Certificate in Information Technology Application

CITA

Study Material

Youth Computer Training Centre

Topics Covered:

- Computer Fundamental
- Operating System Windows 10
- Microsoft Word 2016
- Microsoft Excel 2016
- Microsoft PowerPoint 2016
- Microsoft Visual FoxPro 6.0

Warning and Disclaimer

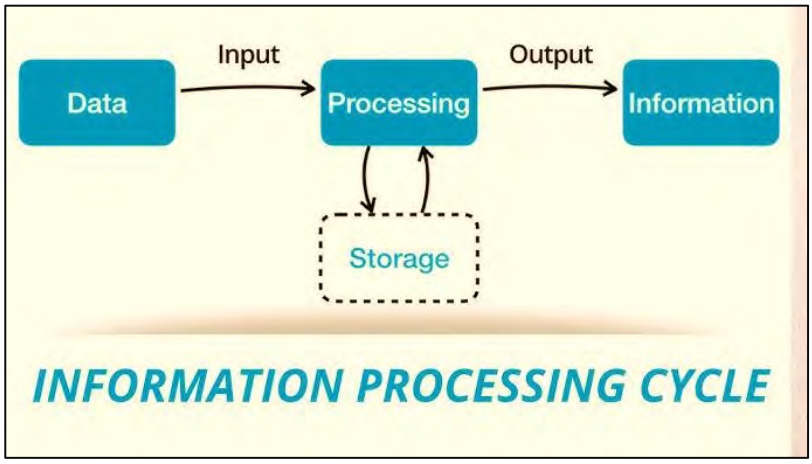
This study material is designed to provide information about 'Certificate in Information Technology Application'. While every effort has been made to make this study material as complete, comprehensive and as accurate as possible, no warranty or fitness is to be implied. The information is provided on an “as is” basis. Hewlett Packard Enterprise shall not have any liability or responsibility to any person or entity with respect to any loss or damages arising from the information contained in this study material. Internet websites offered as citations and/ or sources for further information may have changed or disappeared between the time this study material is written and the time when it may be read by the reader.

Contents:

Chapter 1: Computer Fundamental

Introduction

Computer Fundamentals are designed to equip learners with the foundational knowledge and skills required to understand, utilize, and navigate the world of computers effectively. Computer Fundamentals provide learners with a broad understanding of computers, their components, functions, and applications, ensuring they are prepared to use computers effectively for personal, academic, or professional purposes.



Understanding Basic Concepts

Grasp the definition and importance of computers in daily life and various industries. Learn about the history and evolution of computers. Differentiate among various types of computers (e.g., desktops, laptops, servers, supercomputers).

a. Hardware Components

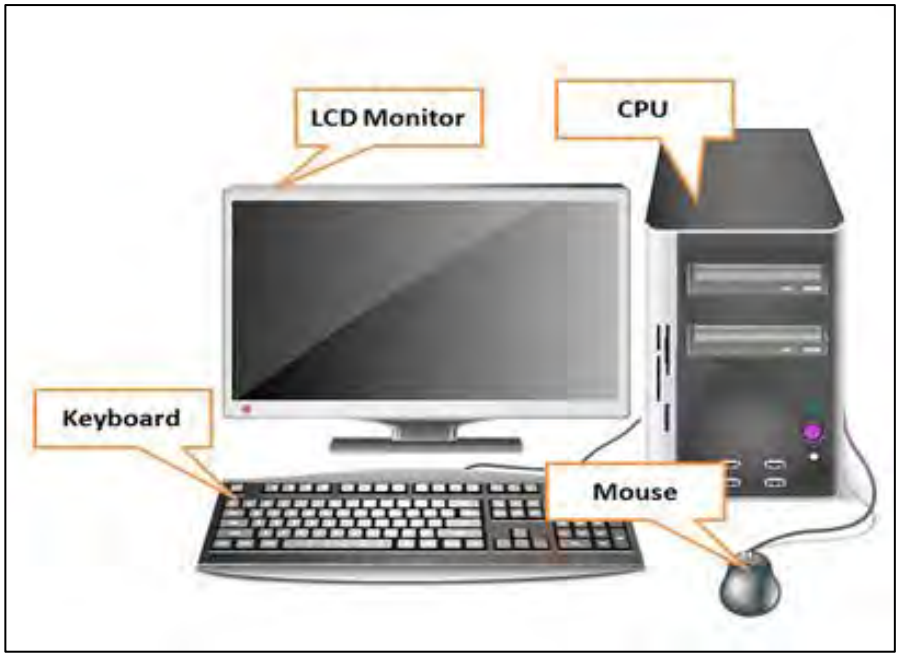
Identify the primary components of a computer system, including input, output, processing, and storage devices. Understand the role of Central Processing Unit (CPU), memory (RAM/ROM), and peripheral devices. Learn the significance of hardware specifications for performance.

b. Software Components

Understand the types of software: system software (e.g., operating systems), application software, and utility software. Learn about operating system functions and their importance in managing hardware resources. Explore common software applications and their use in productivity, communication, and entertainment.

c. Data Representation and Handling

Learn how computers represent data using binary and other numeral systems. Understand basic data units (bit, byte) and storage measurement (KB, MB, GB, etc.). Explore data processing techniques and file management.



d. Applications of Computers

Familiarize with real-world applications of computers in fields like education, healthcare, business, and entertainment. Gain insight into the role of computers in communication (e.g., email, video conferencing) and digital collaboration. Understand the impact of emerging technologies like artificial intelligence, cloud computing, and IoT.

e. Introduction to Networking

Learn basic networking concepts, including the Internet, intranet, and different types of networks (LAN, WAN, MAN). Understand the importance of IP addresses, DNS, and protocols in enabling communication.

f. Computer Security and Ethics

Identify common threats like viruses, phishing, and hacking.

Learn basic measures for securing data and systems, such as using strong passwords and antivirus software. Understand the importance of ethical practices in computing and respecting privacy.

g. Skill Development

Develop the ability to operate a computer, manage files, and navigate operating systems.

Gain basic proficiency in common software applications (e.g., word processors, spreadsheets, and browsers). Cultivate troubleshooting skills for common hardware and software issues.

Today's world is an information-rich and it has become a necessity for everyone to know about computers. A computer is an electronic data processing device, which accepts and stores data input, processes the data input, and generates the output in a required format. The purpose of this tutorial is to introduce you to Computers and its fundamentals.

Functionalities of a Computer

If we look at it in a very broad sense, any digital computer carries out the following five functions:

Step 1 - Takes data as input.

Step 2 - Stores the data/instructions in its memory and uses them as required.

Step 3 - Processes the data and converts it into useful information.

Step 4 - Generates the output.

Step 5 - Controls all the above four steps.

Advantages of Computers: -

High Speed, Accuracy, Storage Capability, Diligence, Versatility, Reliability, Automation, Reduction in Paper Work and Cost

Disadvantages of Computers: -

Dependency, No Feeling, No I.Q.,

Applications of Computer:

Business Payroll calculations, Budgeting, Sales analysis, Financial forecasting, Managing employee database, Maintenance of stocks, etc.

Banking Online accounting facility, ATM machines etc.

Insurance Procedure to continue with policies, starting date of the policies, next due instalment of policy, maturity date, interests due, survival benefits Bonus etc.

Education : The computer provides a tool in the education system known as CBE (Computer Based Education),

Marketing Advertising, Online Shopping etc.

Healthcare Computers have become an important part in hospitals, labs, and dispensaries. They are being used in hospitals to keep the record of patients and medicines. It is also used in scanning and diagnosing different diseases. ECG, EEG, ultrasounds and CT scans, etc. are also done by computerized machines.

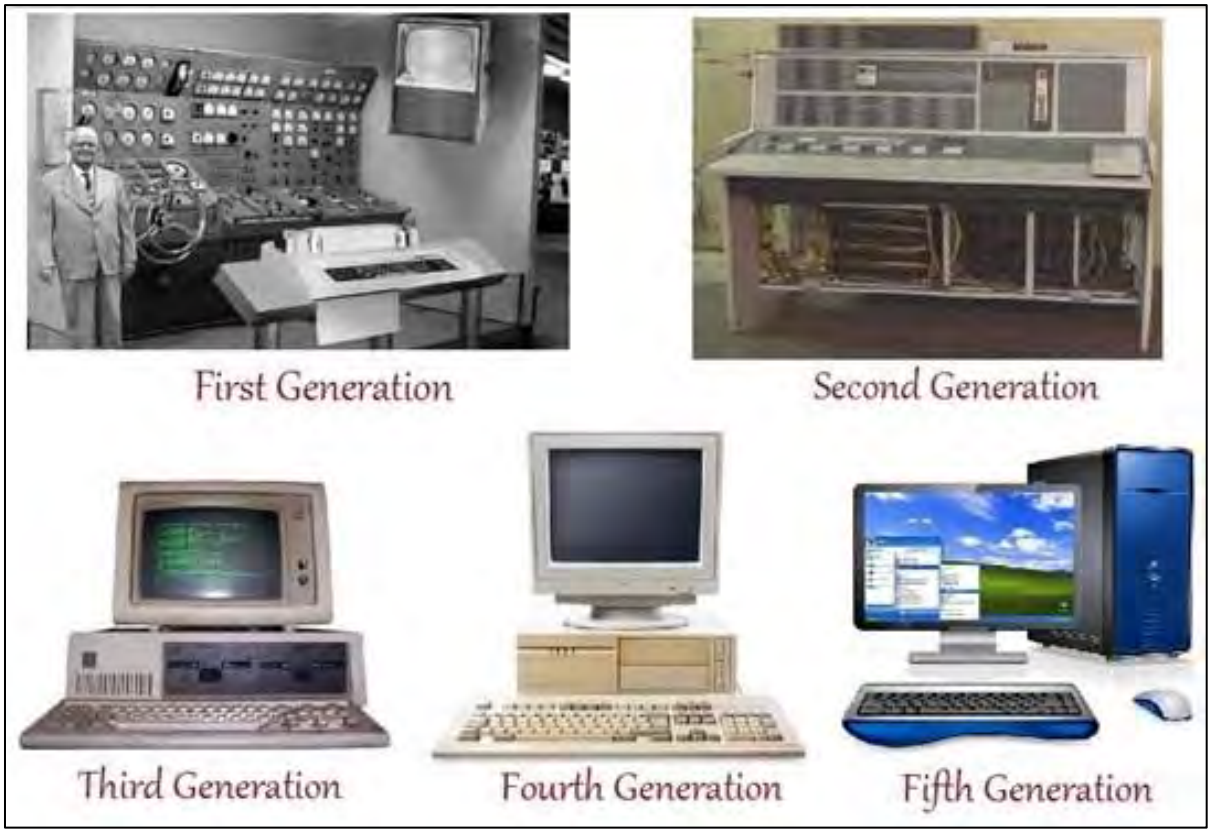
Engineering Design One of the major areas is CAD (Computer Aided Design) that provides creation and modification of images. Structural Engineering, Industrial Engineering, Architectural Engineering., Computers help to designing both 2D and 3D drawings.

Military Computers are largely used in defence. Modern tanks, missiles, weapons, etc. Military also employs computerized control systems.

Communication: Communication is a way to convey a message, an idea, a picture, or speech that is received and understood clearly and correctly by the person for whom it is meant. Some main areas in this category are: E-mail, Chatting, Usenet, and Video-conferencing. Government Computers play an important role in government services. Some major fields in this category are Budgets, Sales tax department, Income tax department, Computerization of Voter ID card and PAN card, Weather forecasting etc.

Generations of Computer

S. No.	Generation & Description
1	**First Generation** The period of first generation: 1946-1959. Vacuum tube based.
2	**Second Generation** The period of second generation: 1959-1965. Transistor based.
3	**Third Generation** The period of third generation: 1965-1971. Integrated Circuit based.
4	**Fourth Generation** The period of fourth generation: 1971-1980. VLSI microprocessor based.
5	**Fifth Generation** The period of fifth generation: 1980-onwards. ULSI microprocessorbased.



Types of Computers

Sl. No.	Type	Specifications
1	PC (PersonalComputer)	It is a single user computer system having moderatelypowerful microprocessor
2	Workstation	It is also a single user computer system, similar topersonal computer however has a more powerful microprocessor
3	Mini Computer	It is a multi-user computer system, capable of supporting hundreds of users simultaneously.
4	Main Frame	It is a multi-user computer system, capable of supporting hundreds of users simultaneously. Software technology is different from minicomputer.
5	Supercomputer	It is an extremely fast computer, which can execute hundreds of millions of instructions per second.

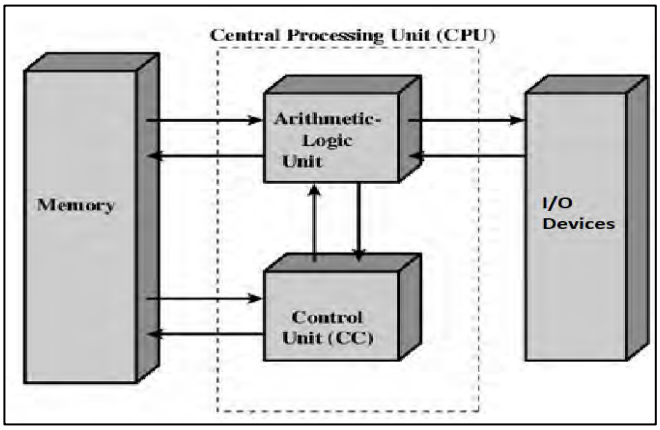
CPU (Central Processing Unit)

CPU is considered as the brain of the computer. CPU performs all types of data processing operations. It stores data, intermediate results, and instructions (program). It controls the operation of all parts of the computer. CPU itself has the following three components:

- ALU (Arithmetic Logic Unit)
- Control Unit (CU)
- Memory Unit

ALU (Arithmetic Logic Unit)

This is a key component of the CPU that performs arithmetic operations (e.g., addition, subtraction) and logical operations (e.g., AND, OR).



Control Unit (CU)

The Control Unit (CU) is a crucial component of a computer's Central Processing Unit (CPU). Its primary role is to manage and coordinate the operations of the computer by directing the flow of data between the CPU and other components.

Memory

A memory is just like a human brain. It is used to store data and instructions. Computer memory is the storage space in the computer, where data is to be processed and instructions required for processing are stored. The memory is divided into large number of small parts called cells. Each location or cell has a unique address, which varies from zero to memory size minus one. For example, if the computer has 64k words, then this memory unit has 64 * 1024=65536 memory locations.

The address of these locations varies from 0 to 65535. Memory is

Primarily of two types - Primary Memory/Main Memory, and Secondary Memory

Primary Memory

Definition: Primary memory (or main memory) is directly accessible by the CPU and is used to store data and instructions temporarily while the computer is running.

Characteristics:

Volatile: Most primary memory (like RAM) loses its data when the power is turned off.

High Speed: Faster than secondary memory for read/write operations.

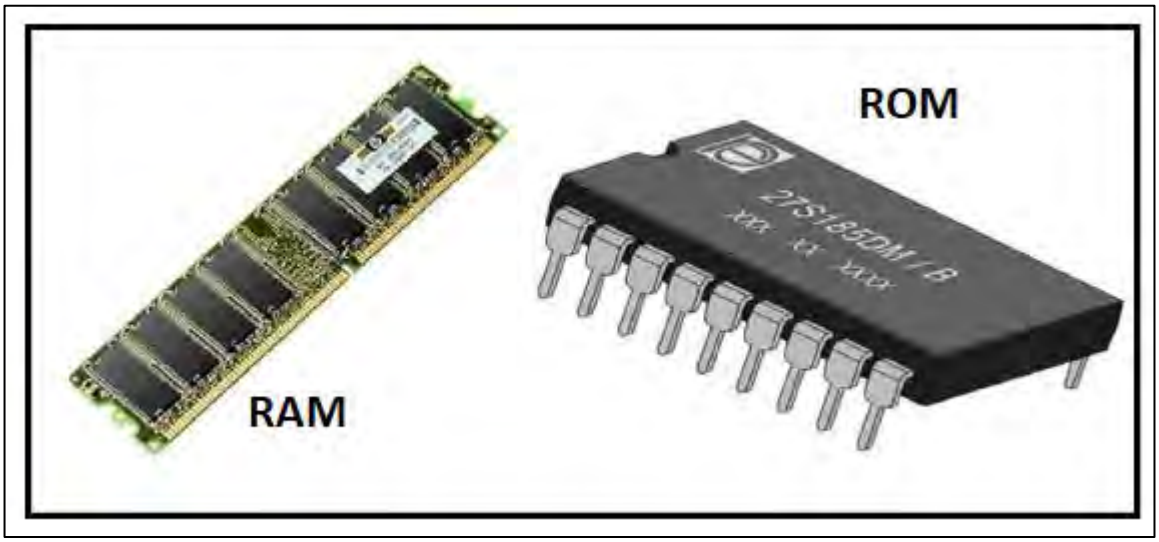
Limited Capacity: Usually smaller in size compared to secondary memory.

Directly Accessed: Communicates directly with the CPU.

RAM (Random Access Memory):

Temporary storage for data and programs being used.

Types: DRAM (Dynamic RAM), SRAM (Static RAM).



ROM (Read-Only Memory):

Contains data permanently written during manufacturing (e.g., BIOS).

Types: PROM, EPROM, EEPROM.

Secondary Memory

Definition: Secondary memory (or storage) is used to store data and programs permanently or semi-permanently for long-term use.

Characteristics:

Non-Volatile: Retains data even when the power is off.

Slower Speed: Compared to primary memory.

Large Capacity: Significantly larger than primary memory.

Indirect Access: Data must be loaded into primary memory for processing.

Types of Secondary Memory:

Magnetic Storage: Hard Disk Drives (HDDs), floppy disks.

Optical Storage: CDs, DVDs, Blu-ray discs.

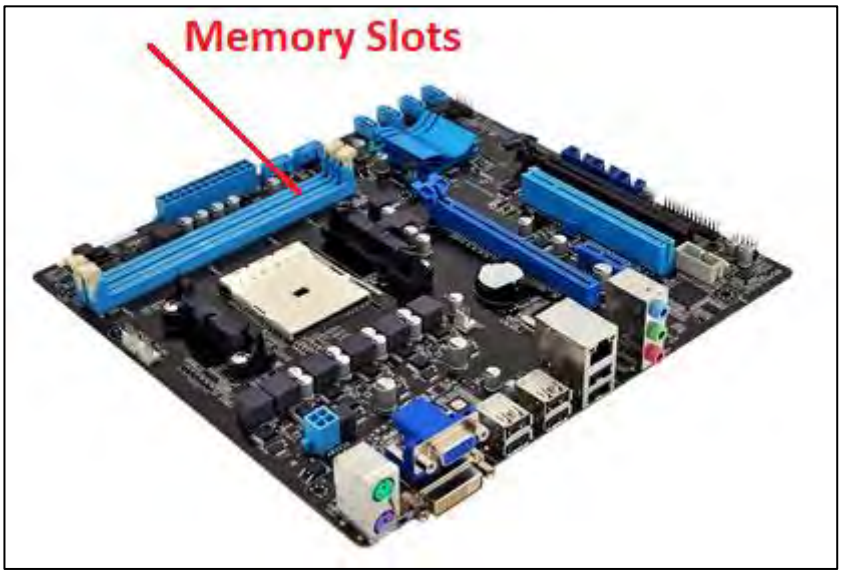
Solid-State Storage: SSDs, USB flash drives.

Cloud Storage: Online storage services like Google Drive or Dropbox.

Examples:

Hard drives for saving documents, software, and media.

External USB drives for backups.



Memory Units

Memory unit is the amount of data that can be stored in the storage unit. This storage capacity is expressed in terms of Bytes.

