," and choose the dimensions.
- **Formatting Tables**: Use the "Table Tools" tab to apply styles, adjust cell sizes, and format borders.

13. Styles and Templates

- **Using Templates**: Start with a pre-designed template from the "File" menu to ensure consistent formatting.
- **Customizing Styles**: Create and save custom styles for specific formatting needs.





Let's Sum Up

Microsoft Word is a versatile tool for document formatting, offering features such as font styles, paragraph alignment, and page layout customization. Users can create professional-looking documents by adjusting margins, inserting headers and footers, and utilizing templates for consistency. Its robust editing capabilities, including spell check, grammar correction, and track changes, make it indispensable for both personal and professional use, ensuring documents are polished and visually appealing.

Check Your Progress

1. Which of the following options is used to change the text alignment in MS Word?

A) Home → Paragraph

B) Insert → Table

C) View → Outline

D) Review → Language

Answer: A) **Home → Paragraph**

2. How can you make text bold in MS Word?

A) Press Ctrl + U

B) Press Ctrl + I

C) Press Ctrl + B

D) Press Ctrl + O

Answer: C) **Press Ctrl + B**

3. To apply a predefined style to a selected text, which tab should you use in MS Word?

A) Review

B) Home

C) Insert

D) References

Answer: B) **Home**

4. How can you change the font size of a selected text in MS Word?

A) Insert → Font

B) Layout → Size

C) Home → Font Size

D) Review → Font

Answer: C) **Home → Font Size**

5. Which of the following is used to change the line spacing of text?

A) Home → Paragraph → Line Spacing

B) Insert → Line

C) File → Options

D) View → Layout

Answer: A) **Home → Paragraph → Line Spacing**

2.4 BULLETS AND NUMBERING

2.4.1 BULLETS

Bullets and numbering in Microsoft Word are formatting tools used to create lists. They help organize information, making it easier to read and understand. Here's a detailed description of both features. Bulleted lists are used for items that do not need to be in a specific order. Each item is preceded by a symbol (bullet point), which can be customized.

Creating a Bulleted List:

1. **Select Text**: Highlight the text you want to format as a list.
2. **Bullets Button**: Click the "Bullets" button in the "Paragraph" group on the "Home" tab.
3. **Customize Bullets**: Click the dropdown arrow next to the "Bullets" button to choose different bullet styles or define a new bullet.

Customizing Bullets:

3 **Symbol**: You can choose from a variety of symbols.

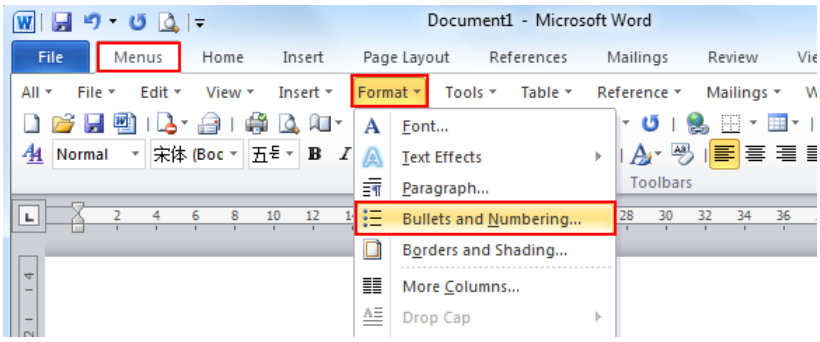
4 **Picture**: You can use an image as a bullet.

5 **Font**: Customize the font style, size, and color of the bullet.

Numbered lists are used for items that need to be in a specific order, such as instructions or steps in a process. Each item is preceded by a number or letter.

2.4.2 NUMBERING

Numbering in Microsoft Word is used to organize and structure your documents by adding numbers to paragraphs, lists, headings, and other elements. It enhances readability and makes it easier to refer to specific sections or items. Here's how you can use numbering effectively in MS Word.



1. Numbered Lists

Numbered lists are useful for creating ordered lists, such as steps in a procedure or ranked items.

- Select the text you want to format as a numbered list, or place the cursor where you want to start the list.
- Go to the Home tab.
- Click the Numbering button in the Paragraph group (it looks like a numbered list).
- Click the arrow next to the Numbering button to choose different numbering formats (e.g., 1., 2., 3. or I., II., III.).
- Select Define New Number Format to customize the appearance of the numbers.

4. Customizing Number Formats

- Select the numbered text.
- Go to the Home tab.
- Click the arrow next to the Numbering or Multilevel List button.
- Select Define New Number Format or Define New Multilevel List.
- Choose the number style, font, and alignment options.

5. Restarting or Continuing Numbering

- Right-click on the number where you want to restart the numbering.
- Select Restart at 1 from the context menu.
- Right-click on the number where you want to continue numbering from a previous list.
- Select Continue Numbering from the context menu.

2.4.3. MULTILEVEL LISTS

Multilevel lists combine both bullets and numbering, allowing you to create a hierarchical structure. This is useful for outlines or complex lists with sub-items.

1. **Select Text**: Highlight the text you want to format as a list.
2. **Multilevel List Button**: Click the "Multilevel List" button in the "Paragraph" group on the "Home" tab.
3. **Customize List**: Click the dropdown arrow next to the "Multilevel List" button to choose different styles or define a new multilevel list.

Let's Sum Up

In Microsoft Word, bulleting and numbering are essential tools for organizing and structuring documents effectively. Bullets are used to list items without any particular order, ideal for creating lists of items or points. Numbering, on the other hand, automatically applies sequential numbers, making it perfect for creating ordered lists such as steps in a procedure or chapters in a report. Both features enhance readability and clarity, ensuring that information is presented logically and comprehensibly within the document.

Check Your Progress

1. Which tab in MS Word is used to access the bullet and numbering options?

A) Insert
B) Home
C) Design
D) View

Answer: B) Home

2. How can you customize the bullet style in a list in MS Word?

A) By using the Font settings
B) By selecting "Define New Bullet" under the Bullet dropdown menu
C) By changing the Page Layout
D) By modifying the Paragraph settings

Answer: B) By selecting "Define New Bullet" under the Bullet dropdown menu

3. Which of the following keyboard shortcuts can be used to create a bullet point in MS Word?

A) Ctrl + Shift + L
B) Ctrl + B
C) Alt + N
D) Ctrl + M

Answer: A) Ctrl + Shift + L

4. If you want to create a multi-level list in MS Word, which option should you select?

A) Numbering
B) Bullets
C) Multilevel List
D) Indent

Answer: C) Multilevel List

5. How can you restart numbering in a numbered list in MS Word?

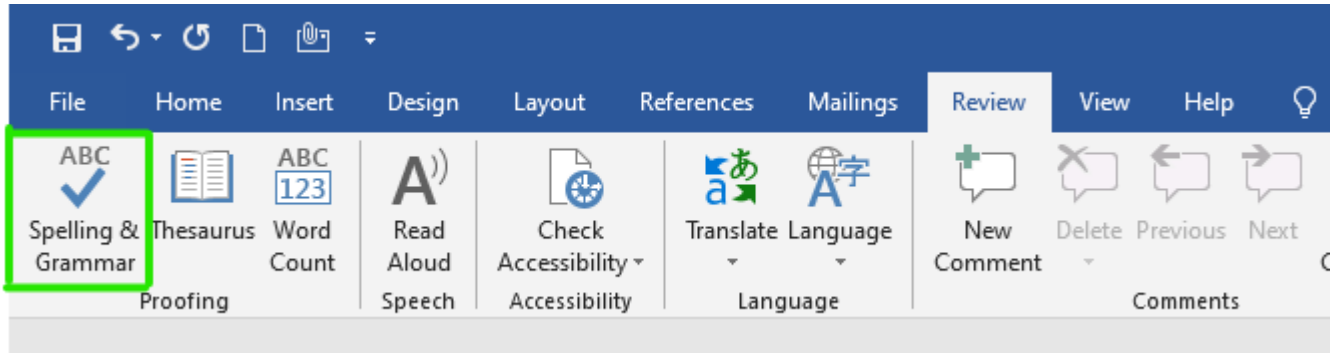
A) Right-click the number and choose "Restart at 1"
B) Press Enter twice
C) Use the Format Painter
D) Change the font size

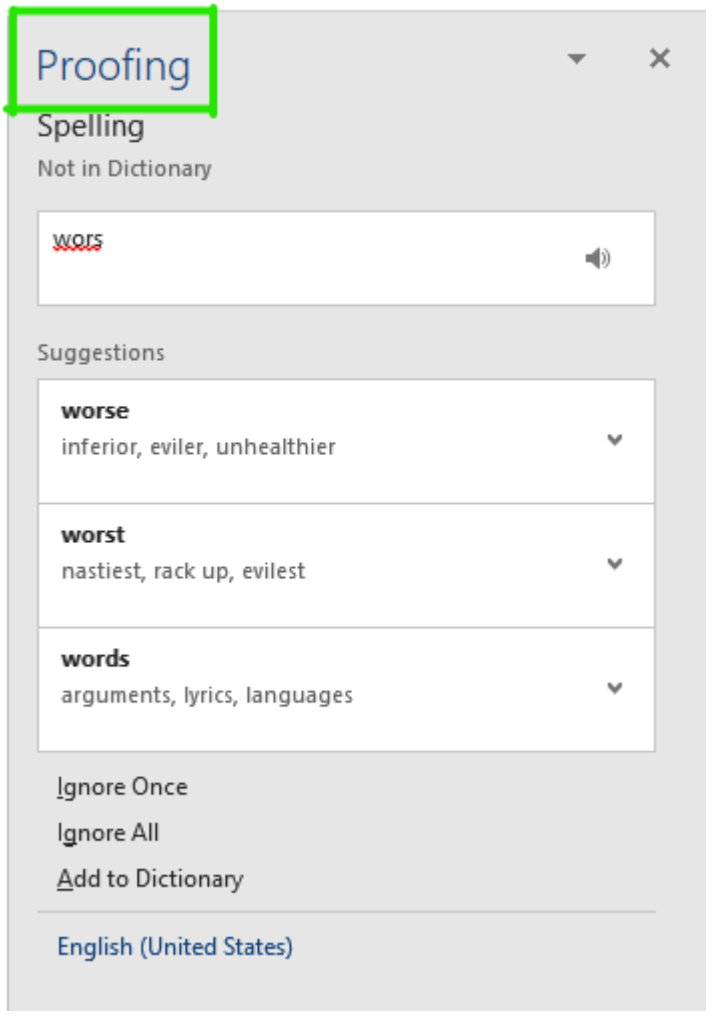
Answer: A) Right-click the number and choose "Restart at 1"

2.5 SPELL CHECKER

Microsoft Word has a special feature called spell check that allows you to check spelling and grammatical mistakes that you made in the document. Basically spell check is a software tool that identifies the misspelled words present in the document. It also allows you to search a particular word in the document that you know you've misspelled in the whole document.

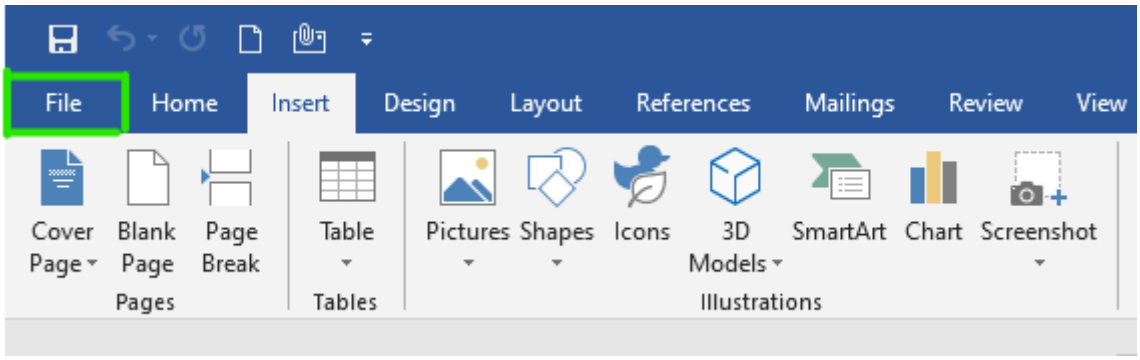
In Microsoft Word documents, Word's spell check function is set to automatically check your spelling while you type. Errors in your document will have color-coded underlines reflecting your choices, like red for spelling errors, green for grammar errors, and blue for contextual spelling errors.



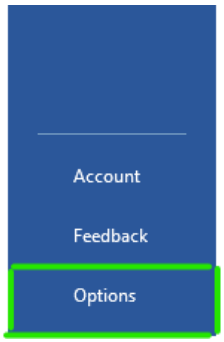


Steps to enable Spell Checker in MS Word

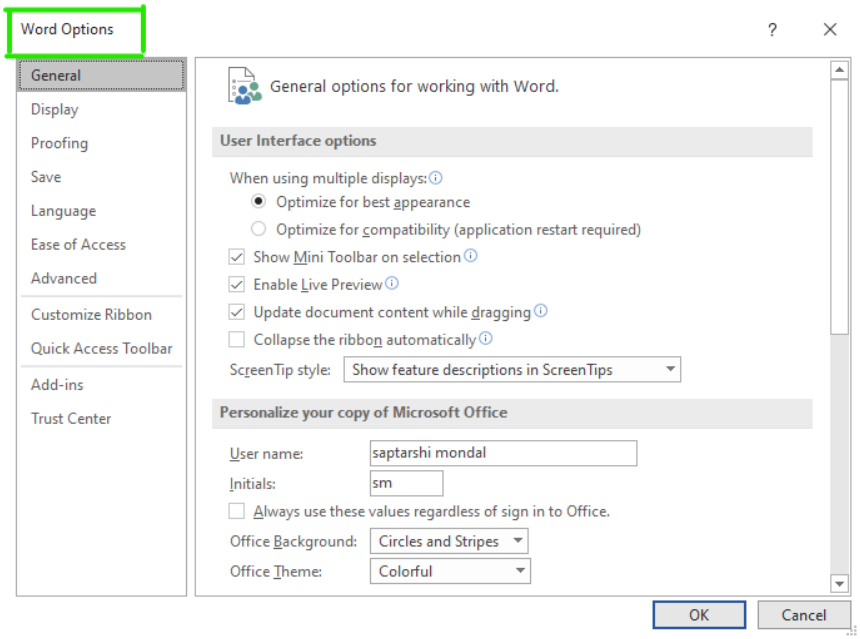
Step 1: On the navigation menu bar click on the **File** option.



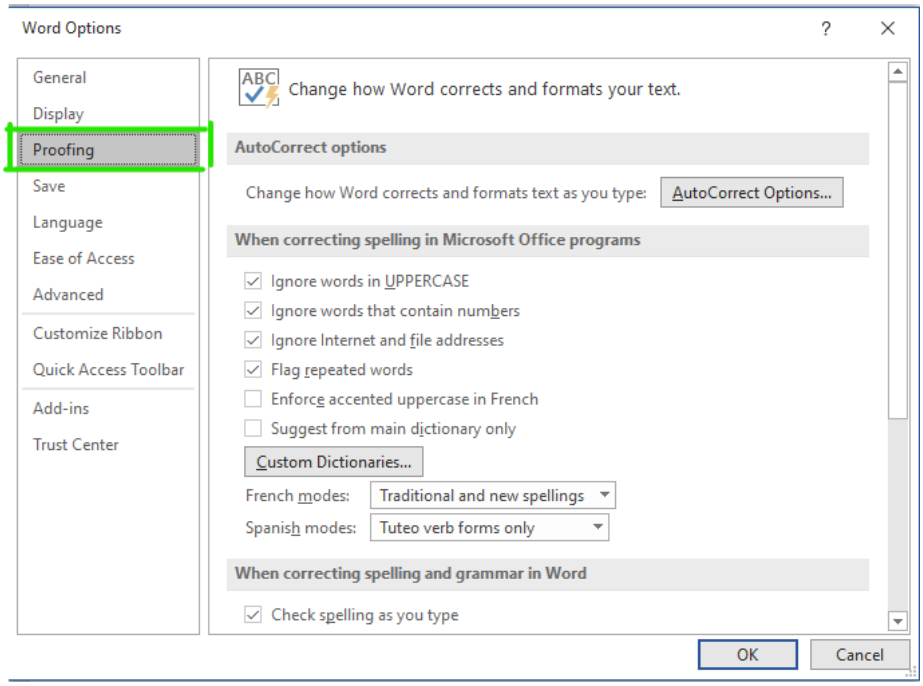
Step 2: Next click on the **option** button as shown in the figure:



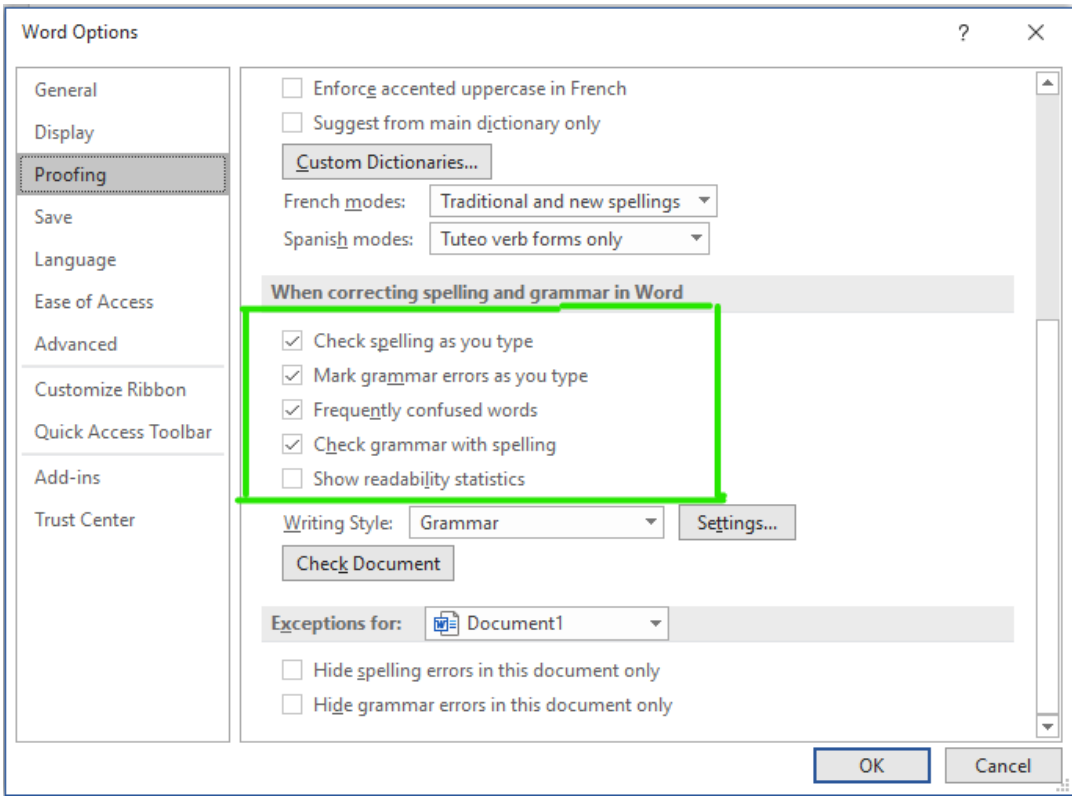
Step 3: A **word option** dialog box will appear on the screen.



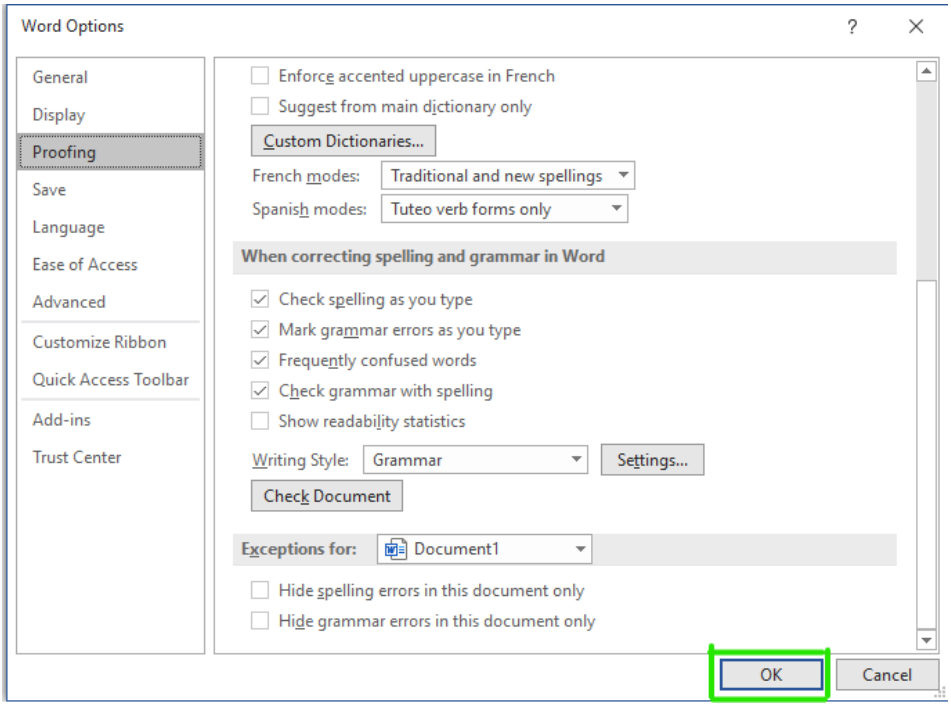
Step 4: Now select the **Proofing** option from the left menu as shown in the figure:



Step 5: Check all boxes as shown in the figure:



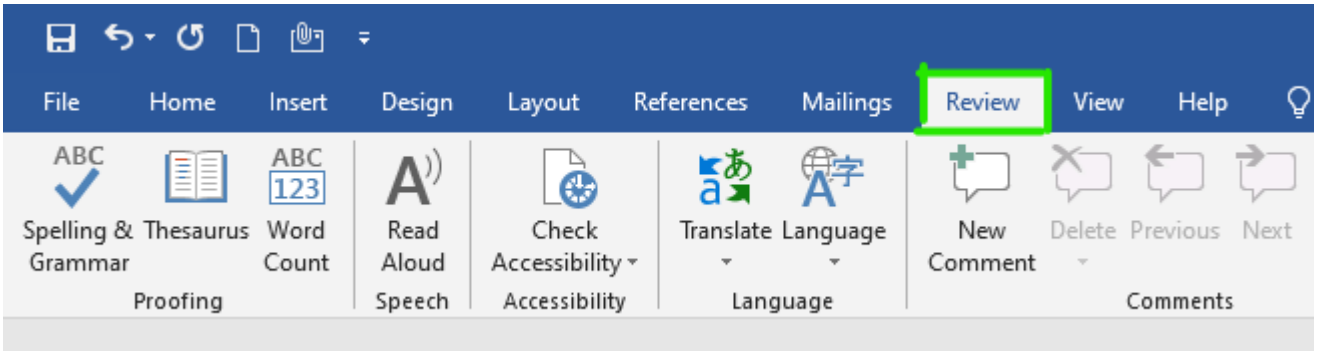
Step 6: Next click on the **OK** button.



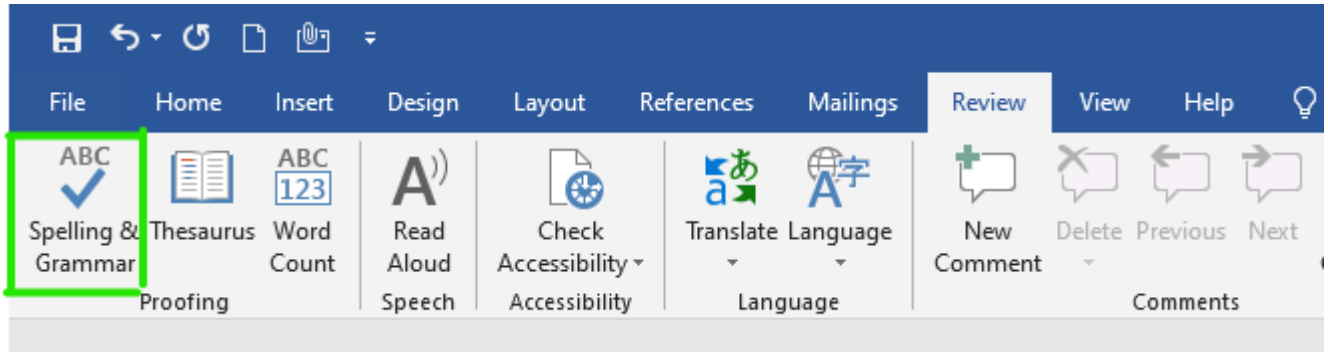
Finally, Spell Check is enabled in MS Word.

How to Manually Check Spellings

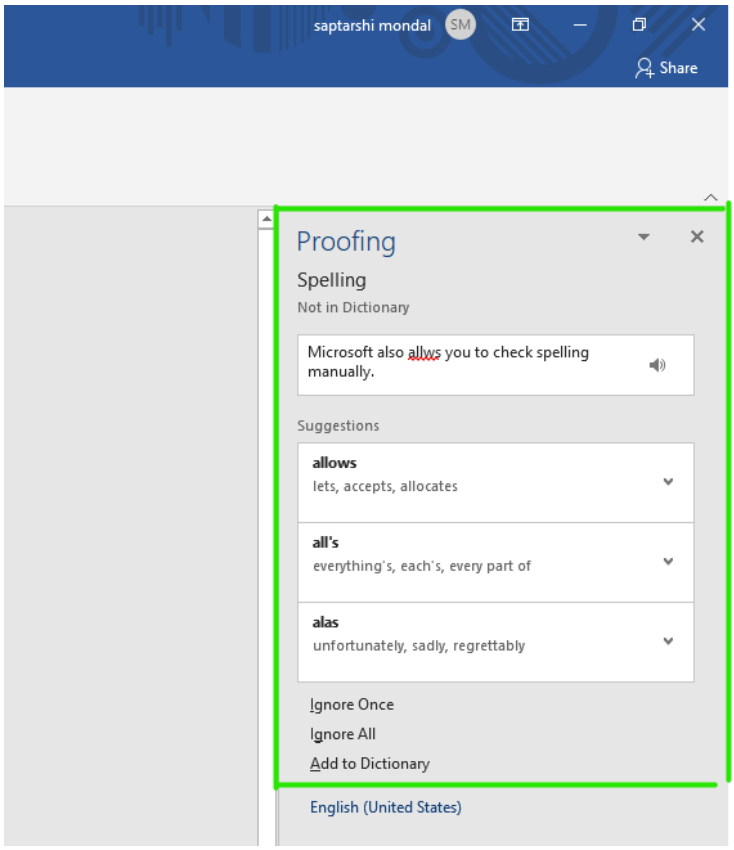
Step 1: On the navigation menu bar click on the **Review** option.



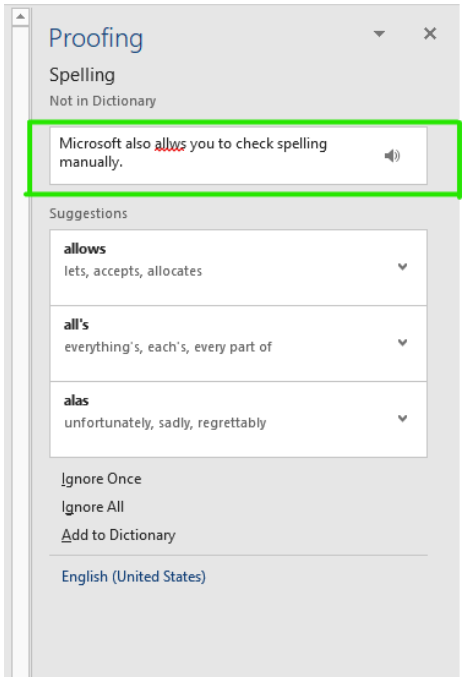
Step 2: Next click on the **spellings & grammar** option as shown in the figure:



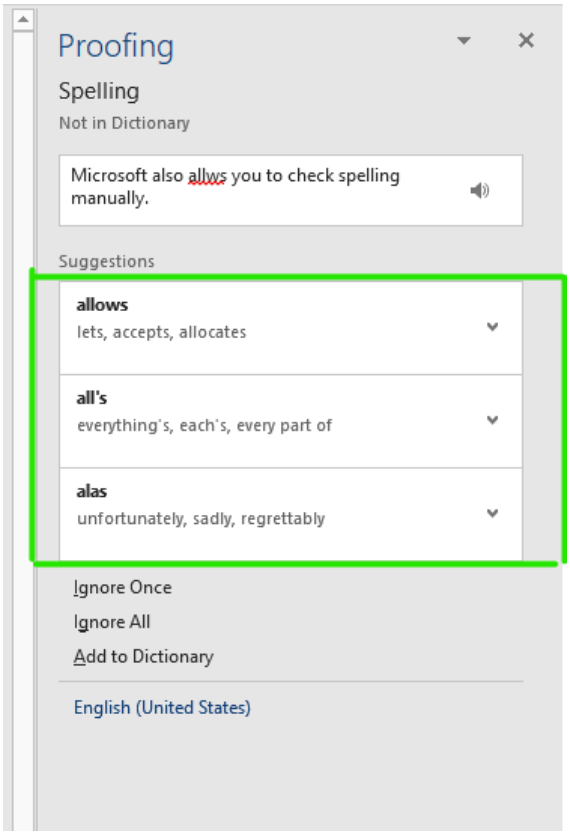
Note – If there is any spelling or grammatical mistake in your Word document, then the following dialog box appears with misspelled words present in the red underlined text.



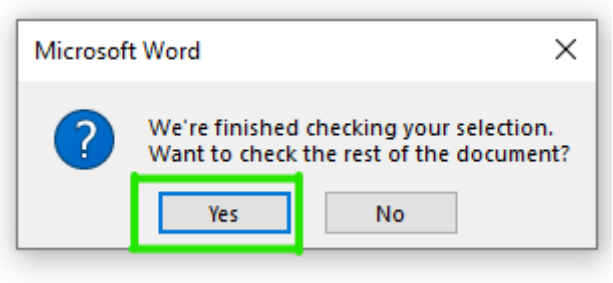
Step 3: If there is a spelling mistake in the document then it will appear in the **red underline** text as shown in the figure:



Step 4: Select the **correct spelling** from the suggestion menu.



Step 5: Next click on the **YES** option.



Let's Sum Up

Microsoft Word's spell-checking feature has revolutionized document processing by ensuring accurate spelling and grammar across various types of content. It automatically detects and corrects errors, improving the overall quality and professionalism of documents. This tool has become indispensable for writers, students, and professionals alike, streamlining the editing process and enhancing communication effectiveness.

Check Your Progress

1. Which feature in MS Word automatically checks the spelling as you type?

A) Grammar Checker

B) AutoCorrect

C) Spell Check

D) Thesaurus

Answer: C) Spell Check

2. What is the default shortcut key to run the spell check in MS Word?

A) F2

B) F5

C) F7

D) Shift + F7

Answer: C) F7

3. How does MS Word indicate a misspelled word in the document?

A) Blue wavy underline

B) Green wavy underline

C) Red wavy underline

D) Yellow highlight

Answer: C) Red wavy underline

4. Which tab in MS Word contains the Spell Check feature?

A) Insert

B) Review

C) Home

D) References

Answer: B) Review

5. What happens when you add a word to the MS Word dictionary?

A) The word will be ignored for the rest of the document.

B) The word will be deleted.

C) The word will be automatically corrected in the future.

D) The word will no longer be marked as a spelling error in all documents.

