



Computer Fundamentals

College of Dentistry / Al-Muthanna University

Computer lectures

First stage

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1. Computer Fundamentals – Overview

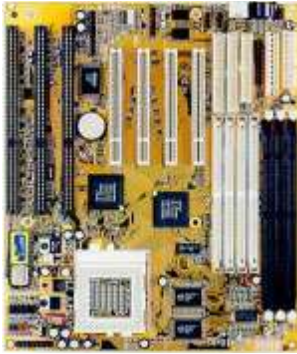
Today's world is an information-rich world and it has become a necessity for everyone to know about computers.

What is a Computer?

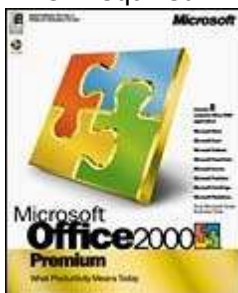
An electronic device that stores, retrieves, and processes data, and can be programmed with instructions. A computer is composed of hardware and software, and can exist in a variety of sizes and configurations.

Hardware & Software

The term hardware refers to the physical components of your computer such as the system unit, mouse, keyboard, monitor etc.



The software is the instructions that makes the computer work. Software is held either on your computers hard disk, CD-ROM, DVD or on a diskette (floppy disk) and is loaded (i.e. copied) from the disk into the computers RAM (Random Access Memory), as and when required.



Functionalities of a Computer

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

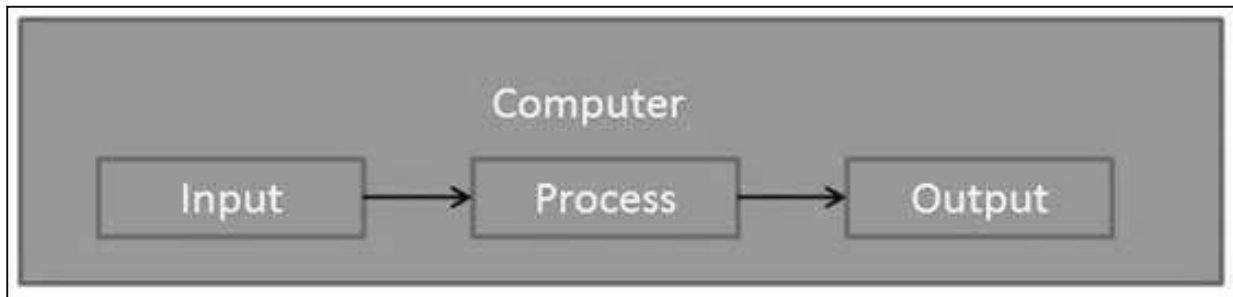
Step 1 - Takes data as input.

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

Following are certain advantages of computers.

High Speed

- Computer is a very fast device.
- It is capable of performing calculation of very large amount of data.
- The computer has units of speed in microsecond, nanosecond, and even the picosecond.
- It can perform millions of calculations in a few seconds as compared to man who will spend many months to perform the same task.

Accuracy

- In addition to being very fast, computers are very accurate.
- The calculations are 100% error free.
- Computers perform all jobs with 100% accuracy provided that the input is correct.

Storage Capability

- Memory is a very important characteristic of computers.
- A computer has much more storage capacity than human beings.
- It can store large amount of data.
- It can store any type of data such as images, videos, text, audio, etc.

Diligence

- Unlike human beings, a computer is free from monotony, tiredness, and lack of concentration.
- It can work continuously without any error and boredom.
- It can perform repeated tasks with the same speed and accuracy.

Versatility

- A computer is a very versatile machine.
- A computer is very flexible in performing the jobs to be done.
- This machine can be used to solve the problems related to various fields.
- At one instance, it may be solving a complex scientific problem and the very next moment it may be playing a card game.

Reliability

- A computer is a reliable machine.
- Modern electronic components have long lives.
- Computers are designed to make maintenance easy.