BIT

Definition:

A bit (short for "binary digit") is the smallest unit of data in a computer and can hold only one of two values:

0 (off/false)

1 (on/true).

Key Characteristics:

Represents the smallest piece of information.

Used in binary systems to encode data, such as text, numbers, or instructions.

Examples of Usage:

A single light switch being "on" or "off" is analogous to a bit.

In data transfer rates, speeds are often measured in bits per second (e.g., Mbps = megabits per second).

BYTE

Definition:

A byte is a collection of 8 bits. It is the standard unit of data used to represent a character (like a letter, number, or symbol) in many encoding systems, such as ASCII.

Key Characteristics:

1 Byte = 8 Bits.

Sufficient to represent 256 different values ($2^8 = 256$), ranging from 00000000 (0 in decimal) to 11111111 (255 in decimal).

Used to measure the size of files or storage (e.g., kilobytes, megabytes).

Examples of Usage:

The letter "A" is represented in ASCII as 01000001, which takes 1 byte.

File sizes (e.g., an image might be 1 MB, which is roughly 1 million bytes).

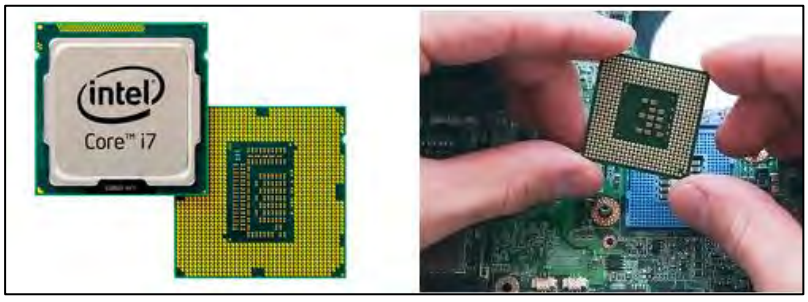
Memory storage Unit

The following table explains the main memory storage units

Sl. No.	Unit	Description
1	Bit (Binary Digit)	A binary digit is logical 0 and 1 representing a passiveor an active state of a component in an electric circuit.
2	Nibble	A group of 4 bits is called nibble.
3	Byte	A group of 8 bits is called byte. A byte is the smallest unit, which can represent a data item or a character.
4	Kilobyte (KB)	1 KB = 1024 Bytes
5	Megabyte (MB)	1 MB = 1024 KB
6	Gigabyte (GB)	1 GB = 1024 MB
7	Terabyte (TB)	1 TB = 1024 GB
8	Petabyte (PB)	1 PB = 1024 TB

About Microprocessor

A microprocessor PC is essentially a computer system where the central processing unit (CPU) is based on a microprocessor chip. The microprocessor interacts with various components such as memory, storage, and I/O



devices to perform a wide range of tasks and operations. Microprocessors continue to evolve, offering greater performance and efficiency for both general and specialized computing applications.

Inside Motherboard

The motherboard is the main printed circuit board (PCB) that serves as the central hub for communication and connectivity between all of the components in a computer system. Inside a motherboard, you will typically find various components and slots that allow different hardware parts to connect and work together. Here's an overview of the main components found inside a motherboard:

CPU Socket

Description: This is where the Central Processing Unit (CPU) is installed. The CPU is the brain of the computer, performing the calculations and instructions needed for the system to function. Common Types: LGA (Land Grid Array) for Intel CPUs, PGA (Pin Grid Array) for AMD CPUs.

RAM Slots (DIMM Slots)

Description: These are slots for inserting memory modules (RAM). The number of RAM slots can vary depending on the motherboard model, but most motherboards support two or four. Common Types: DDR4, DDR5.

Chipset

Description: The chipset acts as a bridge between the CPU and other components of the motherboard, including RAM, storage devices, and peripherals. It manages data flow between the processor and other components. Northbridge (older systems): Handles communication between the CPU, RAM, and high-speed devices like GPUs.Southbridge (older systems): Controls I/O functions, such as USB ports, SATA connections, etc.

PCIe Slots (Expansion Slots)

Description: These slots are used to add expansion cards, such as graphics cards (GPU), network cards, sound cards, storage controller cards, etc.Common Types: PCI Express x16 (for GPUs), PCI Express x1 (for other cards).

Power Connectors

Description: These connectors supply power to the motherboard and other components. Types: 24-pin ATX power connector (for power to the motherboard), 8-pin (or 4+4) connector for additional CPU power.

Storage Connectors

Description: These connectors allow you to attach storage devices like hard drives (HDDs), solid-state drives (SSDs), and optical drives.

Types:

- SATA ports (Serial ATA): For connecting traditional hard drives and SSDs.
- M.2 Slots: For connecting M.2 NVMe or SATA SSDs.
- U.2 Ports: For high-speed SSDs (less common).

Integrated Graphics (iGPU)

Description: Some motherboards come with an integrated GPU, especially in budget systems or CPUs with integrated graphics (e.g., Intel's i3/i5/i7 CPUs or AMD's APUs). Connection: Often provides output options like HDMI, DisplayPort, or VGA directly from the motherboard.

Audio and Network Connectors

Description: These connectors are used for audio and networking functions. Audio: Usually a set of 3-6 audio jacks for surround sound systems.

Network:

An Ethernet port (RJ-45) for wired network connectivity.

USB Ports and Headers

Description: These provide connections for external peripherals such as keyboards, mice, printers, and USB storage devices.

Types:

- Rear I/O ports: USB 2.0, USB 3.0, USB 3.1, USB-C.
- Internal USB headers: For front panel USB ports on the case.

CMOS Battery

Description: A small battery (typically a CR2032 coin cell) that powers the motherboard's CMOS chip. It stores system settings (like BIOS/UEFI configurations) when the system is powered off.

Heat Sinks and VRMs (Voltage Regulator Modules)

Description: These are thermal management components that help dissipate heat from the CPU and power regulation components': These regulate the voltage supplied to the CPU and other components to ensure stable power delivery.

BIOS/UEFI Chip

Description: The BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface) chip stores the firmware that controls the motherboard's hardware and allows for system configuration before booting the operating system.

Front Panel Connectors

Description: These pins connect the motherboard to the front panel of your computer case, where you can connect the power button, reset button, power LED, hard drive activity LED, and front USB ports.

Heat Pipes and Cooling Solutions

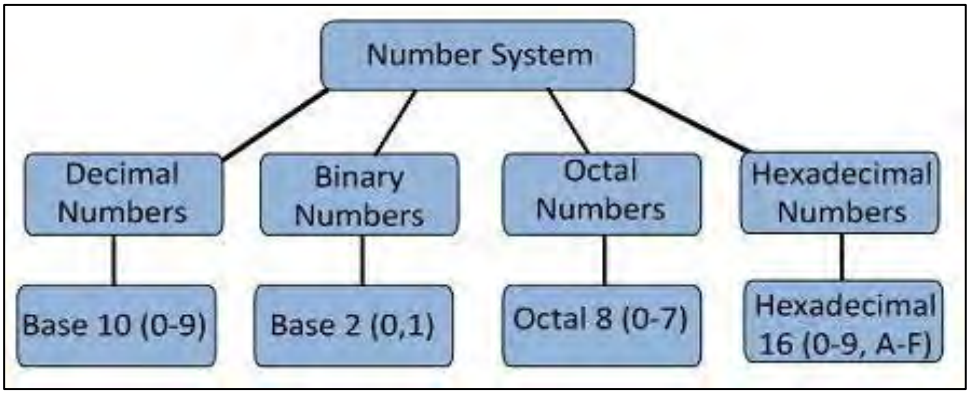
Description: In higher-end motherboards, you may find additional cooling solutions such as heat pipes or active cooling fans for areas like the VRMs and chipset to prevent overheating.

Number System

When we type some letters or words, the computer translates them in numbers as computers can understand only numbers. A computer can understand the positional number system where there are only a few symbols called digits and these symbols represent different values depending on the position they occupy in the number. The value of each digit in a number can be determined using -

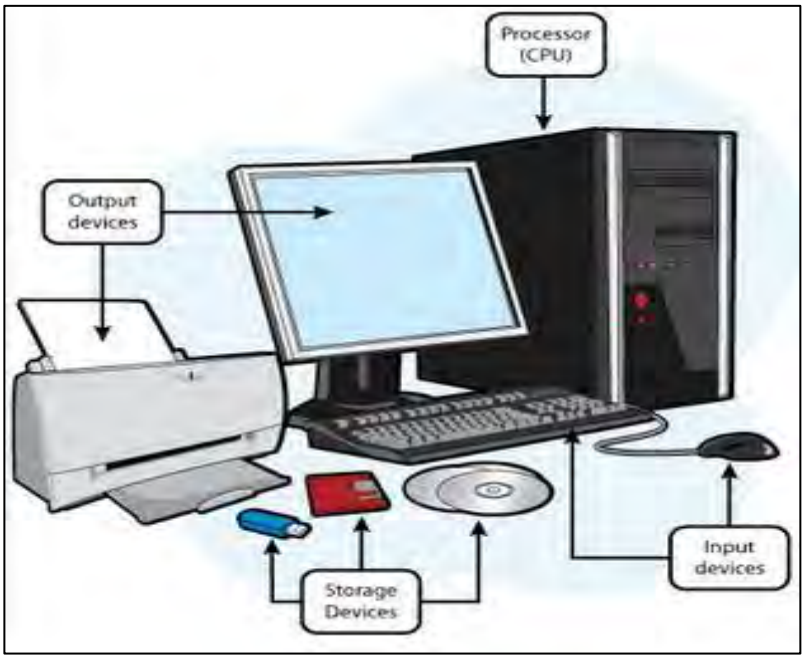
- The digit
- The position of the digit in the number
- The base of the number system (where the base is defined as the total number of digits available in the number system)

Number System	Base	Digits
Binary	2	0, 1
Octal	8	0, 1, 2, 3, 4, 5, 6, 7
Decimal	10	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Hexadecimal	16	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F



I/O Devices (Input/Output Devices)

In a computer system, I/O devices (Input/Output devices) enable interaction between the computer and the external world, allowing data to be input into the computer or output from the computer. These devices play a critical role in facilitating communication between the computer and the user or other systems.



Input Devices:

Input devices are used to send data or commands to the computer for processing.

- Keyboard: Types text and commands
- Mouse: Controls cursor and selects items
- Scanner: Scans documents and images
- Webcam: Captures video and images

- Microphone: Records audio
- Touchpad/Touchscreen: Controls cursor and selects items
- Game Controller: Controls games
- Barcode Reader: Scans barcodes
- RFID Reader: Reads RFID tags
- Joystick: Controls games and simulations

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.

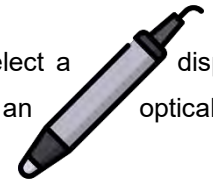
Mouse

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.

Joystick

Joystick is also a pointing device, which is used to move the cursor position on a monitor screen. It is a stick having a spherical ball at its both lower and upper ends. The lower spherical ball moves in a socket. The joystick can be moved in all four directions. The function of the joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

Light Pen



Light pen is a pointing device similar to a pen. It is used to select a displayed menu item or draw pictures on the monitor screen. It consists of a photocell and an optical system placed in a small tube.

Track Ball

Track ball is an input device that is mostly used in notebook or laptop computer, instead of a mouse. This is a ball which is half inserted and by moving fingers on the ball, the pointer can be moved. Since the whole device is not moved, a track ball requires less space than a mouse. A track ball comes in various shapes like a ball, a button, or a square.

Scanner

Scanner is an input device, which works more like a photocopy machine. It is used when some information is available on paper and it is to be transferred to the hard disk of the computer for further manipulation. Scanner captures images from the source which are then converted into a digital form that can be stored on the disk. These images can be edited before they are printed.

Digitizer

Digitizer is an input device which converts analog information into digital form. Digitizer can convert a signal from the television or camera into a series of numbers that could be stored in a computer. They can be used by the computer to create a picture of whatever the camera had been pointed at. Digitizer is also known as Tablet or Graphics Tablet as it converts graphics and pictorial data into binary inputs. A graphic tablet as digitizer is used for fine works of drawing and image manipulation applications.

Microphone

Microphone is an input device to input sound that is then stored in a digital form. The microphone is used for various applications such as adding sound to a multimedia presentation or for mixing music.

Magnetic Ink Card Reader (MICR)

MICR input device is generally used in banks as there are large number of cheques to be processed every day. The bank's code number and cheque number are printed on the cheques with a special type of ink that contains particles of magnetic material that are machine readable. This reading process is called Magnetic Ink Character Recognition (MICR). The main advantages of MICR are that it is fast and less error prone.

Optical Character Reader (OCR)

OCR is an input device used to read a printed text. OCR scans the text optically, character by character, converts them into a machine-readable code, and stores the text on the system memory.

Bar Code Readers

Bar Code Reader is a device used for reading bar coded data (data in the form of light and dark lines). Bar coded data is generally used in labelling goods, numbering the books, etc. It may be a handheld scanner or may be embedded in a stationary scanner. Bar Code Reader scans a bar code image, converts it into an alphanumeric value, which is then fed to the computer that the bar code reader is connected to.

Optical Mark Reader (OMR)

OMR is a special type of optical scanner used to recognize the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked. It is specially used for checking the answer sheets of examinations having multiple choice Questions.

Output Devices:

Output devices are used to display or present data processed by the computer to the user or other systems.

- Monitor: Displays graphics and text
- Speakers: Plays audio
- Printer: Prints documents and images
- Projector: Displays presentations and videos
- Headphones: Plays audio
- LED/LCD Display: Displays text and graphics
- Plotters: Prints large-format documents
- 3D Printer: Creates physical objects
- Braille Display: Displays text in Braille
- HDMI Output: Sends video and audio to external devices

Monitors

Monitors, commonly called as Visual Display Unit (VDU), are the main output device of a computer. It forms images from tiny dots, called pixels that are arranged in a rectangular form. The sharpness of the image depends upon the number of pixels.

There are two kinds of viewing screen used for monitors.

Cathode-Ray Tube (CRT)

Flat-Panel Display

Printers

Printer is an output device, which is used to print information on paper. There are two types of printers: Impact Printers and Non-Impact Printers

Impact Printers

Impact printers print the characters by striking them on the ribbon, which is then pressed on the paper. 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.

Non-impact Printers

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. Faster than impact printers, they are not noisy, High quality, Supports many fonts and different character size. Two types of non-impact printer are their Laser Printers, Inkjet Printers

Computer speaker

A computer speaker is an output device used to produce sound from a computer system. It converts digital audio signals from the computer into audible sound, allowing users to hear music, videos, games, notifications, or any other audio content generated by the computer.

Software

Software is a set of programs, designed to perform a well-defined function. A program is a sequence of instructions designed to solve a particular problem. There are two types of software

- System Software
- Application Software

System Software

The system software is a collection of programs designed to operate, control, and extend the processing capabilities of the computer itself. System software is generally prepared by the computer manufacturers. Some examples of system software are Operating System, Compilers, Interpreter, Assemblers, etc.

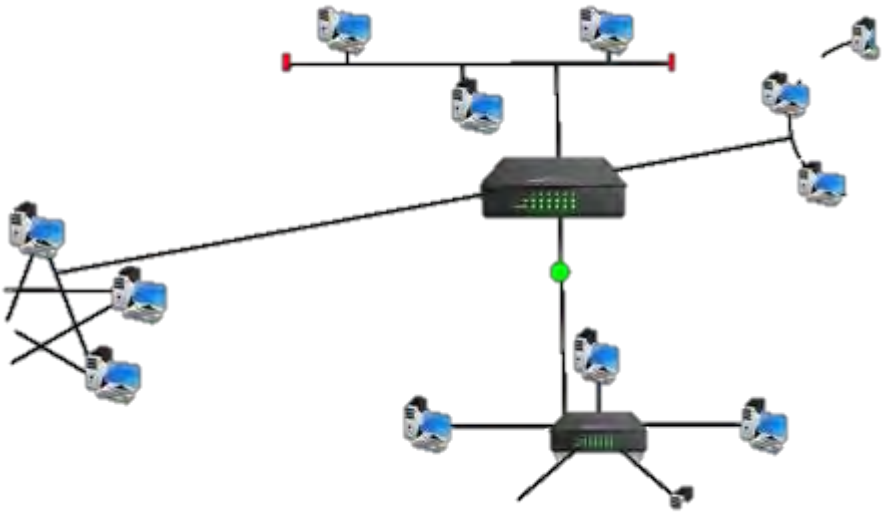
Application Software

Application software products are designed to satisfy a particular need of a particular environment. All software applications prepared in the computer lab can come under the category of Application software. Application software may consist of a single program, such as Microsoft's notepad for writing and editing a simple text. It may also consist of a collection of programs, often called a software package, which work together to accomplish a task, such as a spreadsheet package. Examples of Application software are Payroll Software. Student Record

Software, Inventory Management Software, Income Tax Software, Railways Reservation Software, Microsoft Office Suite Software, Microsoft Office etc.

Networking

A computer network is a system in which multiple computers are connected to each other to share information and resources.



Characteristics of a Computer Network

Share resources from one computer to another. Create files and store them in one computer, access those files from the other computer(s) connected over the network. Connect a printer, scanner, or a fax machine to one computer within the network and let other computers of the network use the machines available over the network.

Following is the list of hardware's required to set up a computer network.

- Network Cables
- Distributors
- Routers
- Internal Network Cards
- External Network Cards

Network Cables

Network cables are used to connect computers. The most commonly used cable is Category 5 cable RJ-45.

Distributors

A computer can be connected to another one via a serial port but if we need to connect many computers to produce a network, this serial connection will not work.

Router

A router is a type of device which acts as the central point among computers and other devices that are a part of the network. It is equipped with holes called ports. Computers and other devices are connected to a router using network cables. Now-a-days router comes in wireless modes using which computers can be connected without any physical cable.

Network Card

Network card is a necessary component of a computer without which a computer cannot be connected over a network. It is also known as the network adapter or Network Interface Card (NIC). Most branded computers have network card pre-installed. Network cards are of two types:

Internal and External Network Cards.

Universal Serial Bus (USB)

USB card is easy to use and connects via USB port. Computers automatically

detect USB card and can install the drivers required to support the USB network card automatically.

Operating System

The Operating System is a program with the following features:

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 overall 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.

Objectives of Operating System

The objectives of the operating system are -

- To make the computer system convenient to use in an efficient manner.
- To hide the details of the hardware resources from the users.
- To provide users a convenient interface to use the computer system.
- To act as an intermediary between the hardware and its users, making it easier for the users to access and use other resources.
- To manage the resources of a computer system. To keep track of who is using which resource, granting resource requests, and mediating conflicting requests from different programs and users.
- To provide efficient and fair sharing of resources among users and programs.

Characteristics of Operating System

- Memory Management - Keeps track of the primary memory, i.e. what part of it is in use by whom, what part is not in use, etc. and allocates the memory when a process or program requests it.
- Processor Management - Allocates the processor (CPU) to a process and deal locates the processor when it is no longer required.

- Device Management - Keeps track of all the devices. This is also called I/O controller that decides which process gets the device, when, and for how much time.
- File Management - Allocates and de-allocates the resources and decides who gets the resources.
- Security - Prevents unauthorized access to programs and data by means of passwords and other similar techniques.
- Job Accounting - Keeps track of time and resources used by various jobs and/or users.
- Control Over System Performance - Records delays between the request for a service and from the system.
- Interaction with the Operators - Interaction may take place via the console of the computer in the form of instructions. The Operating System acknowledges the same, does the corresponding action, and informs the operation by a display screen.
- Error-detecting Aids - Production of dumps, traces, error messages, and other debugging and error-detecting methods.
- Coordination between Other Software and Users - Coordination and assignment of compilers, interpreters, assemblers, and other software to the various users of the computer systems.