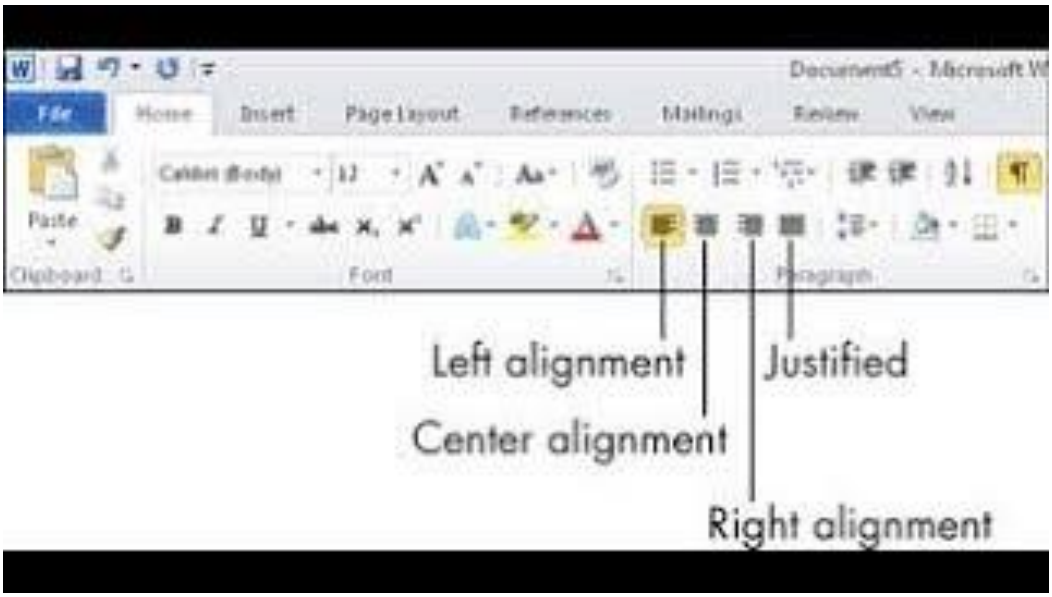
Answer: D) The word will no longer be marked as a spelling error in all documents.

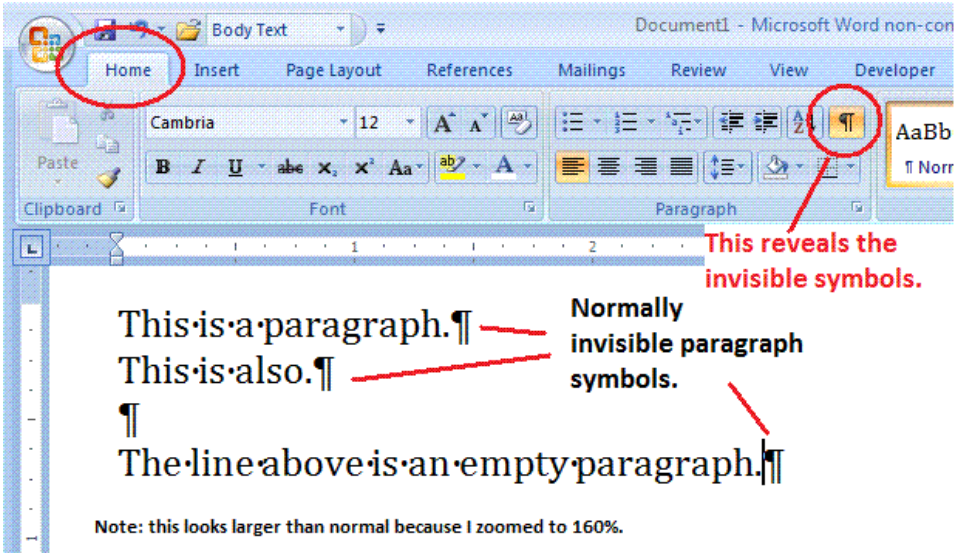
2.6 DOCUMENT FORMATTING

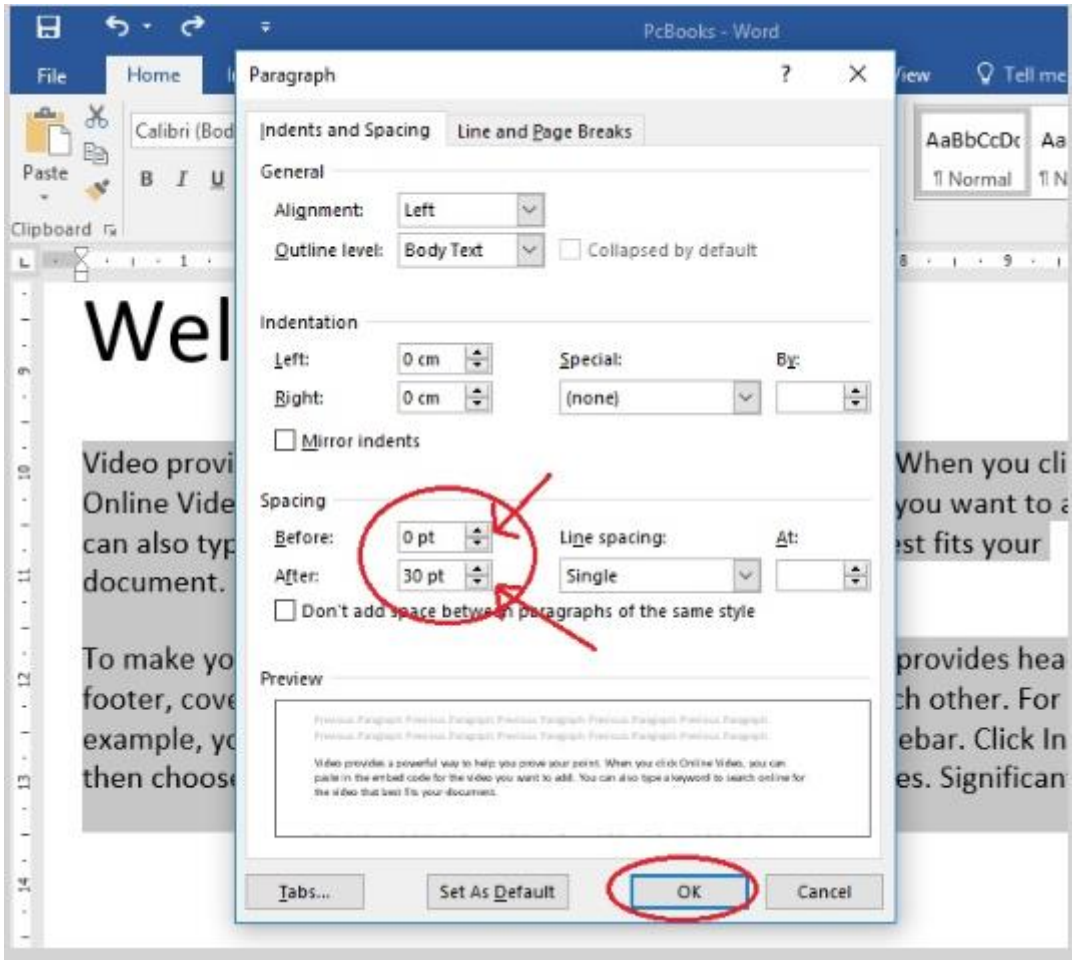
Microsoft Word provides several options for formatting text to enhance readability and emphasize important content. Here's how to apply bold, italics, underline, and strikethrough formatting:

2.6.1 PARAGRAPH ALIGNMENT

Paragraph alignment in Microsoft Word refers to the way text lines up within the margins of your document. Aligning text properly can greatly improve the readability and visual appeal of your document. Here are the steps to adjust paragraph alignment:







Left Align

- Aligns text to the left margin, leaving the right margin uneven. This is the default alignment for most documents.
- Using the Ribbon: Select the paragraph(s) you want to align. Go to the Home tab and click the Left Align button (Align Left icon) in the Paragraph group.
- Keyboard Shortcut: Select the paragraph(s) and press Ctrl + L (Cmd + L on Mac).

Center Align

- Centers text between the left and right margins, giving a more formal and balanced look.

- Using the Ribbon: Select the paragraph(s) you want to center. Go to the Home tab and click the Center Align button (Center icon) in the Paragraph group.
- Keyboard Shortcut: Select the paragraph(s) and press Ctrl + E (Cmd + E on Mac).

Right Align

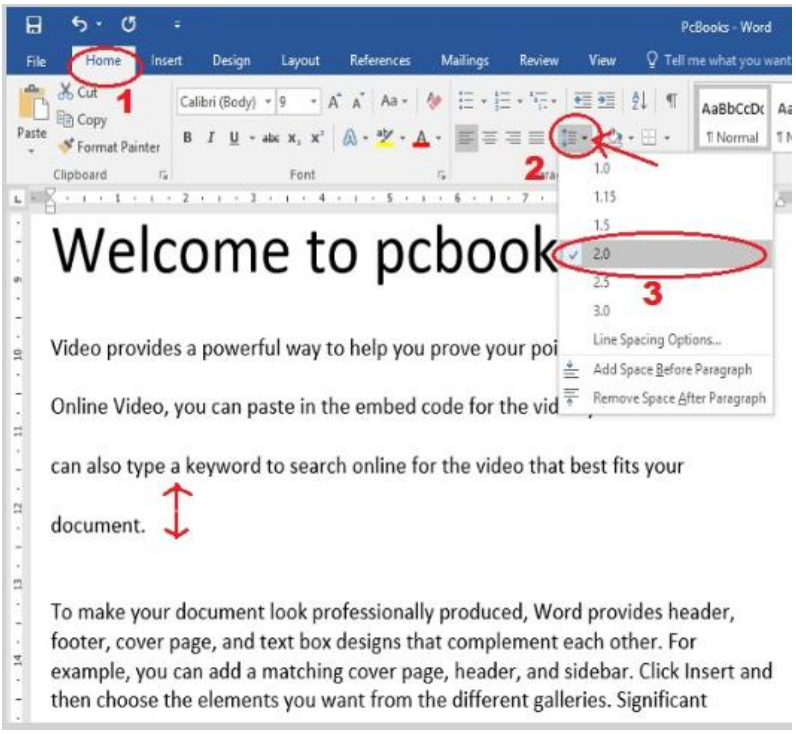
- Aligns text to the right margin, leaving the left margin uneven. This can be useful for special formatting or emphasis.
- Using the Ribbon: Select the paragraph(s) you want to align. Go to the Home tab and click the Right Align button (Align Right icon) in the Paragraph group.
- Keyboard Shortcut: Select the paragraph(s) and press Ctrl + R (Cmd + R on Mac).

Justify

- Aligns text evenly along both the left and right margins, adding extra space between words as necessary. This creates a clean and polished look often used in newspapers and books.
- Using the Ribbon: Select the paragraph(s) you want to justify. Go to the Home tab and click the Justify button (Justify icon) in the Paragraph group.
- Keyboard Shortcut: Select the paragraph(s) and press Ctrl + J (Cmd + J on Mac).

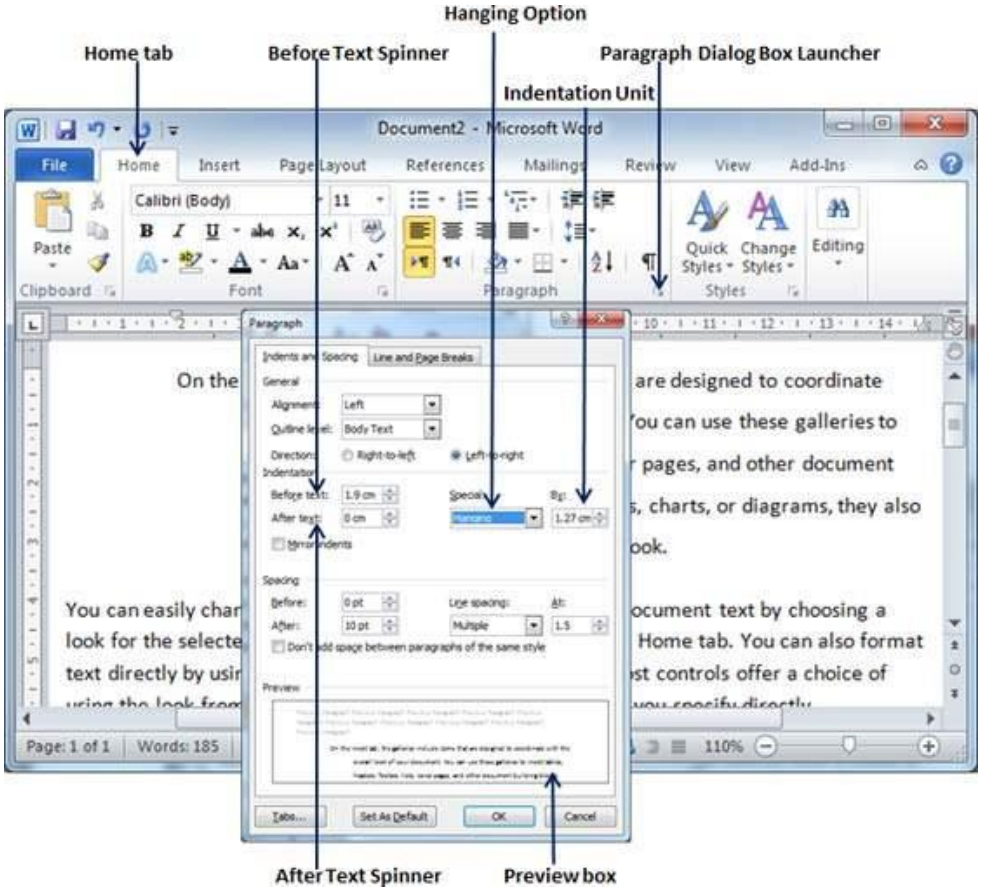
Additional Paragraph Formatting Options

- Select the paragraph(s).
- Go to the Home tab.
- Click the Line and Paragraph Spacing button in the Paragraph group.
- Choose a spacing option from the dropdown menu (e.g., 1.0, 1.15, 1.5, 2.0).
- Choose Add Space Before Paragraph or Remove Space After Paragraph.
- Use the Increase/Decrease Indent buttons to adjust indentation.



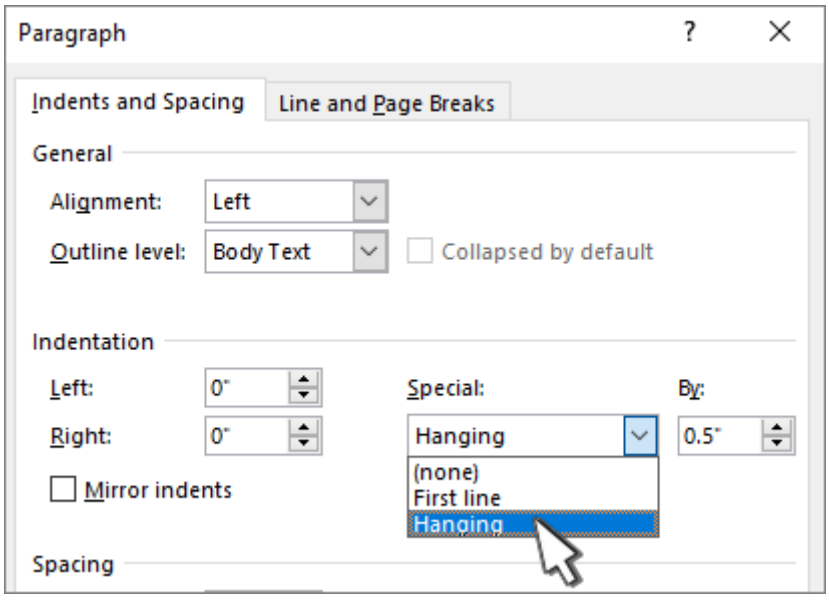
2.6.2 INDENTATION

Indentation in Microsoft Word helps to improve the structure and readability of your document by adding space at the beginning of lines or paragraphs. There are several types of indentations that apply to paragraphs in a Word document. Indentation in Microsoft Word can be adjusted using the Paragraph dialog box. This feature allows you to control the distance between the text and the page margins, both on the left and right sides, and to set special indentations such as a first line or hanging indent. Here's how to use the Paragraph dialog box to adjust indentation:



Indentation Settings:

- In the Paragraph dialog box, you will find the "Indentation" section.
- **Left**: This controls the space added to the left margin of the paragraph. Increase the value to move the paragraph text to the right.
- **Right**: This controls the space added to the right margin of the paragraph. Increase the value to move the paragraph text to the left.
- **Special**: This dropdown menu allows you to select special indentation types:
- **First line:** Indents only the first line of the paragraph. The value entered in the "By" box determines the amount of indentation.
- **Hanging:** Indents all lines of the paragraph except the first line. The value entered in the "By" box determines the amount of indentation.



Adjusting Indentation:

- To set a first line indent, choose "First line" from the "Special" dropdown and enter the desired measurement in the "By" field.
- To set a hanging indent, choose "Hanging" from the "Special" dropdown and enter the desired measurement in the "By" field.
- To set a standard left or right indent, simply enter the desired measurements in the "Left" and "Right" fields.

Preview and Apply:

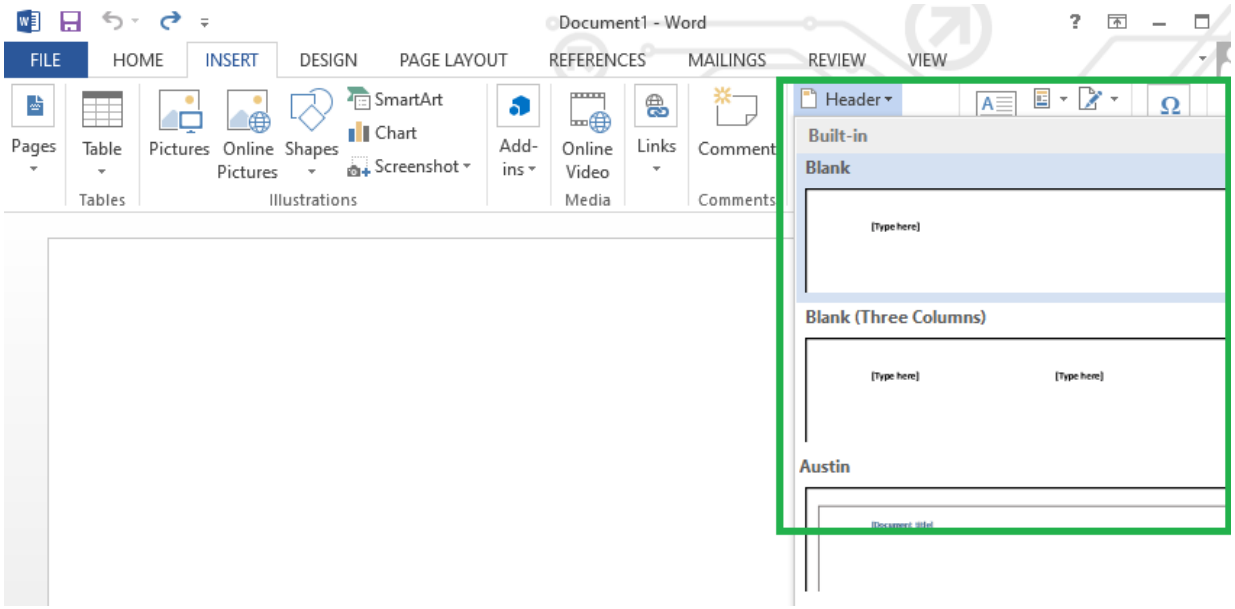
- As you adjust the settings, the preview box at the bottom of the dialog box will show you a visual representation of the paragraph with the new indentation settings.
- Once you are satisfied with the settings, click "OK" to apply the changes to the selected paragraphs.

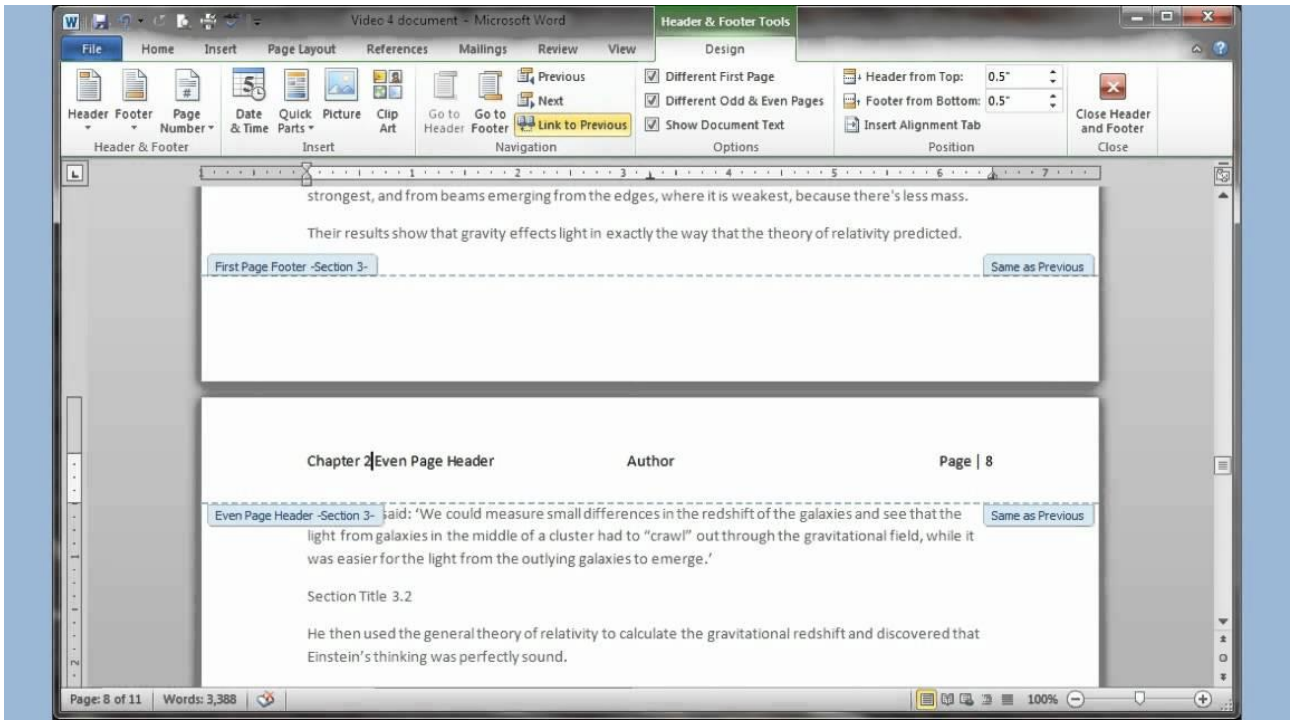
Let's Sum Up

MS Word's document formatting capabilities empower users to create professional-looking documents with ease. From adjusting fonts, margins, and spacing to incorporating headers, footers, and page numbering, Word provides a robust suite of tools for precise customization. Its intuitive interface and extensive formatting options make it indispensable for crafting everything from reports and resumes to newsletters and academic papers.

2.7 HEADERS AND FOOTERS

Headers and footers are sections at the top and bottom of each page in a Word document. They can contain text, page numbers, dates, logos, and other information that you want to repeat on every page or in specific sections of your document.





2.7.1 ADDING HEADERS AND FOOTERS

Adding headers and footers in Microsoft Word is a straightforward process that can enhance the structure and appearance of your documents. Here's a detailed guide on how to add headers and footers:

1. **Open your document**:
    - Launch Microsoft Word and open the document where you want to add headers and footers.
2. **Access the Header and Footer tools**:
    - Go to the "Insert" tab on the Ribbon.
    - In the "Header & Footer" group, you will see options for "Header," "Footer," and "Page Number."
3. **Insert a Header**:
    - Click on the "Header" button.
    - A drop-down menu will appear with several predefined header styles.
    - Select a style from the list or choose "Edit Header" to create a custom header.
    - Once you select an option, the header section will become active, and you can type the text or insert elements such as date, time, or pictures.
4. **Insert a Footer**:
    - Click on the "Footer" button.
    - A drop-down menu will appear with several predefined footer styles.
    - Select a style from the list or choose "Edit Footer" to create a custom footer.
    - Once you select an option, the footer section will become active, and you can type the text or insert elements such as page numbers, date, or other details.
5. **Insert Page Numbers**:
    - Click on the "Page Number" button if you want to add page numbers.
    - A menu will appear with options to position the page numbers (Top of Page, Bottom of Page, Page Margins, etc.).
    - Choose the desired position and format for the page numbers. Word will automatically insert and update the page numbers throughout your document.

6. **Customize Headers and Footers**:
    - While in the header or footer editing mode, you can use the tools on the "Header & Footer Tools" tab that appears on the Ribbon.
    - You can set different headers and footers for odd and even pages, for the first page, or for different sections of your document.
    - To switch between the header and footer, use the "Go to Footer" or "Go to Header" button on the "Header & Footer Tools" tab.
7. **Exit the Header and Footer**:
    - After making your changes, click the "Close Header and Footer" button on the Ribbon, or double-click anywhere outside the header or footer area to return to the main document.

- **Different First Page**: If you need a different header or footer for the first page, check the "Different First Page" box in the "Header & Footer Tools" tab. This is useful for title pages or cover pages.
- **Section Breaks**: To have different headers and footers in different sections of your document, insert section breaks (found under the "Layout" or "Page Layout" tab), and then edit the headers and footers for each section.
- **Link to Previous**: If you want the header or footer in a new section to be the same as in the previous section, use the "Link to Previous" option in the "Header & Footer Tools" tab. Deselect this option if you want to create a unique header or footer for the new section.

Let's Sum Up

Headers and footers in Microsoft Word documents serve crucial organizational and navigational purposes. They typically contain page numbers, document titles, dates, and other relevant information, ensuring consistency and professionalism throughout the document. Customizable across sections, headers and footers enhance document usability by providing contextual details without interrupting the main content flow, facilitating easier navigation and identification of document sections.

2.8 PRINTING AND PREVIEW OPTIONS

In Microsoft Word, the printing process includes several steps and features to ensure your document is printed correctly and meets your specific needs. These features include previewing the document, selecting printing options, and merging documents for printing.

1. Print Preview

Print Preview allows you to see how your document will look once printed. This helps in identifying any formatting issues, page breaks, and overall layout before sending the document to the printer.

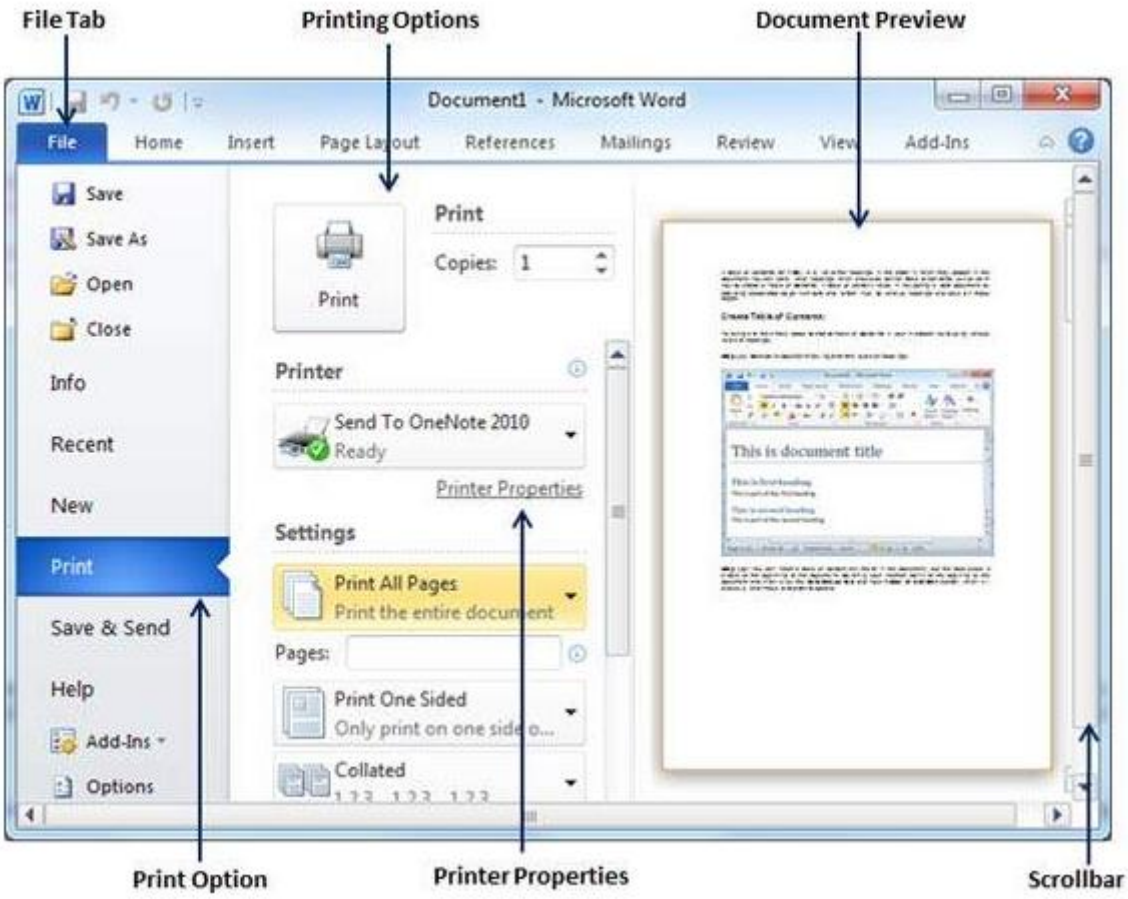
- **Accessing Print Preview**: You can access Print Preview by clicking on File>Print, or by pressing Ctrl + P. This opens the Print pane where the preview is displayed on the right side of the screen.
- **Features in Print Preview**:
    - **Zoom In/Out**: You can zoom in to see details or zoom out to view the entire page.
    - **Navigate Pages**: Use the navigation arrows to move between pages of the document.
    - **Adjust Settings**: Directly change print settings such as orientation, paper size, and margins.

2. Printing Options

Microsoft Word provides a variety of printing options to customize how your document is printed.

- **Print Range**:
    - **All Pages**: Print the entire document.
    - **Current Page**: Print only the page currently being viewed.
    - **Selection**: Print only the selected text.
    - **Custom Range**: Specify specific pages or a range of pages to print (e.g., 1-3, 5, 7-10).
- **Number of Copies**: Specify the number of copies you want to print.

- **Printer Selection**: Choose from the list of available printers connected to your computer or network.
- **Page Setup Options**:
  - **Orientation**: Select between Portrait and Landscape mode.
  - **Paper Size**: Choose the size of the paper (e.g., A4, Letter).
  - **Margins**: Adjust the margins for the document.
- **Collation**: Choose whether to collate copies or not when printing multiple copies of a multi-page document.
- **Duplex Printing**: Select double-sided printing if supported by your printer.
- **Print Quality**: Choose the quality of the print, which can affect print speed and ink usage.



Let's Sum Up

In Microsoft Word, the print option allows users to create physical copies of documents directly from the application. It provides essential settings for adjusting page layout, selecting printers, and previewing documents to ensure accurate and professional printing results.

Check Your Progress

1. Microsoft word is ____ software.

A) Application B) Compiler C) System D) Programming

Answer: A) Application

2. The ___ works with the standard Copy and Paste commands.

A) View Tab B) Paragraph Dialog Box C) Office Clipboard D) All Of These

Answer: C) Office Clipboard

3. What is the blank space outside the printing area on a page?

A) Clipart C) Header D) Footer

Answer: B) Margins

4. Which of the following is an example of page orientation?

A) Landscape B) Subscript C) Superscript D) A4

Answer: A) Landscape

5. Which enables us to send the same letter to different people?

A) Macros B) Template C) Mail Merge D) None Of Above

Answer: C) Mail Merge

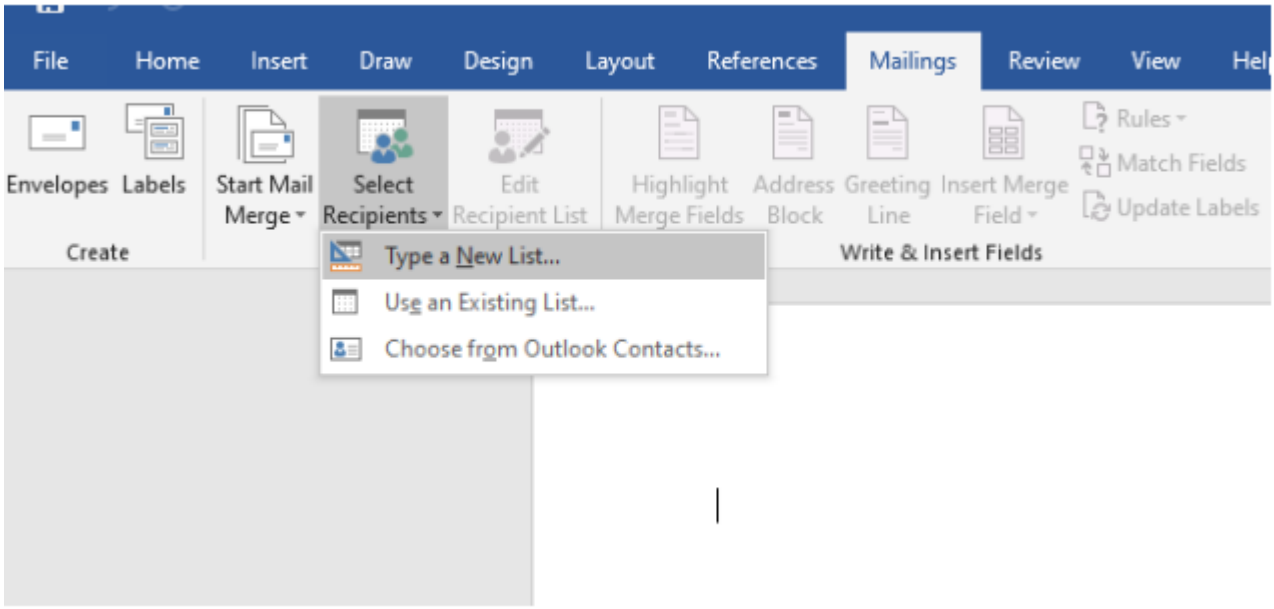
2.9 MAIL MERGE

Mail Merge in Microsoft Word is a powerful feature that allows users to create a batch of documents that are personalized for each recipient. These documents can include letters, labels, envelopes, and emails, among others. The key benefit of using Mail Merge is its

ability to automate the customization process, saving time and effort when creating large volumes of personalized documents.