Automation

- Computer is an automatic machine.
- Automation is the ability to perform a given task automatically. Once the computer receives a program i.e., the program is stored in the computer memory, then the

program and instruction can control the program execution without human interaction.

Reduction in Paper Work and Cost

- The use of computers for data processing in an organization leads to reduction in paper work and results in speeding up the process.
- As data in electronic files can be retrieved as and when required, the problem of maintenance of large number of paper files gets reduced.
- Though the initial investment for installing a computer is high, it substantially reduces the cost of each of its transaction.

Disadvantages of Computers

Following are certain disadvantages of computers.

No I.Q.

- A computer is a machine that has no intelligence to perform any task.
- Each instruction has to be given to the computer.
- A computer cannot take any decision on its own.

Dependency

- It functions as per the user's instruction, thus it is fully dependent on humans.

Environment

- The operating environment of the computer should be dust free and suitable.

No Feeling

- Computers have no feelings or emotions.
- It cannot make judgment based on feeling, taste, experience, and knowledge unlike humans.

2. Computer Fundamentals – Applications

In this chapter, we will discuss the application of computers in various fields.

Business

A computer has high speed of calculation, diligence, accuracy, reliability, or versatility which has made it an integrated part in all business organizations.

Computer is used in business organizations for:

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



Banking

Today, banking is almost totally dependent on computers.

Banks provide the following facilities:

- Online accounting facility, which includes checking current balance, making deposits and overdrafts, checking interest charges, shares, and trustee records.
- ATM machines which are completely automated are making it even easier for customers to deal with banks.



Insurance

Insurance companies are keeping all records up-to-date with the help of computers. Insurance companies, finance houses, and stock broking firms are widely using computers for their concerns.

Insurance companies are maintaining a database of all clients with information showing:

- Procedure to continue with policies
- Starting date of the policies



- Next due installment of a policy
- Maturity date
- Interests due
- Survival benefits
- Bonus

Education

The computer helps in providing a lot of facilities in the education system.

- The computer provides a tool in the education system known as CBE (Computer Based Education).
- CBE involves control, delivery, and evaluation of learning.
- Computer education is rapidly increasing the graph of number of computer students.
- There are a number of methods in which educational institutions can use a computer to educate the students.
- It is used to prepare a database about performance of a student and analysis is carried out on this basis.



Marketing

In marketing, uses of the computer are following:

- **Advertising** - With computers, advertising professionals create art and graphics, write and revise copy, and print and disseminate ads with the goal of selling more products.
- **Home Shopping** - Home shopping has been made possible through the use of computerized catalogues that provide access to product information and permit direct entry of orders to be filled by the customers.



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.

Following are some major fields of health care in which computers are used.

- **Diagnostic System** - Computers are used to collect data and identify the cause of illness.
- **Lab-diagnostic System** - All tests can be done and the reports are prepared by computer.
- **Patient Monitoring System** - These are used to check the patient's signs for abnormality such as in Cardiac Arrest, ECG, etc.
- **Pharma Information System**
- Computer is used to check drug labels, expiry dates, harmful side effects, etc.
- **Surgery** - Nowadays, computers are also used in performing surgery.



Engineering Design

Computers are widely used for Engineering purpose.

One of the major areas is CAD (Computer Aided Design) that provides creation and modification of images. Some of the fields are:

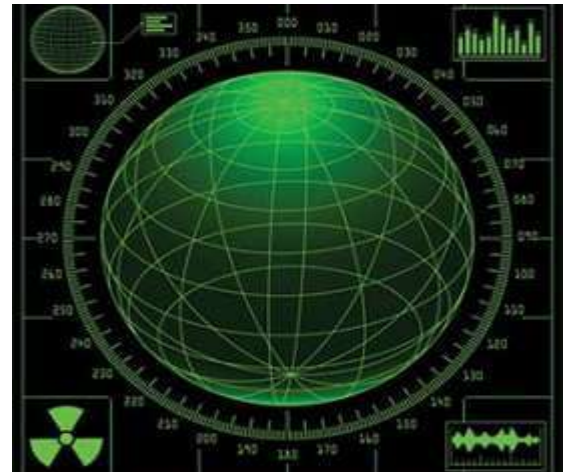
- **Structural Engineering** - Requires stress and strain analysis for design of ships, buildings, budgets, airplanes, etc.
- **Industrial Engineering** - Computers deal with design, implementation, and improvement of integrated systems of people, materials, and equipment.
- **Architectural Engineering**
- Computers help in planning towns, designing buildings, determining a range of buildings on a site using both 2D and 3D drawings.