Internet

It is a worldwide/global system of interconnected computer networks. It uses the standard Internet Protocol (TCP/IP). Every computer in Internet is identified by a unique IP address. IP Address is a unique set of numbers (such as 110.22.33.114) which identifies a computer's location.

A special computer DNS (Domain Name Server) is used to provide a name to the IP Address so that the user can locate a computer by a name. For example, a DNS server will resolve anamehttp://www.tutorialspoint.com to a particular IP address to uniquely identify the computer on which this website is hosted.

Intranet

Intranet is the system in which multiple PCs are connected to each other. PCs in intranet are not available to the world outside the intranet. Usually, each organization has its own Intranet network and members/employees of that organization can access the computers in their intranet.

Each computer in Intranet is also identified by an IP Address which is unique among the computers in that Intranet.

Similarities between Internet and Intranet

- Intranet uses the internet protocols such as TCP/IP and FTP.
- Intranet sites are accessible via the web browser in a similar way as websites in the internet. However, only members of Intranet network can access intranet hosted sites.
- In Intranet, own instant messengers can be used as similar to yahoo messenger/gtalk over the internet.
- Internet is general to PCs all over the world whereas Intranet is specific to few PCs.
- Internet provides a wider and better access to websites to a large population, whereas Intranet is restricted.
- Internet is not as safe as Intranet. Intranet can be safely privatized as per the need.

Summary:

We can learn about hardware (like CPUs, RAM, and storage), software (operating systems and applications), networking basics, and databases. We also get familiar with programming concepts and data security. This foundation has also help you understand how computers work, troubleshoot issues, and make informed tech decisions for your business.

Check your Understanding:

Question: 1

A computer program that converts assembly language to machine language is

a) Compile
b) Interpreter
c) Assembler
d) Comparator

Question: 2

Which is a device that changes information into digital form?

a) Modem
b) Digitizer
c) Mouse
d) Light pen

Question: 3

Which memory stores the values of variables?

a) SRAM
b) ROM
c) RAM
d) PROM

Question: 4

Computer size was very large in

a) First generation
b) Second generation
c) Third generation
d) Fourth generation

Question: 5

A device used to bring information into a computer is

a) ALU
b) Input device
c) Control unit
d) Output device

Question: 6

The period of second-generation computer was started from

a) 1946-1958
b) 1940-1960
c) 1959-1965
d) 1957-1964

Question: 7

Which initiates the loading of the operating system?

a) RAM
b) Hard disk
c) ROM
d) Pen Drive

Question: 8

What is the full form of POST?

a) Power On Start Test
b) Power On Self-Test
c) Push On Self-Test
d) Pulse Oriented Self-Test

Question: 9

The basic operations performed by a computer are

a) Arithmetic operation
b) Storage and relative
c) Logical operation
d) All the above

Question: 10

Which is not application software?

a) Windows NT
b) Page Maker
c) WinWord XP
d) Photoshop

Chapter 2: Operating System Windows 10

Introduction

Windows 10 is a widely acclaimed operating system developed by Microsoft and officially released on July 29, 2015. It marked a significant evolution in the Windows operating system series by combining the best features of its predecessors while introducing innovative functionalities designed for modern users.

About Windows 10

Windows 10 is an operating system developed by Microsoft and was first released on July 29, 2015. It was designed to work across a wide range of devices, including desktops, laptops, tablets, and smartphones.

Key Features Windows 10:

- Start Menu: The Start Menu was brought back in Windows 10 after being removed in Windows 8. It combines the traditional Start Menu with the Live Tiles from Windows 8.
- Cortana: Windows 10 introduced Cortana, a digital assistant that helps with tasks like setting reminders, searching the web, and managing calendars.
- Microsoft Edge: The web browser Microsoft Edge replaced Internet Explorer. It is faster, more secure, and includes features like reading mode and Cortana integration.
- Virtual Desktops: Users can create multiple virtual desktops to better organize their workspace and switch between tasks more efficiently.
- Action Center: This feature provides notifications and quick access to important settings such as Wi-Fi, Bluetooth, and more.
- Windows Update: Windows 10 features automatic updates to keep the system secure and up-to-date with new features and patches.
- DirectX 12: This version of DirectX is designed to improve gaming performance and enhance graphics processing.
- Security Features: Features like Windows Defender, Windows Hello (biometric security), and BitLocker provide added security.
- Compatibility: Windows 10 was built to run a wide variety of applications and software from previous versions of Windows, making it highly compatible.
- Windows Store: The Microsoft Store allows users to download apps, games, music, and movies from a central location.

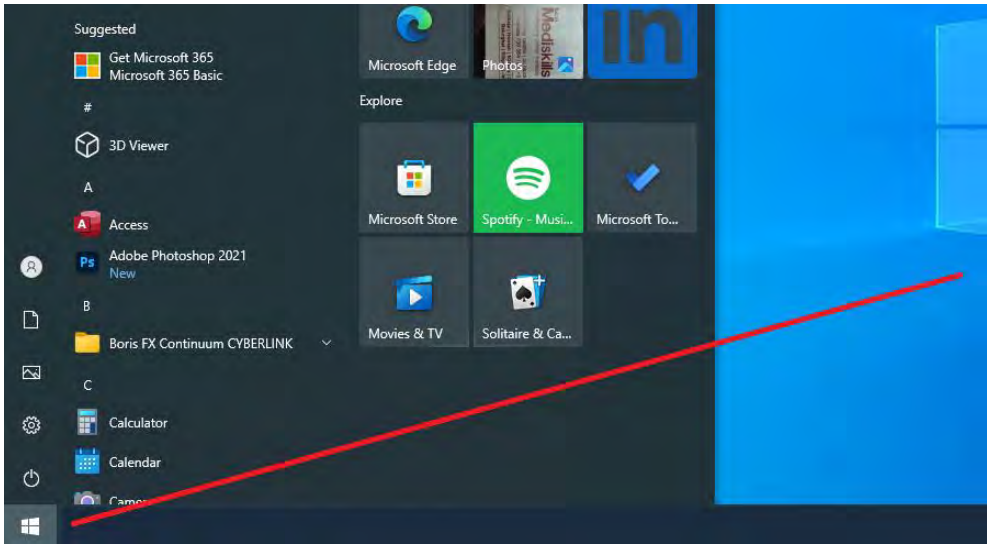
Editions of Windows 10:

- Windows 10 Home: Aimed at consumers, this edition provides basic functionality.
- Windows 10 Pro: Includes additional features for business users, such as BitLocker, Hyper-V, and the ability to join a domain.
- Windows 10 Enterprise: Offers advanced features for IT professionals in large organizations.
- Windows 10 Education: Similar to Enterprise but for educational institutions.
- Windows 10 Mobile: A version designed for smartphones (though largely phased out).

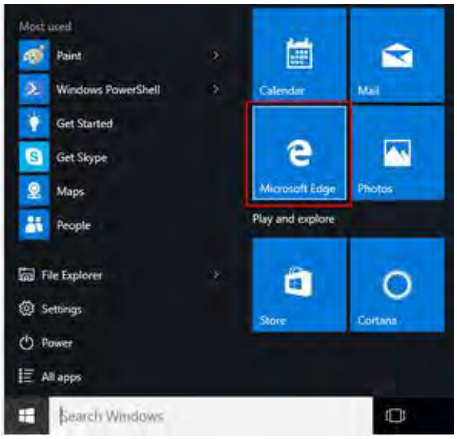
An operating system manages all of the hardware and software on a computer. Without it, the computer would be useless. To learn more about how operating systems work, check out Understanding Operating Systems and Getting to Know the OS in our Computer Basics tutorial.

Start menu

Windows 8 uses the Start screen to launch applications, Windows 10 has reintroduced a more traditional Start menu. It's also been expanded to make it easier to find important apps.



Microsoft Edge



This new browser is designed to give Windows users a better experience on the Web. It's faster, more secure, and includes a lot of new features. Microsoft Edge is meant to replace Internet Explorer as your default web browser, but you'll still be able to use another browser if you prefer.

Cortana

Similar to Google Now, you can talk to this virtual assistant with your computer's microphone. Cortana can answer questions like what's the weather like today.

Multiple desktops and Task view

Instead of keeping everything open on the same desktop, you can move some of your windows to a virtual desktop to get them out of the way. And the new Task view feature makes it easy to manage all of your open windows.

Action Center

The new Action Centre is pretty different from previous versions of Windows. For example, it's been expanded to let you access frequently used settings, such as Wi-Fi connectivity and tablet mode. It's also where you'll see important notifications, so if your computer receives an update, you'll get a notification about it here.

Tablet mode

Unlike Windows 8, Windows 10 makes a clear distinction between desktops and tablets. If you're using a keyboard and mouse with Windows 10, you'll be in desktop mode by default. If your computer also has a touchscreen, you can go into tablet mode at any time. Tablet users can also switch back to desktop mode.

Getting started with Windows 10

Navigating the desktop

Once you've signed in, the first thing you'll see is the desktop. You can think of the desktop as the main workspace for your computer. From here, you can view and manage your files, open applications, access the Internet, and much more.

Opening applications

You'll use the Start menu to open programs on your computer, just like with previous versions of Windows. To do this, click the Start button in the bottom-left corner, then choose the desired application. If you don't see the one you want, you can scroll to see a full list of applications. In the example below, we're opening One Note.

Working with files

You'll use the File Explorer to manage your files and folders. To open File Explorer, click the File Explorer icon on the taskbar or double-click any folder on your desktop.

Searching for files and apps

To search for something on your computer—like a specific file or application—click the Search Box, then start typing. In the example below, we're searching for a Microsoft Word document.

Adjusting your settings

You'll use the Settings app to change the most important settings on your computer, like your network and display options. To open the app, click the Start menu, then select Settings. You can also use the Control Panel to adjust your settings, just like in earlier versions of Windows. However, there are some options that can only be accessed from the Settings app, like adding a new user.

Shutting down your computer

When you're done using your computer, it's important to shut it down properly. To do this, click the Start button, then choose Power > Shut Down.

Tips for managing multiple windows

Windows 10 has several features that make it easier to multi-task and work with multiple windows at the same time.

Snap

Snap allows you to resize windows quickly, which is especially convenient when you want to see two windows

side by side. To do this, click and drag the desired window to the left or right until the cursor reaches the edge of the screen, then release the mouse. The window will snap into place. To unsnap a window, simply click and drag the window down.

Flip

You can use Flip to switch between open windows. To do this, press and hold the Alt key on your keyboard, then press the Tab key. Continue pressing the Tab key until the desired window is selected.

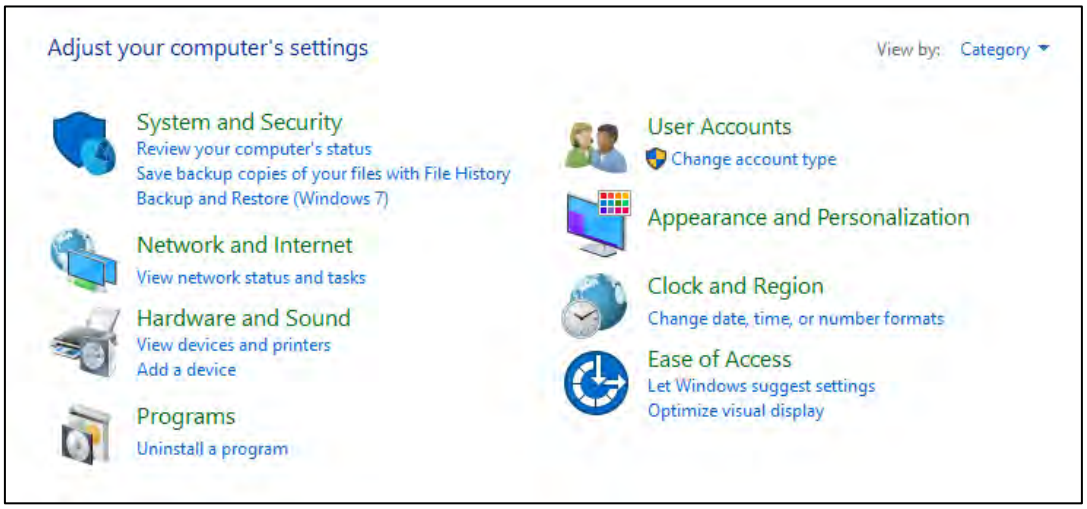
Task view

The Task view feature is similar to Flip, but it works a bit differently. To open Task view, click the Task view button near the bottom-left corner of the taskbar. Alternative, you can press Windows key+Tab on your keyboard. All of your open windows will appear, and you can click to choose any window you want.

Virtual desktops

Instead of keeping everything open on the same desktop, you can move some of your windows to a virtual desktop to get them out of the way. This feature wasn't available in previous versions of Windows, and it's especially helpful for managing a lot of windows at the same time. To create a new desktop, open Task view, then select New desktop near the bottom-right corner.

Once you've created multiple desktops, you can use Task view to switch between them. You can also move windows between desktops. To do this, open Task view, then click and drag a window to the desired desktop.



Summary:

Now, we can see in Windows 10 is a User-Friendly Interface, Performance and Speed, Regular Updates, Wide Compatibility and supports a vast range of software, from legacy Windows applications to modern UWP apps. Windows 10 offers a range of personalization options, from themes to customizable taskbars.

Check your understandings

Question: 1

Which of the following is not an operating system?

a) Windows
b) Linux
c) Oracle
d) DOS

Question: 2

When was the first operating system developed?

a) 1948
b) 1949
c) 1950
d) 1951

Question: 3

Which of the following is the extension of Notepad?

a) .txt
b) .xls
c) .ppt
d) .bmp

Question: 4

What is the full name of FAT?

a) File attribute table
b) File allocation table
c) Font attribute table
d) Format allocation table

Question: 5

What is the mean of the Booting in the operating system?

a) Restarting computer
b) Install the program
c) To scan
d) To turn off

Question: 6

When you delete a file in your computer, where does it go?

a) Recycle bin
b) Hard disk
c) Taskbar
d) None of these

Question: 7

Which of the following is a single-user operating system?

a) Windows
b) MAC
c) Ms-Dos
d) None of these

Question: 8

Which of the following is not application software?

a) Windows 7
b) WordPad
c) Photoshop
d) MS-excel

Question: 9

Which of the following windows does not have a start button?

a) Windows 7
b) Windows 8
c) Windows XP
d) None of these

Question: 10

What is Microsoft window?

a) Operating system
b) Graphics program
c) Word Processing
d) Database program

Chapter 3: Microsoft Word 2016

Introduction

Microsoft Word is one of the most widely used word processing applications in the world, developed by Microsoft as part of its Office suite. As a flagship product in Microsoft Office, Word offers an intuitive interface and a comprehensive set of features that cater to a wide range of users, including students, professionals, and businesses. With integrated tools for spell check, grammar suggestions, and templates, Word simplifies the process of creating polished and professional documents. The software also supports collaborative editing, allowing multiple users to work on a document simultaneously.

History

Microsoft Word 2016 is a word processing application that allows you to create a document, including letters, resumes, and more. Microsoft Word 2016 has some most important features, such as the Ribbon, Quick Access Toolbar, and Backstage view. Microsoft Word 2016 has a user-friendly interface and wide range of formatting options. Microsoft Word 2016 is similar to Microsoft Word 2013 and Microsoft Word 2010. If you've previously used either version, then Ms Word 2016 should feel familiar. But if you are new to Word or have more experience with older versions, you should first take some time to become familiar with the Ms Word 2016 interface.

Working with the Word environment

MS Word 2016 continues to use features like the Ribbon and the Quick Access Toolbar—where you will find commands to perform common tasks in Word—as well as Backstage view. The Ribbon contains multiple tabs, which you can find near the top of the Word window. Each tab contains several groups of related commands. For example, the Font group on the Home tab contains commands for formatting text in your document.

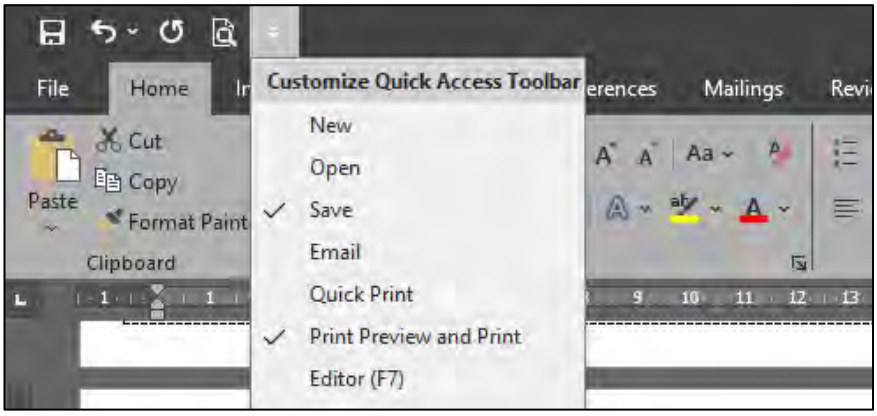
The Ribbon - Word uses a tabbed Ribbon system instead of traditional menus. The Ribbon contains multiple tabs, which you can find near the top of the Word window.

Each tab contains several groups of related commands. For example, the Font group on the Home tab contains commands for formatting text in your document. Some groups also have a small arrow in the bottom-right corner that you can click for even more options. If you find that the Ribbon takes up too much screen space, you can

hide it. To do this, click the Ribbon Display Options arrow in the upper-right corner of the Ribbon, then select the desired option from the drop-down menu:

The Quick Access Toolbar

Located just above the Ribbon, the Quick Access Toolbar lets you access common commands no matter which tab is selected. By default, it shows the Save, Undo, and Redo commands, but you can add other commands depending on your needs.



Backstage view

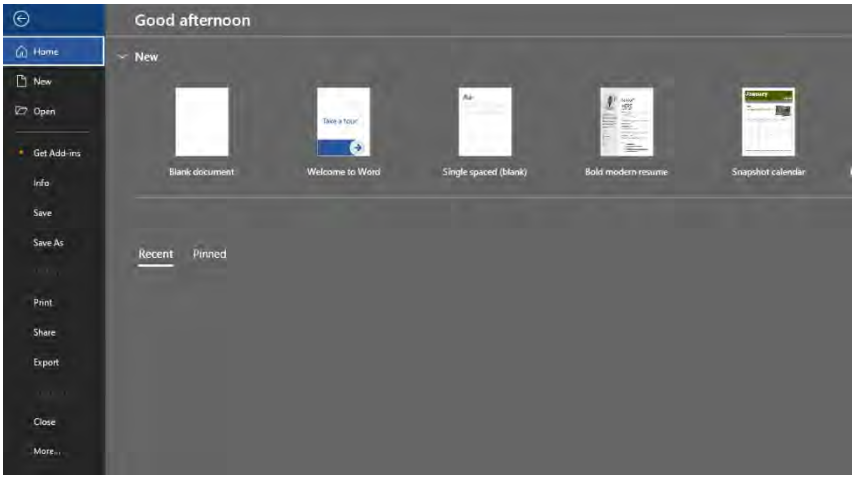
Backstage view gives you various options for saving, opening a file, printing, and sharing your document. To access Backstage view, click the File tab on the Ribbon.

In Microsoft Word 2016, the ribbon is organized into tabs, each of which contains a collection of tools to help you perform specific tasks. Below is a detailed overview of each tab and the key tools you can find within them.