Components of Mail Merge

1. **Main Document**: This is the template that contains the static content and placeholders (also known as merge fields) for the variable data. Examples of main documents include a form letter or a standard email message.
2. **Data Source**: This is the file that contains the data to be merged into the main document. It can be a spreadsheet, a database, or even an Outlook contact list. Common data sources include Microsoft Excel files, CSV files, and Access databases.
3. **Merge Fields**: These are placeholders in the main document that correspond to the columns in the data source. Examples of merge fields include <<FirstName>>, <<LastName>>, and <<Address>>.



Steps to Perform Mail Merge

1. **Prepare the Main Document**: Create the document in Word that will serve as your template. This document should contain the fixed text and placeholders for the data that will be merged.

2. **Set Up the Data Source**: Ensure your data source is well-organized, with a clear header row identifying each column (e.g., FirstName, LastName, Address).
3. **Link the Data Source to the Main Document**:
    - Go to the **Mailings** tab in Word.
    - Click **Start Mail Merge** and choose the type of document you are creating (e.g., Letters, E-mail Messages, Envelopes, Labels, or Directory).
    - Click **Select Recipients** and choose your data source.
4. **Insert Merge Fields**:
    - Position the cursor in the main document where you want to insert the merge field.
    - Click **Insert Merge Field** and select the field you want to insert. Repeat this step for all the fields you need.
5. **Preview the Merged Document**:
    - Click **Preview Results** to see how the merged document will look for each recipient.
    - Use the navigation arrows to view each record's merged document.
6. **Complete the Merge**:
    - Click **Finish & Merge** and choose whether you want to edit individual documents, print documents, or send them via email.

Practical Applications

- **Form Letters**: Send personalized letters to multiple recipients with individualized greetings, names, addresses, and other details.
- **Labels**: Create mailing labels for a large list of addresses.
- **Envelopes**: Print envelopes with recipient addresses from a contact list.
- **Emails**: Send customized email messages to a group of people, each message tailored with the recipient's information.

Let's Sum Up

Mail merge in MS Word enables users to create personalized documents efficiently by merging a template with a data source, such as a spreadsheet. It streamlines the process

of generating bulk letters, emails, or labels, ensuring each recipient receives customized content based on specific data fields.

2.10 Unit Summary

- It focuses on word processing skills using Microsoft Word, covering essential operations and functionalities for creating and formatting documents effectively.
- Develop proficiency in using various tools and formatting options to customize the appearance of text within documents.
- Utilize the spell checker tool to ensure accurate spelling in their documents.
- Document formatting techniques include paragraph alignment, indentation, and the use of headers and footers for document customization.

2.11 Glossary

- Ribbon - Tabs with groups of related commands and features.
- Quick Access Toolbar - A customizable toolbar for frequently used commands.
- Document Window - The area where the content of the document is displayed and edited.
- Status Bar - Displays information about the current document, such as page number and word count.
- Contextual Menu - A menu that appears when right-clicking, showing commands relevant to the current selection.
- Template - A pre-designed document format that can be used to create new documents with a similar layout and style.
- Styles - Predefined combinations of formatting attributes that can be applied to text for consistent formatting.

2.12 Self-Assessment Questions

1. Describe the process of saving a new document in Word.
2. How can you edit text in a Word document? Name two text editing tools or functions you can use.
3. What is the purpose of using bullets in a Word document? How can you add bullets to a list?

4. Describe the function of the spell checker in Word. How can you access and use the spell checker tool?
5. Discuss three formatting options you can apply to paragraphs in Word.

2.13 Case Study: "Document Preparation for a Research Proposal"

Scenario:

You are preparing a research proposal document for your upcoming project on "Innovative Approaches in Leukemia Treatment". The document needs to be professional, well-structured, and free from errors. You will create, edit, and format this document using the following tasks:

Tasks:

1. **Creating and Saving a New Document:**
   - Open a new Word document and save it with the filename: Leukemia_Research_Proposal.docx.
   - Create a title page with the title "Innovative Approaches in Leukemia Treatment" and your name, affiliation, and date. Use appropriate formatting and alignment for a professional appearance.
2. **Editing and Formatting Text:**
   - Add a section titled "Introduction" and write a brief introduction about Leukemia and the purpose of the research.
   - Use the following formatting tools:
     - Bold the first sentence of the introduction.
     - Italicize technical terms such as "Leukemia" and "Treatment".
     - Use a different font (e.g., Times New Roman, size 12) for the body text.
     - Use the "Heading 1" style for section titles.
3. **Using Bullets and Numbering:**
   - Create a list of objectives under the section "Objectives" using bullet points.
   - Create a numbered list under the section "Methodology" to outline the steps of your proposed research approach.

4. **Spell Checker:**
    - Run a spell check on the document to ensure there are no spelling errors. Correct any mistakes found.
5. **Document Formatting:**
    - Align the text in the “Introduction” section to be justified.
    - Indent the first line of each paragraph in the “Introduction” and “Methodology” sections.
    - Insert a header with the title of your research proposal and a footer with the page number.
6. **Headers and Footers:**
    - Insert a header with the title “Leukemia Research Proposal” on all pages.
    - Insert a footer with your name on the left and the page number on the right.
7. **Page Numbering and Page Setup:**
    - Start page numbering from the “Introduction” section, excluding the title page.
    - Adjust the margins to 1 inch on all sides for a neat appearance.
8. **Printing and Preview:**
    - Use the “Print Preview” option to check the overall layout of your document.
    - Explore different printing options such as single-sided and double-sided printing.
9. **Document Merging:**
    - Assume you have another document containing a “Literature Review” section. Use the “Insert” or “Merge” feature to include this section into your main document.
10. **Saving and Closing:**
    - Save the final version of your document.
    - Close the document after saving.

Outcome:

By completing these tasks, you will have a well-formatted research proposal document that demonstrates your proficiency in word processing. The document will be structured, error-free, and ready for submission or printing.

2.14 References and Suggested Readings

1. Peter Norton, Introduction to Computers–Tata McGraw-Hill.
2. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, —Microsoft 2003‖, Tata McGrawHill
3. TorbenLageFrandsen, Microsoft Office Word, 2010

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UNIT - II COMPLETED

UNIT – III

SPREADSHEETS

UNIT III - SPREADSHEETS

Spreadsheets: Excel– opening, entering text and data, formatting, navigating; Formulas– entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction t o data analytics

UNIT OBJECTIVES

- In this unit aims to understand the fundamental features of Excel, including opening and navigating through workbooks, entering text and data, and basic formatting techniques.
- Learners will be able to develop proficiency in entering, handling, and copying formulas in Excel, including basic arithmetic operations, functions, and formula referencing.
- Furthermore, this unit explore the basics of data analytics in Excel, including data manipulation, visualization, and basic statistical analysis techniques.

3.1 INTRODUCTION

MS-EXCEL is a part of Microsoft Office suite software. It is an electronic spreadsheet with numerous rows and columns, used for organizing data, graphically representing data(s), and performing different calculations. It consists of 1048576 rows and 16384 columns, a row and column together make a cell. Each cell has an address defined by column name and row number example A1, D2, etc. This is also known as a cell reference.

Microsoft Excel is a software application designed for creating tables to input and organize data. It provides a user-friendly way to analyze and work with data. The image below provides a visual representation of what an Excel spreadsheet typically appears like

3.2 EXCEL OPENING

Launch Microsoft Excel from your start menu or applications folder.

Windows: Click on the Start menu, type "Excel" in the search bar, and select Microsoft Excel from the list of results.

Mac: Open Finder, go to the Applications folder, and double-click on Microsoft Excel.

Excel Interface Overview:

Title Bar: Displays the name of the workbook.

Ribbon: Contains tabs (Home, Insert, Page Layout, etc.) with various tools and options.

Workbook: A file containing one or more worksheets.

Worksheet: A grid of cells where you can enter data. Each worksheet has rows (numbered) and columns (lettered).

Formula Bar: Displays the contents of the selected cell and allows you to enter or edit data and formulas.

Status Bar: Located at the bottom, it provides information about the current mode and includes tools like zoom control.

3.3 ENTERING TEXT AND DATA

1. Open Excel:

- Launch the Microsoft Excel application on your computer.

2. Creating or Opening a Workbook:

- Create a new workbook: Click on File > New > Blank Workbook.
- Open an existing workbook: Click on File > Open and select the file.

3. Understanding Cells, Rows, and Columns:

- Cells: The individual boxes you see on the worksheet. Each cell is identified by its column letter and row number (e.g., A1, B2).
- Rows: Horizontal lines of cells, identified by numbers (1, 2, 3, ...).
- Columns: Vertical lines of cells, identified by letters (A, B, C, ...).

4. Entering Text:

- Click on the cell where you want to enter text.
- Type the desired text.
- Press Enter to move to the cell below or Tab to move to the cell to the right.

5. Entering Numbers:

- Click on the cell where you want to enter a number.
- Type the number (e.g., 1234, 56.78).
- Press Enter to confirm.

6. Entering Dates and Times:

- Click on the cell where you want to enter a date or time.
- Type the date (e.g., 12/11/2024) or time (e.g., 14:30).
- Press Enter to confirm.

7. Entering Formulas:

- Click on the cell where you want the result to appear.
- Type an equals sign (=) followed by the formula (e.g., =SUM(A1:A10)).
- Press Enter to calculate and display the result.

8. Using AutoFill:

- Enter data in one or more cells.
- Select the cells you've just filled.
- Drag the fill handle (a small square at the bottom-right corner of the selection) across the cells you want to fill.

9. Editing Cell Content:

- Double-click the cell you want to edit, or click on the cell and press F2.
- Make the necessary changes.

- Press Enter to save the changes.

10. Copying and Pasting Data:

- Copy: Select the cell(s) you want to copy and press Ctrl+C (or right-click and select Copy).
- Paste: Select the cell where you want to paste the data and press Ctrl+V (or right-click and select Paste).

11. Deleting Cell Content:

- Select the cell(s) you want to clear.
- Press the Delete key.

12. Formatting Cells:

- Select the cell(s) you want to format.
- Right-click and select Format Cells.
- Choose the desired format (Number, Currency, Date, etc.) and click OK.

Let's Sum Up

In Microsoft Excel, entering data and text involves selecting cells and typing directly into them or using the formula bar for precise input. Excel's versatility allows for easy manipulation and organization of data through various formatting and editing options, making it a powerful tool for both simple data entry and complex calculations.

3.4 FORMATTING

1. Font and Text Formatting:

Bold, Italic, Underline**:**

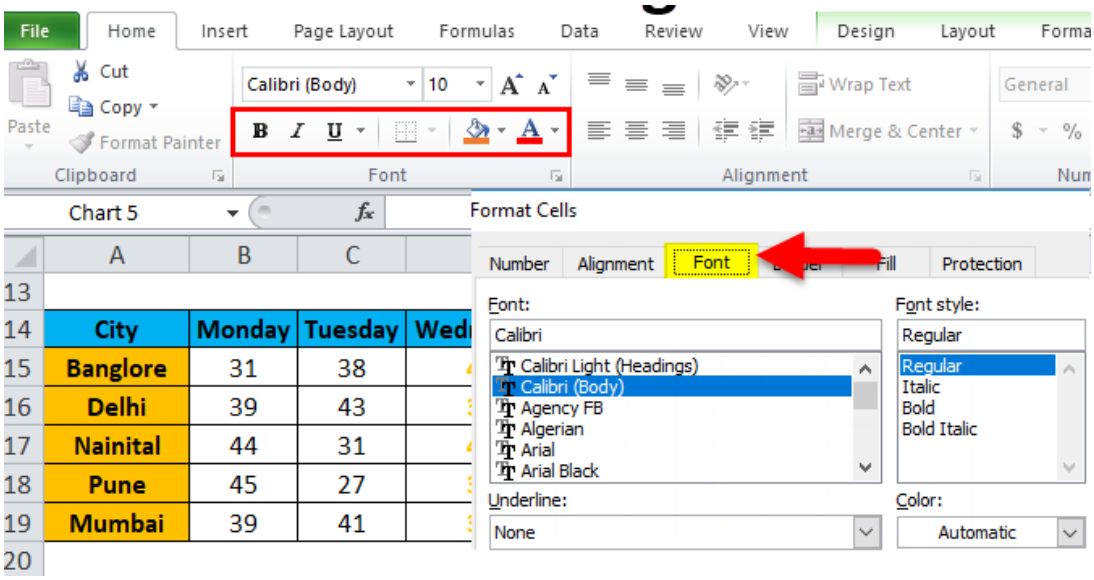
- Select the cell or range of cells.
- Click the B, I, or U buttons in the "Home" tab.

Font Size and Type:

- Select the cell or range of cells.
- Choose a font and size from the dropdown menus in the "Home" tab.

Font Color**:**

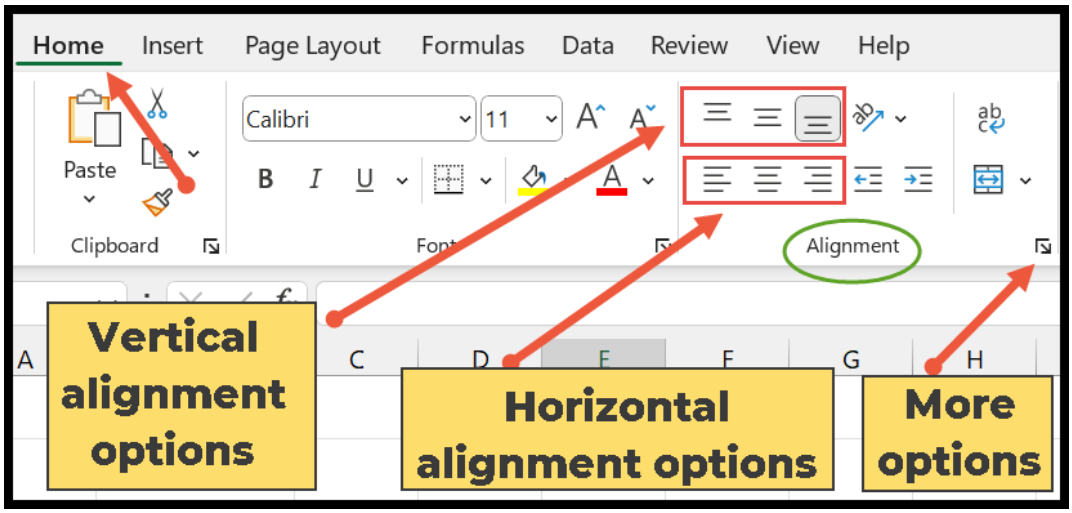
- ❖ Select the cell or range of cells.
- ❖ Click the Font Color button in the "Home" tab and choose a color.



2. Cell Alignment:

- **Horizontal Alignment:**
  - ❖ Select the cell(s).
  - ❖ Use the Align Left, Center, or Align Right buttons in the Home tab.
- **Vertical Alignment:**
  - ❖ Select the cell(s).
  - ❖ Use the Top Align, Middle Align, or Bottom Align buttons in the Home tab.
- **Text Wrap:**
  - ❖ Select the cell(s).
  - ❖ Click the Wrap Text button in the Home tab to ensure all text is visible within a cell.
- **Merge Cells:**
  - ❖ Select the cells you want to merge.

❖ Click the Merge &Center button in the Home tab (click the arrow for more options like Merge Across or Merge Cells).



3. Number Formatting

- **General, Number, Currency, Percentage, etc.:**
  - Select the cell(s).
  - In the Home tab, use the Number Format drop-down menu to select the appropriate format (e.g., Number, Currency, Percentage).
- **Decimal Places:**
  - After selecting a number format, you can adjust the number of decimal places by clicking the Increase Decimal or Decrease Decimal buttons in the Home tab.

4. Cell Borders and Fill

- **Borders:**
  - Select the cell(s).
  - Click the Borders button in the Home tab and choose the desired border style (e.g., All Borders, Outside Borders, Thick Box Border).
- **Fill Color:**
  - Select the cell(s).
  - Click the Fill Color button (a paint bucket icon) in the Home tab and choose a color.

5. Conditional Formatting:

- Select the cell(s) you want to apply conditional formatting to.
- Go to the Home tab and click Conditional Formatting.
- Choose a rule (e.g., Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets).
- Follow the prompts to set the conditions and format.

6. Adjusting Column Width and Row Height:

- **AutoFit Column Width:**
  - Double-click the right boundary of the column header (e.g., between A and B) to auto-adjust the width based on content.
- **AutoFit Row Height:**
  - Double-click the bottom boundary of the row header (e.g., between 1 and 2) to auto-adjust the height based on content.
- **Manual Adjustment:**
  - Click and drag the boundary between columns or rows to adjust width or height manually.
  - Right-click the column or row header and select Column Width or Row Height to enter a specific value.

Let's Sum Up

Formatting in Microsoft Excel is crucial for organizing and presenting data effectively. It includes features such as cell formatting (like number, currency, and date formats), text formatting (like font style, size, and color), and conditional formatting for highlighting data based on specific criteria. These tools enable users to create clear, professional-looking spreadsheets that enhance readability and analysis.

Check Your Progress

1. What is the default file extension for an Excel workbook saved in Excel 2016 and later versions?

A) .xls

B) .xlsx

C) .xlsm

D) .csv

Answer: B) .xlsx

2. Which of the following can you use to change the format of a cell in Excel?

A) Home tab

B) Data tab

C) Insert tab

D) View tab

Answer: A) Home tab

3. To merge cells in Excel, which option would you select from the Home tab?

A) Center

B) Merge & Center

C) Align Right

D) Format Cells

Answer: B) Merge & Center

4. Which shortcut key is used to open the Format Cells dialog box in Excel?

A) Ctrl + F

B) Ctrl + 1

C) Alt + F

D) Shift + F10

Answer: B) Ctrl + 1

5. In Excel, what does the "Wrap Text" feature do?

A) It changes the text color.

B) It allows text to appear on multiple lines within a single cell.

C) It rotates the text in the cell.

D) It increases the font size.

Answer: B) It allows text to appear on multiple lines within a single cell.

6. Which option can be used to format numbers as currency in Excel?

A) General Format

B) Number Format

C) Currency Format

D) Text Format

Answer: C) Currency Format

3.5 NAVIGATING IN EXCEL

Basic Navigation

- **Arrow Keys:** Move one cell up, down, left, or right.
- **Tab:** Move one cell to the right.
- **Enter:** Move one cell down.
- **Ctrl + Arrow Keys:** Move to the edge of data regions.
- **Home:** Move to the beginning of a row.
- **Ctrl + Home:** Move to the beginning of a worksheet (A1).
- **Ctrl + End:** Move to the last cell with data.

Selecting Cells

- **Shift + Arrow Keys:** Select a range of cells.
- **Ctrl + Shift + Arrow Keys:** Select a large range of cells in the direction of the arrow.
- **Ctrl + A:** Select the entire worksheet.
- **Shift + Space:** Select the entire row.
- **Ctrl + Space:** Select the entire column.

3.6 FORMULAS ENTERING HANDLING AND COPYING

Formulas are equations that perform calculations on values in your sheet. All formulas begin with an equal sign (=). You can create a simple formula by using constant and calculation operator. For example, the formula **=5+2*3**, multiplies two numbers and then adds a number to the result. A predefined formula that simplifies entering calculations.

1. **Equal signs** start all formulas.

2. **Constants**, such as numbers or text values, can be entered directly into a formula.

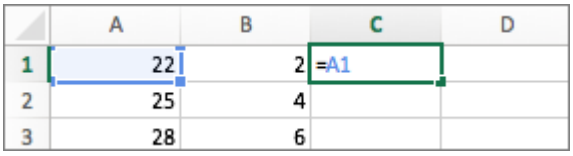
3. **Operators** specify the kind of calculation that the formula performs. For example, the ^ (caret) operator raises a number to a power, and the * (asterisk) operator multiplies numbers.

4. **Functions** are premade formulas that can be used alone, or as part of a longer formula. Each function has a specific argument syntax.

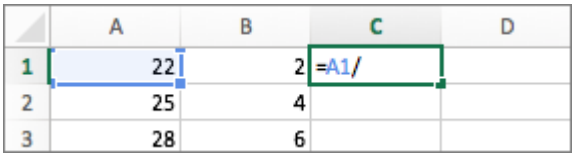
5.**Cell values** let you to reference an Excel cell, instead of the specific value inside the cell so that the contents of the cell can change without the function that refers to the cell having to change.

ENTERING AND HANDLING THE FORMULA

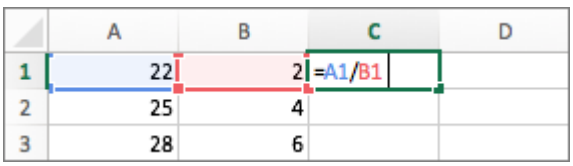
1. In a sheet that contains columns of numbers, click the cell where you want the formula results to appear.
2. Type an equal sign **=**
3. Click the first cell that you want to include in your calculation.



4. Type an operator. An operator is the kind of calculation that the formula performs. For example, the * (asterisk) operator multiplies numbers. In this example, use the / (forward slash) operator to divide. At this point your formula should look like this:



5. Click the next cell that you want to include in your calculation. Now your formula should look like this:



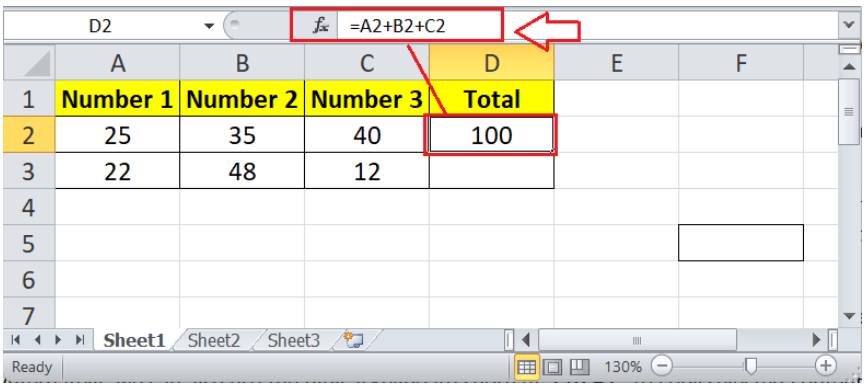
6. Press RETURN.

The result of the calculation appears in the cell.

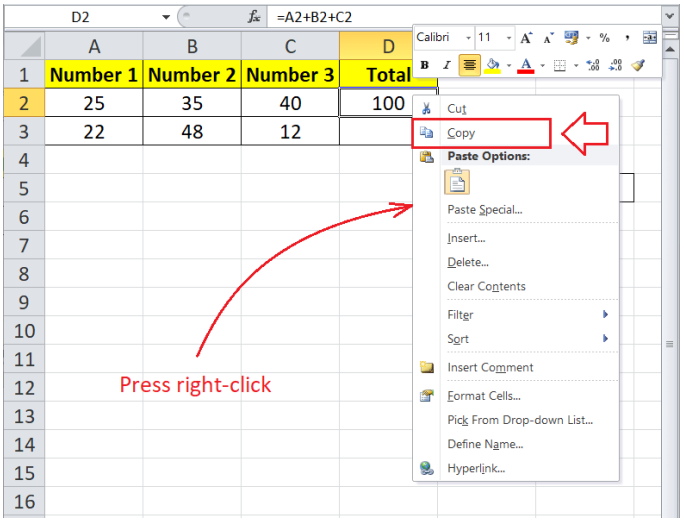
	A	B	C	D
1	22	2	11	
2	25	4		
3	28	6		

3.6.1 COPYING A FORMULAFROM ONE EXCEL CELL TO ANOTHER

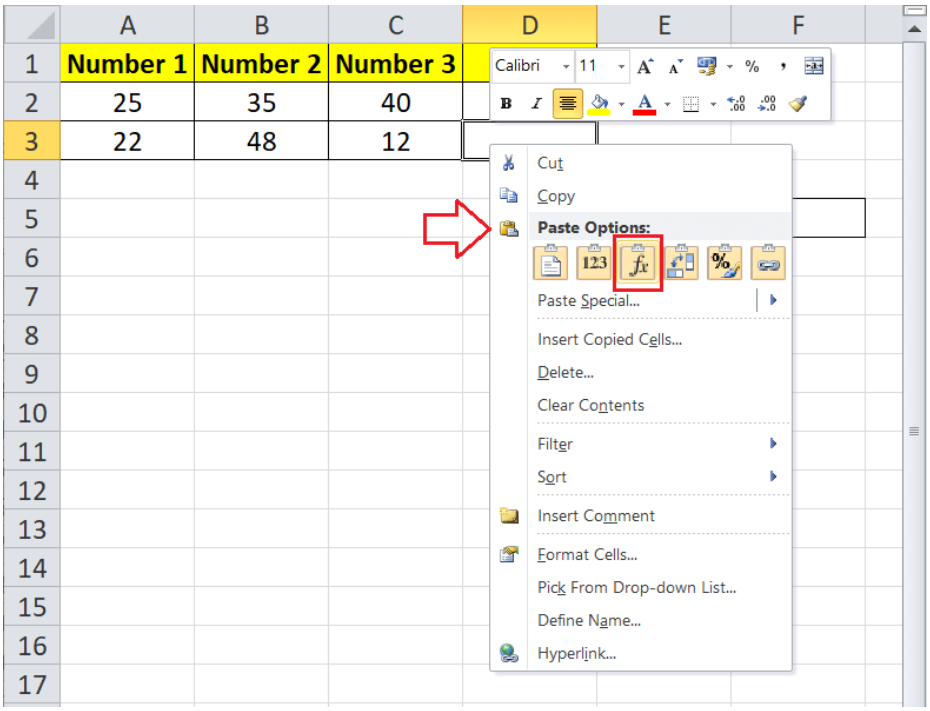
It is easy to copy a formula from one cell to another, avoiding entering it again and again and saving time. We can easily copy the formula using various ways. Suppose we have the following Excel sheet where the values from cells A2, B2, and C2, are added in cell D2. We need to copy the formula from cell D2 to D3.



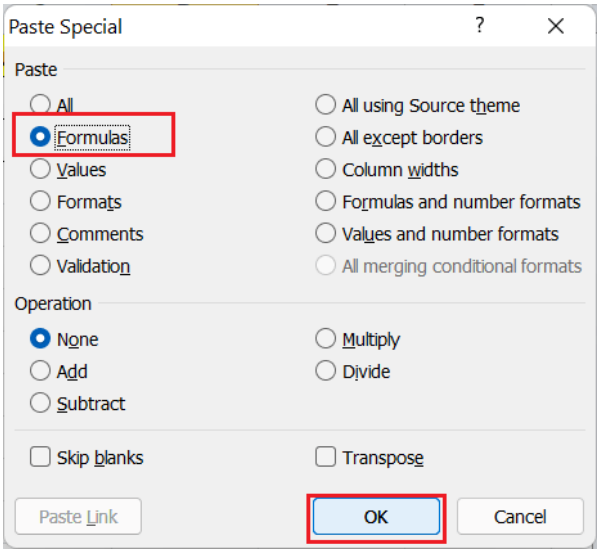
When copying the formula from cell D2, we must first select the specific cell. We must press the **right-click** button and select the **'Copy'** option to copy the entire cell content and the formula. Alternately, we can also use the typical keyboard shortcut **'Ctrl + C'** to copy selected contents in Excel.



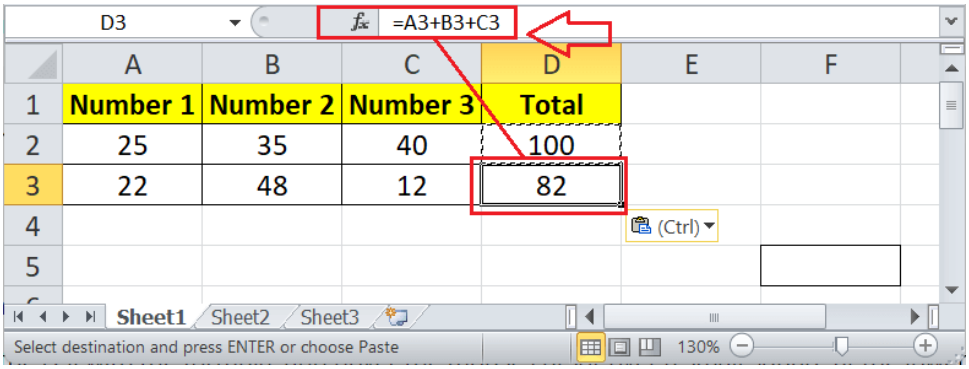
After copying the cell with the formula, we need to go to the cell where we must paste the formula (D3 in our case). Again, we need to press the right-click button and choose **'Formula'** under the **'Paste Options'** from the contextual menu (right-click menu).



Alternately, we can launch Paste Special dialogue box by clicking the **'Paste Special'** option from the contextual menu. Next, we can choose **'Formulas'** under the **'Paste'** section and click the **OK** button. This will paste only the formula from the copied cell.



The cell references are automatically adjusted as soon as we paste the copied formula into an Excel cell. However, the formula remains the same as the one in the copied cell. Thus, in our example, cell D3 has the same formula, but values are taken from cells A3, B3, and C3. The cell references are self-adjusted to match the row number or column of the pasted cell.



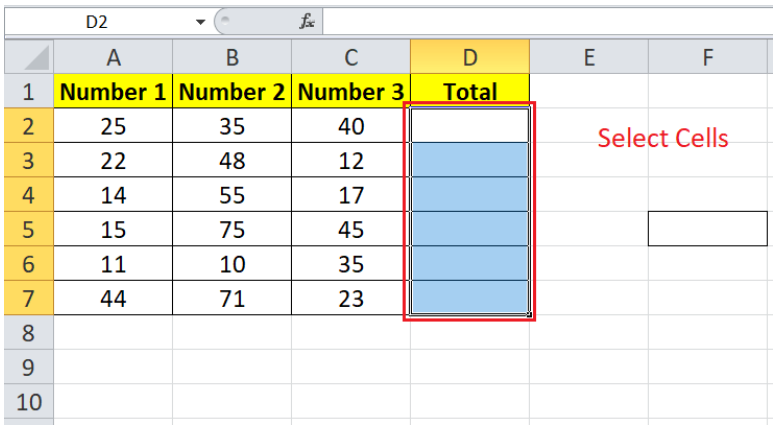
3.6.2 COPYING A FORMULA FROM ONE EXCEL CELL TO MULTIPLE CELLS

When copying a formula to multiple cells, we can follow the same steps as the previous method. We have to copy the cell with the formula using the **"Ctrl+C"** shortcut and then paste it on the destination cells. However, we must select all the destination cells before pasting the formula. To select multiple cells, we can click on the desired cells, one

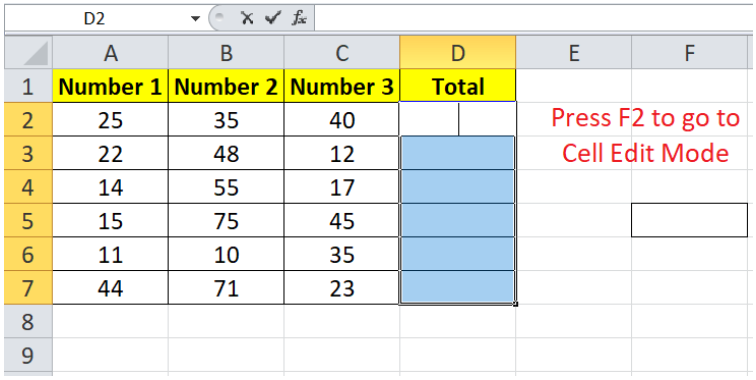
by one, while holding down the **Ctrl** key. Also, we can hold down the **Shift** key while selecting multiple contiguous cells and click on the first and last cells.