Military

Computers are largely used in defence. Modern tanks, missiles, weapons, etc. Military also employs computerized control systems. Some military areas where a computer has been used are:

- Missile Control
- Military Communication
- Military Operation and Planning
- Smart Weapons



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
- FTP
- Telnet
- 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
- Computation of male/female ratio
- Computerization of voters lists
- Computerization of PAN card
- Weather forecasting



4. Computer Fundamentals – Generations

Generation in computer terminology is a change in technology a computer is/was being used. Initially, the generation term was used to distinguish between varying hardware technologies. Nowadays, generation includes both hardware and software, which together make up an entire computer system.

There are five computer generations known till date. Each generation has been discussed in detail along with their time period and characteristics. In the following table, approximate dates against each generation has been mentioned, which are normally accepted.

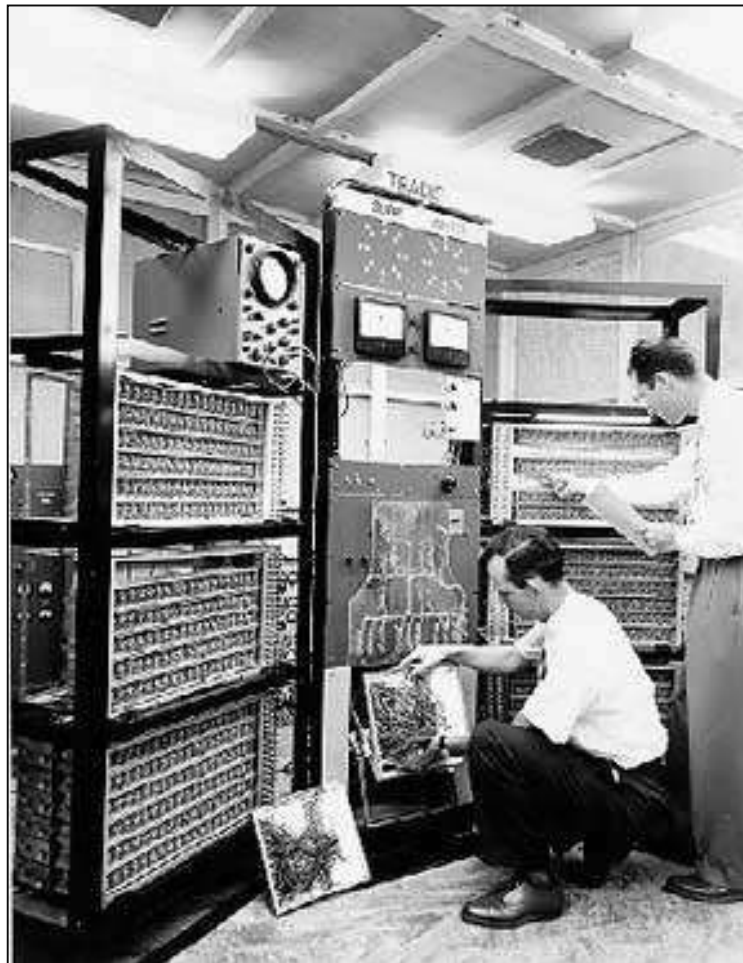
Following are the main five generations of computers.

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

First Generation Computers

The period of first generation was from 1946-1959. The computers of first generation used vacuum tubes as the basic components for memory and circuitry for CPU (Central Processing Unit). These tubes, like electric bulbs, produced a lot of heat and the installations used to fuse frequently. Therefore, they were very expensive and only large organizations were able to afford it.