In Microsoft Word 2016, there are 9 main tabs on the ribbon, each with its own set of tools and commands. Here's a breakdown of the main tabs:

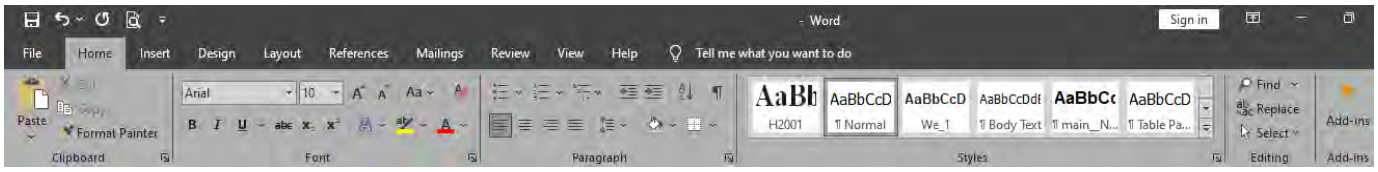
1. File Tab (Backstage View)

- New: Create a new document.
- Open: Open an existing document from your computer or cloud storage.
- Save: Save the current document.
- Save As: Save the document with a new name or location.
- Print: Open the print dialog to print the document.
- Share: Share the document via email, OneDrive, or other options.
- Export: Export the document to different formats (PDF, XPS).
- Close: Close the current document.
- Account: Manage your Microsoft account, product information, and updates.
- Options: Access Word settings for customization and preferences.



2. Home Tab

This tab is the most frequently used and contains the basic tools for text formatting and paragraph adjustments.



Clipboard:

- Cut: Remove selected text or object.
- Copy: Copy the selected text or object.
- Paste: Paste the contents of the clipboard into your document.
- Format Painter: Copy the formatting from selected text and apply it elsewhere.

Font:

- Font Style: Change font type (e.g., Arial, Times New Roman).
- Font Size: Adjust the font size.
- Bold: Make text bold.
- Italic: Make text italicized.
- Underline: Underline the selected text.
- Strikethrough: Cross out text with a line.
- Subscript/Superscript: Adjust the text position (subscript: below, superscript: above).
- Text Highlight Color: Highlight text with color.
- Font Color: Change text color.
- Text Effects: Apply effects like shadow, reflection, glow, etc.

Paragraph:

- Align Left, Center, Align Right, justify: Adjust the alignment of the text.
- Line and Paragraph Spacing: Adjust space between lines or paragraphs.
- Shading: Apply background color to paragraphs.
- Borders: Add or remove borders from paragraphs.
- Bullets and Numbering: Create bulleted or numbered lists.
- Increase/Decrease Indent: Adjust paragraph indentation.
- Sort: Sort text alphabetically or numerically.
- Find: Open the "Find" dialog to search for specific text.
- Replace: Replace specific text with another.

Styles:

- Quick Styles: Apply predefined text styles (e.g., Heading 1, Heading 2, Normal).
- Change Styles: Modify document styles or create custom styles.

Editing:

- Find: Search for specific text.
- Replace: Search and replace text.
- Select: Select all or specific parts of the document.

3. Insert Tab

The Insert tab provides tools for adding various elements to your document.

Pages:

- Cover Page: Insert a predesigned cover page.
- Blank Page: Insert a blank page at the current cursor position.
- Page Break: Start a new page at the cursor's location.
- Tables: Insert a table, draw a table, or use a predefined table design.

Illustrations:

- Pictures: Insert images from your device or online.
- Shapes: Insert predefined shapes (e.g., circles, arrows, lines).
- Icons: Add vector-based icons.
- SmartArt: Insert diagrams for visualizing information.
- Chart: Insert a chart to display data.
- Screenshot: Take a screenshot of another open window.

Links:

- Hyperlink: Insert or edit hyperlinks.
- Bookmark: Add a bookmark to a specific place in the document.
- Cross-reference: Insert references to other parts of the document.

Text:

- Text Box: Insert a text box.
- Quick Parts: Insert reusable content such as headers, footers, and autotext.
- WordArt: Add decorative text.
- Signature Line: Insert a line for a signature.
- Date & Time: Insert the current date or time.
- Object: Insert an embedded file or object.

Symbols: Insert special characters, symbols, or equation formulas.

4. Design Tab

The Design tab provides tools to control the visual layout of your document.

Document Formatting:

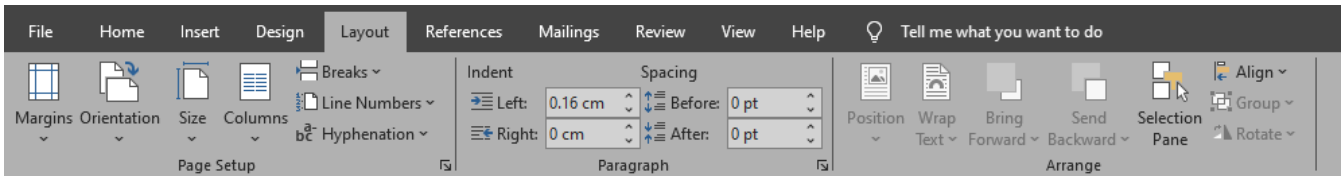
- Themes: Change the overall look of the document with predefined themes.
- Colors: Change the color scheme of the document.
- Fonts: Choose a font style for the entire document.
- Effects: Apply visual effects such as shadows, reflections, etc.

Page Background:

- Watermark: Insert a watermark to appear behind text (e.g., "Confidential").
- Page Color: Change the background color of the page.
- Borders: Add or remove page borders.
- Page Color: Apply color to the background of the page.

5. Layout Tab

The Layout tab provides tools for adjusting the layout of your document, such as margins, spacing, and orientation.



Page Setup:

- Margins: Set custom margins or choose from predefined options.
- Orientation: Switch between Portrait and Landscape mode.
- Size: Set page size (e.g., A4, Letter).
- Columns: Create multicolumn layouts.

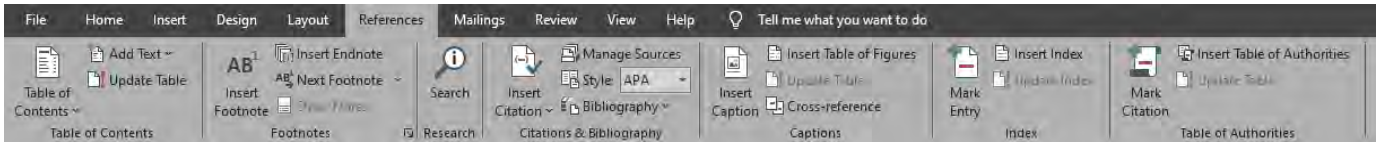
Paragraph:

- Indentation: Adjust the left or right indent.
- Spacing: Set spacing before or after paragraphs.

Arrange:

- Position: Adjust the position of objects on the page (e.g., text wrapping around an image).
- Bring Forward / Send Backward: Adjust the stacking order of objects.
- Group: Group multiple objects together.

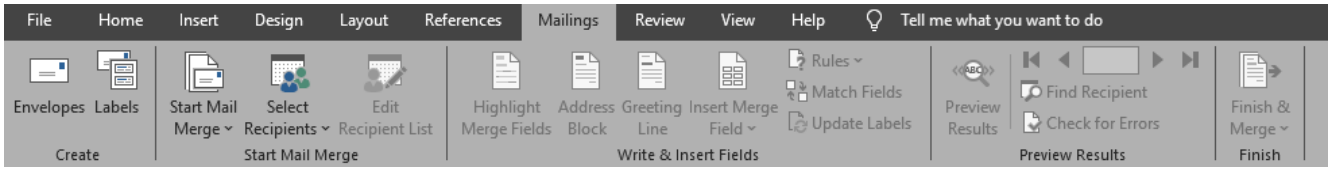
6. References Tab



The References tab is mainly used for academic or research papers.

- Table of Contents: Automatically create a table of contents.
- Footnotes: Insert footnotes or endnotes.
- Citations & Bibliography: Manage references, insert citations, and generate a bibliography.
- Captions: Add captions to images, tables, and figures.
- Index: Insert an index based on your document's content.
- Table of Authorities: Insert a legal style table of authorities.

7. Mailings Tab



The Mailings tab is used for creating and managing mail merges.

Create:

- Start Mail Merge: Create letters, envelopes, labels, etc.
- Select Recipients: Choose the recipients for your mail merge.
- Insert Merge Fields: Insert fields from your data source into your document.

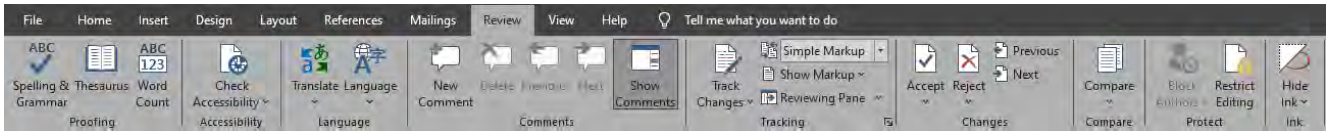
Write & Insert Fields:

- Address Block: Insert an address block into a letter.
- Greeting Line: Insert a personalized greeting.

Preview Results: View how the merged document will look.

Finish: Complete the mail merge and print or save the documents.

8. Review



This tab provides tools for reviewing and editing your document, including spelling and grammar checking, adding comments, tracking changes, comparing documents, and protecting documents.

The Review tab includes tools for reviewing and editing documents.

Proofing:

- Spelling & Grammar: Check for spelling and grammar mistakes.
- Thesaurus: Find synonyms for selected words.
- Word Count: Count words, characters, and other statistics.

Comments:

- New Comment: Add a comment to the document.
- Delete: Delete a comment.
- Previous/Next: Navigate through comments.

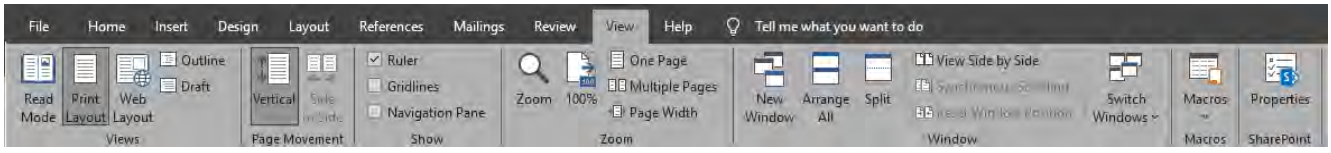
Tracking:

- Track Changes: Turn on Track Changes to mark edits.
- Accept/Reject: Accept or reject changes made to the document.

Changes:

- Compare: Compare two versions of a document.
- Protect: Restrict editing permissions on the document.

9. View Tab



The View tab provides tools for adjusting the layout and view settings of your document.

Views:

- Print Layout: View the document as it will appear when printed.
- Web Layout: View the document as a web page.
- Outline: View the document as an outline.
- Draft: View the document in draft mode.

Show:

- Ruler: Display or hide the ruler for measuring and alignment.
- Gridlines: Display or hide gridlines for positioning objects.

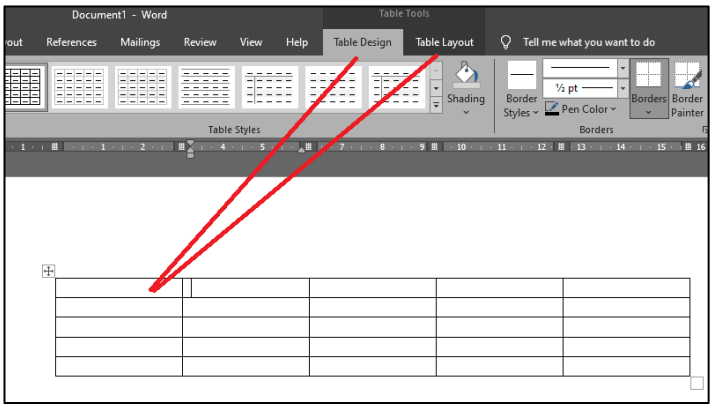
Zoom:

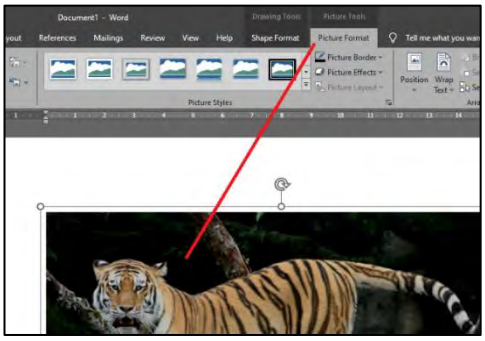
- Zoom: Change the zoom level for better viewing.
- One Page / Multiple Pages: View one or multiple pages at once.

Additional Tabs:

There are also contextual tabs that appear when you perform certain actions or select certain objects (such as tables, pictures, charts, etc.). These tabs provide specific tools related to that object. For example:

- Table Tools: Appears when you select a table, with tools for table design and layout.
- Picture Tools: Appears when you select a picture, with tools for adjusting the image and applying effects.
- Drawing Tools: Appears when you select a shape or drawing.





Open Microsoft Word & Start Typing

Open Microsoft Word by clicking on the Word icon in your Start menu or taskbar.

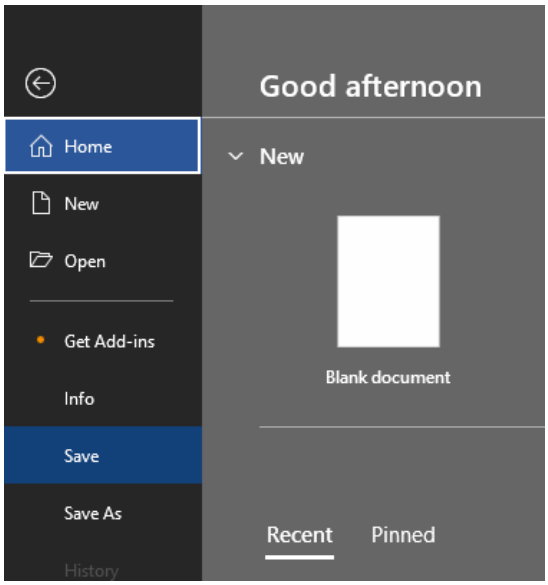
Start typing to create your document. Word automatically adjusts text formatting as you type, but you can customize the style using the Home tab for font styles, sizes, and alignments.

Save Your Document Regularly

Press Ctrl+S to Save your document regularly.

Save As: If you want to save the document with a new name or format, click on File > Save As.

AutoSave: If you're using OneDrive or SharePoint, you can enable AutoSave for continuous saving.



Use Keyboard Shortcuts

- Ctrl+N: Create a new document.
- Ctrl+P: Open the Print menu.
- Ctrl+Z: Undo last action.
- Ctrl+Y: Redo last action.
- Ctrl+F: Open the Find dialog.
- Ctrl+H: Open the Replace dialog.
- Ctrl+B: Apply or remove bold.
- Ctrl+I: Apply or remove italics.
- Ctrl+U: Apply or remove underline.

Summary of Microsoft Word 2016

We have highlighted the key points for getting started with Microsoft Word and optimizing its features for efficient document creation. Open Microsoft Word and start typing and formatting text. Insert images, tables, and other multimedia.

Check your understanding

Question 1

Which is not shown under Microsoft Word toolbar?

a) Italic
b) Font
c) Bold
d) Magic tool

Question 2

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

a) Margins
b) Clipart
c) Footer
d) Header

Question 3

Select all the text in MS Word document by

a) Ctrl + S
b) Ctrl + A
c) Ctrl + V
d) Ctrl + 1

Question 4

Ctrl + I command is used for what purpose?

a) Save Document
b) Left Indent
c) Italic
d) Close Document

Question 5

Which of the following tools can be used in MS Word?

a) Hyperlinks
b) Bullets
c) Highlight
d) All of the above

Question 6

What is the function of the spelling and grammar tool?

a) Corrects Spelling Errors as You Type
b) Indicates Grammatical Errors
c) Identifies Words with Capitalization Problems
d) All Of Above

Question 7

Formatting is performed on

a) Table
b) Text
c) Menu

Question 8

What is landscape?

a) Page Orientation
b) Paper Size
c) A Font Style
d) Page Layout

Question 9

Shortcut key for “Subscript” is?

a) Ctrl + Shift + –
b) Ctrl + Shift + =
c) Ctrl + =
d) Ctrl + –

Question 10

What is the default file extension for all MS Word documents?

a) .word
b) .docx
c) .docs

Chapter 4: Microsoft Excel 2016

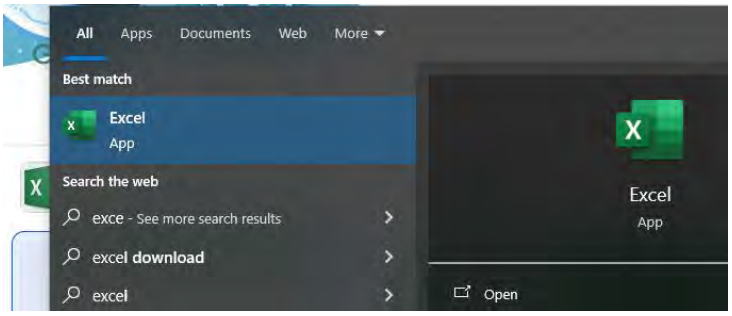
Introduction

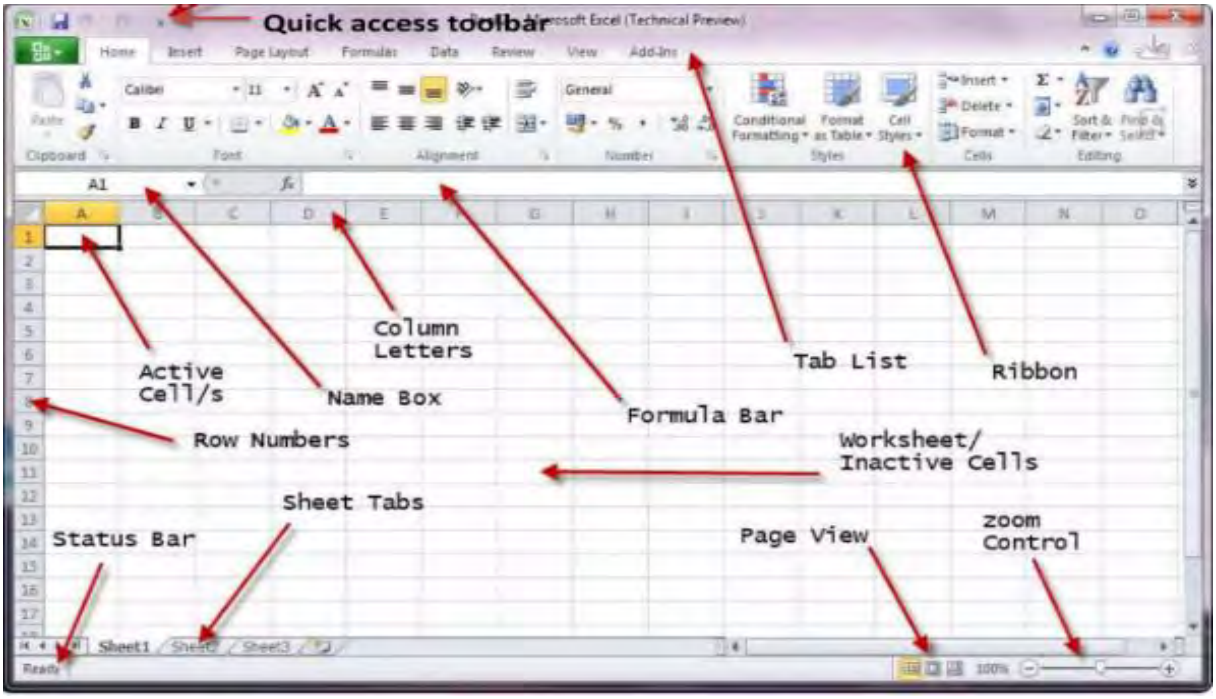
Learning Microsoft Excel 2016 effectively can help you harness its powerful features for managing data, performing calculations, creating charts, and analysing information. Below are key learning utilities and tools within Excel 2016, along with helpful tips to get started and improve your skills.