If we need to enter the formula in multiple cells, Excel also allows us to do the same with a single keystroke. The method works for both adjacent and non-adjacent cells.

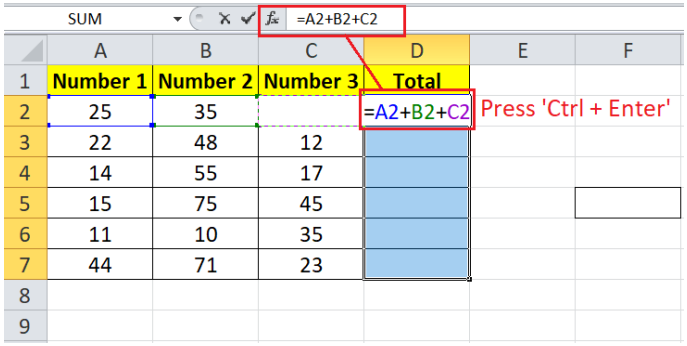
- First, we need to select all the cells to type the formula. We can select contiguous cells using the **drag** feature of the mouse. Besides, we can click on each non-contiguous cell while holding the **Ctrl** key to select non-adjacent cells.



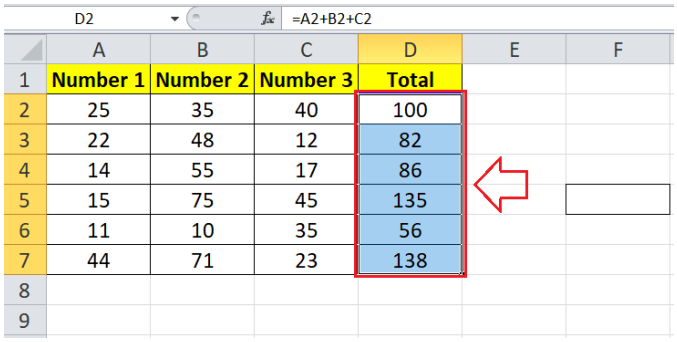
- We need to press the **F2** key to go to the Edit mode.



- Lastly, we must enter the formula in an editing mode and press the Ctrl and Enter keys together (i.e., **Ctrl + Enter**).



- This will copy the entered formula into all selected cells with adjusted relative cell references.



Let's Sum Up

Navigating and entering formulas in MS Excel is essential for efficient data manipulation and analysis. Users can navigate through worksheets using keyboard shortcuts or the navigation pane, while formula entry involves selecting cells, inputting operators and functions, and using relative or absolute cell references for calculations. Excel's versatility in handling complex formulas and its user-friendly interface make it a powerful tool for organizing and analysing data in various professional and personal contexts.

Check Your Progress

1. What symbol is used to begin a formula in Excel?

A) @

B) #

C) =

D) &

Answer: C) =

2. Which of the following formulas will correctly calculate the sum of cells A1 to A10?

A) SUM(A1)

B) A1+A10

C) TOTAL(A1)

D) ADD(A1)

Answer: A) SUM(A1)

3. What will be the result of the formula =A1/B1 if A1 contains 10 and B1 contains 0?

A) 10

B) 0

C) #DIV/0!

D) Error

Answer: C) #DIV/0!

4. In Excel, what is the purpose of using parentheses in a formula?

A) To group operations

B) To define cell references

C) To create text strings

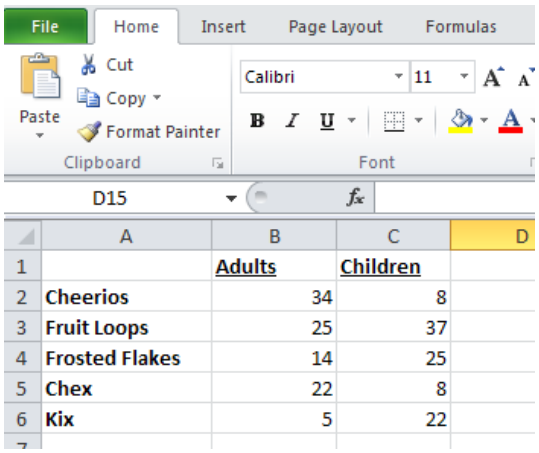
D) To format numbers

Answer: A) To group operations

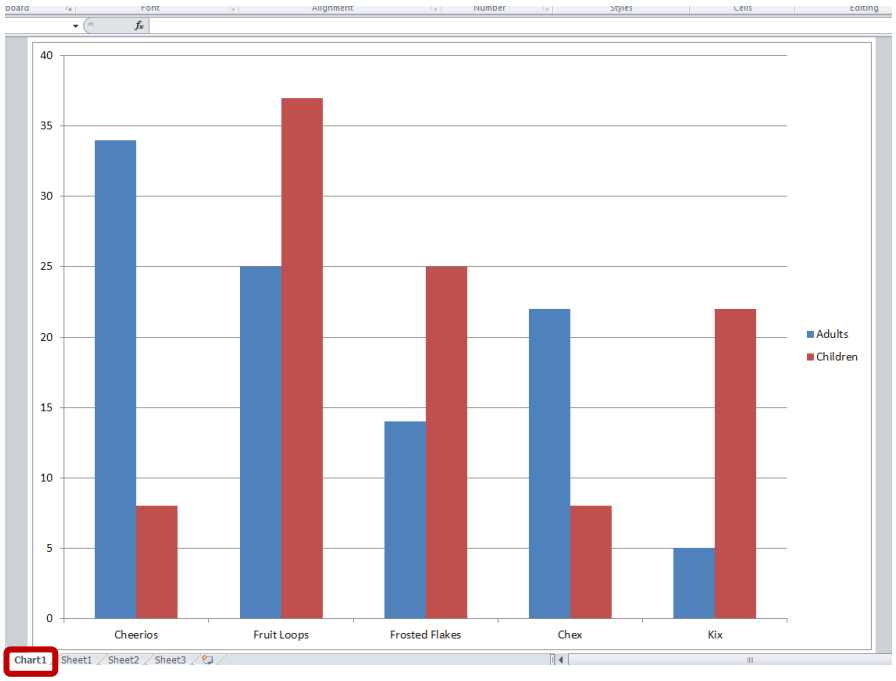
3.7 CHARTS

3.7.1 CREATING A CHART

1. To create a basic chart in Excel that you can modify and format later, start by entering



2. The data for the chart on a worksheet. It is important to include titles in the datasheet so that Excel can create legends and labels for the chart.
3. Then simply select that data (including titles) and press **F11**.Thiscreatesaninstant column chart in a new tab, which can be customized to meet your needs.



4. Or, instead of pressing F11, goto the **Insert** tab and select the type of

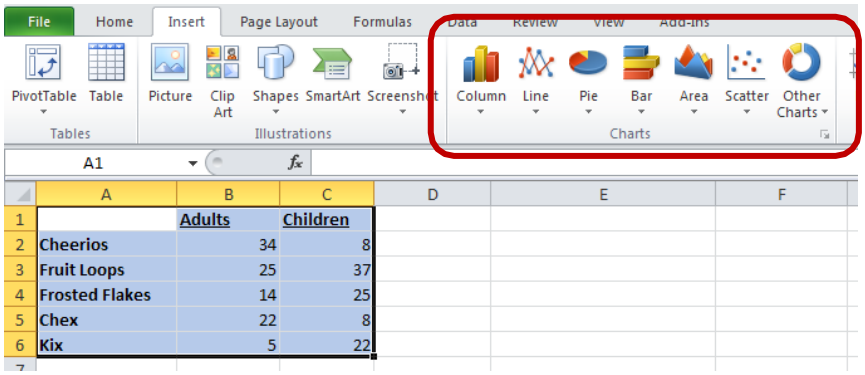
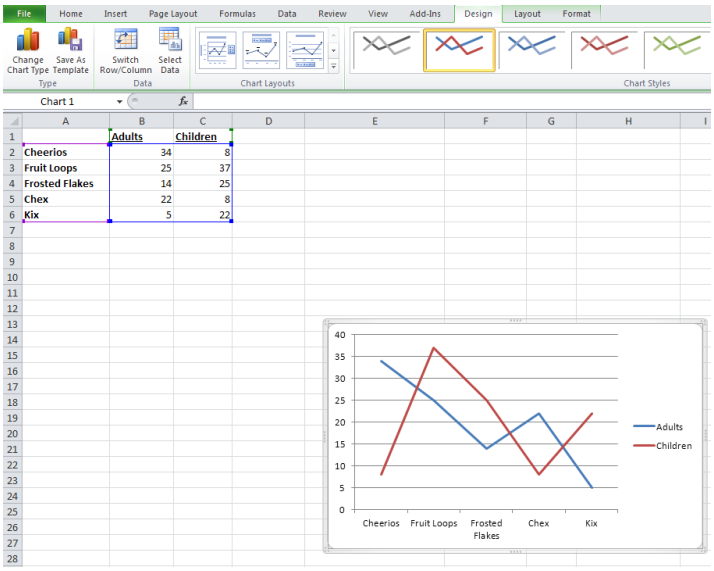


chart you would like to create.

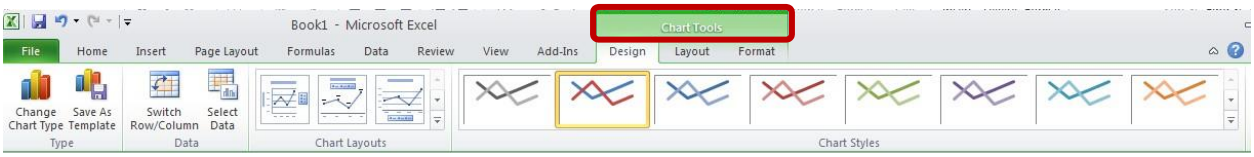
5. This creates a chart embedded in the datasheet.



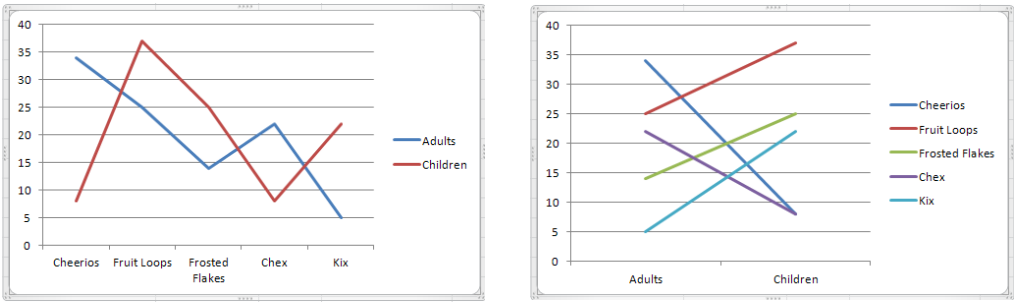
3.7.2 FORMATTING A CHART

Once a chart has been created, there are a multitude off or matting options that can be applied.

1. Select the chart. This activates the **Chart Tools** on the Ribbon.



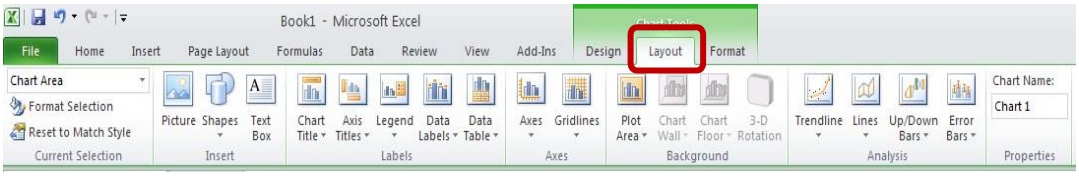
2. Use the features available on the **Design** tab to:
   a. Change the chart type.



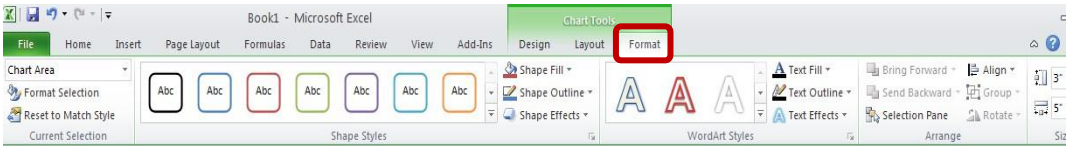
   b. Swap the rows and columns or adjust what data is charted. For example, switching the columns and rows changes the look of the chart, even though therawdatahasnot changed:
   c. Apply a Chart Style.

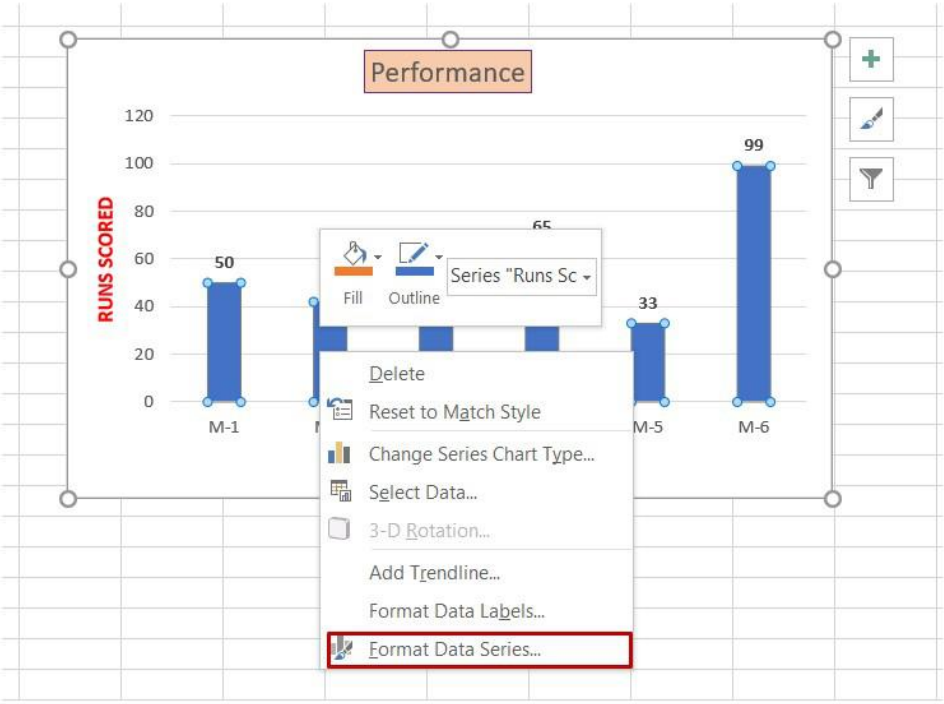
d. Move the chart (from the data sheet to its own tab or vice versa).

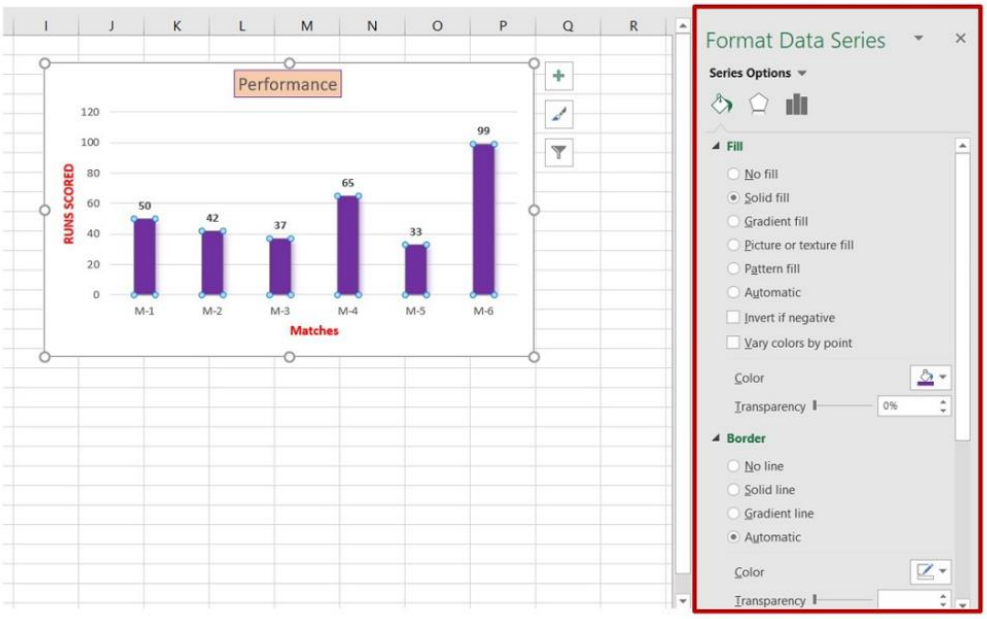
3. Use the features available on the **Layout** tab to:
   a. Insert a picture, shape, or textbox.
   b. Adjust the labels, including moving the legend, editing titles, and adding data labels (like values).
   c. Adjust the axes and gridlines (for example, showing numbers on the axis in millions or adding or removing gridlines).
   d. Format the background.
   e. Addtrendlinestoforecastfuturedataorerrorbarstoshowpotentialerror amounts.



4. Use the features available on the **Format** tab to:
   a. Apply a style, fill, outline, or effect.(For example, to change the color ofthe bars.)
   b. Apply and format WordArt.
   c. Use the drop down list in the **Current Selection** group to quickly adjust which area of the chart you want to format.







Let's Sum Up

Creating charts in Microsoft Excel allows for the visual representation of data, making it easier to understand and analyze trends and patterns. Excel offers various chart types, such as bar, line, pie, and scatter plots, which can be customized to suit specific data presentation needs.

Check Your Progress

1. Which of the following chart types is best used to show the relationship between two variables?

A) Pie Chart

B) Line Chart

C) Scatter Plot

D) Column Chart

Answer: C) Scatter Plot

2. What is the main purpose of a Pie Chart in MS Excel?

A) To display trends over time

B) To compare the frequency of categories

C) To show the proportion of parts to a whole

D) To illustrate the relationship between different datasets

Answer: C) To show the proportion of parts to a whole

3. Which chart type would you use to compare the performance of multiple categories over time?

A) Doughnut Chart

B) Bar Chart

C) Area Chart

D) Stacked Column Chart

Answer: D) Stacked Column Chart

4. What feature in MS Excel allows you to quickly change the data range of a chart?

A) Chart Filters

B) Chart Styles

C) Chart Elements

D) Chart Data Selector

Answer: A) Chart Filters

5. In MS Excel, which of the following can be used to add a trendline to a chart?

A) Data Labels

B) Axis Titles

C) Chart Tools

D) Format Data Series

Answer: D) Format Data Series

3.8 PREPARATION OF FINANCIAL STATEMENT

Creating financial statements in MS Excel involves using various functions and formatting tools to organize and calculate financial data effectively. Here's a step-by-step guide to help you get started:

Step 1: Set Up Your Workbook

1. **Open Excel**: Start Excel and create a new workbook.
2. **Worksheet Setup**: Rename your worksheets. Typically, you might have sheets for Income Statement, Balance Sheet, and Cash Flow Statement.

Step 2: Enter Your Data

1. **Income Statement**:
   - Enter revenue and expenses data. Label columns for items like Sales, Cost of Goods Sold, Operating Expenses, etc.
   - Calculate subtotal for Gross Profit and Operating Income.
2. **Balance Sheet**:
   - Enter assets (current and non-current) and liabilities (current and long-term).
   - Include equity items such as Retained Earnings and Common Stock.
   - Calculate totals for Assets and Liabilities + Equity.
3. **Cash Flow Statement**:
   - List operating, investing, and financing activities.
   - Calculate Net Cash Flow from Operations, Investing Activities, and Financing Activities.

Step 3: Use Formulas and Functions

- **Basic Formulas**:
  - Use basic arithmetic operations (+, -, *, /) for calculations.
  - Example: =SUM(B2:B10) to sum up a range of cells.
- **Financial Functions**:

  - Utilize functions like SUM, SUMIF, SUMIFS, AVERAGE, IF, VLOOKUP, etc., as per your requirements.
  - Example: =SUMIF(B2:B10, ">1000") to sum values greater than 1000.
- **Excel Tables**:
  - Convert your data range into a table (Ctrl + T), which allows easy referencing and automatic formula application as you add more data.

Step 4: Formatting

- **Currency Formatting**:
  - Select cells and apply appropriate currency formatting (Ctrl + Shift + $).
- **Alignment and Styling**:
  - Format headings, numbers, and dates for clarity and consistency.
  - Use bold, italics, and underline for emphasis where needed.

Step 5: Review and Finalize

- **Check Formulas**:
  - Double-check all formulas and calculations to ensure accuracy.
- **Graphs and Charts**:
  - Create charts (e.g., pie charts, line graphs) to visualize financial data.
  - Use Insert > Charts and select the appropriate chart type.

Step 6: Save and Share

- **Save Your Workbook**:
  - Save your Excel file (Ctrl + S) regularly to avoid losing your work.
- **Share Your Workbook**:
  - Share your final workbook with colleagues or stakeholders as needed.

Let's Sum Up

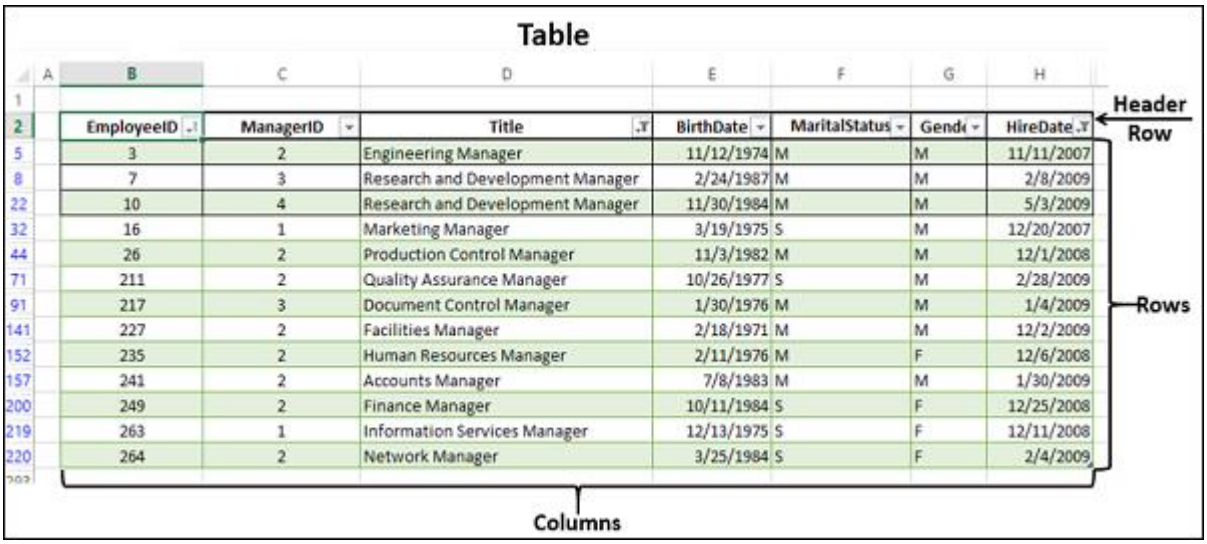
Preparing a financial statement in MS Excel involves organizing financial data into a structured format, typically using spreadsheets to create income statements, balance sheets, and cash flow statements. This process includes inputting relevant financial data,

applying formulas for calculations, and using built-in functions and tools to ensure accuracy and clarity in the presentation of financial information.

3.9 INTRODUCTION TO DATA ANALYTICS

A **Table** is a rectangular range of structured data. The key features are −

- Each row in the table corresponds to a single record of the data. Example - Employee information.
- Each column contains a specific piece of information. Exmaple - The columns can contain data such as name, employee number, hire date, salary, department, etc.
- The top row describes the information contained in each column and is referred to as header row.
- Each entry in the top row is referred to as column header.



EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gende	HireDate
3	2	Engineering Manager	11/12/1974	M	M	11/11/2007
7	3	Research and Development Manager	2/24/1987	M	M	2/8/2009
10	4	Research and Development Manager	11/30/1984	M	M	5/3/2009
16	1	Marketing Manager	3/19/1975	S	M	12/20/2007
26	2	Production Control Manager	11/3/1982	M	M	12/1/2008
211	2	Quality Assurance Manager	10/26/1977	S	M	2/28/2009
217	3	Document Control Manager	1/30/1976	M	M	1/4/2009
227	2	Facilities Manager	2/18/1971	M	M	12/2/2009
235	2	Human Resources Manager	2/11/1976	M	F	12/6/2008
241	2	Accounts Manager	7/8/1983	M	M	1/30/2009
249	2	Finance Manager	10/11/1984	S	F	12/25/2008
263	1	Information Services Manager	12/13/1975	S	F	12/11/2008
264	2	Network Manager	3/25/1984	S	F	2/4/2009

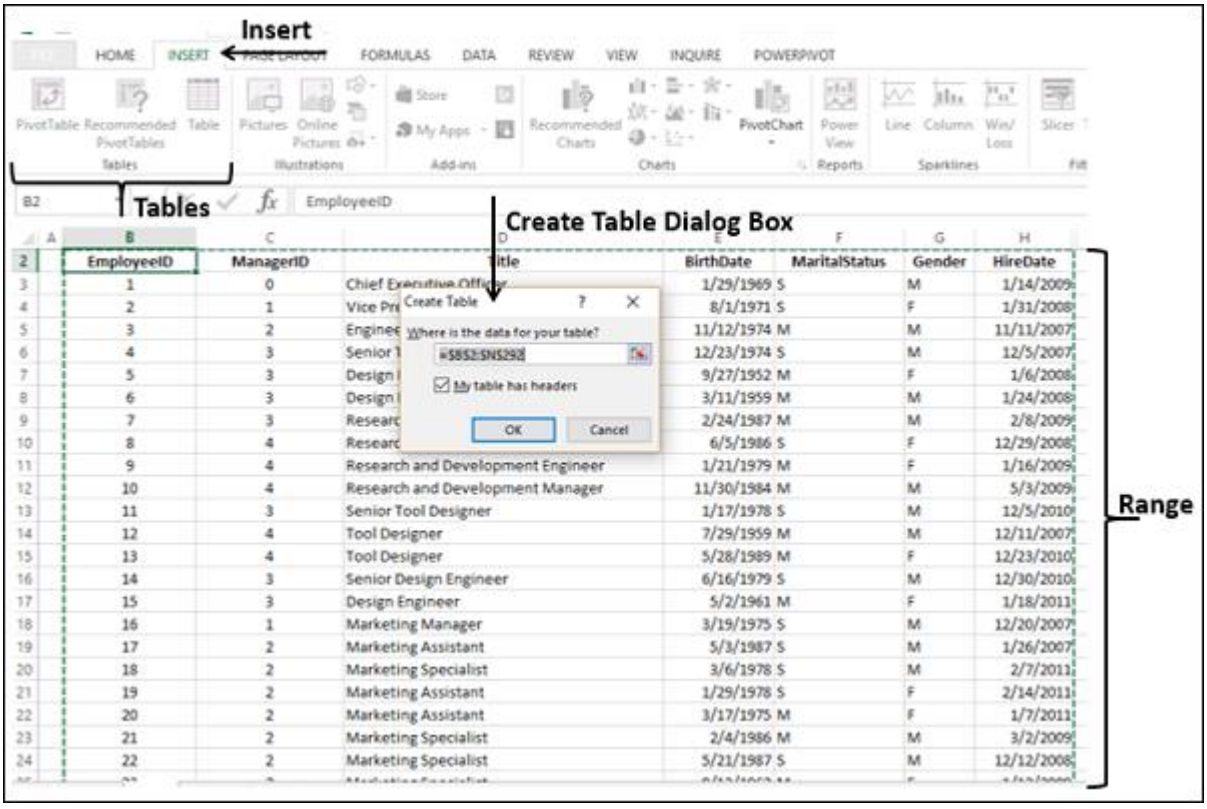
3.9.1 CREATE TABLE

To create a table from the data you have on the worksheet, follow the given steps −

Step 1 − Select the Range of Cells that you want to include in the Table. Cells can contain data or can be empty. The following Range has 290 rows of employee data. The top row of the data has headers.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
1	0	Chief Executive Officer	1/29/1969	S	M	1/14/2009
2	1	Vice President of Engineering	8/1/1971	S	F	1/31/2008
3	2	Engineering Manager	11/12/1974	M	M	11/11/2007
4	3	Senior Tool Designer	12/23/1974	S	M	12/5/2007
5	3	Design Engineer	9/27/1952	M	F	1/6/2008
6	3	Design Engineer	3/11/1959	M	M	1/24/2008
7	3	Research and Development Manager	2/24/1987	M	M	2/8/2009
8	4	Research and Development Engineer	6/5/1986	S	F	12/29/2008
9	4	Research and Development Engineer	1/21/1979	M	F	1/16/2009
10	4	Research and Development Manager	11/30/1984	M	M	5/3/2009
11	3	Senior Tool Designer	1/17/1978	S	M	12/5/2010
12	4	Tool Designer	7/29/1959	M	M	12/11/2007
13	4	Tool Designer	5/28/1989	M	F	12/23/2010
14	3	Senior Design Engineer	6/16/1979	S	M	12/30/2010
15	3	Design Engineer	5/2/1961	M	F	1/18/2011
16	1	Marketing Manager	3/19/1975	S	M	12/20/2007
17	2	Marketing Assistant	5/3/1987	S	M	1/26/2007
18	2	Marketing Specialist	3/6/1978	S	M	2/7/2011
19	2	Marketing Assistant	1/29/1978	S	F	2/14/2011
20	2	Marketing Assistant	3/17/1975	M	F	1/7/2011
21	2	Marketing Specialist	2/4/1986	M	M	3/2/2009

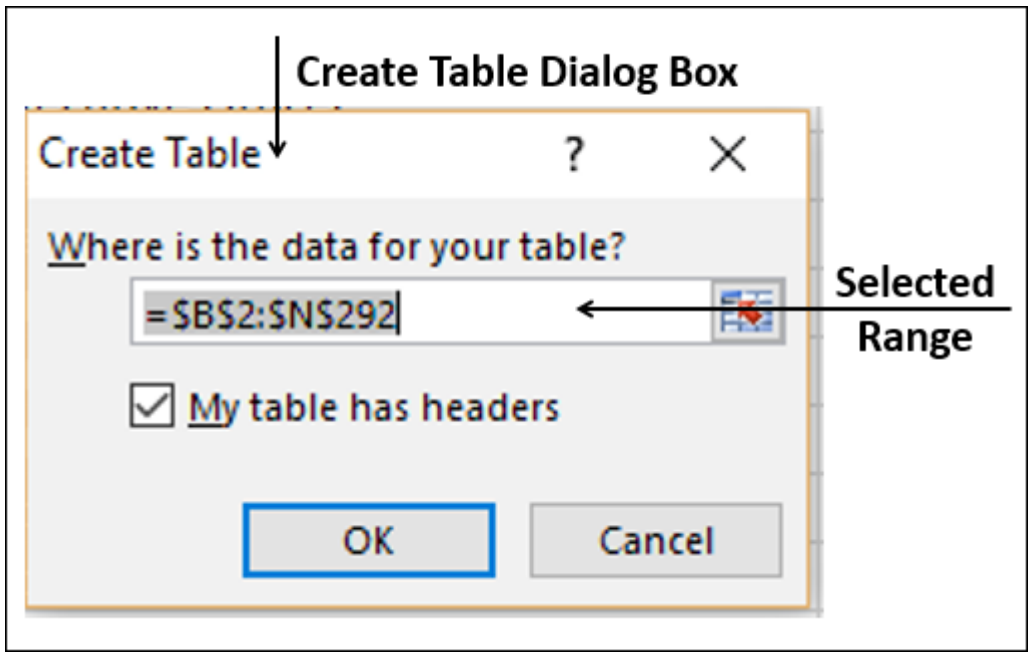
Step 2 − Under the **Insert** tab, in the Tables group, click Tables. The **Create Table** dialog box appears. Check that the data range selected in the **Where is the data for your table?** Box is correct.