In this generation, mainly batch processing operating system was used. Punch cards, paper tape, and magnetic tape was used as input and output devices. The computers in this generation used machine code as the programming language.



The main features of the first generation are:

- Vacuum tube technology
- Unreliable
- Supported machine language only
- Very costly
- Generated a lot of heat
- Slow input and output devices
- Huge size
- Non-portable
- Consumed a lot of electricity

Some computers of this generation were:

- ENIAC
- EDVAC
- UNIVAC
- IBM-701
- IBM-650

Second Generation Computers

The period of second generation was from 1959-1965. In this generation, transistors were used that were cheaper, consumed less power, more compact in size, more reliable and faster than the first generation machines made of vacuum tubes. In this generation, magnetic cores were used as the primary memory and magnetic tape and magnetic disks as secondary storage devices.

In this generation, assembly language and high-level programming languages like FORTRAN, COBOL were used. The computers used batch processing and multiprogramming operating system.



The main features of second generation are:

- Use of transistors
- Reliable in comparison to first generation computers
- Smaller size as compared to first generation computers
- Generated less heat as compared to first generation computers
- Consumed less electricity as compared to first generation computers

- Faster than first generation computers
- Still very costly
- Supported machine and assembly languages

Some computers of this generation were:

- IBM 1620
- IBM 7094
- CDC 1604
- CDC 3600
- UNIVAC 1108

Third Generation Computers

The period of third generation was from 1965-1971. The computers of third generation used Integrated Circuits (ICs) in place of transistors. A single IC has many transistors, resistors, and capacitors along with the associated circuitry.

The IC was invented by Jack Kilby. This development made computers smaller in size, reliable, and efficient. In this generation remote processing, time-sharing, multi-programming operating system were used. High-level languages (FORTRAN-II TO IV, COBOL, PASCAL PL/1, BASIC, ALGOL-68 etc.) were used during this generation.



The main features of third generation are:

- IC used
- More reliable in comparison to previous two generations
- Smaller size
- Generated less heat

- Faster
- Lesser maintenance
- Costly
- Consumed lesser electricity
- Supported high-level language

Some computers of this generation were:

- IBM-360 series
- Honeywell-6000 series
- PDP (Personal Data Processor)
- IBM-370/168
- TDC-316

Fourth Generation Computers

The period of fourth generation was from 1971-1980. Computers of fourth generation used Very Large Scale Integrated (VLSI) circuits. VLSI circuits having about 5000 transistors and other circuit elements with their associated circuits on a single chip made it possible to have microcomputers of fourth generation.

Fourth generation computers became more powerful, compact, reliable, and affordable. As a result, it gave rise to Personal Computer (PC) revolution. In this generation, time sharing, real time networks, distributed operating system were used. All the high-level languages like C, C++, DBASE etc., were used in this generation.



The main features of fourth generation are:

- VLSI technology used
- Very cheap
- Portable and reliable
- Use of PCs
- Very small size
- Pipeline processing
- Concept of internet was introduced
- Great developments in the fields of networks
- Computers became easily available

Some computers of this generation were:

- DEC 10
- STAR 1000
- PDP 11
- CRAY-1(Super Computer)
- CRAY-X-MP(Super Computer)

Fifth Generation Computers

The period of fifth generation is 1980-till date. In the fifth generation, VLSI technology became ULSI (Ultra Large Scale Integration) technology, resulting in the production of microprocessor chips having ten million electronic components.

This generation is based on parallel processing hardware and AI (Artificial Intelligence) software. AI is an emerging branch in computer science, which interprets the means and method of making computers think like human beings. All the high-level languages like C and C++, Java, .Net etc., are used in this generation.