- Practice Regularly: The more you use Excel, the more comfortable you will become. Try to use Excel to solve real-world problems like budgeting, data analysis, or project planning.
- Start with Templates: Use Excel's built-in templates to get familiar with common document types and their formatting.
- Experiment with Functions: Start experimenting with simple functions like SUM, AVERAGE, and IF to build your understanding of how Excel works.
- Use Conditional Formatting and Charts: Make your data visually appealing and easier to interpret.
- Explore Advanced Features: Once you're comfortable with the basics, explore more advanced tools like PivotTables, Power Query, and Macros.

Spreadsheet

Microsoft Excel 2016 is a powerful spreadsheet program developed by Microsoft. It is a part of the Microsoft Office suite of productivity tools and is widely used for organizing, analyzing, and visualizing data. Excel 2016 provides a range of features and functions that enable users to perform complex calculations, create charts and graphs, manage data. We can prepare a budget, forecast sales data, create profit and loss statements etc. on an electronic spreadsheet faster and more accurately.



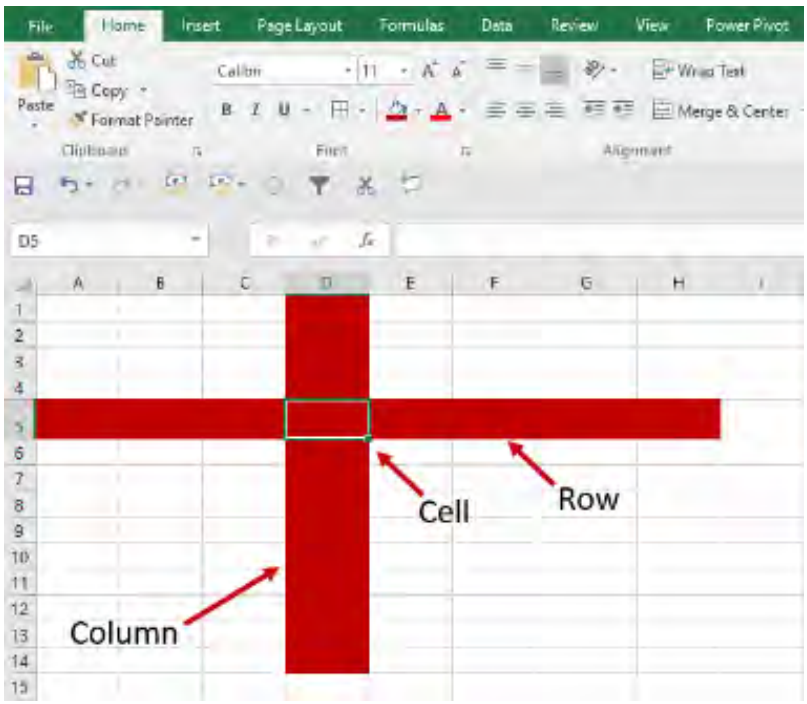


Column and Row:

The horizontal bar across the top of the worksheet area is filled with letters, beginning with A. Each letter represents a column while the vertical bar on the left side of the worksheet filled with numbers refers to rows.

Cell

The intersection between a column and a row is referred to as a cell. A cell is similar to a box that can be used to store pieces of information. Each piece of information could be a word or group of words, number or a mathematical formula.

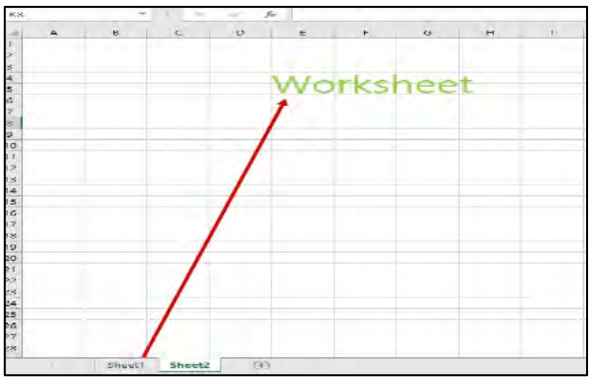


Cell Address

Cell has its own address which the identifies the location of each cell. This address is used in formula for referencing the cell of the Worksheet. The address of a cell is defined by the letter of the column in which it is located and the Number of the row. For example, in column B, row 5 would be referred to as B5.

Workbooks and Worksheet

An Excel workbook is a file also known as spreadsheet. It serves as a container for organizing and storing data in a structured manner. A workbook consists of one or more worksheets, which are individual tabs within the workbook where you can enter and manipulate data. At the bottom of the worksheet is a set of small Tabs that identify each sheet in the workbook.



The operators in Excel uses for formulas: Operator (Key) Function

= Begins all Excel functions and formulas

+ Addition

- Subtraction

* Multiplication

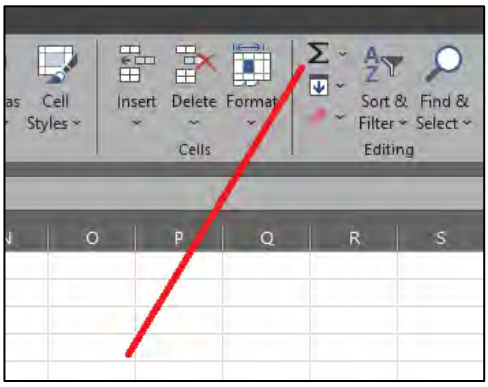
/ Division

AutoSum Function

The most common formula in Excel is SUM. We could create a formula i.e. =C6+D6+E6+F6+G6+H6. We have to type a lot, instead of, we can use the SUM function to do the same

Printing a Worksheet

To Print, Preview and Modify Page Setup



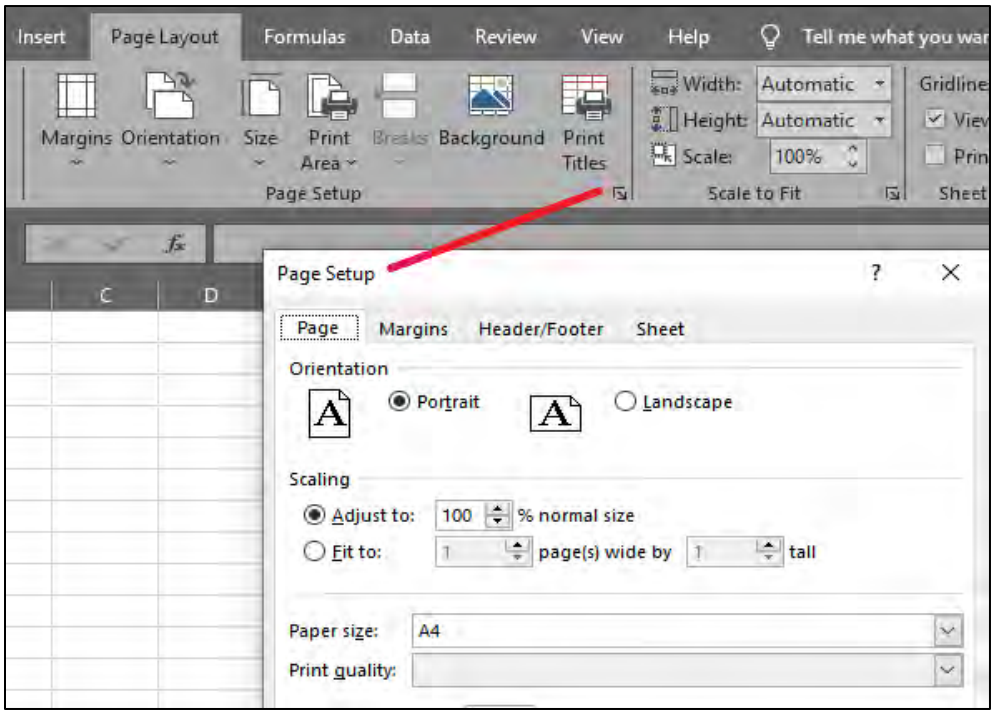
- Click on the File tab
- Click on Print

Page Setup

You can setup the following options under page setup

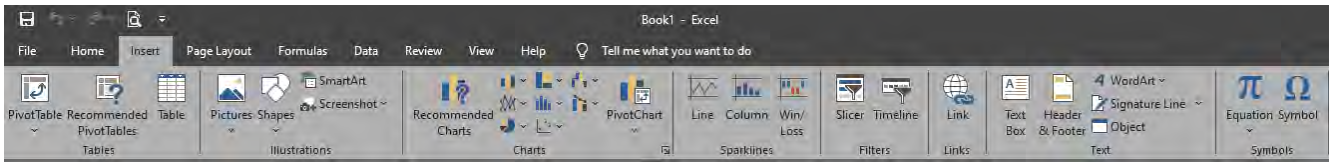
Page

- Change the Orientation
- Adjust the Scaling
- Change the Paper Size



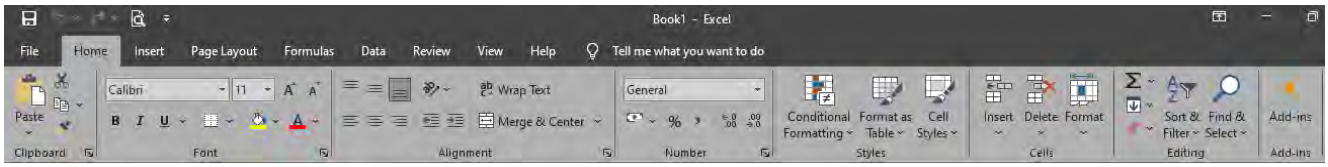
Margins

- Change the margins
- Center on the page either horizontally, vertically or select both



Header/Footer:

On the Insert tab, in the Text group, click Header & Footer. Excel displays the worksheet in Page Layout view. To add or edit a header or footer, click the left, center, or right header or footer text box at the top or the bottom of the worksheet page (under Header, or above Footer). Type the new header or footer text.



Home Tab:- Home tab contains the most frequently used options such as cut-copy-paste, font formatting, alignment, Number, Conditional formatting, etc.

Clipboard: – This group contains frequently used commands i.e. Cut, Copy, Paste and Format painter. Clipboard option allows us to collect text and graphic items and paste it.

Font: – This option helps to change the font style and font-size. We can make it bold, italic and underline. Also, this group contains border styles, fill color, font color.

Alignment: – This option helps to change the alignment of cell's text to the right, left and middle. we can subject the text to top, bottom, and middle alignment. We can use wrap text option also.

Number: – This option helps to change the number formatting into General, Percentage, Currency, Date, Time, Fraction etc. We can increase and decrease the decimal point and also convert the number into accounting number.

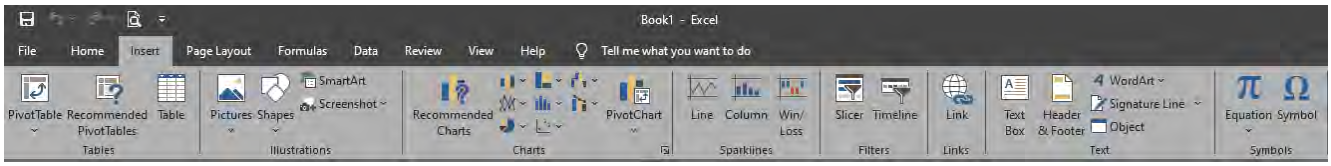
Styles: – This option helps for conditional Formatting, Format as Table and Cell Styles. Format as table is having readymade table format and Cell styles feature different types of built-in styles that are a combination of Font style, Font colour and Fill colour.

Cells: – This option helps to insert or delete cells, rows, columns and sheets. We can also adjust the height, width of cells or range. This option also helps to hide or unhide the range, protect the workbook, rename the sheet name, fill the tab colour, move or copy to sheets, lock the cells.

Editing: – This option helps to apply Auto Sum feature to return the total, Clear the format, content, comments and hyperlink. We can also apply sort and find option.

Insert Tab

We use Insert tab to insert the picture, charts, filter, hyperlink etc. We use this option to insert the objects in Excel. To open the insert tab, press shortcut keys Alt + N.



Tables: - This option helps us to insert the dynamic table, Pivot table and recommended table.

Illustration: - We use this option to insert the Pictures, Online Pictures, Shapes, SmartArt and Screenshot. It means if we want to insert any image, we can use Illustration feature.

Add-ins: - The Add-ins are the software components; that inserts enhances new features in the Microsoft Excel.

Charts: -Charts is very important and useful in Excel. In Excel we have different and good numbers of readymade chart options. Column, Bar, Radar, Line, Area, Combo, Pie and Bubbles chart.

Reports: -We use this option to create a better report on the basis of the decisions we take for business. It makes the report more interactive and decipherable.

Sparkline's: - Sparkline is a very tricky and useful option. It can visualize the trends in a single cell as charts.

Filters: - This option to filter data visually and filter dates interactively. We have 2 options: Slicers and Timeline. We use Slicer to make the fast and easier to filter tables, Pivot tables, Pivot Charts and cube functions. Timeline makes it faster and easier to select time periods in order to filter Pivot Tables, Pivot Charts and Cube function.

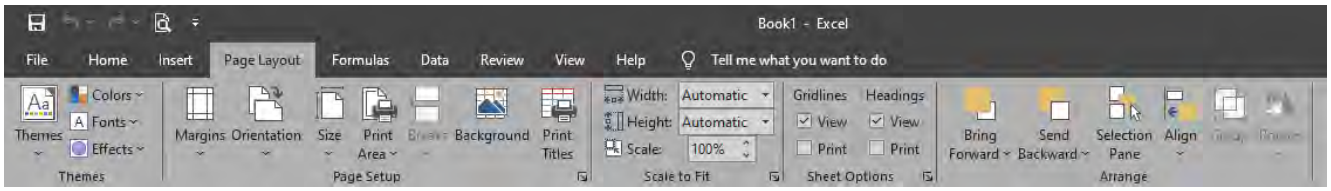
Text: - This option helps to insert the Text box, Header and Footer, Word art, Signature and objects. We use Header and Footer options to place the content on the top and bottom of the page. We can use word art makes the text stylish.

Symbols: - This option helps to insert the symbols and equation. We use equation for common mathematical equations. We use Symbols to insert the symbols which are not on the keyboard.

Page Layout

Page layout option control how the spreadsheet will look when printed. This includes options such as adjusting margins, orientation, scaling, headers and footers etc.

In the "Page Setup" group, we have various options to customize the page layout.



Margins:

This option helps to select predefined margin sizes or choose "Custom Margins" to set your own margin values.

Orientation:

This helps to use the "Orientation" buttons to switch between portrait (vertical) and landscape (horizontal) orientations.

Scaling:

The scaling of the printed content using the "Scale to Fit" options. On the "Sheet Options" button to show or hide certain elements when printing, such as gridlines, headings, and more.

Print Titles:

The "Print Titles" button use to define specific rows or columns that should appear on every printed page.

Breaks:

The "Breaks" button allows to insert manual page breaks or reset automatic page breaks.

Background:

This option helps to set a background image or color to the printed pages using the "Background" button.

Themes:

This option helps to apply predefined themes that you can apply to change the overall look of your spreadsheet when printed. Additionally, you can set headers and footers that will appear on each page of your printed spreadsheet.

Formulas and Functions.

There are two basic ways to perform calculations in Excel: [**Formulas and Functions]**

- Formulas

In Excel, a formula is an expression that operates on values in a range of cells or a cell. For example,

=A1+A2+A3, which finds the sum of the range of values from cell A1 to cell A3.

- Functions

Functions are predefined formulas in Excel. They eliminate laborious manual entry of formulas while giving them human-friendly names. For example: =SUM(A1:A3). The function sums all the values from A1 to A3.

Different elements in excel formula

- Constants - numbers or text values that you enter directly in a formula, like =2*3.
- Cell references - reference to a cell containing the value you want to use in your Excel formula, e.g.

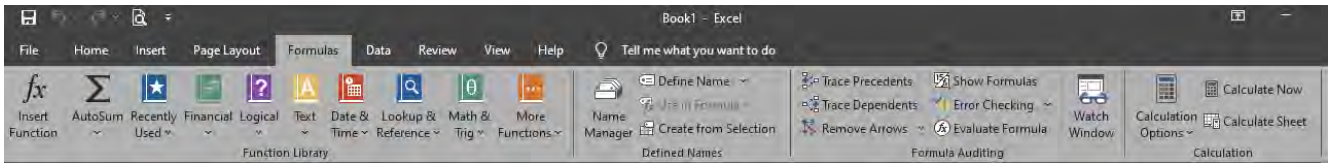
=SUM(A1, A2, B5).To refer to data in two or more contiguous cells, use a range reference like A1:A5. For example, to sum values in all cell between A1 and A5, inclusive, use this formula =SUM(A1:A5).

- Names - defined name for a cell range, constant, table, or function, for example =SUM(my_name).

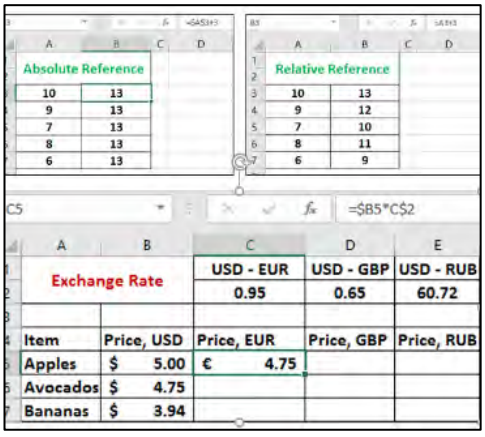
- Functions - predefined formulas in Excel that perform calculations using the values supplied in their arguments.
- Operators - special symbols that specify the type of operation or calculation to be performed.

Cell references

There are three types of cell references in Excel. Absolute (A1), relative (A1) and mixed ($A1 or A$1). All three of the above references refer to the same cell, and the dollar sign ($) is used only for one purpose - it tells Microsoft Excel whether to change or not to change cell references when the formula is moved or copied to other cells.



Absolute cell reference (A1) - the $ sign before the row and column coordinates makes a reference static, and lets you copy a formula without changing references.

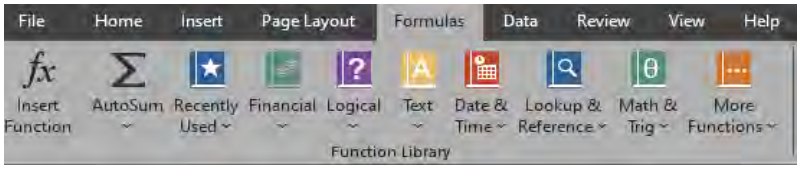


Relative cell reference (A1) - a cell reference with no $ sign changes based on relative position of rows and columns in a spreadsheet.

Mixed cell reference - can be of 2 types:

Absolute column and relative row ($A1) - the $ sign in front of the column letter locks the reference to the specified column, so the column never changes. The relative row reference, without the dollar sign, changes depending on the row to which the formula is copied.

Relative column and absolute row (A$1) - the row's reference locked by $ doesn't change, and the column's reference does.



Operators in Excel worksheet formulas

To tell Microsoft Excel what type of operation you want to perform in a formula, you use special symbols that are technically called operators. There exist 4 types of operators in Excel:

Arithmetic - to perform basic mathematical operations.

Comparison (logical) - to compare values.

Concatenation - to join text values into a single string.

Reference - to make ranges and separate arguments in Excel functions.