Step 3 − Check the **My table has headers** box if the top row of the selected Range contains data that you want to use as the Table Headers.

Note − If you do not check this box, your table will have Headers – Column1, Column2,

Step 4 − Click OK.



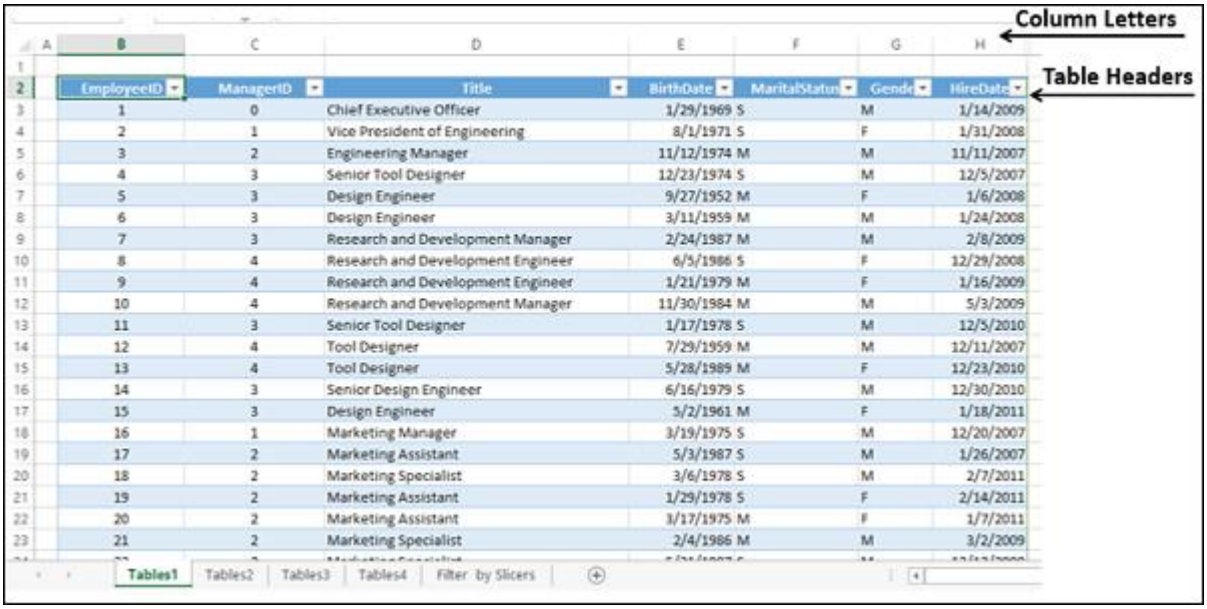
Range is converted to Table with the default Style.

EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gende	HireDate
1	0	Chief Executive Officer	1/29/1969	S	M	1/14/2009
2	1	Vice President of Engineering	8/1/1971	S	F	1/31/2008
3	2	Engineering Manager	11/12/1974	M	M	11/11/2007
4	3	Senior Tool Designer	12/23/1974	S	M	12/5/2007
5	3	Design Engineer	9/27/1952	M	F	1/6/2008
6	3	Design Engineer	3/11/1959	M	M	1/24/2008
7	3	Research and Development Manager	2/24/1987	M	M	2/8/2009
8	4	Research and Development Engineer	6/5/1986	S	F	12/29/2008
9	4	Research and Development Engineer	1/21/1979	M	F	1/16/2009
10	4	Research and Development Manager	11/30/1984	M	M	5/3/2009
11	3	Senior Tool Designer	1/17/1978	S	M	12/5/2010
12	4	Tool Designer	7/29/1959	M	M	12/11/2007
13	4	Tool Designer	5/28/1989	M	F	12/23/2010
14	3	Senior Design Engineer	6/16/1979	S	M	12/30/2010
15	3	Design Engineer	5/2/1961	M	F	1/18/2011
16	1	Marketing Manager	3/19/1975	S	M	12/20/2007
17	2	Marketing Assistant	5/3/1987	S	M	1/26/2007
18	2	Marketing Specialist	3/6/1978	S	M	2/7/2011
19	2	Marketing Assistant	1/29/1978	S	F	2/14/2011
20	2	Marketing Assistant	3/17/1975	M	F	1/7/2011
21	2	Marketing Specialist	2/4/1986	M	M	3/2/2009
22	2	Marketing Specialist	5/21/1987	S	M	12/12/2008

Step 5 − You can also convert a range to a table by clicking anywhere on the range and pressing Ctrl+T. A **Create Table** dialog box appears and then you can repeat the steps as given above.

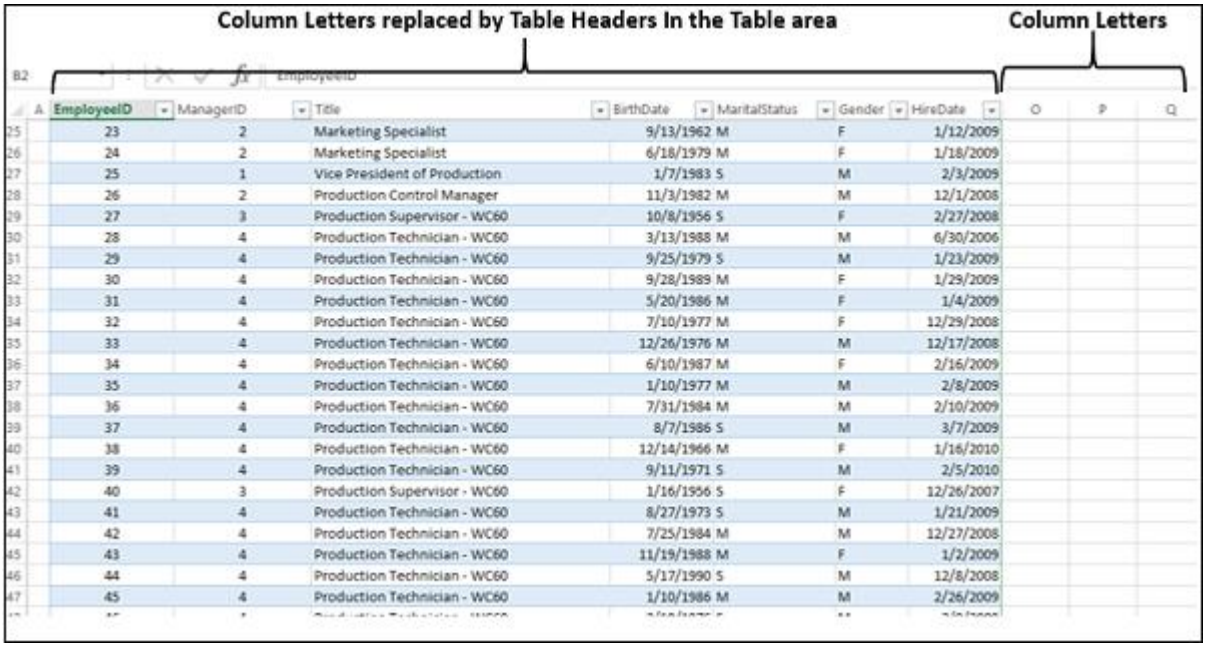
3.9.2 TABLE HEADERS REPLACING COLUMN LETTERS

In the worksheet given below, the column letters are appearing as they are and the table headers are in row 2. 21 rows of 290 rows of data are visible.



	A	B	C	D	E	F	G	H
1								
2		EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gende	HireDate
3		1	0	Chief Executive Officer	1/29/1969	S	M	1/14/2009
4		2	1	Vice President of Engineering	8/1/1971	S	F	1/31/2008
5		3	2	Engineering Manager	11/12/1974	M	M	11/11/2007
6		4	3	Senior Tool Designer	12/23/1974	S	M	12/5/2007
7		5	3	Design Engineer	9/27/1952	M	F	1/6/2008
8		6	3	Design Engineer	3/11/1959	M	M	1/24/2008
9		7	3	Research and Development Manager	2/24/1987	M	M	2/8/2009
10		8	4	Research and Development Engineer	6/5/1986	S	F	12/29/2008
11		9	4	Research and Development Engineer	1/21/1979	M	F	1/16/2009
12		10	4	Research and Development Manager	11/30/1984	M	M	5/3/2009
13		11	3	Senior Tool Designer	1/17/1978	S	M	12/5/2010
14		12	4	Tool Designer	7/29/1959	M	M	12/11/2007
15		13	4	Tool Designer	5/28/1989	M	F	12/23/2010
16		14	3	Senior Design Engineer	6/16/1979	S	M	12/30/2010
17		15	3	Design Engineer	5/2/1961	M	F	1/18/2011
18		16	1	Marketing Manager	3/19/1975	S	M	12/20/2007
19		17	2	Marketing Assistant	5/3/1987	S	M	1/26/2007
20		18	2	Marketing Specialist	3/6/1978	S	M	2/7/2011
21		19	2	Marketing Assistant	1/29/1978	S	F	2/14/2011
22		20	2	Marketing Assistant	3/17/1975	M	F	1/7/2011
23		21	2	Marketing Specialist	2/4/1986	M	M	3/2/2009

Scroll down to see the table rows 25 – 35. The table headers will replace the column letters for the table columns. Other column letters remain as they are.



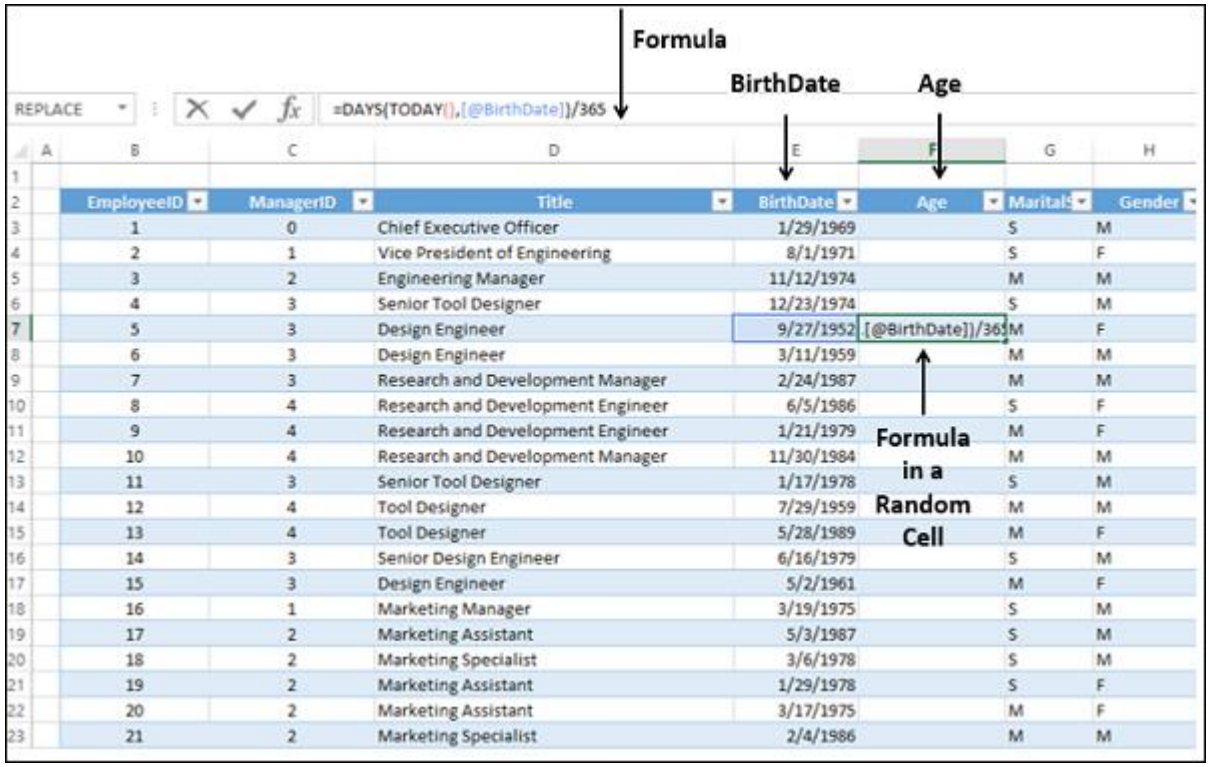
	A	EmployeeID	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate	O	P	Q
25		23	2	Marketing Specialist	9/13/1962	M	F	1/12/2009			
26		24	2	Marketing Specialist	6/18/1979	M	F	1/18/2009			
27		25	1	Vice President of Production	1/7/1983	S	M	2/3/2009			
28		26	2	Production Control Manager	11/3/1982	M	M	12/1/2008			
29		27	3	Production Supervisor - WC60	10/8/1956	S	F	2/27/2008			
30		28	4	Production Technician - WC60	3/13/1988	M	M	6/30/2006			
31		29	4	Production Technician - WC60	9/25/1979	S	M	1/23/2009			
32		30	4	Production Technician - WC60	9/28/1989	M	F	1/29/2009			
33		31	4	Production Technician - WC60	5/20/1986	M	F	1/4/2009			
34		32	4	Production Technician - WC60	7/10/1977	M	F	12/29/2008			
35		33	4	Production Technician - WC60	12/26/1976	M	M	12/17/2008			
36		34	4	Production Technician - WC60	6/10/1987	M	F	2/16/2009			
37		35	4	Production Technician - WC60	1/10/1977	M	M	2/8/2009			
38		36	4	Production Technician - WC60	7/31/1984	M	M	2/10/2009			
39		37	4	Production Technician - WC60	8/7/1986	S	M	3/7/2009			
40		38	4	Production Technician - WC60	12/14/1966	M	F	1/16/2010			
41		39	4	Production Technician - WC60	9/11/1971	S	M	2/5/2010			
42		40	3	Production Supervisor - WC60	1/16/1956	S	F	12/26/2007			
43		41	4	Production Technician - WC60	8/27/1973	S	M	1/21/2009			
44		42	4	Production Technician - WC60	7/25/1984	M	M	12/27/2008			
45		43	4	Production Technician - WC60	11/19/1988	M	F	1/2/2009			
46		44	4	Production Technician - WC60	5/17/1990	S	M	12/8/2008			
47		45	4	Production Technician - WC60	1/10/1986	M	M	2/26/2009			

3.9.3 PROPAGATION OF A FORMULA IN A TABLE LETTERS

In the table given below, suppose you want to include the age of each employee.

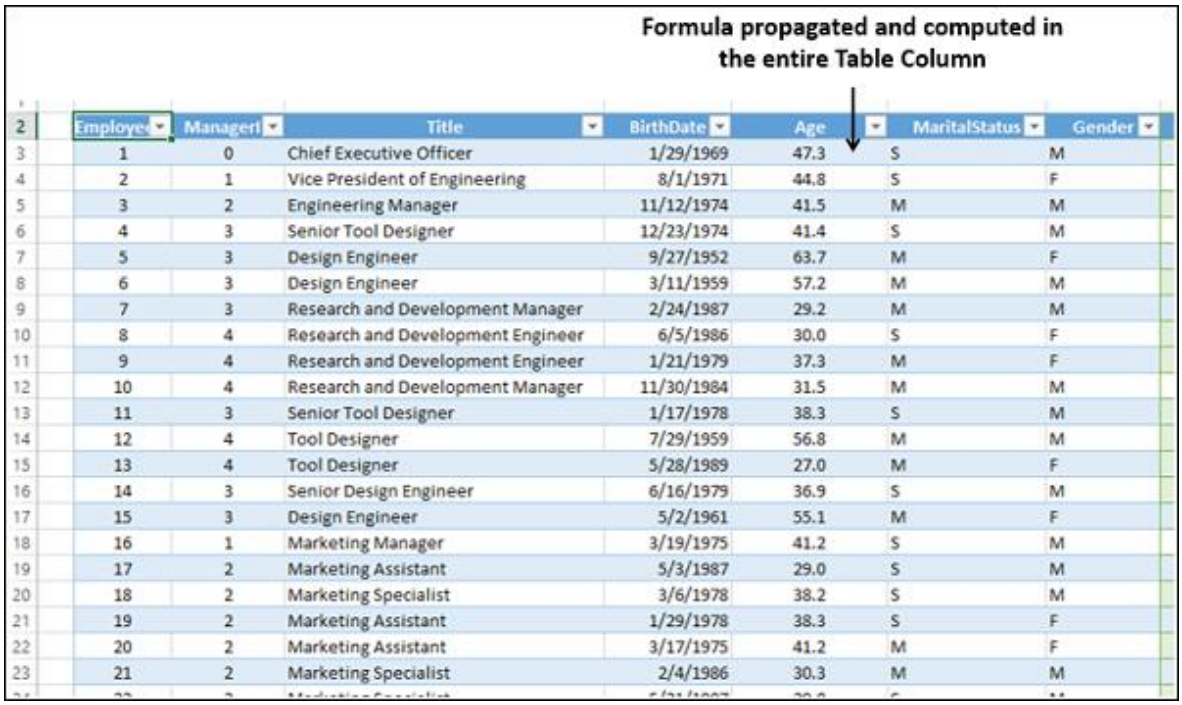
Step 1 − Insert a column to the right of the column Birthdate. Type Age in the Column Header.

Step 2 − In any of the Cells in that empty column, type the Formula, =**DAYS ([@BirthDate], TODAY ())** and Press Enter.



EmployeeID	ManagerID	Title	BirthDate	Age	MaritalS	Gender
1	0	Chief Executive Officer	1/29/1969		S	M
2	1	Vice President of Engineering	8/1/1971		S	F
3	2	Engineering Manager	11/12/1974		M	M
4	3	Senior Tool Designer	12/23/1974		S	M
5	3	Design Engineer	9/27/1952	[@BirthDate])/365	M	F
6	3	Design Engineer	3/11/1959		M	M
7	3	Research and Development Manager	2/24/1987		M	M
8	4	Research and Development Engineer	6/5/1986		S	F
9	4	Research and Development Engineer	1/21/1979		M	F
10	4	Research and Development Manager	11/30/1984		M	M
11	3	Senior Tool Designer	1/17/1978		S	M
12	4	Tool Designer	7/29/1959		M	M
13	4	Tool Designer	5/28/1989		M	F
14	3	Senior Design Engineer	6/16/1979		S	M
15	3	Design Engineer	5/2/1961		M	F
16	1	Marketing Manager	3/19/1975		S	M
17	2	Marketing Assistant	5/3/1987		S	M
18	2	Marketing Specialist	3/6/1978		S	M
19	2	Marketing Assistant	1/29/1978		S	F
20	2	Marketing Assistant	3/17/1975		M	F
21	2	Marketing Specialist	2/4/1986		M	M

The formula propagates automatically to the other cells in that column of the table.



Employee	ManagerI	Title	BirthDate	Age	MaritalStatus	Gender
1	0	Chief Executive Officer	1/29/1969	47.3	S	M
2	1	Vice President of Engineering	8/1/1971	44.8	S	F
3	2	Engineering Manager	11/12/1974	41.5	M	M
4	3	Senior Tool Designer	12/23/1974	41.4	S	M
5	3	Design Engineer	9/27/1952	63.7	M	F
6	3	Design Engineer	3/11/1959	57.2	M	M
7	3	Research and Development Manager	2/24/1987	29.2	M	M
8	4	Research and Development Engineer	6/5/1986	30.0	S	F
9	4	Research and Development Engineer	1/21/1979	37.3	M	F
10	4	Research and Development Manager	11/30/1984	31.5	M	M
11	3	Senior Tool Designer	1/17/1978	38.3	S	M
12	4	Tool Designer	7/29/1959	56.8	M	M
13	4	Tool Designer	5/28/1989	27.0	M	F
14	3	Senior Design Engineer	6/16/1979	36.9	S	M
15	3	Design Engineer	5/2/1961	55.1	M	F
16	1	Marketing Manager	3/19/1975	41.2	S	M
17	2	Marketing Assistant	5/3/1987	29.0	S	M
18	2	Marketing Specialist	3/6/1978	38.2	S	M
19	2	Marketing Assistant	1/29/1978	38.3	S	F
20	2	Marketing Assistant	3/17/1975	41.2	M	F
21	2	Marketing Specialist	2/4/1986	30.3	M	M

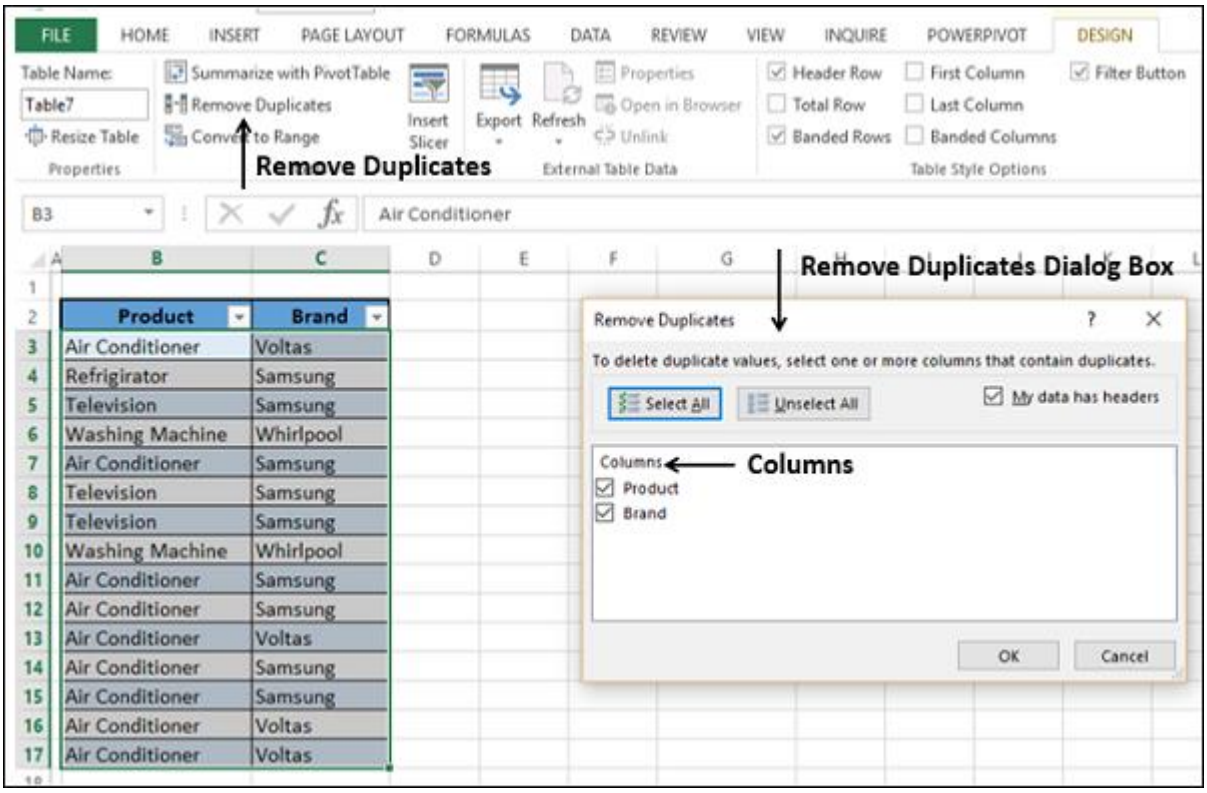
3.9.4 REMOVE DUPLICATES

When you gather data from different sources, you probably can have duplicate values. You need to remove the duplicate values before going further with analysis.

Look at the following data where you have information about various products of various brands. Suppose, you want to remove duplicates from this data.

Product	Brand
Air Conditioner	Voltas
Refrigirator	Samsung
Television	Samsung
Washing Machine	Whirlpool
Air Conditioner	Samsung
Television	Samsung
Television	Samsung
Washing Machine	Whirlpool
Air Conditioner	Samsung
Air Conditioner	Samsung
Air Conditioner	Voltas
Air Conditioner	Samsung
Air Conditioner	Samsung
Air Conditioner	Voltas
Air Conditioner	Voltas

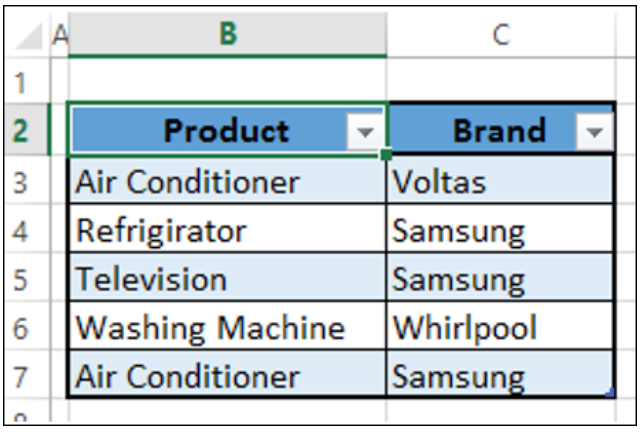
- Click the table.
- On the **DESIGN** tab, click **Remove Duplicates** in the Tools group on the Ribbon. The **Remove Duplicates** dialog box appears.



The column headers appear under columns in the Remove Duplicates dialog box.

- Check the column headers depending on which column you want to remove the duplicates and click OK.

You will get a message on how many rows with duplicate values are removed and how many unique values remain. The cleaned data will be displayed in the table.



Remove duplicates with **Remove Duplicates** in the **Data Tools** group under DATA tab on the Ribbon.

Let's Sum Up

Data analytics in MS Excel involves using tools like pivot tables, charts, and various functions to analyze and visualize data. Excel's features allow users to perform complex calculations, identify trends, and gain insights from large datasets efficiently.

3.10 Unit Summary

- This unit covers the creation and formatting of charts to visually represent data, as well as the preparation of analysis tables for summarizing and analyzing large datasets.
- This unit also introduces learners to the basics of data analytics in Excel, providing them with foundational knowledge of data manipulation, visualization, and basic statistical analysis techniques.

3.11 Glossary

- Cell - The intersection of a row and column.
- Formula - An expression to calculate values.
- Function - Predefined calculation, e.g., SUM.
- Workbook - A file containing one or more sheets.
- Worksheet - A single spreadsheet within a workbook.
- Range - A selection of two or more cells.
- Chart - A visual representation of data

3.12 Self-Assessment Questions

1. How do you open an existing Excel spreadsheet?
2. What are three methods for entering text and data into Excel cells?
3. What is a formula in Excel, and how do you enter one into a cell?
4. Describe a situation where you might use the SUM function in Excel.
5. What is a chart in Excel, and how can it help visualize data?
6. Name two types of charts you can create in Excel and briefly describe each one.

3.13 Activity:

Activity 1: Create a Student Attendance Sheet

- **Steps**:
  - Open a new Excel workbook.
  - In Sheet1, create a table with columns for "Date," "Student Name," "Roll Number," and "Attendance Status (Present/Absent)".
  - Enter sample data for 10 students over 5 days.
  - Format the headers with bold and a background color.
  - Use "Freeze Panes" to keep headers visible while scrolling.

Activity 2: Employee Details Record

- **Steps**:
  - Create a table with columns such as "Employee ID," "Name," "Department," "Designation," "Salary".
  - Enter data for at least 5 employees.
  - Format the text to be centered, and apply conditional formatting to highlight any salaries above a certain threshold (e.g., $5000).

3.14 References and Suggested Readings

1. Peter Norton, Introduction to Computers–Tata McGraw-Hill.
2. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, —Microsoft 2003, Tata McGrawHill
3. TorbenLageFrandsen, Microsoft Office Excel, 2007

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UNIT - III COMPLETED

UNIT – IV

DATABASE CONCEPTS

UNIT IV - DATABASE CONCEPTS
Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of datafiles; Understanding Programming environment in DBMS; Developing menu drive applications in query language (MS–Access).

UNIT OBJECTIVES

- In this unit aims to provide a comprehensive introduction to the Database Concepts.
- Learners will be able to understand the concepts of data filed, records, sorting and filtering techniques.
- Furthermore, this unit covers the concepts of indexing, Query and Reports.

4.1 THE CONCEPT OF DBMS

A Database Management System (DBMS) is a software system that is designed to manage and organize data in a structured manner. It allows users to create, modify, and query a database, as well as manage the security and access controls for that database.

4.1.1 KEY FEATURES OF DBMS

Data modelling: A DBMS provides tools for creating and modifying data models, which define the structure and relationships of the data in a database.

Data storage and retrieval: A DBMS is responsible for storing and retrieving data from the database, and can provide various methods for searching and querying the data.

Concurrency control: A DBMS provides mechanisms for controlling concurrent access to the database, to ensure that multiple users can access the data without conflicting with each other.

Data integrity and security: A DBMS provides tools for enforcing data integrity and security constraints, such as constraints on the values of data and access controls that restrict who can access the data.

Backup and recovery: A DBMS provides mechanisms for backing up and recovering the data in the event of a system failure.

DBMS can be classified into two types: Relational Database Management System (RDBMS) and Non-Relational Database Management System (NoSQL or Non-SQL).

RDBMS: Data is organized in the form of tables and each table has a set of rows and columns. The data are related to each other through primary and foreign keys.

NoSQL: Data is organized in the form of key-value pairs, documents, graphs, or column-based. These are designed to handle large-scale, high-performance scenarios.

4.1.2 ADVANTAGES OF DBMS

Data organization: A DBMS allows for the organization and storage of data in a structured manner, making it easy to retrieve and query the data as needed.

Data integrity: A DBMS provides mechanisms for enforcing data integrity constraints, such as constraints on the values of data and access controls that restrict who can access the data.

Concurrent access: A DBMS provides mechanisms for controlling concurrent access to the database, to ensure that multiple users can access the data without conflicting with each other.

Data security: A DBMS provides tools for managing the security of the data, such as controlling access to the data and encrypting sensitive data.

Backup and recovery: A DBMS provides mechanisms for backing up and recovering the data in the event of a system failure.

Data sharing: A DBMS allows multiple users to access and share the same data, which can be useful in a collaborative work environment.

4.1.3 DISADVANTAGES OF DBMS

Complexity: DBMS can be complex to set up and maintain, requiring specialized knowledge and skills.

Performance overhead: The use of a DBMS can add overhead to the performance of an application, especially in cases where high levels of concurrency are required.

Scalability: The use of a DBMS can limit the scalability of an application, since it requires the use of locking and other synchronization mechanisms to ensure data consistency.

Cost: The cost of purchasing, maintaining and upgrading a DBMS can be high, especially for large or complex systems.

Let's Sum Up

A Database Management System (DBMS) is software that facilitates the creation, management, and manipulation of databases, enabling efficient data storage, retrieval, and updating. It ensures data integrity, security, and consistency while providing a systematic way to manage large amounts of structured information.

4.2 DATA FIELD, RECORDS, AND FILES

Data Field

- A data field is the smallest unit of information in a database. It represents an attribute or characteristic of an entity. For example, in a database of students, fields could include "Student ID," "Name," "Age," "Gender," etc.

- Each data field has a defined data type (such as text, numeric, date, etc.) and constraints (such as maximum length, format, etc.).

Records

- A record, also known as a tuple or row, is a collection of related data fields that represent a single entity or occurrence within a database.
- For example, in a database of employees, a record could contain information such as employee ID, name, department, position, and salary.
- Records are organized and stored together based on a unique identifier, such as a primary key, which distinguishes one record from another.

Files

- A file, also referred to as a table, is a collection of records that share a common structure and are grouped together for efficient storage and retrieval.
- In a relational database, files are often referred to as tables, where each table represents a specific entity or concept.
- For instance, in a university database, there could be separate files or tables for students, courses, instructors, etc.
- Each file/table consists of rows (records) and columns (data fields), with each column representing a specific attribute of the entity.

Example: Let's consider a simple example of a database for a library:

Data Fields:

- Book ID (numeric)
- Title (text)
- Author (text)
- Genre (text)
- Publication Year (numeric)
- ISBN (text)

Records (Rows):

- Record 1:
  - Book ID: 101
  - Title: "To Kill a Mockingbird"
  - Author: Harper Lee
  - Genre: Fiction
  - Publication Year: 1960
  - ISBN: 978-0061120084
- Record 2:
  - Book ID: 102
  - Title: " A Programming Guide "
  - Author: George Orwell
  - Genre: Dystopian Fiction
  - Publication Year: 1949
  - ISBN: 978-0451524935

File (Table):

- Library Catalog:

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935

In this example, "Library Catalog" is a file/table containing records of books. Each record represents a specific book, and each data field within the record provides information about that book.