AI includes:

- Robotics
- Neural Networks
- Game Playing
- Development of expert systems to make decisions in real-life situations
- Natural language understanding and generation

The main features of fifth generation are:

- ULSI technology
- Development of true artificial intelligence
- Development of Natural language processing
- Advancement in Parallel Processing
- Advancement in Superconductor technology
- More user-friendly interfaces with multimedia features
- Availability of very powerful and compact computers at cheaper rates

Some computer types of this generation are:

- Desktop
- Laptop
- NoteBook
- UltraBook
- ChromeBook

5. Computer Fundamentals – Types

Computers can be broadly classified by their speed and computing power.

Sr. No.	Type	Specifications
1	PC (Personal Computer)	It is a single user computer system having moderately powerful microprocessor (Cheap and easy to use. Often used as stand-alone computers or in a network).
2	Workstation	It is also a single user computer system, similar to personal computer however has a more powerful microprocessor
3	Mini Computer	It is a multi-user computer system, capable of supporting hundreds of users simultaneously. (Very powerful, used by large organisations such as banks to control the entire business operation. Very expensive!).
4	Main Frame	It is a multi-user computer system, capable of supporting hundreds of users simultaneously. Software technology is different from minicomputer. (Very powerful, used by large organisations such as banks to control the entire business operation. Very expensive!).
5	Supercomputer	It is an extremely fast computer, which can execute hundreds of millions of instructions per second.

PC (Personal Computer)

A PC can be defined as a small, relatively inexpensive computer designed for an individual user. PCs are based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip. Businesses use personal computers for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. At home, the most popular use for personal computers is playing games and surfing the Internet.

Although personal computers are designed as single-user systems, these systems are normally linked together to form a network. In terms of power, now-a-days high-end models of the Macintosh and PC offer the same computing power and graphics capability as low-end workstations by Sun Microsystems, Hewlett-Packard, and Dell.



Workstation

Workstation is a computer used for engineering applications (CAD/CAM), desktop publishing, software development, and other such types of applications which require a moderate amount of computing power and relatively high quality graphics capabilities.

Workstations generally come with a large, high-resolution graphics screen, large amount of RAM, inbuilt network support, and a graphical user interface. Most workstations also have mass storage device such as a disk drive, but a special type of workstation, called diskless workstation, comes without a disk drive.

Common operating systems for workstations are UNIX and Windows NT. Like PC, workstations are also single-user computers like PC but are typically linked together to form a local-area network, although they can also be used as stand-alone systems.



Minicomputer

It is a midsize multi-processing system capable of supporting up to 250 users simultaneously.



Mainframe

Mainframe is very large in size and is an expensive computer capable of supporting hundreds or even thousands of users simultaneously. Mainframe executes many programs concurrently and supports many simultaneous execution of programs.



Supercomputer

Supercomputers are one of the fastest computers currently available. Supercomputers are very expensive and are employed for specialized applications that require immense amount of mathematical calculations (number crunching).