Using arithmetic operators in Excel formulas

These operators are used to perform basic mathematical operations such as addition, subtraction, multiplication, and division. For example, if you have an item price in cell A2 and VAT in cell B2, you can calculate the VAT amount by using the following percentage formula: =A2*B2

Operator Table

Operator	Meaning	Formula example
+ (plus sign)	Addition	=A2+B2
- (minus sign)	Subtraction Negation (reversing the sign)	=A2-B2 =-A2 (changes the sign of thevalue in A2)
* (asterisk)	Multiplication	=A2*B2
/ (forward slash)	Division	=A2/B2
% (percent sign)	Percentage	=A2*10% (returns 10% of thevalue in A2)
^ (caret)	Exponential (power of)	=A2^3 (raises the number in A2to the power of 3)

Comparison/ logical operators in Excel formulas

In Microsoft Excel formulas, comparison, or logical, operators are used to compare two values. The result of the comparison is always a logical value of TRUE or FALSE.

Comparison operator	Meaning	Formula example
=	Equal to	=A2=B2
<>	Not equal to	=A2<>B2
>	Greater than	=A2>B2
<	Less than	=A2<B2
>= <=	Greater than or equal to Less than or equal to	=A2>=B2 =A2<=B2

FORMULAS IN EXCEL

In Microsoft Excel 2016, formulas are essential for performing calculations, manipulating data, and analysing information. Here's a comprehensive guide to the most common formulas and functions in Excel 2016:

1. Basic Arithmetic Formulas

These are simple formulas that involve basic mathematical operations.

Addition: =A1 + B1

Adds the values in cells A1 and B1.

Subtraction: =A1 - B1

Subtracts the value in B1 from A1.

Multiplication: =A1 * B1

Multiplies the values in A1 and B1.

Division: =A1 / B1

Divides the value in A1 by the value in B1.

Exponentiation: =A1^B1

Raises the value in A1 to the power of B1.

2. Common Excel Functions

a. Mathematical Functions

These functions are used for calculations and working with numbers.

SUM: Adds a range of numbers.

=SUM(A1:A10)

Adds all values from A1 to A10.

AVERAGE: Returns the average (mean) of a range of numbers.

=AVERAGE(A1:A10)

Finds the average of values from A1 to A10.

MIN: Finds the smallest number in a range.

=MIN(A1:A10)

Returns the smallest value from the range.

MAX: Finds the largest number in a range.

=MAX(A1:A10)

Returns the largest value from the range.

COUNT: Counts the number of cells that contain numbers.

=COUNT(A1:A10)

Counts how many cells in the range A1 contain numeric data.

COUNTA: Counts the number of non-empty cells.

=COUNTA(A1:A10)

Counts how many cells in the range A1 are not empty.

ROUND: Rounds a number to a specified number of digits.

=ROUND(A1, 2)

Rounds the value in A1 to 2 decimal places.

b. Logical Functions

Logical functions return values based on whether a condition is true or false.

=IF(A1 > 10, "Yes", "No")

If the value in A1 is greater than 10, the formula returns "Yes". Otherwise, it returns "No".

AND: Returns TRUE if all conditions are true, otherwise returns FALSE.

=AND(A1 > 10, B1 < 5)

Returns TRUE if both conditions are true.

OR: Returns TRUE if at least one condition is true.

=OR(A1 > 10, B1 < 5)

Returns TRUE if either condition is true.

NOT: Reverses the logic of a condition.

=NOT(A1 > 10)

Returns TRUE if the value in A1 is not greater than 10.

c. Lookup and Reference Functions

These functions help to find values in a range or table.

VLOOKUP: Looks for a value in the first column of a range and returns a value in the same row from another column.

=VLOOKUP(D1, A1:B10, 2, FALSE)

Looks for the value in D1 in the first column (A1) and returns the corresponding value from second column (B1).

HLOOKUP: Similar to VLOOKUP but searches for values in rows instead of columns.

=HLOOKUP(D1, A1:B10, 2, FALSE)

Looks for the value in D1 in the first row (A1) and returns the corresponding value from the second row.

INDEX: Returns a value from a range based on a specified row and column.

=INDEX(A1:C10, 2, 3)

Returns the value from the second row and third column in the range A1

.MATCH: Returns the position of a value in a range.

=MATCH("Apple", A1:A10, 0)

Returns the position of "Apple" in the range A1

INDIRECT: Returns a reference specified by a text string.

=INDIRECT("A" & 1)

Returns the value in cell A1.

d. Text Functions

Text functions allow you to manipulate and format text strings.

CONCATENATE (or CONCAT in later versions): Joins two or more text strings into one.

=CONCATENATE(A1, " ", B1)

Joins the text in A1 and B1 with a space between them.

LEFT: Extracts a given number of characters from the start of a text string.

=LEFT(A1, 5)

Returns the first 5 characters from the value in A1.

RIGHT: Extracts a given number of characters from the end of a text string.

=RIGHT(A1, 3)

Returns the last 3 characters from the value in A1.

MID: Extracts a specific number of characters from a text string, starting at a specific position.

=MID(A1, 2, 4)

Returns 4 characters from the value in A1, starting at the second character.

LEN: Returns the number of characters in a text string.

=LEN(A1)

Returns the number of characters in the value in A1.

UPPER: Converts text to uppercase.

=UPPER(A1)

Converts the text in A1 to uppercase.

LOWER: Converts text to lowercase.

=LOWER(A1)

Converts the text in A1 to lowercase.

TRIM: Removes extra spaces from text (except for single spaces between words).

=TRIM(A1)

Removes any leading, trailing, or double spaces from the text in A1.

e. Date and Time Functions

These functions deal with dates and times in Excel.

TODAY: Returns the current date.

=TODAY()

Displays today's date.

NOW: Returns the current date and time.

=NOW()

Displays the current date and time.

DATE: Returns a date based on year, month, and day.

=DATE(2024, 12, 25)

Returns the date December 25, 2024.

YEAR: Extracts the year from a date.

=YEAR(A1)

Returns the year from the date in A1.

MONTH: Extracts the month from a date.

=MONTH(A1)

Returns the month from the date in A1.

DAY: Extracts the day from a date.

=DAY(A1)

Returns the day from the date in A1.

DATEDIF: Calculates the difference between two dates in years, months, or days.

=DATEDIF(A1, B1, "d")

Returns the difference between the dates in A1 and B1 in days.

f. Financial Functions

These functions are useful for financial calculations, such as loans or investments.

PMT: Calculates the payment for a loan based on constant payments and a constant interest rate.

=PMT(rate, nper, pv)

- Calculates the monthly payment for a loan where:
- rate is the interest rate per period.
- nper is the number of periods.
- pv is the present value (loan amount).

FV: Calculates the future value of an investment.

=FV(rate, nper, pmt, [pv], [type])

Returns the future value of an investment based on constant payments and a constant interest rate.

DATA TAB

Data Tools

Text to Columns – This option helps to Displays the "Convert Text to Columns Wizard" dialog box.

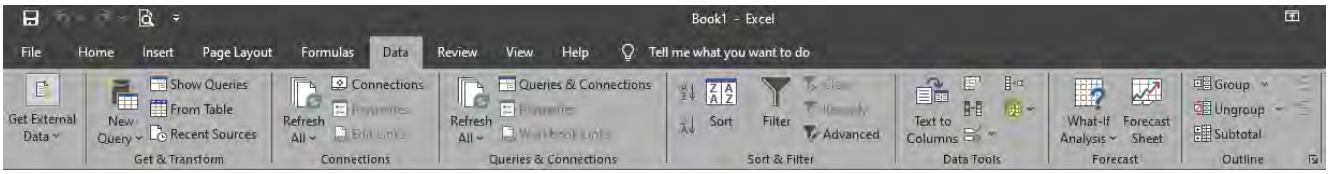
Flash Fill – This option helps to automatically fills in values.

Remove Duplicates - This option helps to Remove Duplicates.

Data Validation - This option helps to apply data validation rules.

Consolidate - This option helps to apply Consolidate option.

Relationships - This option helps to create or edit relationships between the tables

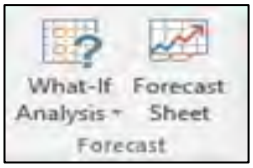


Manage Data Model –

This option helps to Opens the Power Pivot window. You need to enable the Data Analysis add-ins to enable this feature.

Forecast

What-If Analysis - This option helps to Scenario Manager; Goal Seek and Data Table.



Forecast Sheet - This option helps to forecast your timeline data.

Outline

You can quickly display the "Settings" dialog box, by clicking on the dialog box launcher in the bottom right corner of this group.

Group - This option helps to group a selection of rows and columns. Also **Ungroup - option** helps to remove the outlines from the rows and columns.

Subtotal - This option helps to insert subtotals for the selected rows. Show Detail - This option helps to Expand a collapsed group of cells. Hide Detail - This option helps to Collapse a group of cells.

Analysis

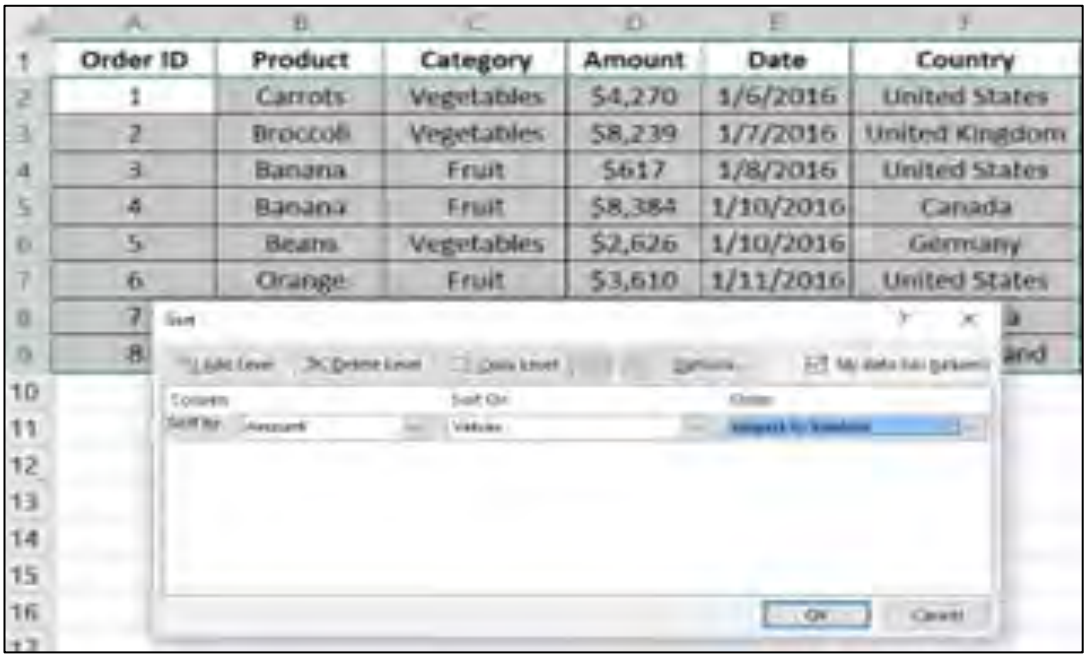
This group will be only be displayed if you have either the Analysis-ToolPak add-in or the Solver add-in loaded.

Data Analysis - This option helps to create the Data Analysis

Solver - This option helps to apply Solver.

Sort

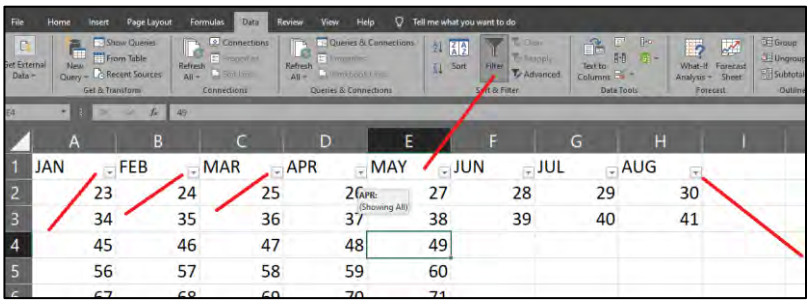
Select any cell in the data range. On the Data tab, in the Sort & Filter group,



Order ID	Product	Category	Amount	Date	Country
1	Carrots	Vegetables	$4,270	1/6/2016	United States
2	Broccoli	Vegetables	$8,239	1/7/2016	United Kingdom
3	Banana	Fruit	$617	1/8/2016	United States
4	Banana	Fruit	$8,384	1/10/2016	Canada
5	Beans	Vegetables	$2,626	1/10/2016	Germany
6	Orange	Fruit	$3,610	1/11/2016	United States
7					
8					

Filter

Select any cell within the range. Select Data > Filter. Select Text Filters or Number Filters, and then select a comparison, like between. Enter the filter criteria and select OK.



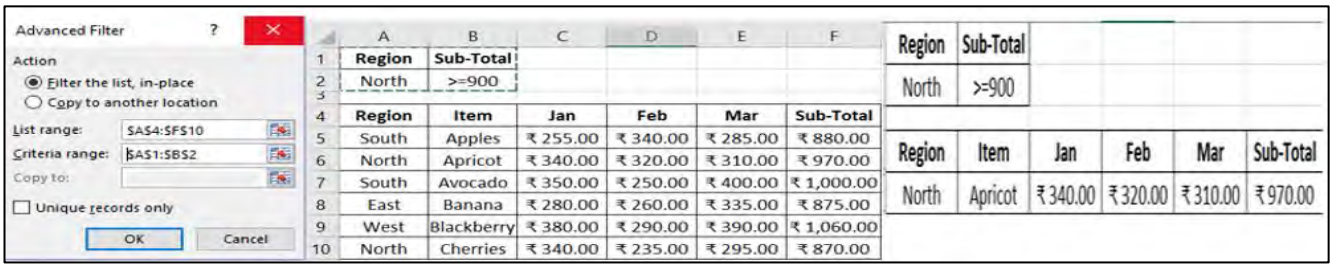
	A	B	C	D	E	F	G	H	I
1	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	
2	23	24	25	26	27	28	29	30	
3	34	35	36	37	38	39	40	41	
4	45	46	47	48	49				
5	56	57	58	59	60				

Advanced filter in Excel

To create an advanced filter. Organize the source data. Each column has a unique heading; duplicate headings will cause confusion to Advanced Filter. Blank rows are not allowed within the data set. Sample table looks like.

Set up the criteria range

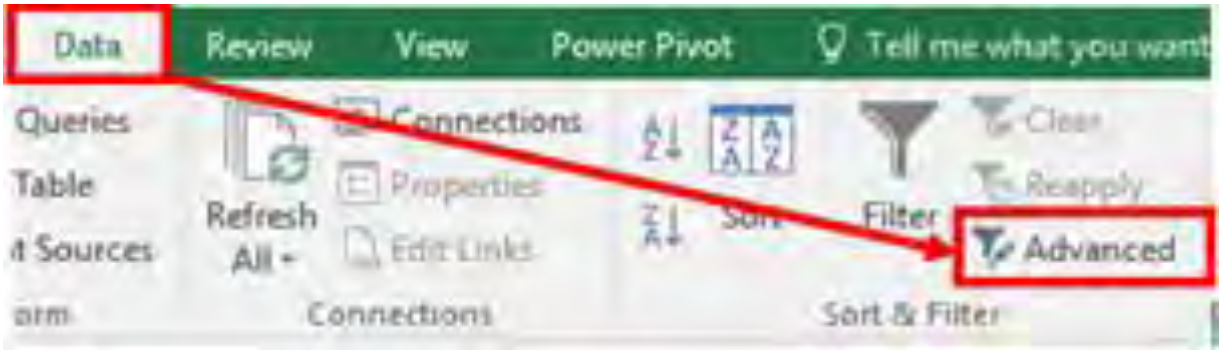
Type your criteria, in a separate range on the worksheet.



	A	B	C	D	E	F
1	Region	Sub-Total				
2	North	>=900				
3						
4	Region	Item	Jan	Feb	Mar	Sub-Total
5	South	Apples	₹ 255.00	₹ 340.00	₹ 285.00	₹ 880.00
6	North	Apricot	₹ 340.00	₹ 320.00	₹ 310.00	₹ 970.00
7	South	Avocado	₹ 350.00	₹ 250.00	₹ 400.00	₹ 1,000.00
8	East	Banana	₹ 280.00	₹ 260.00	₹ 335.00	₹ 875.00
9	West	Blackberry	₹ 380.00	₹ 290.00	₹ 390.00	₹ 1,060.00
10	North	Cherries	₹ 340.00	₹ 235.00	₹ 295.00	₹ 870.00

Region	Sub-Total
North	>=900

Region	Item	Jan	Feb	Mar	Sub-Total
North	Apricot	₹ 340.00	₹ 320.00	₹ 310.00	₹ 970.00



Apply Excel Advanced Filter

In the criteria range apply an advanced filter as follows: Select any single cell within your dataset.

Go to the Data tab >Sort & Filter group and click :-

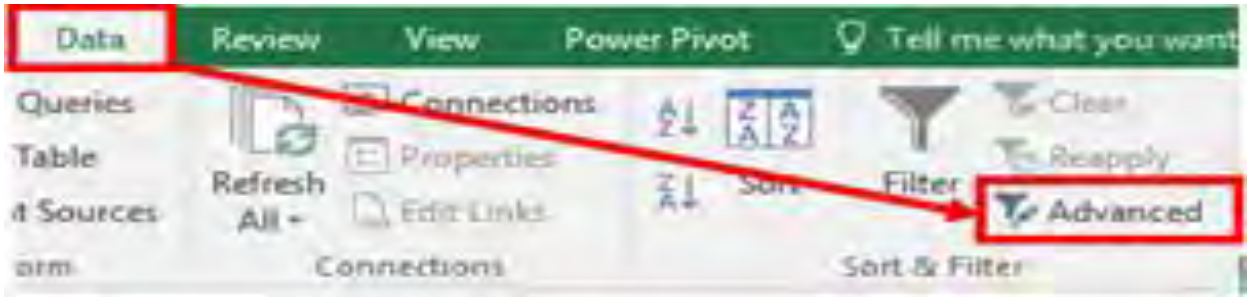
Advanced Filter

Action : Choose whether to filter the list in place or copy the results to another location.

List range: It's the range of cells to be filtered, the column headings should be included.

Criteria range: It's the range of cells in which you input the criteria.

Finally, click OK, and you will get the following result:



Summary:

Microsoft Excel is a powerful spreadsheet application widely used for data organization, analysis, and visualization. It allows users to create and manage spreadsheets that can handle complex calculations, data modelling, and reporting. Microsoft Excel is an essential tool for professionals across various industries, enabling effective data manipulation, analysis, and presentation. Mastery of its features can significantly enhance productivity and decision-making capabilities.