Let's Sum Up

Data files and records in a Database Management System (DBMS) are organized collections of data stored and accessed electronically. DBMSs ensure efficient data management, retrieval, and manipulation, supporting various applications by providing a systematic way to handle large volumes of data accurately and securely.

Check Your Progress

1. Which of the following is NOT a characteristic of a Database Management System (DBMS)?

A) Data Redundancy

B) Data Integrity

C) Data Isolation

D) Data Inconsistency

Answer: D) Data Inconsistency

2. Which component of DBMS is responsible for managing data storage, retrieval, and updates?

A) Query Processor

B) Database Engine

C) Transaction Manager

D) Data Dictionary

Answer: B) Database Engine

3. Which of the following is an example of a Relational Database Management System (RDBMS)?

A) MongoDB

B) Neo4j

C) Oracle

D) Hadoop

Answer: C) Oracle

4. Which SQL statement is used to delete a table from a database?

A) DROP TABLE

B) DELETE TABLE

C) REMOVE TABLE

D) ERASE TABLE

Answer: A) DROP TABLE

5. In a relational database, which key uniquely identifies each record in a table?

A) Foreign Key

B) Candidate Key

C) Primary Key

D) Super Key

Answer: C) Primary Key

4.3 SORTING AND INDEXING DATA

4.3.1 SORTING DATA

Sorting data in a DBMS involves arranging the records in a specific order based on the values of one or more fields. Sorting makes it easier to retrieve and analyze data in a meaningful way. Consider the same example of a librarycatalog with the following table structure:

LibraryCatalog:

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935
103	The Great Gatsby	F. Scott Fitzgerald	Classic	1925	978-0743273565
104	Moby Dick	Herman Melville	Adventure	1851	978-1503280786

To sort the table by the Title in ascending order:

Book ID	Title	Author	Genre	Publication Year	ISBN
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935

Book ID	Title	Author	Genre	Publication Year	ISBN
103	The Great Gatsby	F. Scott Fitzgerald	Classic	1925	978-0743273565
104	Moby Dick	Herman Melville	Adventure	1851	978-1503280786
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084

To sort the table by Publication Year in descending order:

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935
103	The Great Gatsby	F. Scott Fitzgerald	Classic	1925	978-0743273565
104	Moby Dick	Herman Melville	Adventure	1851	978-1503280786

4.3.2 INDEXING DATA

Indexing in a DBMS involves creating a separate data structure (index) that contains pointers to the actual locations of records in a database file. Indexing helps speed up data retrieval operations, especially for large databases, by allowing the DBMS to quickly locate records without having to search through every record sequentially.

Benefits of Indexing:

- **Faster Searches:** When you search for a book by its title, the database can use the index to quickly locate the records.
- **Efficient Sorting:** Indexes can also speed up sorting operations on indexed columns.

Drawbacks of Indexing:

- **Storage Overhead:** Indexes consume additional disk space.
- **Maintenance Overhead:** Indexes need to be updated whenever records are inserted, updated, or deleted, which can slow down these operations.

Using the same library database example, let's create an index on the "Title" field:

Book ID	Title
101	To Kill a Mockingbird
102	A Programming Guide
103	The Great Gatsby
104	Moby Dick

In the index, each unique title value is associated with the corresponding Book ID. Now, if we want to retrieve the record for the book "To Kill a Mockingbird," the DBMS can use the index to quickly locate the record without having to scan through the entire database file.

4.4 SEARCHING RECORDS

Searching for records in a DBMS involves querying the database to retrieve specific data based on certain criteria. In the context of our "LibraryCatalog" example, we can use SQL (Structured Query Language) to search for records.

4.4.1 STEPS FOR SEARCHING RECORDS IN A DBMS

1. Identify the Table:

- In our example, the table is LibraryCatalog.

2. Define the Criteria:

- Criteria are the conditions that the records must meet to be retrieved. For example, you might want to find books by a specific author, books published in a certain year, or books of a certain genre.

3. Write the Query:

- Use SQL to write a query that specifies the table and criteria.

Examples of Searching Records

Using the sample data from our "LibraryCatalog" table:

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935

Search for Books by a Specific Author:

Suppose we want to find all books by "Harper Lee."

SELECT * FROM LibraryCatalog WHERE Author ='Harper Lee';

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084

Search for Books Published in a Specific Year:

Suppose we want to find all books published in the year 1949.

SELECT*FROM Library Catalog WHERE Publication Year=1949;

Book ID	Title	Author	Genre	Publication Year	ISBN
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935

Let's Sum Up

Sorting and indexing in DBMS are crucial for optimizing query performance and data retrieval. Sorting organizes data in a specified order, while indexing creates data structures that improve the speed of search operations by allowing quick access to rows in a database. Together, they enhance efficiency and ensure faster query processing.

4.5 DESIGNING QUERIES, AND REPORTS

4.5.1 DESIGNING QUERIES

Queries are requests to retrieve data from a database. They are written using SQL (Structured Query Language) to specify what data to fetch and how to display it. Below are some examples of designing queries for the "LibraryCatalog" table.

1. Simple Queries

To fetch all records from the "LibraryCatalog" table:

*SELECT * FROM LibraryCatalog;*

2. Conditional Queries

To find all books by "Harper Lee":

SELECT * FROM LibraryCatalog WHERE Author ='Harper Lee';

3. Aggregate Queries

To count the total number of books in the catalog:

SELECT COUNT (*) FROM Library Catalog;

4.5.2 DESIGNING REPORTS

Reports are structured presentations of data, often generated from the results of queries. They can be used for data analysis, decision-making, and communication of information. Below are examples of designing reports based on the "Library Catalog" table.

Detailed Report

A detailed report can list all books along with their details, sorted by publication year.

SQL Query:

SELECT * FROM Library Catalog ORDER BY Publication Year DESC;

Report Format:

Book ID	Title	Author	Genre	Publication Year	ISBN
101	To Kill a Mockingbird	Harper Lee	Fiction	1960	978-0061120084
102	A Programming Guide	George Orwell	Dystopian Fiction	1949	978-0451524935

4.5.3 Tools for Designing Queries and Reports

Various tools and software can be used for designing and executing queries, and for generating reports:

- **SQL Clients:** Tools like MySQL Workbench, Microsoft SQL Server Management Studio (SSMS), and pgAdmin.
- **Reporting Tools:** Tools like Crystal Reports, Microsoft Power BI, Tableau, and Jasper Reports.

These tools help users to visually design queries, execute them, and generate formatted reports that can be used for further analysis and presentation.

4.6 LINKING DATA FILES

Linking data files in a database management system (DBMS) is a fundamental concept that ensures data integrity and efficient data retrieval. This process typically involves the use of primary keys, foreign keys, and various types of relationships between tables.

Here's an explanation of linking data files using our "Library Catalog" example, extended to include additional related tables.

4.6.1 KEY CONCEPTS

1. **Tables:**
   - Tables are the fundamental objects in a database that store data in rows and columns.
   - Each table typically represents an entity (e.g., customers, orders, products).
2. **Primary Key:**
   - A primary key is a unique identifier for each record in a table.
   - It ensures that each row can be uniquely identified.
   - Example: In a Customers table, CustomerID could be a primary key.
3. **Foreign Key:**
   - A foreign key is a column or a set of columns in one table that uniquely identifies a row in another table.
   - It establishes a link between the data in two tables.
   - Example: In an Orders table, CustomerID can be a foreign key that links to CustomerID in the Customers table.
4. **Relationships:**
   - **One-to-One:** Each row in Table A is linked to one and only one row in Table B.
   - **One-to-Many:** A row in Table A can be linked to multiple rows in Table B.
   - **Many-to-Many:** Rows in Table A can be linked to multiple rows in Table B, and vice versa (typically implemented using a junction table).

Example of Linking Data files

Consider an example with three tables: Customers, Orders, and OrderDetails.

1. **Customers Table:**
   - Columns: CustomerID (Primary Key), CustomerName, ContactInfo
2. **Orders Table:**
   - Columns: OrderID (Primary Key), OrderDate, CustomerID (Foreign Key)

3. **Order Details Table:**
    - Columns: OrderDetailID (Primary Key), OrderID (Foreign Key), ProductID, Quantity

4.6.2 CREATING RELATIONSHIPS

1. **Creating Tables:**

```
CREATE TABLE Customers (
    CustomerID INT PRIMARY KEY,
    CustomerName VARCHAR(100),
    ContactInfo VARCHAR(100)
);

CREATE TABLE Orders (
    OrderID INT PRIMARY KEY,
    OrderDate DATE,
    CustomerID INT,
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);

CREATE TABLE OrderDetails (
    OrderDetailID INT PRIMARY KEY,
    OrderID INT,
    ProductID INT,
    Quantity INT,
    FOREIGN KEY (OrderID) REFERENCES Orders(OrderID)
);
```

2. **Inserting Data:**

```
INSERT INTO Customers (CustomerID, CustomerName, ContactInfo)
VALUES (1, 'John Doe', 'john@example.com');

INSERT INTO Orders (OrderID, OrderDate, CustomerID)
VALUES (101, '2023-06-01', 1);

INSERT INTO OrderDetails (OrderDetailID, OrderID, ProductID, Quantity)
VALUES (1001, 101, 10, 2);
```

4.6.3 ENSURING DATA INTEGRITY

Referential Integrity:

- Ensured by foreign keys, which make sure that a row in a child table cannot reference a non-existent row in the parent table.

.

Constraints:

- Enforced by the DBMS to maintain accuracy and reliability of the data within the database.
- Example constraints include NOT NULL, UNIQUE, CHECK, and DEFAULT.

Let's Sum Up

Designing queries and reports in a DBMS involves formulating precise SQL statements to retrieve and manipulate data according to specific requirements. This process includes selecting relevant tables, defining criteria for data extraction, and formatting the output to generate insightful and actionable reports.

Check Your Progress

1. Which SQL command is used to retrieve data from a database?

A) INSERT
B) SELECT
C) UPDATE
D) DELETE

Answer: B) SELECT

2. When designing a report, which element is typically used to group data?

A) Footer
B) Header
C) Grouping Level
D) Summary

Answer: C) Grouping Level

3. In a database query, what does the "WHERE" clause do?

A) Specifies which fields to return

B) Limits the results based on a condition

C) Joins two tables together

D) Orders the results

Answer: B) Limits the results based on a condition

4. What is the purpose of using parameters in queries?

A) To increase the speed of the query

B) To filter the data dynamically at runtime

C) To create a static report

D) To ensure all records are retrieved

Answer: B) To filter the data dynamically at runtime

5. In report design, which format is typically used for presenting numeric data clearly?

A) Plain text

B) Tabular format

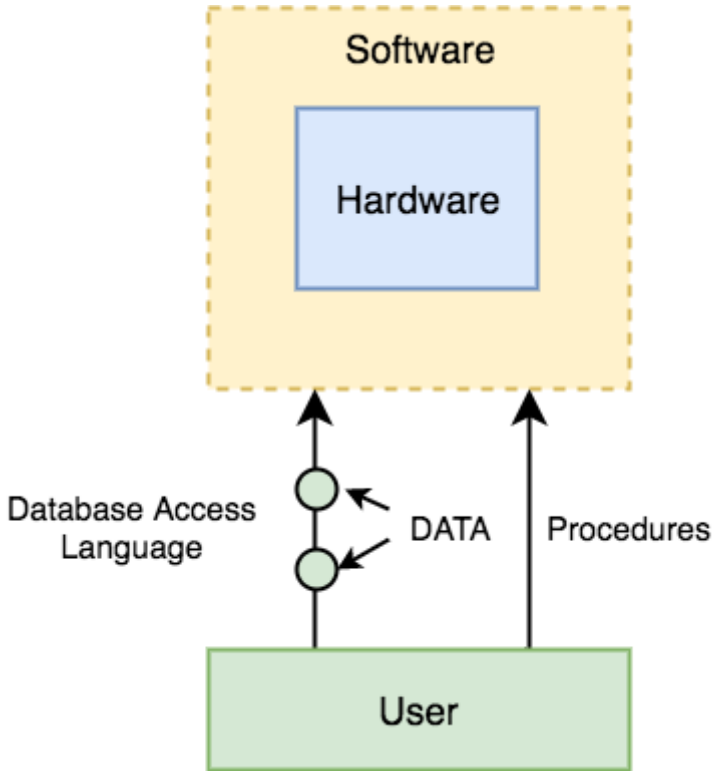
C) Paragraph format

D) Image format

Answer: B) Tabular format

4.7 UNDERSTANDING PROGRAMMING ENVIRONMENT IN DBMS

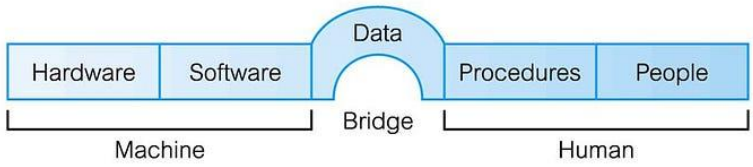
The database system consists of many components. Each component performing very significant tasks in the database management system environment. A database environment is a collective system of components that comprise and regulates the group of data, management, and use of data, which consist of software, hardware, people, techniques of handling database, and the data also.



Database System Environment

The hardware in a database environment means the computers and computer peripherals that are being used to manage a database, and the software means the whole thing right from the operating system (OS) to the application programs that include database management software like M.S. Access or SQL Server. Again the people in a database environment include those people who administrate and use the system. The techniques are the rules, concepts, and instructions given to both the people and the software along with the data with the group of facts and information positioned within the database environment. The database management system can be divided into five major components such as Hardware, Software, Data, Procedures, and People.

Components of DBMS Environment



4.7.1 HARDWARE

- When we say hardware, we mean computer, hard disk, I/o channels for data and any other physical components involved before any data is successfully stored into the memory.
- This provides the interface between computers and the real world system.

4.7.2 SOFTWARE

- This is the set of programs used to control and manage the overall database. This includes the DBMS software itself, the operating system, the network software being used to share the data among users, and the application program used to access data in the DBMS.
- This is the main component, as this the program which controls everything. The DBMS software is more like a wrapper around the physical database, which provides us with an easy-to-use interface to store, access and update data.

4.7.3 DATA

- The main task of DBMS is to process the data. Here database are defined, constructed, and then data is stored, retrieved, and updated to and form the database.

- It is the most important component of the database management system. The database contains both the metadata(data about data) and the actual(operational) data.

4.7.4 PROCEDURES

- These are the instructions and rules that assist on how to use the DBMS, and in designing and running the database, using documented procedures, to guide the users that operate and manage it.

- Procedures are used to setup and install a new DBMS to login and logout of DBMS software, to manage DBMS or application programs, to take backup of the database, and to change the structure of the database, etc.

4.7.5 PEOPLE

- The people are who control and manage the databases and perform different types of operations on the database in the DBMS. The people include database administrator, software developer and End user.

- Database administrator-database administrator is the one who manages the complete database management system. DBA takes care of the security of the DBMS, it's availability, managing the license keys, managing user accounts and access, etc.

- Software developer-This user group is involved in developing and designing the parts of DBMs.

- End user- These days all the modern applications, web or mobile, store user data.

Let's Sum Up

A programming environment in a Database Management System (DBMS) provides tools and interfaces for database creation, manipulation, and management, typically through SQL (Structured Query Language). It often includes features like query editors, debugging tools, and support for stored procedures and triggers, facilitating efficient and effective database development and maintenance.

4.8 DEVELOPING MENU DRIVE APPLICATIONS IN QUERY LANGUAGE (MS–ACCESS)

Developing menu-driven applications in MS Access involves creating a user-friendly interface that allows users to navigate and perform database operations without needing to write SQL queries directly. This typically includes using forms, buttons, and macros. Below is a step-by-step guide on how to create a menu-driven application in MS Access using the example of a "LibraryCatalog" database.

4.8.1 CREATE THE DATABASE AND TABLES

1. **Create a New Database:**
   - Open MS Access.
   - Select "File" > "New" > "Blank Database."
   - Save the database with an appropriate name, e.g., LibraryCatalog.accdb.
2. **Create Tables:**
   - **Authors Table:**

```
Field Name    | Data Type
-----------------------
AuthorID      | AutoNumber (Primary Key)
AuthorName    | Short Text
BirthYear     | Number
```

   - **LibraryCatalog Table:**

```
Field Name       | Data Type
--------------------------
BookID           | AutoNumber (Primary Key)
Title            | Short Text
AuthorID         | Number (Foreign Key)
Genre            | Short Text
PublicationYear  | Number
ISBN             | Short Text
```

4.8.2 DEFINE RELATIONSHIPS

1. **Open Relationships Window:**
   - Go to "Database Tools" > "Relationships."
2. **Add Tables:**
   - Add the Authors, and LibraryCatalog, tables to the Relationships window.
3. **Create Relationships:**
   - Drag AuthorID from Authors to AuthorID in LibraryCatalog (One-to-Many).

4.8.3 CREATE FORMS

1. **Create a Main Menu Form:**
   - Go to "Create" > "Form Design."
   - Add buttons for different operations, such as "Add Book," "View Books," "Add Borrower," "View Borrowers," "Borrow Book," and "Return Book."
   - Use the "Button" tool in the Design tab to create buttons and assign appropriate labels and actions.
2. **Create Sub-Forms:**
   - For each operation (e.g., adding a book), create separate forms:
     - **Add Book Form:**
       - Use "Create" > "Form Design."
       - Add text boxes for entering Title, AuthorID, Genre, PublicationYear, and ISBN.
       - Add a "Save" button that saves the new record to LibraryCatalog.
     - **View Books Form:**
       - Use "Create" > "Form Wizard."
       - Select the LibraryCatalog table and choose the fields to display.
       - Complete the wizard to create a form that lists all books.
     - Repeat similar steps to create forms for adding borrowers, viewing borrowers, borrowing books, and returning books.

4.8.4 CREATE MACROS FOR COMMON TASKS

1. **Open Form Macro:**
   - Create a macro to open specific forms. For instance, create a macro named OpenAddBookForm:
     - Action: OpenForm
     - Form Name: AddBookForm
2. **Save Record Macro:**
   - Create a macro to save a record in forms where data is entered:
     - Action: RunCommand
     - Command: SaveRecord
3. **Assign Macros to Buttons:**
   - In the form design view, assign the appropriate macros to the "On Click" event of buttons.

4.8.5 TEST THE APPLICATION

1. **Open Main Menu Form:**
   - Set the Main Menu form to open automatically on database startup: File > Options > Current Database > Display Form > Select "Main Menu Form."
   -
2. **Test Each Function:**
   - Test each button on the Main Menu to ensure it opens the correct form and performs the desired operations.

Let's Sum Up

Developing a menu-driven application in MS Access involves creating a user-friendly interface that allows users to navigate through various forms, reports, and queries using custom menus. This can be achieved by designing switchboards or utilizing the Ribbon interface, ensuring an intuitive experience for efficient data management and interaction.

Check Your Progress

1. What is the primary purpose of a menu-driven application in MS Access?

A) To store data

B) To provide a user interface for executing queries

C) To create forms

D) To generate reports

Answer: B) To provide a user interface for executing queries

2. Which of the following is a common method to create a menu in MS Access?

A) Using Excel

B) Creating a Macro

C) Writing VBA code

D) Both B and C

Answer: D) Both B and C

3. In MS Access, which of the following query types is used to retrieve data based on user input from a menu?

A) Action Query

B) Select Query

C) Parameter Query

D) Delete Query

Answer: C) Parameter Query

4. To add a button to a form in MS Access that executes a specific query, which of the following properties must be set?

A) Control Source

B) On Click

C) Data Source

D) Default Value

Answer: B) On Click

5. What is the result of using the "MsgBox" function in a menu-driven application in MS Access?

A) It saves data to the database.

B) It displays a message box to the user.

C) It executes a SQL query.

D) It creates a new table.

Answer: B) It displays a message box to the user.

4.9 Unit Summary

- Sorting and indexing operations are fundamental for organizing data and improving retrieval efficiency, facilitating quick access to relevant information.
- Searching records involves querying the database based on specified criteria, utilizing indexing and search algorithms to locate desired data.
- Linking data files establishes relationships between datasets, ensuring data integrity and coherence across the database.
- Demonstrate proficiency in searching records within a database, utilizing search algorithms and indexing techniques to locate specific information.
- Understanding the programming environment within a DBMS is explored, with a focus on developing menu-driven applications in query languages like MS-Access.

4.10 Glossary

- Database - An organized collection of data.
- DBMS - Software for managing databases.
- SQL - Language for querying databases.
- Primary Key - Unique identifier for records.
- Foreign Key - A key linking two tables.
- Normalization - Process of organizing data to reduce redundancy.
- Index - A performance optimization feature.

4.11 Self-Assessment Questions

1. What is a database management system (DBMS), and what is its primary function?
2. Explain the purpose of sorting and indexing data in a database. How do these operations improve data retrieval?
3. What is a query in the context of databases? How do you design and execute queries to retrieve specific information from a database?

4. Discuss the importance of reports in a database system. What types of information can be included in a database report?
5. Explain the concept of linking data files in a database. When and why would you link multiple data files together?
6. Describe the process of developing menu-driven applications in query language, using MS Access as an example.

4.12 Case Study: Library Management System

Objective: To design and implement a database management system for managing a small library using MS Access.

Tasks:

1. **Database Concepts & Design:**
   - Create tables to store information about books (BookID, Title, Author, Genre, YearPublished), members (MemberID, Name, ContactInfo, MembershipDate), and borrowing records (TransactionID, MemberID, BookID, BorrowDate, ReturnDate).
2. **Data Field, Records, and Files:**
   - Define the fields for each table, making sure to set appropriate data types and constraints.
   - Populate the tables with sample data.
3. **Sorting and Indexing Data:**
   - Create an index on the BookID and MemberID fields to optimize search queries.
   - Sort the list of books based on the YearPublished field and generate a report.
4. **Searching Records:**
   - Implement queries to search for:
     - Books by a specific author.
     - Books borrowed by a particular member.
     - Overdue books based on the current date.
5. **Designing Queries and Reports:**
   - Create queries to generate:

- A list of all books currently borrowed along with member details.
- A report of all new members who joined in the past month.
- A summary report of the total number of books in each genre.

6. **Linking of Data Files:**
   - If the library data is split into multiple files, demonstrate how to link these files using relationships in MS Access.

Outcome: This case study will give students practical experience in creating and managing databases, designing queries and reports, and understanding the programming environment in MS Access.

4.13 References and Suggested Readings

1. Peter Norton, Introduction to Computers–Tata McGraw-Hill.
2. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, —Microsoft 2003, Tata McGrawHill
3. TorbenLageFrandsen, Microsoft Office Excel, 2007

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UNIT - IV COMPLETED

UNIT – V

POWER POINT

UNIT V - POWER POINT
Power point: Introduction to Power point - Features – Understanding slide typecasting &viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition–Animation effects, audio inclusion, timers.

UNIT OBJECTIVES

- This unit aims to provide a various features and functionalities available in PowerPoint, including tools for creating presentations, formatting slides, and adding multimedia elements.
- Learners the skills to create engaging and informative slide shows by arranging and designing slides, incorporating text, images, and multimedia elements effectively.

5.1 INTRODUCTION

MS PowerPoint is a comprehensive presentation package used for the creation of attractive presentations. A presentation can be defined as great visuals, making it easy to communicate your ideas and market products effectively. It has everything needed to design a professional looking presentation. PowerPoint supports word processing; add drawings, graphs and multimedia to presentation. It also consists of tools to manage the designing of presentation. The objectives of all these features of the MS PowerPoint are to design impressive presentation in short time and little efforts.

A PowerPoint presentation is made up of a series of slides, which contain the information you want to communicate with the audience. This information can include text, pictures, charts, video, sound, and more. This class covers the essentials of using PowerPoint, including getting started, adding slides, adding text and pictures to slides, changing the look of your presentation, and presenting, saving, and printing your PowerPoint slideshow.

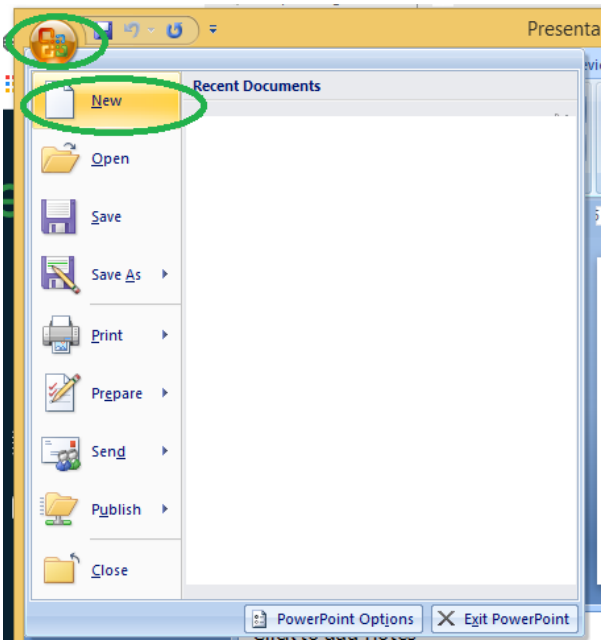
5.1.1 STARTING POWERPOINT

Step 1: Go to the program section in the windows start menu.

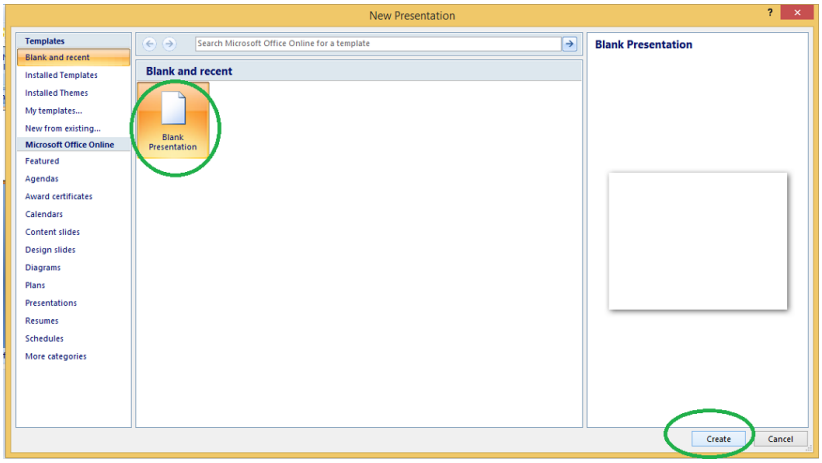
Step 2: Go to MS Office & click on it. A drop-down list is seen

Step 3: Click on MS PowerPoint & MS PowerPoint window will pop up.

Step 4: Click on the Microsoft button on the top left.



Step 5: Click on new, a new Presentation window will pop up.

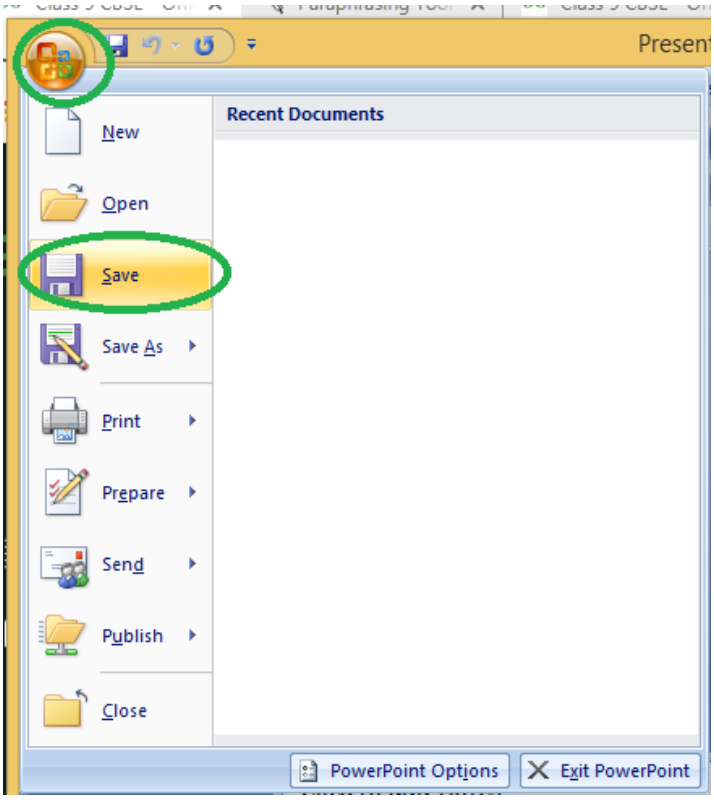


Step 6: Click on Create & a new presentation will be created.

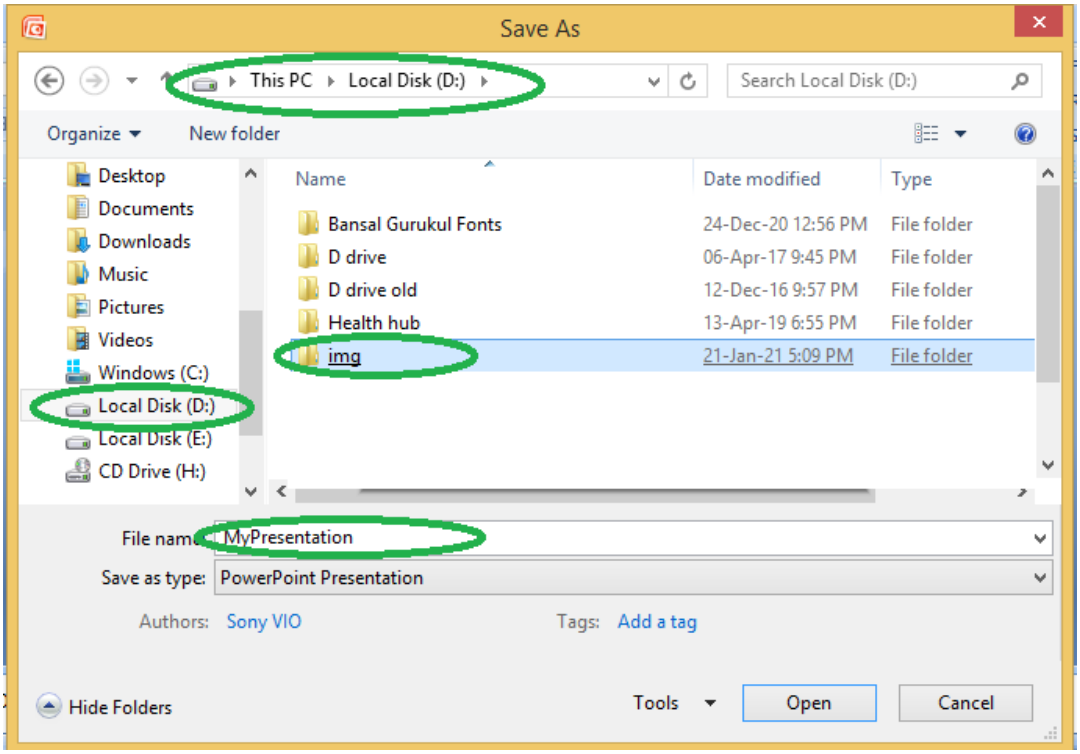
5.1.2 SAVING A PRESENTATION

Step 1: Click on the Microsoft icon

Step 2: Click on the Save button



Step 3: A new Window for Save As will pop up.