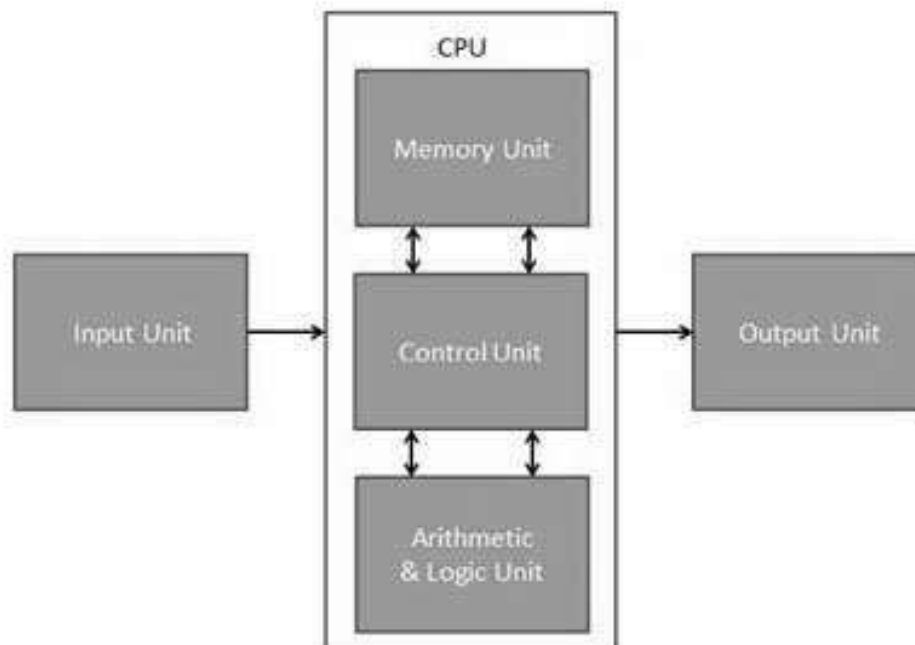


For example, weather forecasting, scientific simulations, (animated) graphics, fluid dynamic calculations, nuclear energy research, electronic design, and analysis of geological data (e.g. in petrochemical prospecting).

6. Computer Fundamentals – Components

All types of computers follow the same basic logical structure and perform the following five basic operations for converting raw input data into information useful to their users.

Sr. No.	Operation	Description
1	Take Input	The process of entering data and instructions into the computer system.
2	Store Data	Saving data and instructions so that they are available for processing as and when required.
3	Processing Data	Performing arithmetic, and logical operations on data in order to convert them into useful information.
4	Output Information	The process of producing useful information or results for the user, such as a printed report or visual display.
5	Control the workflow	Directs the manner and sequence in which all of the above operations are performed.



7. Computer Fundamentals – Hardware

Hardware represents the physical and tangible components of a computer, i.e. the components that can be seen and touched.

Examples of Hardware are the following:

- **Input devices** - keyboard, mouse, etc.
- **Output devices** - printer, monitor, etc.
- **Secondary storage devices** - Hard disk, CD, DVD, etc.
- **Internal components** - CPU, motherboard, RAM, etc.



Input Unit

This unit contains devices with the help of which we enter data into the computer. This unit creates a link between the user and the computer. The input devices translate the information into a form understandable by the computer

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)
- Memory Unit
- Control Unit

Output Unit

The output unit consists of devices with the help of which we get the information from the computer. This unit is a link between the computer and the users. Output devices translate the computer's output into a form understandable by the users.

8. Computer Fundamentals – Central Processing Unit

("The brain of the computer")

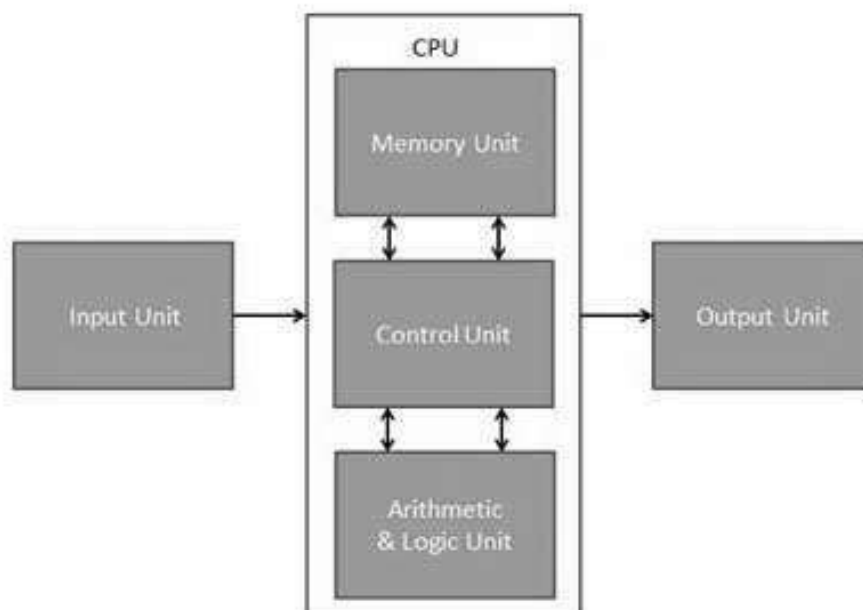
Central Processing Unit (CPU) consists of the following features:

- 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.
- It determines how fast your computer will run and is measured by its MHz speed. Thus a 600 MHz Pentium is much faster than say a 400 MHz Pentium CPU.