Check your Understanding:

Question 1

MS Excel is a _____Software

a) Database Management software
b) Presentation software
c) Wordbook software
d) Spreadsheet Software

Question 2

MS Excel 2016 has column limit of _____

a) 13684
b) 16384
c) 18634
d) 84163

Question 3

Formulas in Excel start with _____

a) /
b) f
c) -
d) =

Question 4

_____function in MS Excel worksheet represents the total number of entries in the cell

a) Sum
b) Average
c) Count
d) Total

Question 5

A function inside another function is called

a) Round
b) Sum
c) Text
d) Nested

Question 6

You can set Page Border in Excel from

a) From Border tab in Format Cells dialog box
b) From Border tool in Formatting toolbar
c) From Line style tool in Drawing toolbar
d) You can't set page border in Excel

Question 7

How do you display current date and time in Word

a) Date()
b) Today()
c) Now()
d) Time()

Question 8

Give me an example of Absolute reference

a) $F15
b) F$15
c) F15
d) F15

Question 9

How to restrict the values of a cell so that only whole numbers between 10 and 100 can be entered in a cell?

a) Data Table
b) Advanced Filter
c) Data Validation
d) Fill Series

Question 10

In Excel two common wildcard characters that it recognizes are –

a) and ?
b) < and >
c) ^ and /
d) + and –

Chapter 5: Microsoft PowerPoint 2016

Introduction

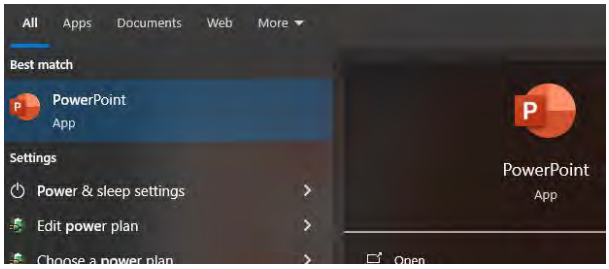
- Understand the basic features and interface of MS PowerPoint.
- Learn to create, format & Organize New Presentation.
- Develop skills in adding and editing text, images, and multimedia. Master slide design, layout, and customization options
- Explore transitions, animations, and visual effects. Learn to present slideshows and manage presentation flow
- Gain proficiency in using templates and themes for consistent design
- Understand best practices for creating engaging and professional presentations.

Uses

Microsoft PowerPoint is a professional presentation program that allows the user to create "presentation slides" that can be displayed on the computer screen or through a projector that is plugged in to the computer. A PowerPoint presentation is a good way to convey pieces of information, usually in the form of an outline, to a large audience.

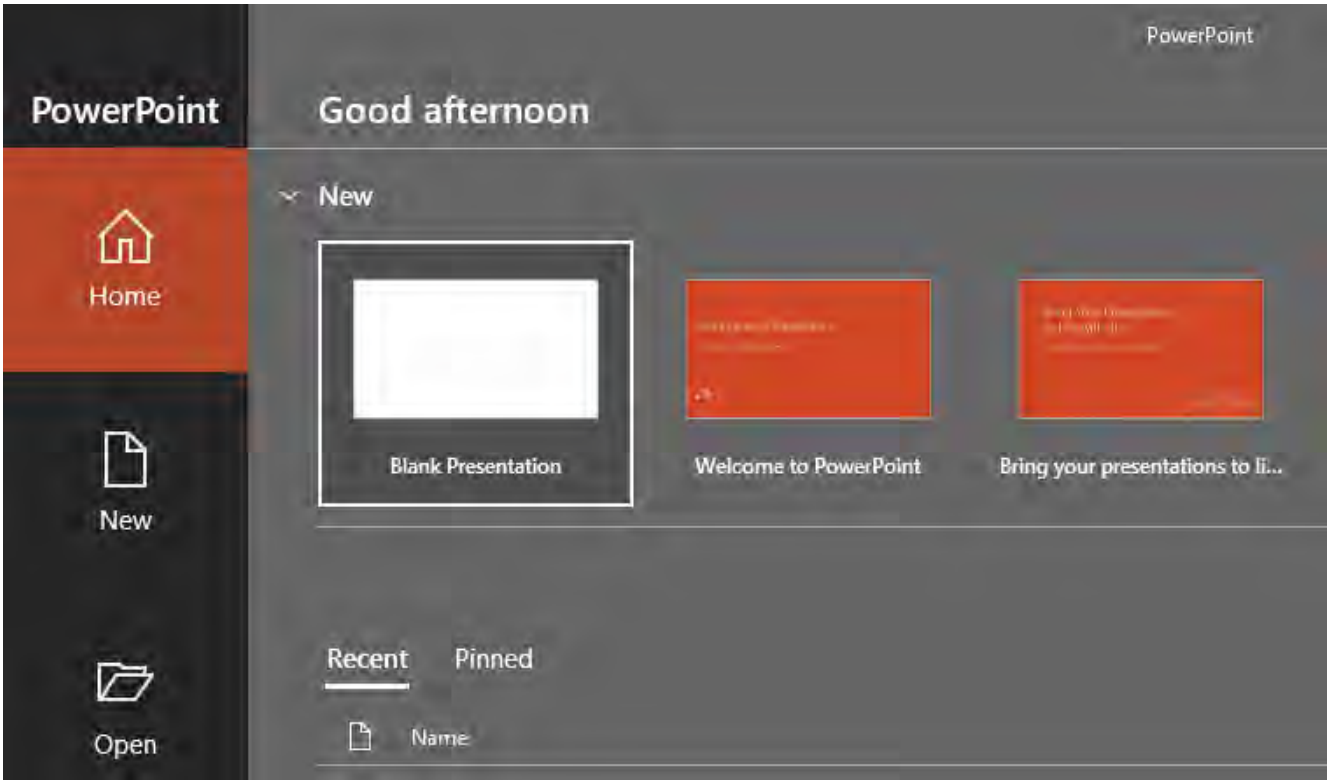
Getting started with Microsoft PowerPoint

1. Click Start → Programs



Microsoft PowerPoint

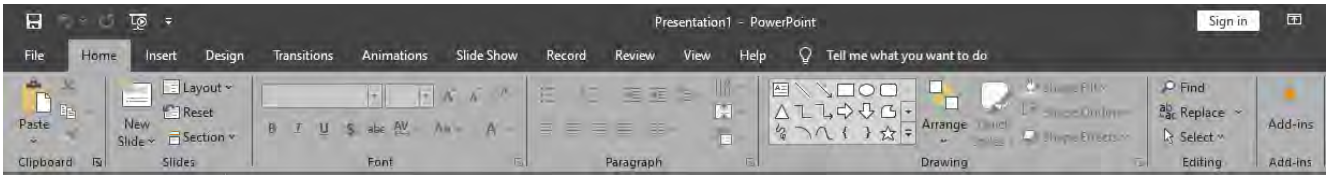
- File Menu and Backstage View
- Quick Access Toolbar (QAT)
- Ribbon
- Slides Pane
- Slide Area
- Task Pane
- Status Bar
- Notes Pane
- View Buttons
- Mini Toolbar



Creating a PowerPoint presentation

Create a blank presentation that consists only of a title slide, add slides and slide content, and then format the presentation. We can Import a list of slide titles from a text document, add slide content and a title slide, and then format the presentation. We Import slide titles and content from a Microsoft Word file, add a title slide, and then format the presentation. Create a preformatted or prepopulated presentation based on a local or online template. When PowerPoint is running, you can create a blank or prepopulated presentation from the New page of the Backstage view. Built-in, online, and custom templates are available from the New page By default, a new

presentation includes only a title slide. You can add blank content slides to the presentation, or copy or move slides from another presentation.



To create a blank presentation

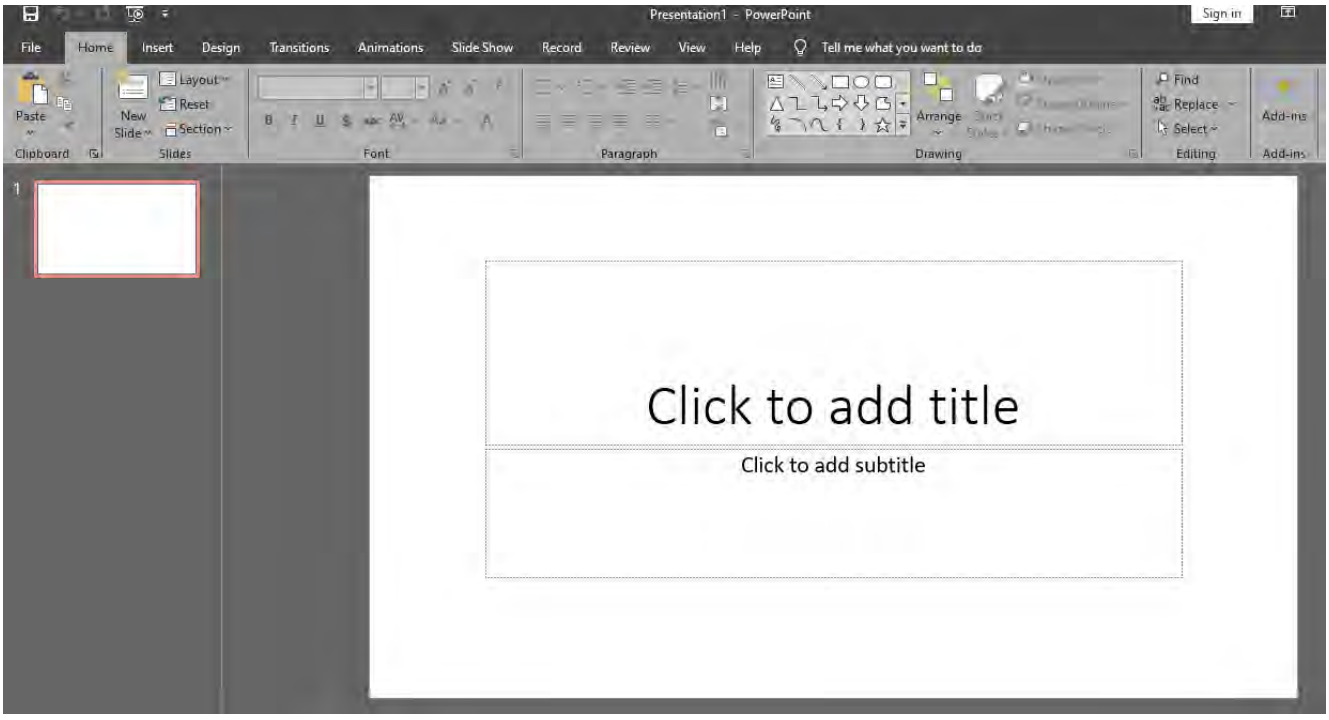
Start PowerPoint. On the start screen, press Esc or click Blank Presentation.On the New page of the Backstage view, click Blank Presentation. From the program window, press Ctrl+N.

Create a Presentation based on a template

Creating attractive presentations from scratch can be time-consuming. You can save time by basing your presentation on one of the templates that come with PowerPoint. Two types of templates are available when creating a new presentation:

Design template: This is a blank presentation with a theme

Content template: From the PowerPoint start screen, you can preview and download presentation templates that are available from the Office website.



Formatting slide backgrounds

You can customize the background of an individual slide by adding a solid color, a color gradient, a texture, or even a picture. In the Format Background pane, you can specify the colors, texture, pattern, or picture that appear on the background of the current slide or slide master. You can configure a simple yet elegant slide background

by displaying a solid color or color gradient that reflects the color scheme applied to the presentation. You can configure a more complex slide background by selecting one of the 15 built-in textures or 48 patterns that can be customized with any two colors. Each texture is a small graphic that is tiled on the slide and designed to repeat gracefully, both horizontally and vertically.

Changing slide size

By default, PowerPoint 2016 slides are sized for a widescreen display (13.333 inches by 7.5 inches). The slides are oriented horizontally, with slide numbers starting at 1. You can set the size and orientation of the slides, and the orientation of notes, handouts, and outlines, to fit your intended distribution methods. You can modify these attributes in the Slide Size dialog box.

You can select from the following slide sizes:

On-screen Show

For an electronic slide show on screens of various aspects (4:3, 16:9, or 16:10)

Letter Paper → For a presentation printed on 8.5-by-11-inch US letter-size paper

Ledger Paper→ For a presentation printed on 11-by-17-inch ledger-size paper

A3 Paper, A4 Paper, B4 (ISO) Paper, B5 (ISO)

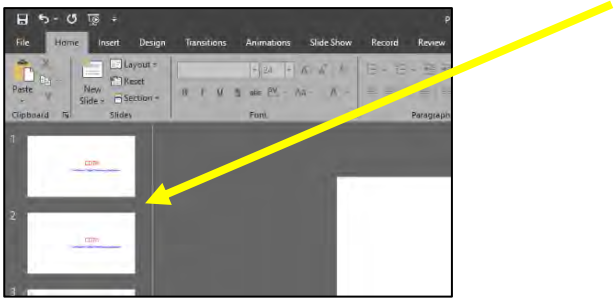
Paper For a presentation printed on paper of various standard international sizes 35mm Slides For 35mm slides to be used in a carousel with a projector Overhead For transparencies for an overhead projector. Banner For a webpage banner Widescreen For a widescreen monitor display Custom For slides that are a nonstandard size.

Create a presentation in PowerPoint

- Open PowerPoint.
- In the left pane, select New.
- Select an option:
- To create a presentation from scratch, select Blank Presentation.
- To use a prepared design, select one of the templates.
- To see tips for using PowerPoint, select Take a Tour, and then select

Add a slide

i. In the thumbnails on the left pane, select the slide you want new slide to follow.
ii. In the Home tab, in the Slides section, select New Slide.
iii. In the Slides section, select Layout, and then select the layout you want from the menu.



Add and format text

i. Place the cursor inside a text box, and then type something.
ii. Select the text, and then select one or more options from the Font section of the Home tab, such as Font, Increase Font Size, Decrease Font Size, Bold, Italic, Underline, etc.
iii. To create bulleted or numbered lists, select the text, and then select Bullets or Numbering.

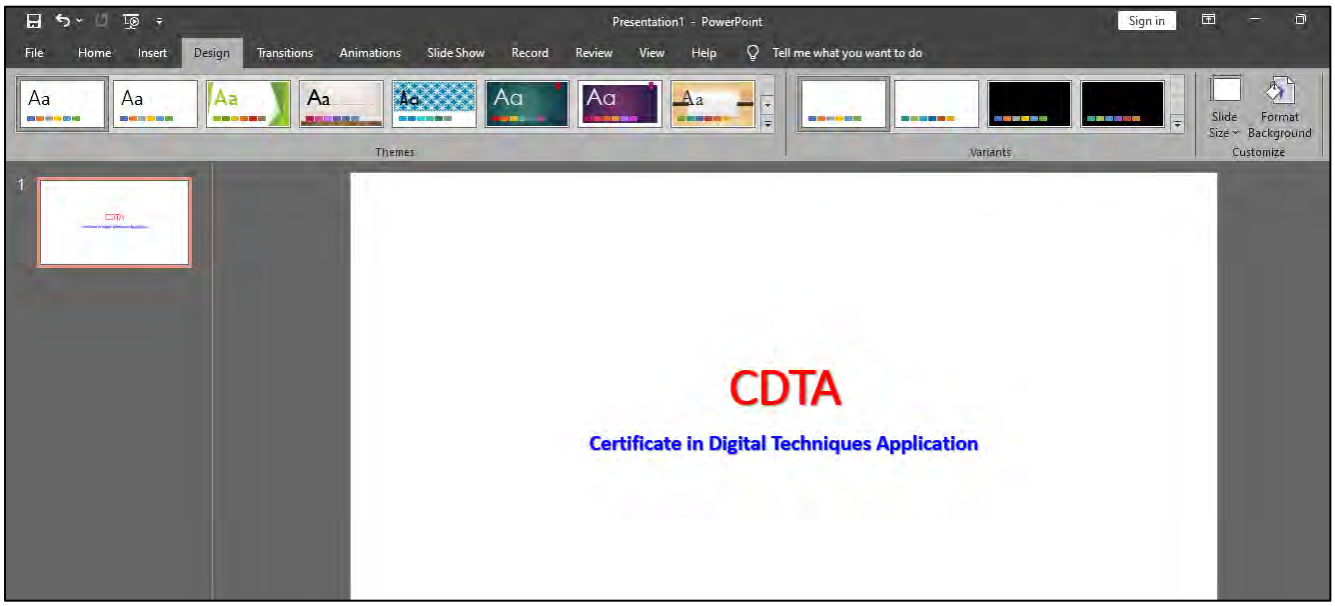
Add a picture, shape, and more

Go to the Insert tab → To add a picture:

- In the Images section, select Pictures.
- In the Insert Picture From menu, select the source you want.
- Browse for the picture you want, select it, and then select Insert.

To add illustrations:

- In the Illustrations section, select Shapes, Icons, 3D Models, SmartArt, or Chart.
- In the dialog box that opens when you click one of the illustration types, select the item you want and follow the prompts to insert it.



How to apply multiple Animations

If you've ever seen a PowerPoint presentation that had special effects between each slide, you've seen slide transitions. A transition can be as simple as fading to the next slide or as flashy as an eye-catching effect. PowerPoint makes it easy to apply transitions to some or all of your slides, giving your presentation a polished, professional look.

You can preview the transition for a selected slide at any time using either of these two methods:

- Click the Preview command on the Transitions tab.
- Click the Play Animations command in the Slide Navigation pane.

Apply multiple animation effects to one object

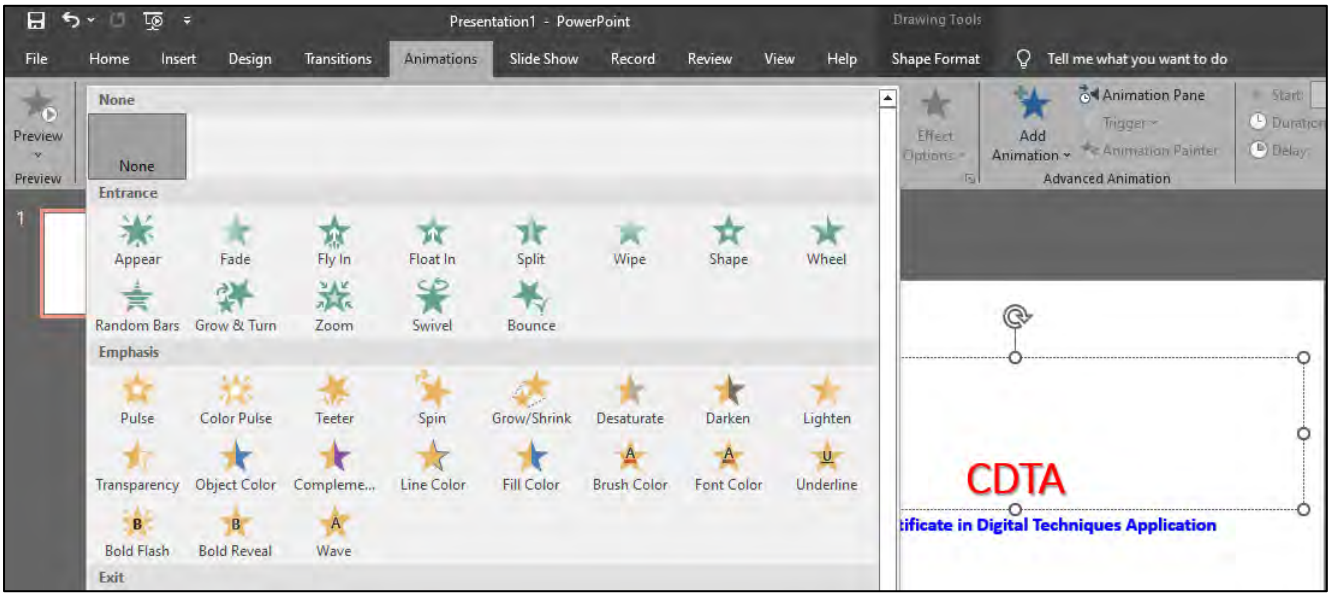
In the PowerPoint desktop apps, you can apply multiple animation effects to a single string of text or an object, such as a picture, shape, or SmartArt graphic.

Tip: When working with multiple animation effects, it helps to work in the Animation Pane, where you can see a list of all the animation effects for the current slide.

Open the Animation Pane

- Select the object on the slide that you want to animate.
- On the Animations tab, click Animation Pane.
- Click Add Animation, and pick an animation effect.

➔ To apply additional animation effects to the same object, select it, click Add Animation and pick another animation effect.