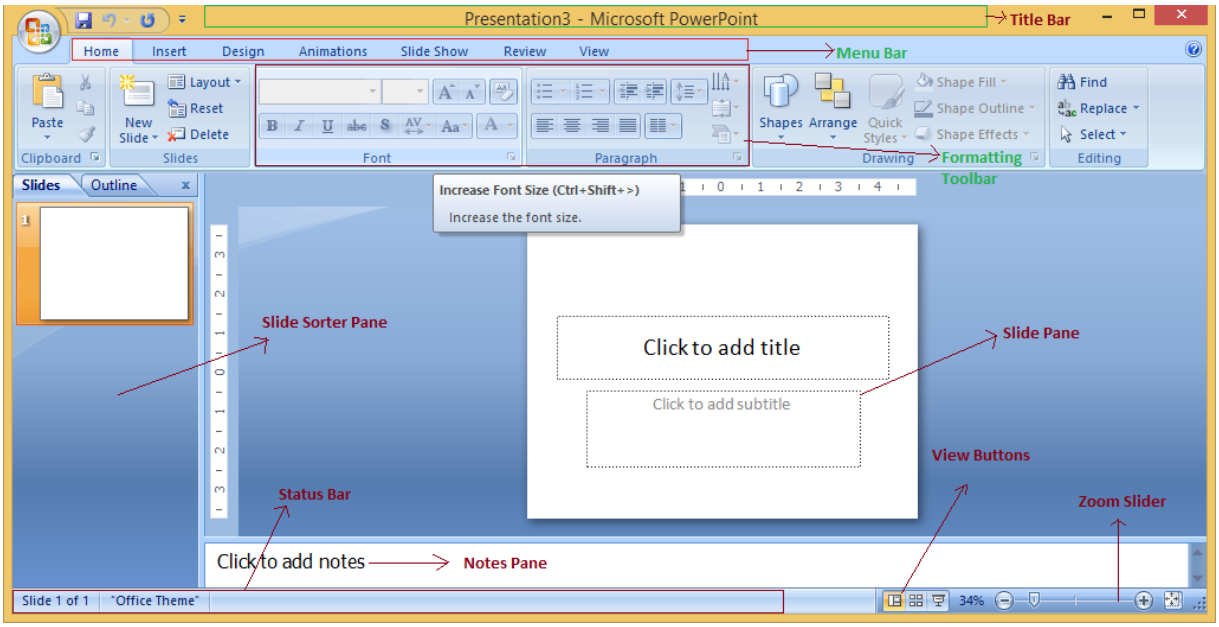


Step 4: Select the drive (by clicking on it: Example: Local Drive (D)) in which you want to save the presentation. Then your drive will open up, select the folder in which you want to

save the presentation (Example: img folder here) & then give the required name to your presentation (Example: MyPresentation here). Your presentation is created & saved with the provided name.

5.1.3 BASIC ELEMENTS OF A POWERPOINT WINDOW

- **Title Bar**: This shows the name/title given by you to the current presentation. If users do not save the presentation by any name, default name given by MS PowerPoint appears in this bar.
- **Menu Bar**: Contains menu items like insert, views, design, animations, etc.
- **Office Button**: MS Office button on the left-most top.
- **Formatting Toolbar**: Have tools like Bold, Italic, Underline, Font shape & size etc. to format your data.
- **Zoom Slider**: To zoom in or zoom out your presentation.
- **Slide Sorter Pane**: This allows us to choose which slides will be shown in which sequence during the slide show.
- **Notes Pane**: This allows us to type notes that we may require later when preparing for the presentation, but they will not be displayed during the slide show.
- **View Buttons**: Provides different views of your presentation like : normal, slide show & slide sorter.
- **Slide Pane**: This is where we type, format, and otherwise designs the slide.



Let's Sum Up

PowerPoint is a widely-used software application developed by Microsoft, designed primarily for creating presentations. It allows users to combine text, graphics, animations, and multimedia elements to communicate ideas effectively. With its intuitive interface and robust features, PowerPoint has become indispensable in business, education, and various other fields for delivering compelling and visually engaging presentations.

Check Your Progress

1. What is the primary purpose of Microsoft PowerPoint?

A) To create spreadsheets

B) To develop websites

C) To create presentations

D) To edit photos

Answer: C) To create presentations

2. Which of the following is a common view in PowerPoint?

A) Print Layout

B) Slide Sorter

C) Web Layout

D) Draft

Answer: B) Slide Sorter

3. What is the default file extension for PowerPoint presentations created in recent versions of PowerPoint?

A) .ppt

B) .pptx

C) .pps

D) .pdf

Answer: B) .pptx

4. In PowerPoint, what is a "slide master" used for?

A) To create a new presentation

B) To manage background music

C) To apply uniform formatting to all slides

D) To add animations

Answer: C) To apply uniform formatting to all slides

5. Which of the following elements can be included on a PowerPoint slide?

A) Text

B) Images

C) Videos

D) All of the above

Answer: D) All of the above

5.2 FEATURES OF POWERPOINT PRESENTATION

PowerPoint provides a number of features and customisable options to enhance the visual appeal and performance of presentations. Some of these are as follows:

1. Slide Creation:

PowerPoint helps create slides that act as individual pages that contain pictures, texts, tables, charts, graphics, etc. attached to our presentations. This helps users create a meaningful and systematic presentation for our work.

2. Templates and Themes:

PowerPoint contains pre-designed templates and themes that can be used to enhance the visual appeal of your presentation. PowerPoint offers a number of themes

and templates. These well-created themes and templates improve the slides' and presentation's attractiveness and give them a professional look.

3. Transitions and Animations:

PPT helps in creation of visual effects between presentations by using animations and transitions. These transitions can be simple or elaborate and can engage the audience and create smooth transitions between slides.

4. Multimedia Integration:

PowerPoint can help the users to insert images videos audio and animations in the slides to create an engaging and dynamic presentation.

5. Collaboration and Sharing:

PowerPoint offers collaboration features that allow multiple users to work on a presentation simultaneously. Power Point presentations with others through email, cloud storage, or collaboration platforms, making it easy to collaborate and distribute work.

6. Speaker Notes:

Speaker notes can be added by presenters for use as a reference during the presentation. These notes can be hidden from the audience and can be utilised by the users to give reminders additional details or signals while giving the presentation.

Let's Sum Up

PowerPoint is a widely used presentation software offering a range of features that facilitate creating, editing, and delivering dynamic presentations. Its capabilities include slide customization with text, graphics, and multimedia, seamless integration of animations and transitions, and tools for collaboration and audience engagement, making it a versatile tool for professional and educational settings alike.

5.3 UNDERSTANDING SLIDE TYPECASTING

5.3.1 SLIDE TYPECASTING

Slide Typecasting refers to the process of categorizing slides based on their layout, content, and purpose within a presentation. PowerPoint offers several predefined slide layouts and types, each designed for specific content and presentation needs:

1. **Title Slide:**

To create a title slide, go to the "Home" tab, click on "New Slide," and choose a layout that features a title placeholder. Customize the title and subtitle as needed. To view a title slide, simply navigate to it within the presentation or start the slideshow from the beginning.

2. **Content Slide:**

Content slides typically feature text and possibly other media such as images or charts. To create a content slide, select a layout with content placeholders or insert text boxes and other elements manually. To view content slides, navigate through the presentation or start the slideshow.

3. **Bullet Point Slide:**

Bullet point slides are commonly used for listing key points or ideas. Create them by selecting a layout with bullet point placeholders or by manually adding bullet points to a text box. To view bullet point slides, advance through the presentation or start the slideshow.

4. **Image Slide:**

Image slides showcase visuals such as photos, diagrams, or illustrations. To create an image slide, insert an image onto a slide layout. To view image slides, navigate through the presentation or start the slideshow.

5. **Chart/Graph Slide:**

These slides display data using charts or graphs. Create them by inserting a chart or graph onto a slide layout and entering your data. To view chart/graph slides, navigate through the presentation or start the slideshow.

6. **Transition Slide:**

Transition slides help transition between different sections or topics within the presentation. To create a transition slide, insert a slide with transition effects or animations. To view transition slides, move through the presentation or start the slideshow.

7. Conclusion Slide:

Conclusion slides summarize key points or takeaways. To create a conclusion slide, design it to encapsulate the main ideas of the presentation. To view the conclusion slide, navigate to it within the presentation or start the slideshow.

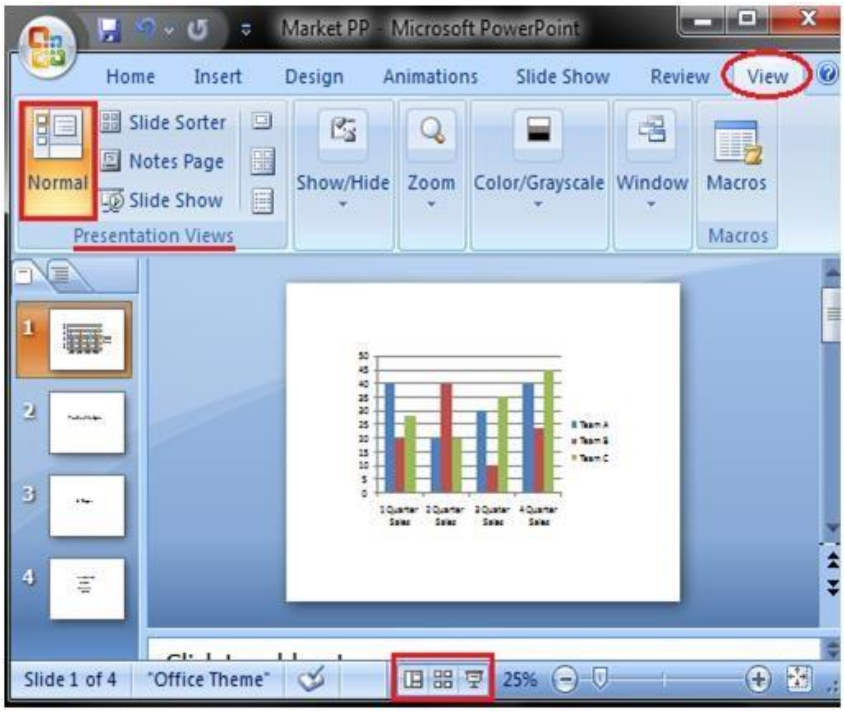
Let's Sum Up

Slide typecasting in PowerPoint involves assigning specific slide layouts to effectively organize and present content. It streamlines the creation process by offering predefined templates that structure text, media, and data, ensuring clarity and visual coherence throughout presentations.

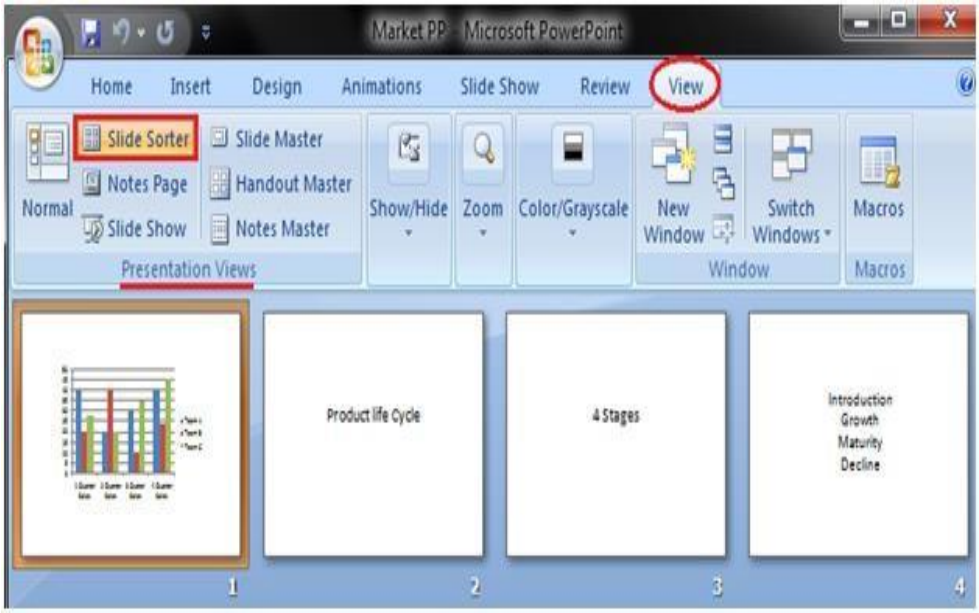
5.3.2 VIEWING SLIDES

The presentation can be view it in different ways. Select the View tab. Locate the Presentation Views group. It displays four options to view presentations; Normal View, Slide Sorter View, Slide Show View and Notes Page View.

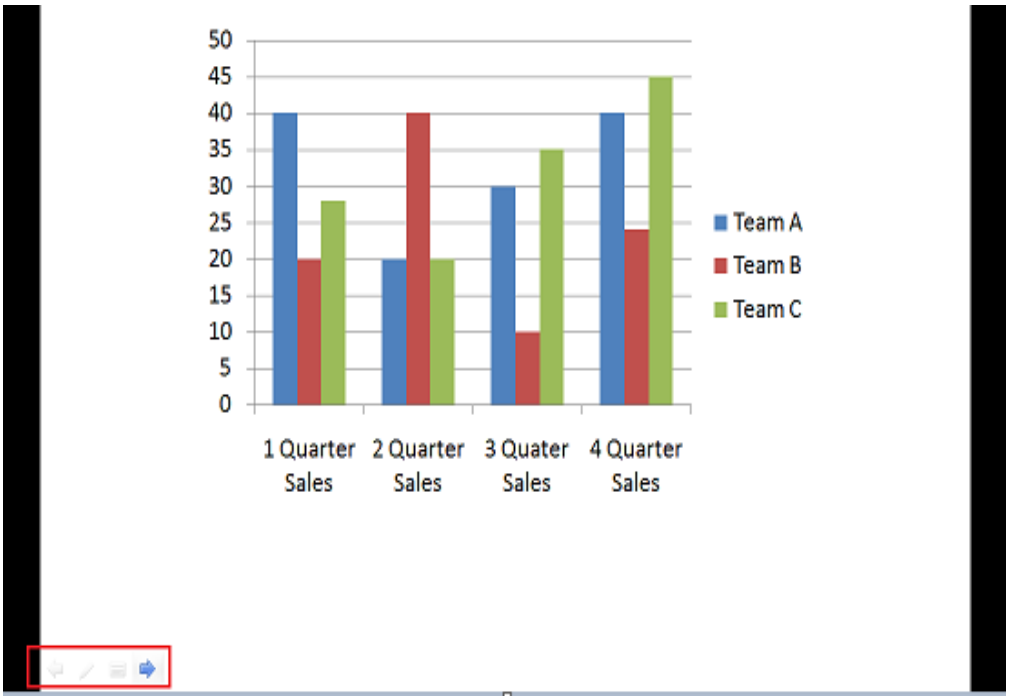
Normal View: The normal view appears by default when we open the PowerPoint window. We create and edit slides in Normal View. This view also offers three view options out of four options in the form of buttons on the status bar.



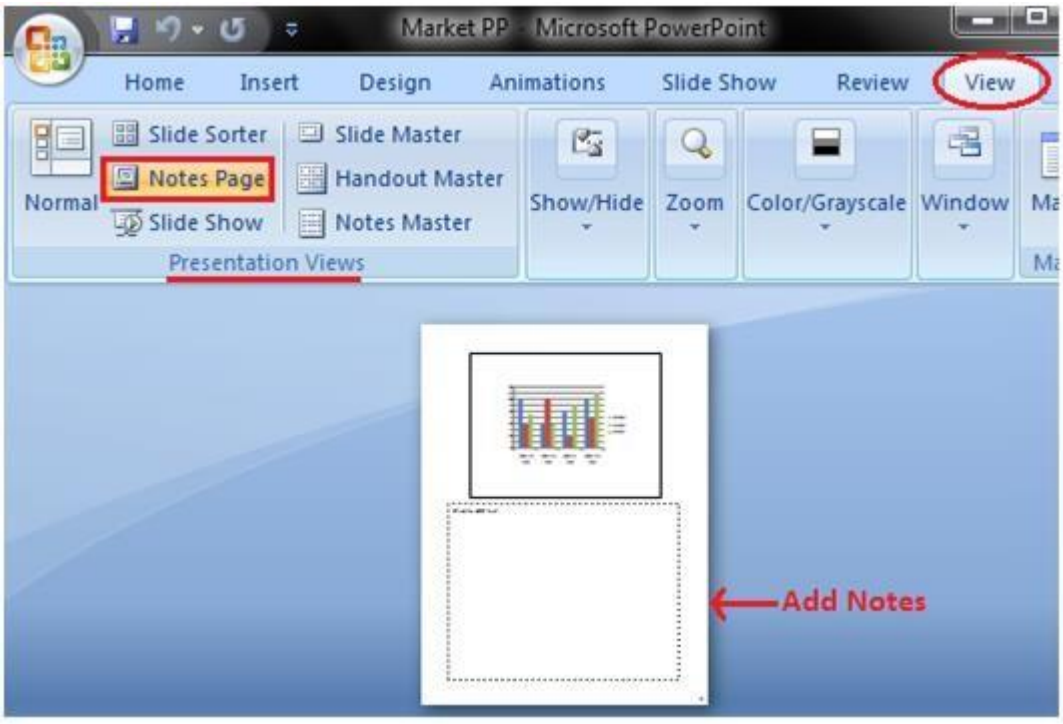
Slide Sorter View: It offers miniature or thumbnail version of all slides. You can see all your slides at one time in the screen. You can also drag or delete the slides to rearrange them.



Slide Show View: It displays your presentation in full screen mode. It also offers an additional menu at the left bottom corner of the slide.



Notes Page View: This view provides space below the slide to add notes.



Let's Sum Up

In PowerPoint, there are primarily two types of slide views: the Normal view, which allows for editing and organizing slides with a sidebar for easy navigation, and the Slide Show view, which displays slides full screen for presentations, offering real-time previews of animations and transitions. These views cater to both creation and delivery phases of presenting, ensuring seamless preparation and effective communication of ideas.

Check Your Progress

1. Which mode allows you to view your presentation in full-screen format during a slideshow?

A) Normal View

B) Slide Sorter View

C) Reading View

D) Slide Show View

Answer: D) Slide Show View

2. What key can you press to start the slideshow from the beginning?

A) F5

B) F2

C) Ctrl + P

D) Esc

Answer: A) F5

3. During a slideshow, how can you move to the next slide?

A) Press the Spacebar

B) Click the mouse

C) Use the arrow keys

D) All of the above

Answer: D) All of the above

4. Which feature allows you to jump to a specific slide during a presentation?

A) Slide Master

B) Slide Navigation Pane

C) Hyperlink

D) Notes Page

Answer: C) Hyperlink

5. What does the "Esc" key do during a slideshow?

A) Pauses the presentation

B) Ends the slideshow

C) Restarts the slideshow

D) Goes to the previous slide

Answer: B) Ends the slideshow

5.4 CREATING SLIDESHOW APPLYING SPECIAL OBJECT

5.4.1 CREATING SLIDESHOWS

You can start presenting your slideshow in a number of ways:

1. Go to Slide Show tab →Start Slide Show group → From Beginning or From Current Slide command.
2. Select the Slide Show icon from the status bar at the bottom of the screen.
3. PresstheF5 key on the keyboard.

Move through your slides by clicking the mouse, pressing the spacebar, or using the arrow keys on the keyboard.

Exiting Your Slideshow

To exit your slideshow:

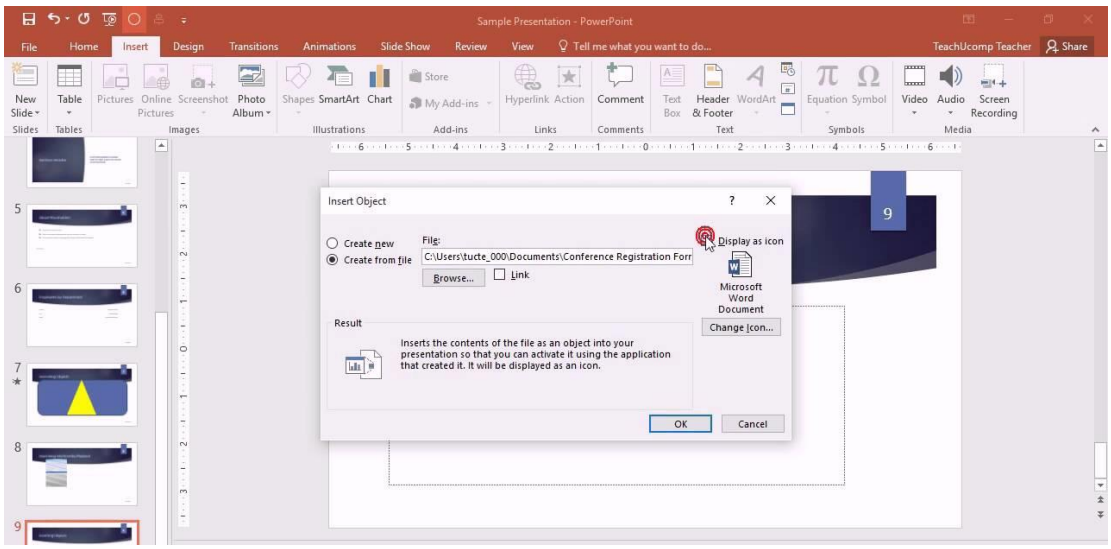
1. Press the Esc key on the keyboard.
2. Right-click on the slide and select End Show at the bottom of the resulting menu.

5.4.2 APPLYING SPECIAL OBJECTS

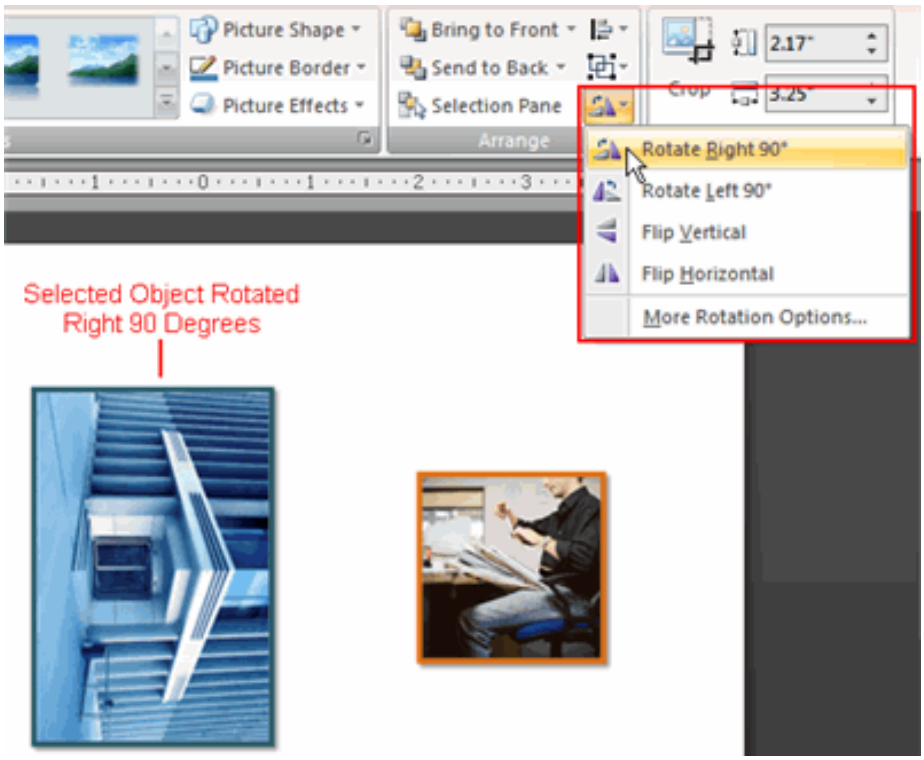
Creating a slideshow with special objects in PowerPoint can make your presentation more engaging and visually appealing. Here's how you can apply special objects:

1. **Open PowerPoint**: Launch PowerPoint and start a new presentation or open an existing one.
2. **Insert Special Objects:** Click on the "Insert" tab in the top menu bar. Here are some special objects you can insert:

- **SmartArt**: Click on "SmartArt" to insert diagrams, processes, cycles, hierarchies, matrices, pyramids, or other types of graphics.
- **Charts**: Click on "Chart" to insert various types of charts like bar charts, line charts, pie charts, etc., to visualize data.
- **Shapes**: Click on "Shapes" to insert pre-defined shapes or draw custom shapes on your slides.
- **3D Models**: Click on "3D Models" to insert 3D objects into your presentation.
- **Icons**: Click on "Icons" to insert scalable vector icons and symbols from a library of available options.
- **Pictures**: Click on "Pictures" to insert images from your computer or online sources.



3. **Customize Special Objects:** After inserting a special object, you can customize it according to your needs:
4. **Arrange and Format Objects:** Arrange the special objects on your slides and format them to make them visually appealing and coherent with your overall design. Use alignment guides and grids to position objects precisely.



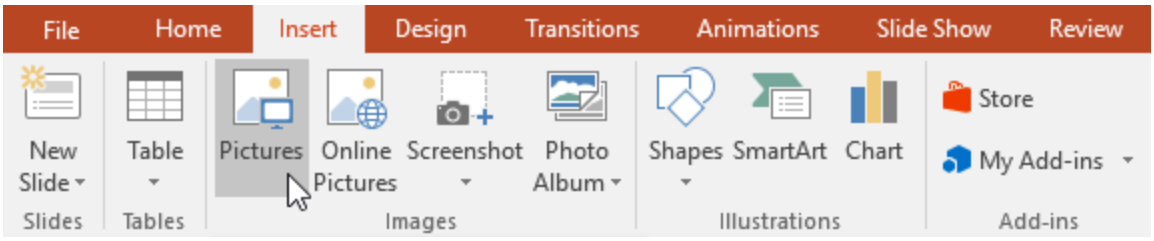
5. **Preview Your Slideshow:** Before presenting, preview your slideshow to ensure that all special objects are displayed correctly and that animations and transitions work as intended.
6. **Save Your Presentation:** Once you're satisfied with your slideshow, save your presentation by clicking on the "File" tab and selecting "Save As."

5.5 INCLUDE OBJECTS AND PICTURES

1. **Insert Pictures:**

- Click on the "Insert" tab in the top menu.
- Click on "Pictures" in the Images group.
- Choose a picture from your computer, or select "Online Pictures" to search for images on the web.

- Select the picture you want to insert and click "Insert."



2. Insert Objects:

- Depending on the type of object you want to insert, you can use various options:
- Shapes: Click on "Shapes" in the Illustrations group under the "Insert" tab. Choose a shape from the gallery, click and drag on your slide to draw the shape.
- Icons: Click on "Icons" in the Illustrations group under the "Insert" tab. A panel will open on the right side with a library of icons. Select an icon and click "Insert."
- 3D Models: Click on "3D Models" in the Images group under the "Insert" tab. Choose whether to insert from a file, online source, or stock models provided by Microsoft.
- SmartArt: Click on "SmartArt" in the Illustrations group under the "Insert" tab. Choose a SmartArt graphic from the gallery and click OK to insert it into your slide.

Let's Sum Up

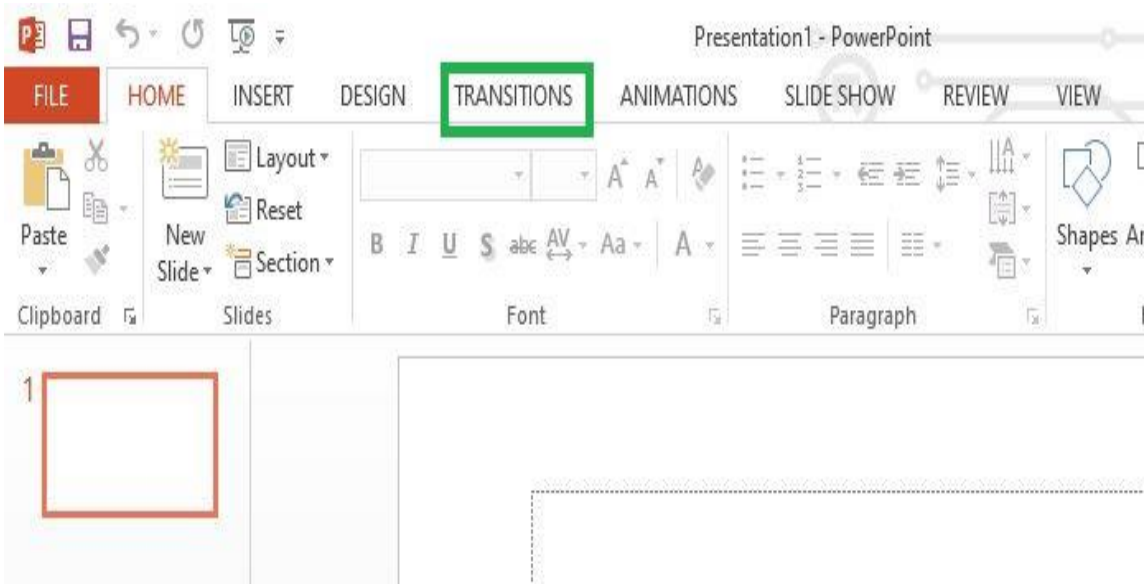
PowerPoint is a versatile presentation software that enables users to create dynamic slideshows incorporating text, images, videos, and objects like charts and diagrams. Its intuitive interface and extensive editing tools make it a popular choice for organizing information visually and delivering engaging presentations efficiently.

5.6 SLIDE TRANSITIONS

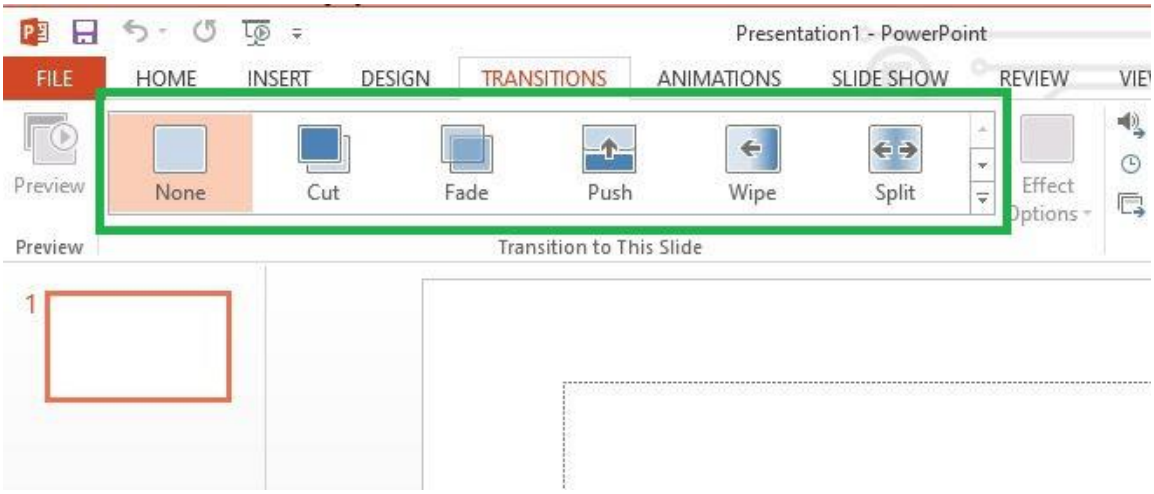
5.6.1 ADDING SLIDE TRANSITIONS

Transitions between slides cover much more than some movement between one slide and the next. Slide transitions in PowerPoint many options including timings and sounds. In either the Slide Sorter or Normal view, select the slide or slides to which you want to apply the transition to. Now, let's do it practically.

Step 1: From the Menu ribbon, select the Transitions tab.

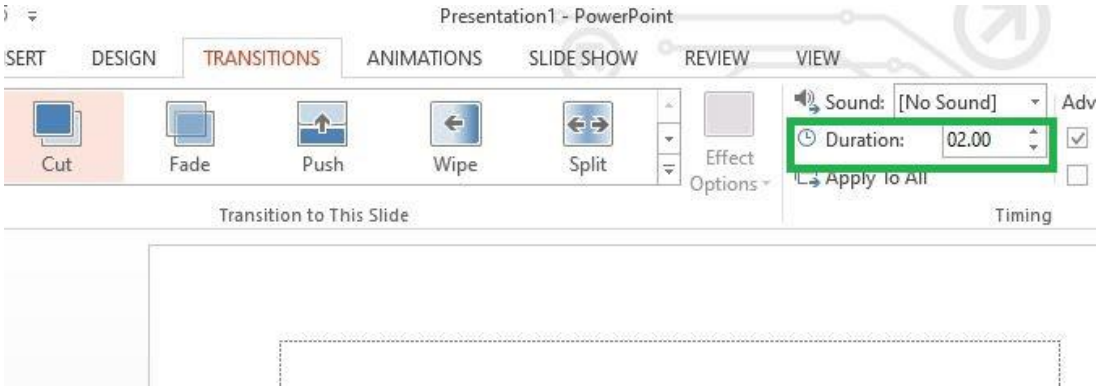


Step 2: The most commonly used animations will appear in the center. To preview more transition options, click the down arrow.

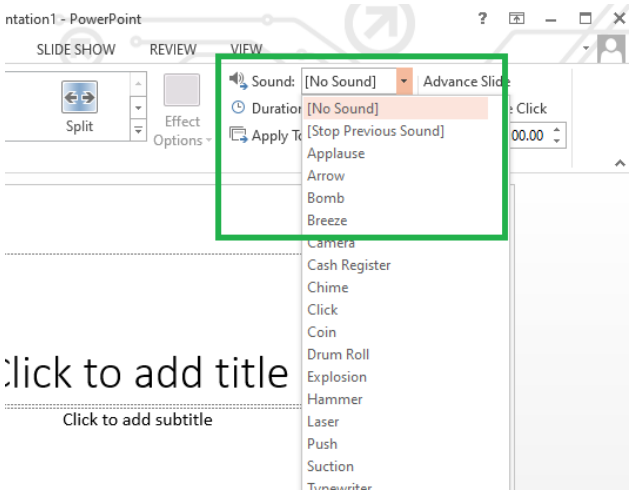


Step 3: Select a transition from the list. Clicking it will apply the transition to the slide. You can also select Apply to All to apply the same transition to all your slides.

Step 4: In the Duration option, enter the speed at which you want the transition to play.

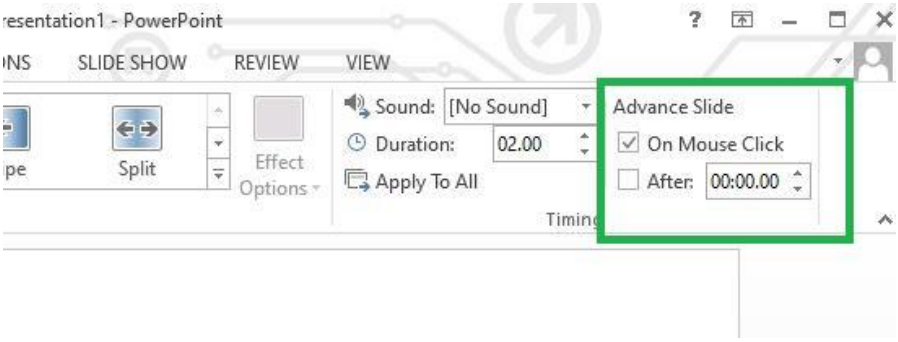


Step 5: In the Sound field, use the drop-down menu to select a sound to play during a slide transition, if desired.



Step 6: Indicate how you want the slide transition to occur by selecting an option under the Advance Slide heading. Select On mouse Click if you want the transition to take place when you click the left mouse button.

Select Automatically After if you want the transition to occur after a specified time. Use the up and down arrow keys in the blank box to specify the number of seconds which should pass before the transition takes place.

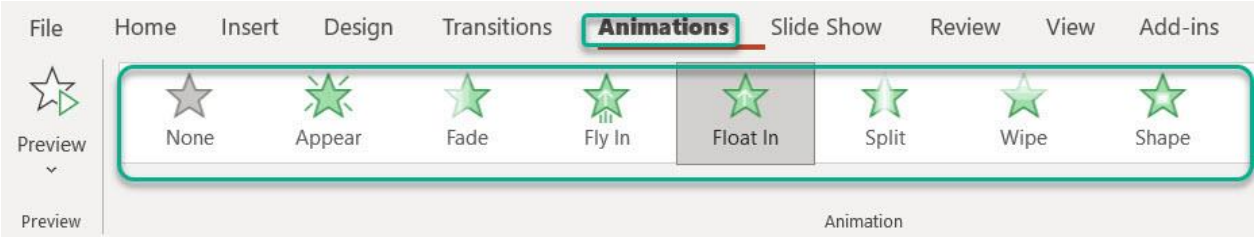


Let's Sum Up

PowerPoint slide transitions are animations that occur when moving from one slide to the next, adding a dynamic element to presentations. These transitions can be customized in terms of style, speed, and sound to enhance the audience's viewing experience.

5.7 ANIMATION EFFECTS

PowerPoint animations are used to create games or movies. But majorly it is used for the purpose of education and business sectors. You can see this option under the Animations tab. Now we will learn more about animations in MS PowerPoint.



5.7.1 ANIMATION IN POWERPOINT

Animations are one of the most important features of MS PowerPoint from which we can make creative templates out of it. Now we see the various options present under the animations tab and discuss them one by one:

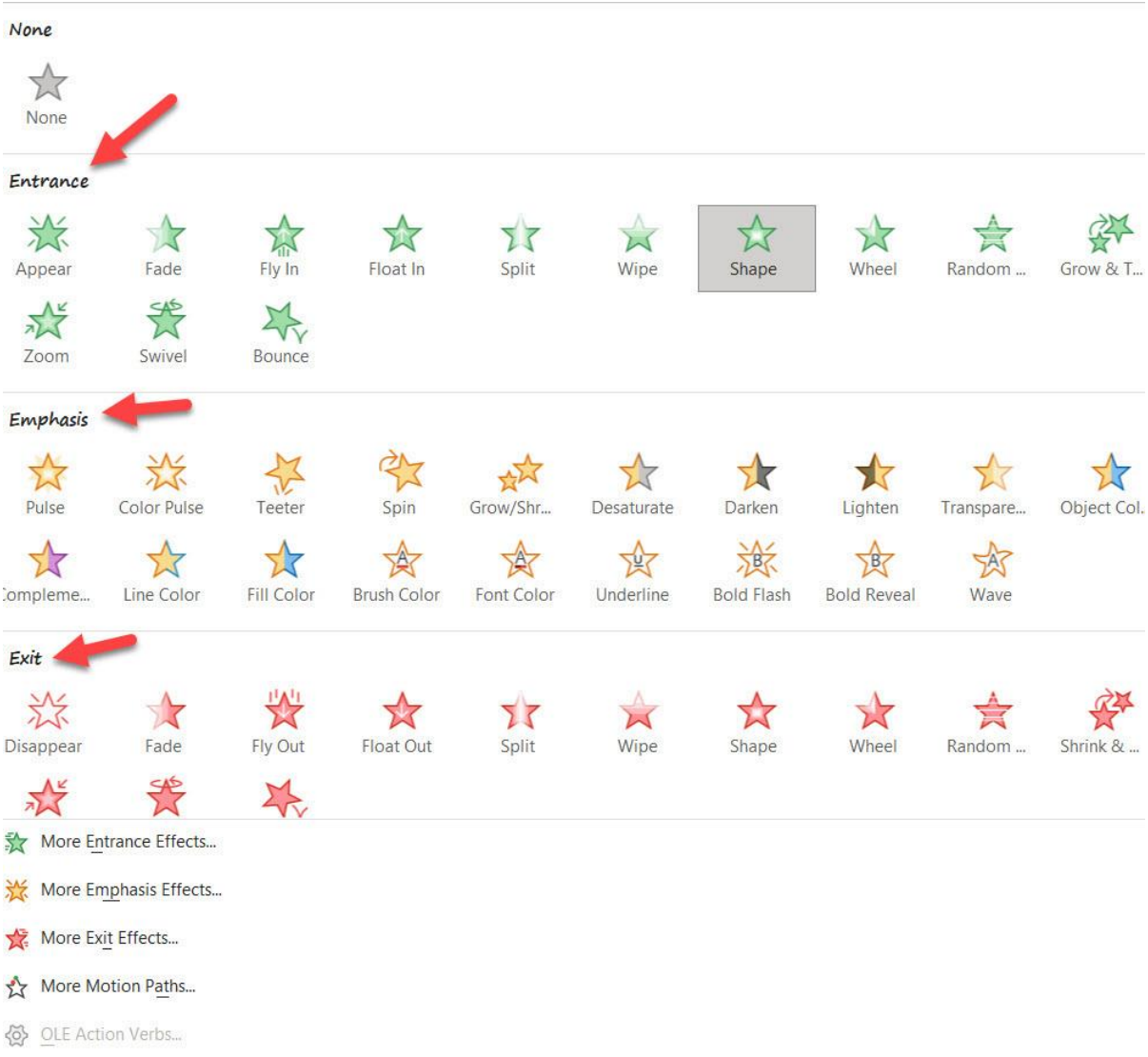
- Preview
- Type of animation
- Effect options

- Add Animation
- Animation Pane
- Trigger (available for new version)
- Animation Painter (available for new version)

5.7.2 TYPES OF ANIMATION

There are so many in-built animation effects provided by MS PowerPoint, and they are categorized into four types:

- **Entrance:** It has animations telling that how an object should enter. For example, with the fly animation, the object will “fly” onto the slide from any of the 4 directions.
- **Emphasis:** This type of animation usually occurs by the mouse clicks i.e when the object is already on the slide. For example, we can make the object wave after the entrance animation has finished.
- **Exit:** These have a set of animations to control the exit animations. For example, in the Fade animation, the object will fade away.
- **Motion Paths:** They are similar to emphasis animation effects, but these animations are a little advanced as the object will move in a specified path. These paths can be edited also.


None
None
Entrance
Appear
Fade
Fly In
Float In
Split
Wipe
Shape
Wheel
Random ...
Grow & T...
Zoom
Swivel
Bounce
Emphasis
Pulse
Color Pulse
Teeter
Spin
Grow/Shr...
Desaturate
Darken
Lighten
Transpare...
Object Col.
Compleme...
Line Color
Fill Color
Brush Color
Font Color
Underline
Bold Flash
Bold Reveal
Wave
Exit
Disappear
Fade
Fly Out
Float Out
Split
Wipe
Shape
Wheel
Random ...
Shrink & ...
More Entrance Effects...
More Emphasis Effects...
More Exit Effects...
More Motion Paths...
OLE Action Verbs...

Steps to apply the animation:

Step 1: Select the object you want to animate.

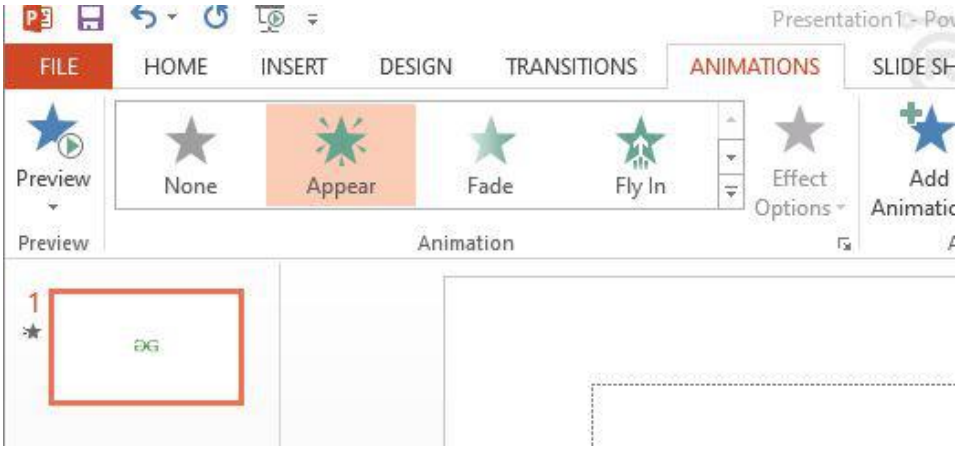
Step 2: Go to the animation tab and click on the dropdown to view all types of animations.

Step 3: A drop-down menu of animation effects will appear. Select the desired effect.

Step 4: The effect will apply to the object. In the Slide pane, a star symbol appears next to the slide, by which we can confirm that animation is applied.

Preview

Animation effects that you have applied will show when you play the slide show. You can preview the animations quickly for the current slide without clicking the option of the slideshow.

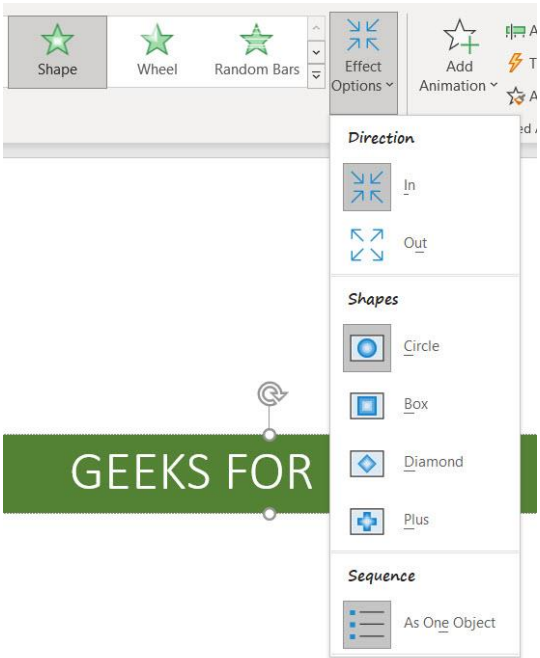


Steps to preview:

1. Navigate to the slide you want to preview.
2. From the Animations tab, click the Preview command. The animations for the current slide will play.

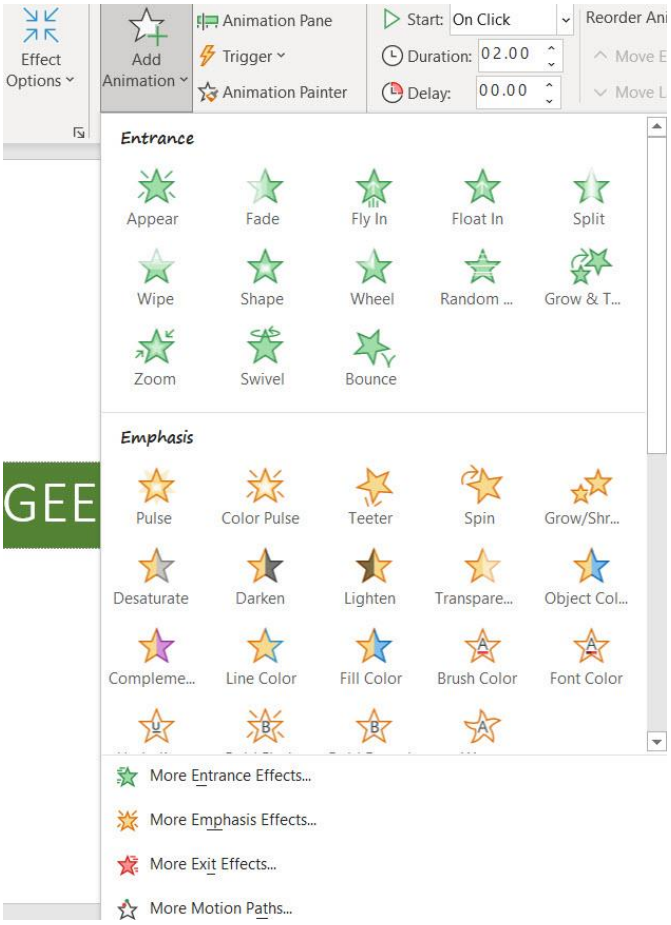
5.7.3 EFFECT OPTIONS

Some effects will have options you can change. For example, in the effect of the random bars, we can control that we need vertical or horizontal bars. We can use these options by accessing the Effect Options command in the Animation group. It totally depends on the animation which is selected.



Add Animation

If you want to add new animation then we can reselect in the animation group but to add new animation without changing the existing one we use this option. And sometimes to make the content interactive we need to add 2 or more effects. To apply these changes click on Add Animation command, this option will allow adding new animations without changing the old ones.



Steps to apply multiple animations to a single object:

Step 1: Select an object.

Step 2: Click the Animations tab.

Step 3: In the Advanced Animation group, we need to click the Add Animation command to view the available animations.

Step 4: Select the desired animation effect.

Step 5: If the object has multiple effects then for every effect it will show numbers according to the priority i.e., numbers indicate the order in which the effects will occur.

5.7.4 ANIMATION PANE

The Animation Pane option has the power to manage the timing of particular animations. You can easily modify the effects related to the animations like reordering the animations according to the preference and time interval.

Steps for Operating Animation pane:

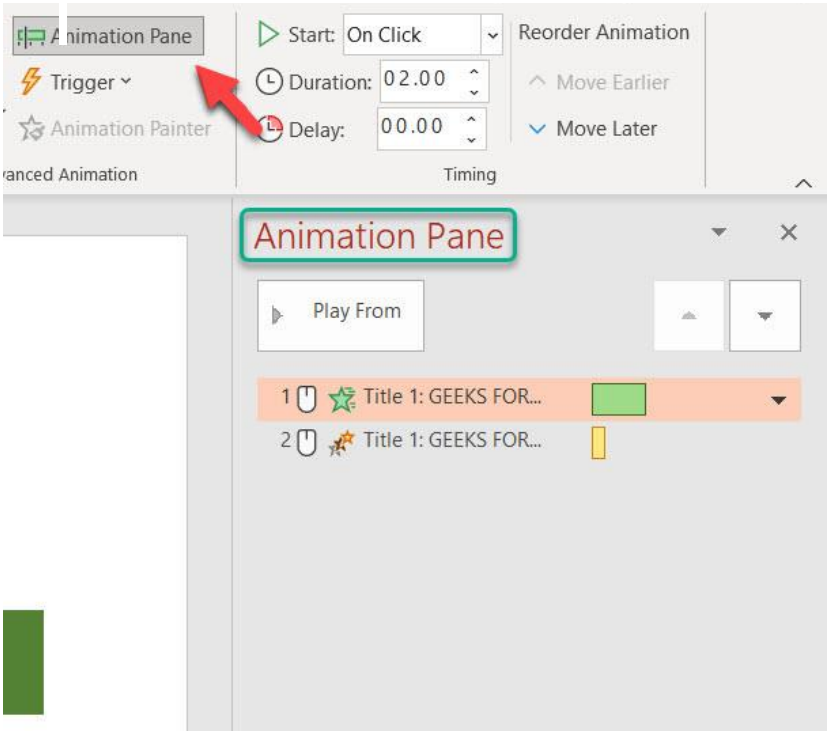
Step 1: Open the Animations tab, on the right side click on the animation pane option.

Step 2: A separate dialogue box gets opened on the right side of the window. It shows all the effects for the current slide in which they will appear.

Step 3: We can also set the start time, delay time, and also we can set when to move to the next slide, for this, we have 3 options:

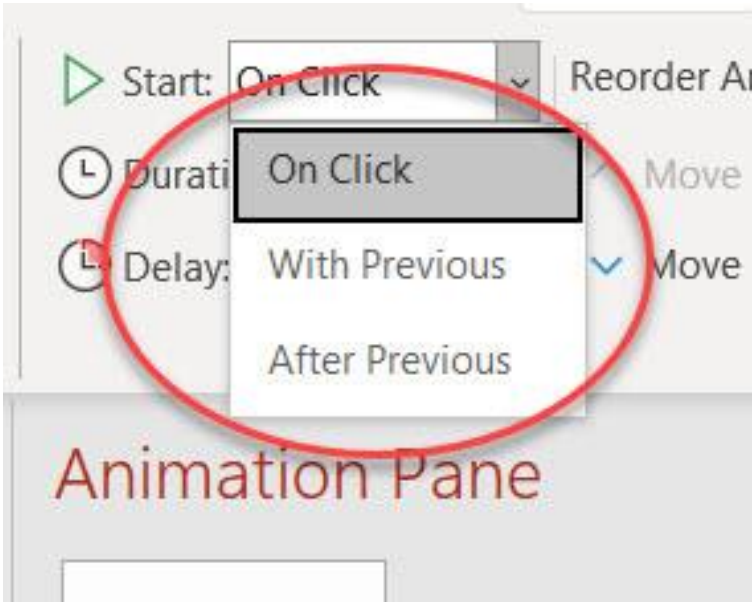
- Start on Click
- Start with Previous

- Start after Previous



Step 4: We can reorder animations with the help of two options which are a) Move Earlier b) Move Later

Note: *We can also reorder the animations according to our requirement, for that we just need to click and drag.*



Let's Sum Up

PowerPoint's animation effects enhance presentations by adding movement and visual interest to text, images, and other elements, making them more engaging and easier to follow. These effects range from simple transitions like fades and wipes to more complex animations that can be customized to suit the presenter's needs.

Check Your Progress

1. Which tab in PowerPoint contains the options for adding slide transitions?

A) Home

B) Insert

C) Transitions

D) Animations

Answer: C) Transitions

2. What is the default duration for most slide transitions in PowerPoint?

A) 0.5 seconds

B) 1 second

C) 2 seconds

D) 3 seconds

Answer: B) 1 second

3. Which of the following statements is true about animations in PowerPoint?

A) Animations can only be applied to entire slides.

B) Animations can be applied to individual objects on a slide.

C) Animations can only be used in the first slide of a presentation.

D) Animations cannot be customized.

Answer: B) Animations can be applied to individual objects on a slide.

4. What is the purpose of the "Effect Options" button in the Animations tab?

A) To change the color of the slide background

B) To customize the direction or sequence of the animation

C) To delete all animations from the presentation

D) To preview the slide without animations

Answer: B) To customize the direction or sequence of the animation

5. Which of the following is NOT a type of slide transition in PowerPoint?

A) Fade

B) Wipe

C) Zoom

D) Expand

Answer: D) Expand

5.8 AUDIO INCLUSION

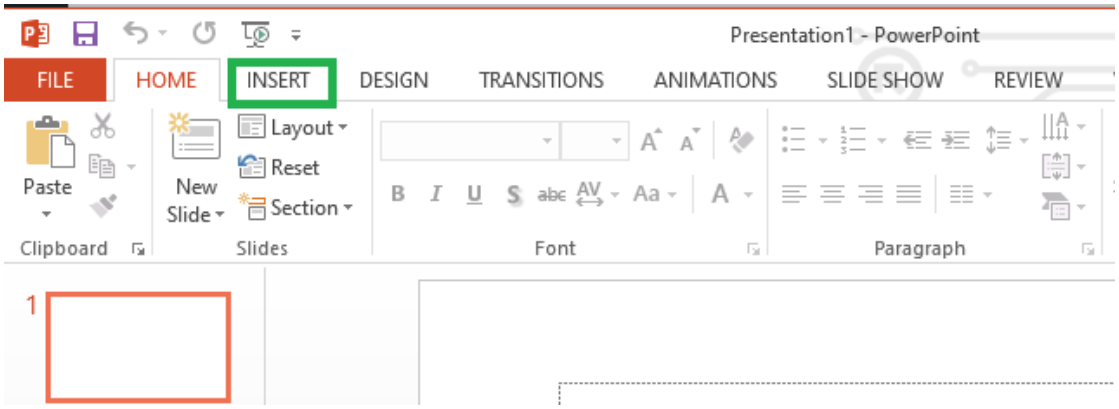
Inserting Audio in Presentations

MS PowerPoint allows its users to add audio files and recordings to presentations to give a better look and feel to your slides.

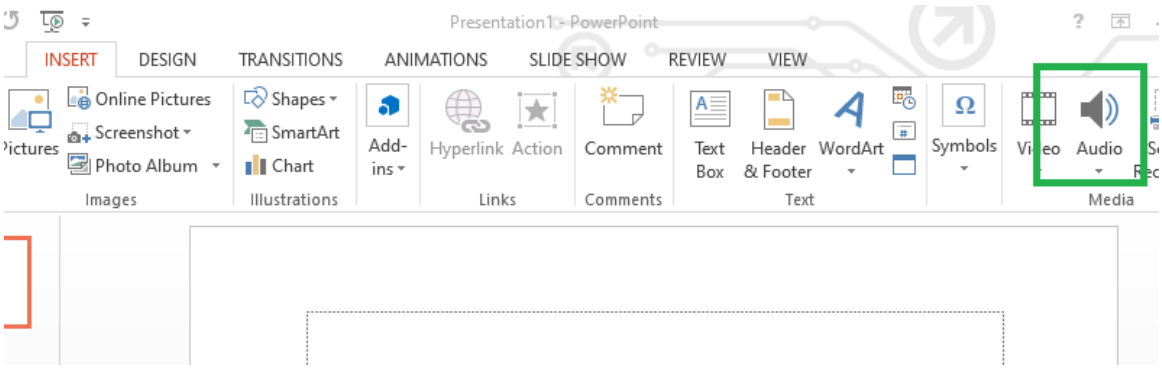
Steps for Adding Audio:

There are some steps for inserting audio in the MS PowerPoint:

Step 1: Under the Insert tab, so many options are available where we can choose what feature we want to insert in their presentation. This may include images, audio, video, header, footer, symbols, shapes, etc.



Step 2: On the Insert tab, within the Media group click the Audio.

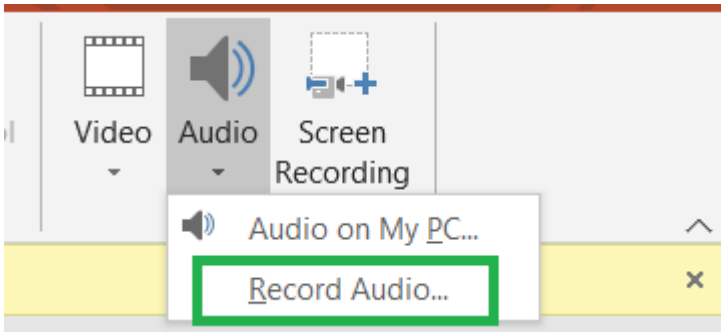


There are two ways of adding audio in the presentation:

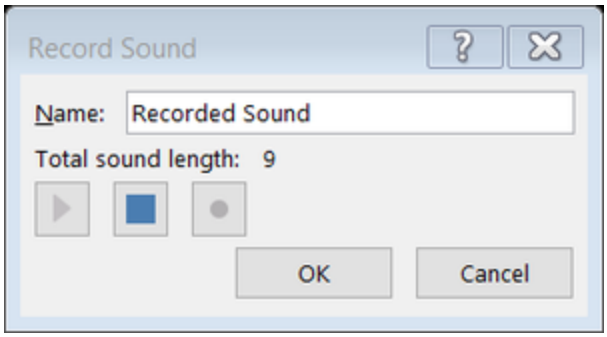
(i) Audio on my PC

(ii) Record Audio

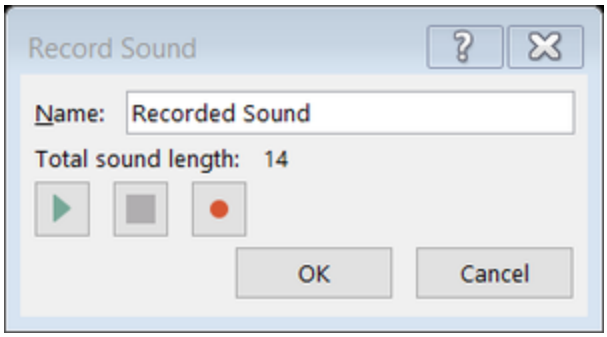
Step 4: Click on the Record Audio button:



Step 5: Click on the “Square Blue” button to stop recording it.



For Playing the audio, click on the green-colored “Play” button.



Let's Sum Up

Including audio in PowerPoint presentations enhances engagement and understanding by providing auditory explanations and context to the visual content. This multimedia approach can cater to diverse learning styles, making the presentation more dynamic and effective.

5.9 TIMERS

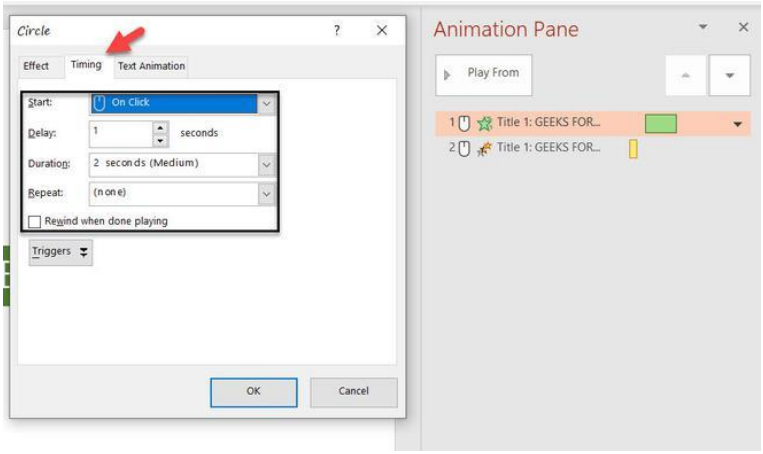
Adding timers in PowerPoint can be a useful tool for managing time during presentations, quizzes, or interactive sessions. Here's a step-by-step guide on how to add timers in PowerPoint:

1. **Open Your Presentation:**
    - Open the PowerPoint presentation where you want to add a timer.
2. **Insert a Shape or Text Box:**
    - Go to the Insert tab.
    - Choose Shapes or Text Box and create a box where the timer will be displayed.
3. **Set Up the Timer:**
    - Click inside the shape or text box and type the starting time (e.g., "10" for a 10-second timer).
4. **Add Animations:**
    - Select the shape or text box.
    - Go to the Animations tab.
    - Select Add Animation>Disappear (or any exit effect).

5. **Configure the Animation Timing:**
    - With the shape or text box still selected, click on the Animations Pane.
    - In the Animations Pane, right-click on the animation and select Timing.
    - Set the Duration to 1 second and the Start to After Previous.

6. **Create Countdown Steps:**
    - Duplicate the shape or text box for each second of the countdown (e.g., from "10" to "1").
    - Adjust the text in each box accordingly.
    - Set the Start of each subsequent shape or text box to After Previous.

7. **Preview the Timer:**
    - Click Slide Show>From Current Slide to test the timer.



Let's Sum Up

A timer in PowerPoint can be used to manage the duration of slides or presentations, ensuring that each segment adheres to a specific time frame. This feature is particularly useful for timed presentations, allowing presenters to maintain a consistent pace and avoid overrunning their allotted time.

5.10 Unit Summary

- It provides a comprehensive introduction to PowerPoint, focusing on its features and functionalities for creating dynamic and engaging presentations.
- To understand the different types of slides and how to navigate through presentations effectively.

- The unit also covers slide transitions, animation effects, audio inclusion, and timers, empowering learners to create captivating and professional presentations that effectively convey their message.

5.11 Glossary

- Slide - A single page or screen in a PowerPoint presentation.
- Animation - Visual effects applied to objects on a slide.
- Transition - Effects that occur when moving from one slide to the next.
- Template - Pre-designed layout and design for slides.
- Master Slide - A slide that stores information about the theme and slide layouts.
- Slide Show - A sequence of slides displayed in order during a presentation.

5.12 Self-Assessment Questions

1 Explain the process of creating a slide show in PowerPoint. What steps do you need to take to add slides and organize their sequence?

2 How can you insert objects and pictures into a PowerPoint slide? Provide two methods for inserting objects or pictures.

3 Describe the purpose of slide transitions in PowerPoint. Give an example of a slide transition effect and when it might be used.

4 What are animation effects in PowerPoint? How can you apply animation to objects on a slide?

5 How can you include audio in a PowerPoint presentation? Describe the steps to add audio files to your slides.

6 What is the purpose of timers in PowerPoint? How can you use timers to control the timing of slide transitions or animations?

5.13 Activity

Activity 1: Introduction to PowerPoint Features

1. **Objective**: To get familiar with the basic features of PowerPoint.
2. **Activity**:
   - **Task**: Create a 5-slide presentation about any topic of your choice (e.g., "Benefits of Healthy Eating").

- **Instructions**:
  - Use at least three different slide layouts (e.g., title slide, content slide, picture with caption).
  - Include a title slide and a conclusion slide.
  - Add a background color or image to each slide.

3. **Outcome**: Understanding of basic slide creation, layouts, and visual customization.

Activity 2: Slide Typecasting & Viewing Slides

1. **Objective**: To understand different slide types and viewing modes.
2. **Activity**:
   - **Task**: Create a 7-slide presentation on the topic "Environmental Conservation".
   - **Instructions**:
     - Use at least four different types of slides (title slide, comparison slide, content with image, chart slide).
     - Switch between Normal, Slide Sorter, and Reading views to ensure content and formatting consistency.
     - Use the "Notes" section to add speaker notes for each slide.
3. **Outcome**: Understanding the application of various slide types and viewing modes.

5.14 References and Suggested Readings

1. Peter Norton, Introduction to Computers–Tata McGraw-Hill.
2. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, —Microsoft 2003, Tata McGrawHill
3. Torben Lage Frandsen, Microsoft Office Power point, 2010

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UNIT - V COMPLETED