Set the start time and length of an animation effect

When you want to control the timing of your animation effects, do the following for each animation effect:

i. In the Animation Pane, click the down arrow next to the animation effect, and then click Timing.

ii. On the Timing tab, click the Start down arrow, and choose from the following start times:

- To play when you click the mouse, pick On Click.
- To play at the same time as the previous animation effect, pick With Previous
- To play after the previous animation effect plays, pick

SUMMARY

- Understanding New User Interface: Use simplified user-friendly interface with a ribbon that provides quick access to various tools and features and use of Tell Me tool to find new commands quickly and easily.
- New Themes and Templates: Improved design themes and templates that make it easy to create professional-looking presentations with updated designer feature which provides design suggestions as users add new content to their slides.
- Enhanced Association: Allows multiple users to work on a presentation simultaneously. You can add comments to slides, helping better communication among team members.
- Smart Guides: It helps to align objects like text, objects and graphics on slides, making it easier to create visually attractive layouts.
- Animation and Transition effects: Various animation options to create smooth animations of objects in slides as well as transition between slides, giving presentations a more dynamic feel.
- Insert Media: You can attach videos and audio files directly into slides, at the same time "Insert Online Video" feature allows embedding from popular platforms like YouTube.
- Export and Share Options: You are ready to export presentations as PDFs or share them directly via email or One Drive which makes it easy to distribute content to others.

Check your understanding

Question:1

What is a Microsoft PowerPoint?

a) Spreadsheet Program
b) Presentation Program
c) Database Program
d) All of the above

Question:2

Which of the following shortcut key is used to start the slideshow?

a) Using F5 key
b) Using F3 key
c) Using F1 key
d) Using F6 key

Question:3

What is the best way to create another copy of a slide?

a) Click the slide then press Ctrl+A and paste in new slide
b) From Insert Menu choose Duplicate Slide
c) Redo everything on a new slide that you had done on previous slide
d) None of above

Question: 4

In a PowerPoint presentation -

a) We can insert movie clips but not the sound clips
b) We can insert sound clips but not the movie clips
c) Both movie clips and sound clips can be inserted
d) Both movie clips and sound clips cannot be inserted

Question:5

What is the easiest way to place same graphic in same place in all slides

a) Place graphic in Notes Master
b) Place graphic in Slide Master
c) Place graphic in Handout Master
d) Place graphic manually in all slide

Question:6

MS PowerPoint is software of ____

a) Google
b) Apple
c) Android
d) Microsoft

Question:7

What are the three options available in Insert >> Picture menu?

a) Clipart, Pictures, Shapes
b) Clipart, From File, Shapes
c) Clipart, From Files, AutoShapes
d) Clipart, Pictures, AutoShapes

Question:8

Which of the following method can insert a new slide in current presentation?

a) Right click on the Slide panel and choose New Slide
b) From Insert menu choose New Slide
c) Click on New Slide button on toolbar
d) All of above

Question:9

What is the keyboard shortcut to start the slideshow from the current slide of a

PowerPoint presentation?

a) F5
b) Ctrl+F5
c) Shift+F5
d) Ctrl+F12

Question:10

Boxes with dotted or hatch marked borders that are part of most slide layouts are

called as

a) Placeholder
b) Line spacing
c) Header
d) Footer

Chapter 6: Microsoft Visual ForPro 6.0

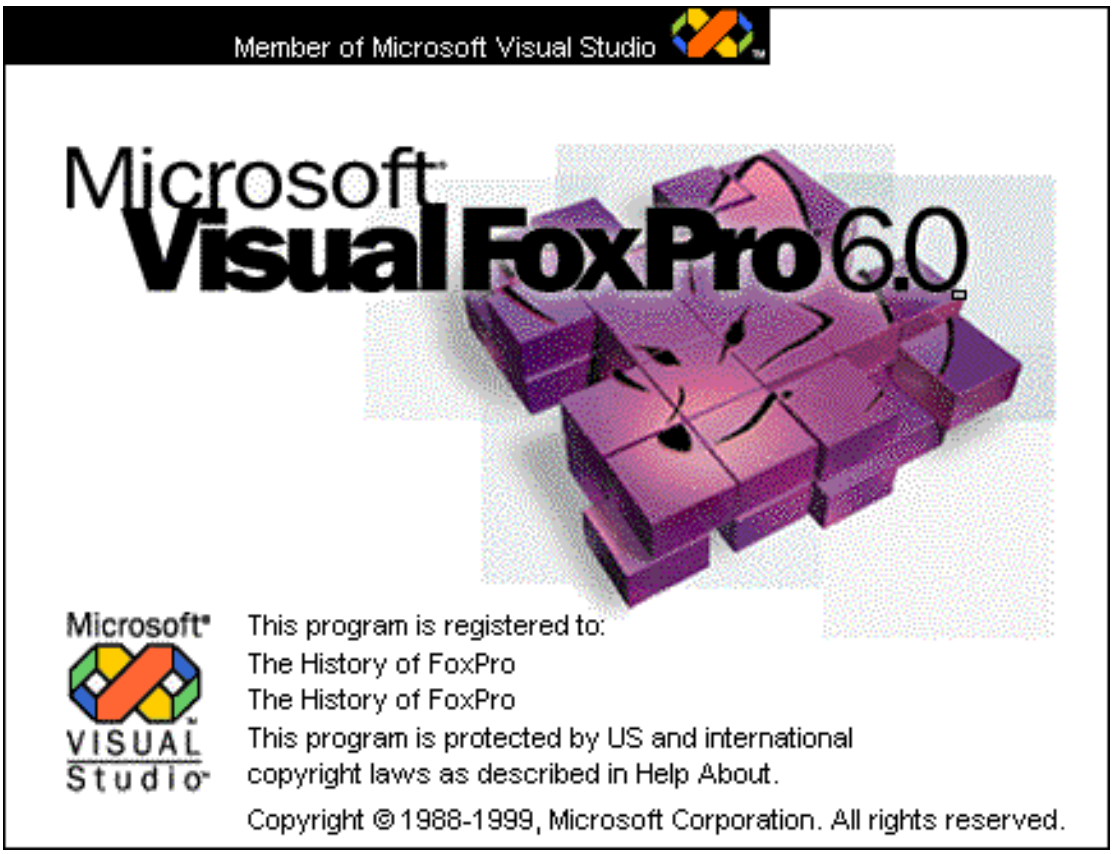
Introduction

1. **Understand Visual FoxPro Basics**: Learn the interface, commands, and database concepts.
2. **Database Management**: Create and manage tables, relationships, and indexes effectively.
3. **Programming Skills**: Write and execute scripts, use control structures, and handle errors.
4. **Design User Interfaces**: Develop interactive forms and controls for data input and management.
5. **Querying and Reporting**: Use SQL for data manipulation and design reports.
6. **Advanced Features**: Explore views, stored procedures, and OLE automation.
7. **Build Applications**: Package, test, and deploy database-driven applications.
8. **Real-World Application**: Solve practical problems with robust database solutions.

Visual FoxPro equips users with essential skills for database management and application development.

About Visual FoxPro

Visual FoxPro (VFP) is a data-centric, object-oriented programming language Visual FoxPro (VFP) is a data-centric, object-oriented programming language and environment primarily used for developing database applications. It is a successor to FoxPro, which was originally a DOS-based database management system created in the mid-1980s.



Microsoft acquired FoxPro in 1992 and subsequently evolved it into Visual FoxPro.

Key Features:

a) **Relational Database Management**

Supports relational data modelling with tables, indexes, and relationships.

Provides advanced querying and data handling capabilities.

b) **Powerful Programming Environment**

Includes an integrated development environment (IDE) for writing and debugging programs.

Supports procedural and object-oriented programming (OOP).

c) **User Interface Design**

Tools to create forms, menus, and reports for custom applications.

Offers controls like text boxes, combo boxes, and command buttons.

d) **SQL Support**

Built-in SQL capabilities for querying and managing data.

Optimized for both ad-hoc and complex queries.

e) **Data Handling Efficiency**

Handles large datasets efficiently with indexing and optimized storage.

Offers features like buffering, transactions, and data validation.

f) **Customizable Reporting**

Tools to create and customize reports with data grouping, sorting, and summaries.

Supports exporting reports in various formats.

g) **Event-Driven Programming**

Includes event handlers for interactive application behaviour.

Supports user-triggered and system-triggered events.

h) **Advanced Data Views**

Create and manage views for simplified data access and abstraction.

Supports parameterized views for dynamic data retrieval.

i) **OLE Automation**

Integrates with Microsoft Office applications for enhanced functionality.

Allows embedding and automating tasks with external programs.

j) Cross-Platform Compatibility

Works seamlessly with multiple data formats and file types.

Supports database connectivity via ODBC.

k) Security and Scalability

Provides data encryption and user authentication features.

Scalable for multi-user environments.

l) Application Deployment

Tools for packaging and distributing applications.

Includes debugging tools and error-handling mechanisms for production-ready solutions.

Visual FoxPro 6.0 is a comprehensive platform for database management and application development, blending flexibility, efficiency, and user-friendliness.

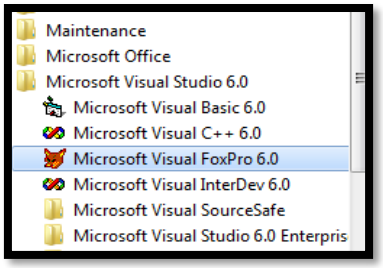
Version

The word database is a compositionof "data" and "base". "Data" are factsof the real world, which is suppliedby "base". The word "data base" was first used in the beginning of 1960's, and then written as "data- base" and recently "database". A database is a store of data arrangedin a logical manner that describe entities and the relationships betweenthe entities. This concept of database is deeply concerned with the development ofcomputers. The computers weregetting regarded as information processing machines rather than machines that calculate. As a result, people demanded to use computers to store firstly increasing data of the realworld and utilize them communally with ease. For multipurpose use, not file systems but database management systems (DBMS) were expected powerful in this sense.

Version	Release Date
Visual FoxPro 3.0	June 1995
Visual FoxPro 5.0	October 1996
Visual FoxPro 5.0a	October 1997
Visual FoxPro 6.0	18 May 1998
Visual FoxPro 7.0	27 June 2001
Visual FoxPro 8.0	1 February 2003
Visual FoxPro 8.0 Service Pack 1	7 October 2003
Visual FoxPro 9	20 December 2004
Visual FoxPro 9 Service Pack 1	8 December 2005
Visual FoxPro 9 Service Pack 2	16 October 2007

Starting Visual FoxPro

As you would do in the case of any other windows base software, you start this software too either from the start menu, programs or in case you have the icons, you start with it. Other way of starting could be from windows explorer where you click double click at the filename VFP, EXE

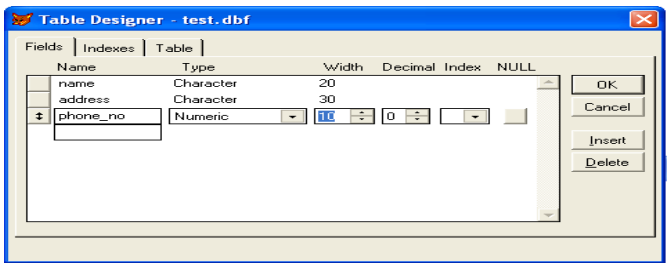


Creation of a TABLE

To create a table the command is CREATE DATABASENAME.

For example, to create a table called ABCD the command should be CREATE ABCD

The default extension of table files in Visual FoxPro is DBF. Now the following screen will appear.



In the Table Designer window, we have to specify

Field name : The name of the Column that will appear in the Table.

Type : It determines the type of the data the Column will hold.

Width : The maximum length of the data that a Column can hold.

Decimal : The maximum number of Decimal places theColumn will hold.

Index : It determines whether the datawill appear in a particular Column in Ascending or Descending order.

Null : It determines whether a Column will allow Null value or not.

Data Types in Visual FoxPro

Visual FoxPro supports the following data types to handle various kinds of data:

i) Character

Description: Used to store text or alphanumeric data.

Size: Up to 254 characters.

Example: "John Doe", "ABC123"

ii) Currency

Description: Used for monetary values.

Size: 8 bytes.

Example: $12345.67

iii) Date

Description: Used to store calendar dates.

Size: 8 bytes.

Example: 01/01/2024

iv) DateTime

Description: Stores both date and time.

Size: 8 bytes.

Example: 01/01/2024 10:30 AM

v) Double

Description: Used for floating-point numbers with high precision.

Size: 8 bytes.

Example: 12345.6789

vi) Float

Description: Stores floating-point numbers.

Size: 4 bytes.

Example: 123.45

vii) Integer

Description: Used to store whole numbers.

Size: 4 bytes.

Range: -2,147,483,648 to 2,147,483,647

Example: 100, -50

viii) Logical

Description: Stores Boolean values.

Size: 1 byte.

Values: .T. (True), .F. (False)

ix) Memo

Description: Used to store large text or binary data.

Size: Variable (up to 2 GB).

Example: Long descriptions or large paragraphs of text.

x) Numeric

Description: Stores numeric values with or without decimal places.

Size: Variable (based on precision).

Example: 1234, 12.34

xi) General

Description: Stores binary data, such as OLE objects.

Size: Variable (depends on the object size).

Example: Embedded Excel sheet or Word document.

xii) Blob (Binary Large Object)

Description: Stores binary data, such as images or files.

Size: Up to 2 GB.

Example: JPEG, PNG, or other file types.

Note:

Visual FoxPro's data types are designed for flexibility, making it a powerful tool for handling diverse datasets.

Data types like **Memo**, **General**, and **Blob** are particularly useful for large or unstructured data storage.

Foxpro Commands

FoxPro, a text-based programming language and database management system, provides a variety of commands to manage data, create applications, and handle files. Below is a categorized list of commonly used FoxPro commands:

File and Program Management

- CREATE – Create a new database or file.
- MODIFY COMMAND – Edit a program file.
- USE – Open a database or table.
- CLOSE – Close open files or tables.
- DELETE FILE – Delete a file.
- RUN – Execute an external program.
- SET PATH – Set the default search path for files.

Table and Database Operations

- APPEND – Add records to a table.
- BROWSE – View table data in a grid format.
- DELETE – Mark records for deletion.
- PACK – Permanently remove deleted records.
- RECALL – Undo the deletion of a record.
- INDEX – Create an index for faster data access.
- REINDEX – Rebuild indexes for a table.
- ZAP – Delete all records in a table.
- COPY TO – Copy records to another file.

Data Manipulation

- REPLACE – Update field values in a record.
- STORE – Save a value to a variable or memory.
- LIST – Display data in a table or view.
- GOTO – Navigate to a specific record.
- SKIP – Move to the next record.
- LOCATE – Find a specific record.
- SEEK – Search for a record using an index.

Querying and Reporting

- SELECT – Perform SQL queries.
- REPORT FORM – Generate a report based on a layout.
- COUNT – Count the number of records matching a condition.
- SUM – Calculate the total of numeric fields.
- AVERAGE – Calculate the average of numeric fields.

User Interface Commands

- @ SAY – Display text on the screen.
- @ GET – Get input from the user.
- READ – Allow input fields to be edited.
- MENU – Create menus for user navigation.
- MESSAGEBOX – Display a message box with options.

Debugging and Environment Settings

- SET STEP ON – Enable step-by-step debugging.
- DISPLAY MEMORY – Show memory variables.
- SET TALK – Enable or disable command output.
- SET ECHO – Enable or disable the display of executed commands.

Program Flow Control

- DO WHILE...ENDDO – Create loops.
- IF...ELSE...ENDIF – Conditional execution.
- FOR...NEXT – Iterate over a range.
- DO CASE...ENDCASE – Multi-conditional branching.
- PROCEDURE / FUNCTION – Define reusable routines.

System Commands

- QUIT – Exit FoxPro.
- CLEAR – Clear the screen or reset the environment.
- SET DATE – Configure date format.
- SET CENTURY – Enable or disable the century portion of dates.

Sorting & Indexing

In **Visual FoxPro (VFP)**, **sorting** and **indexing** are essential operations for organizing and efficiently accessing data. Here's how you can use sorting and indexing to manage your data.

Sorting

Sorting rearranges the records in a specific order (e.g., ascending or descending) based on one or more fields. Sorting does not modify the original table's physical order but can be done temporarily or with output to a new table.

Sorting with SQL

You can sort records using the ORDER BY clause in an SQL query:

SELECT * FROM Customers ORDER BY LastName ASC INTO CURSOR SortedCustomers

Ascending Order (default):

ORDER BY FieldName ASC

Descending Order:

ORDER BY FieldName DESC

Sorting into a New Table

To create a new sorted table:

SELECT * FROM Orders ORDER BY OrderDate DESC INTO TABLE SortedOrders

Indexing

Indexing creates a data structure that optimizes the process of searching, sorting, and accessing records. Unlike sorting, indexes persist and do not alter the physical order of records.

Types of Indexes

Simple Index: Based on a single field.

INDEX ON LastName TAG LastNameIndex

Compound Index: Based on multiple fields.

INDEX ON LastName + FirstName TAG FullNameIndex

Use + to concatenate fields for combined sorting.

Expression Index: Based on an expression or function.

INDEX ON UPPER(LastName) TAG UpperLastNameIndex

Descending Index: To create an index in descending order.

INDEX ON OrderDate TAG DescOrderDateIndex DESCENDING

Indexing Commands

Create a New Index File:

CREATE INDEX IndexFileName ON Customers LastName

Add Index to Existing Table:

USE Customers

INDEX ON LastName TAG LastNameIndex

Reindex: Rebuilds corrupted or outdated index files.

REINDEX

Working with Indexes

Set Active Index: Use SET ORDER TO to activate a specific index tag.

SET ORDER TO LastNameIndex

Disable Indexes:

SET ORDER TO 0

Combining Sorting and Indexing

Using an Index for Optimized Sorting

Indexing is more efficient than repeatedly sorting large datasets. For example:

INDEX ON City TAG CityIndex

SET ORDER TO CityIndex

BROWSE

Differences Between Sorting and Indexing

Features	Indexing	Sorting
Purpose	Temporary arrangement of data	Persistent structure for fast access
Performance	Slower for large datasets	Faster retrieval and query execution
Effect on Data	Creates a new dataset or cursor	Leaves original data untouched
Persistence	Temporary	Permanent (stored in .CDX or .IDX)
Usage	Simple one-time operations	For frequent access and updates

Summary:

Visual FoxPro (VFP) is a data-centric, object-oriented programming language and relational database management system (RDBMS) developed by Microsoft. While it is considered legacy software today, learning Visual FoxPro can still be beneficial in specific contexts.

Check your understanding

Question 1:

How many types of sort commands in visual FoxPro?

a) 1
b) 5
c) 2
d) 4

Question 2:

In Visual FoxPro, there are _____ relational Operator

a) 1
b) 2
c) 3
d) 6

Question 3:

How many data types in visual FoxPro?

a) 12
b) 11
c) 10
d) 13

Question 4:

Maximum width of character data type in Visual FoxPro 6.0

a) 253
b) 250
c) 254
d) 252

Question 5:

To Display the System Time on Screen, the Command is ?

a) Time ()
b) Time ()
c) Time?
d) ?Time

Question 6:

Width of the Date type field is

a) 6 Characters
b) 10 Characters
c) 7 Characters
d) 8 Characters

Question 7:

Which command is used to print a report file named EMPLOYEE on the screen ?

a) FORMAT REPORT EMPLOYEE
b) DO REPORT EMPLOYEE
c) REPORT FORMAT EMPLOYEE
d) None of These

Question 8:

Extension of a label file in FoxPro

a) .xcs
b) .qpr
c) .lbx
d) .css

Question 9

Extension of database file in FoxPro

a) .dbc
b) .dba
c) .dbf
d) .idx

Question 10

Extension of form file in FoxPro

a) .scx
b) .frm
c) .cdx
d) .mnx

THE END

Great! Practice Regularly.