CPU itself has following three components.

- Memory or Storage Unit
- Control Unit
- ALU (Arithmetic Logic Unit)



Memory or Storage Unit

This unit can store instructions, data, and intermediate results. This unit supplies information to other units of the computer when needed. It is also known as internal storage unit or the main memory or the primary storage or Random Access Memory (RAM).

Its size affects speed, power, and capability. Primary memory and secondary memory are two types of memories in the computer. Functions of the memory unit are:

- It stores all the data and the instructions required for processing.
- It stores intermediate results of processing.
- It stores the final results of processing before these results are released to an output device.
- All inputs and outputs are transmitted through the main memory.

Control Unit

This unit controls the operations of all parts of the computer but does not carry out any actual data processing operations.

Functions of this unit are:

- It is responsible for controlling the transfer of data and instructions among other units of a computer.
- It manages and coordinates all the units of the computer.
- It obtains the instructions from the memory, interprets them, and directs the operation of the computer.
- It communicates with Input/Output devices for transfer of data or results from storage.
- It does not process or store data.

ALU (Arithmetic Logic Unit)

This unit consists of two subsections namely,

- Arithmetic Section
- Logic Section

Arithmetic Section

Function of arithmetic section is to perform arithmetic operations like addition, subtraction, multiplication, and division. All complex operations are done by making repetitive use of the above operations.

Logic Section

Function of logic section is to perform logic operations such as comparing, selecting, matching, and merging of data.

9. Computer Fundamentals – Input Devices

(Input Devices -- "How to tell it what to do")

Following are some of the important input devices which are used in a computer:

- Keyboard
- Mouse
- Joy Stick
- Light pen
- Track Ball
- Scanner
- Graphic Tablet
- Microphone
- Magnetic Ink Card Reader (MICR)
- Optical Character Reader (OCR)
- Bar Code Reader
- Optical Mark Reader (OMR)

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.



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

The keys on the keyboard are as follows:

Sr. No.	Keys	Description
1	Typing Keys	These keys include the letter keys (A-Z) and digit keys (0-9) which generally give the same layout as that of typewriters.
2	Numeric Keypad	It is used to enter the numeric data or cursor movement. Generally, it consists of a set of 17 keys that are laid out in the same configuration used by most adding machines and calculators.
3	Function Keys	The twelve function keys are present on the keyboard which are arranged in a row at the top of the keyboard. Each function key has a unique meaning and is used for some specific purpose.
4	Control keys	These keys provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).
5	Special Purpose Keys	Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

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.



Advantages

- Easy to use
- Not very expensive
- Moves the cursor faster than the arrow keys of the keyboard

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.



When the tip of a light pen is moved over the monitor screen and the pen button is pressed, its photocell sensing element detects the screen location and sends the corresponding signal to the CPU.

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.

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.

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.

10. Computer Fundamentals – Output Devices (Output Devices -- "How it shows you what it is doing")

Following are some of the important output devices used in a computer.

- Monitors
- Graphic Plotter
- Printer

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

Cathode-Ray Tube (CRT) Monitor

The CRT display is made up of small picture elements called pixels. The smaller the pixels, the better the image clarity or resolution. It takes more than one illuminated pixel to form a whole character, such as the letter 'e' in the word help.



A finite number of characters can be displayed on a screen at once. The screen can be divided into a series of character boxes - fixed location on the screen where a standard character can be placed. Most screens are capable of displaying 80 characters of data horizontally and 25 lines vertically.

There are some disadvantages of CRT:

- Large in Size
- High power consumption

Flat-Panel Display Monitor

The flat-panel display refers to a class of video devices that have reduced volume, weight and power requirement in comparison to the CRT. You can hang them on walls or wear them on your wrists. Current uses of flat-panel displays include calculators, video games, monitors, laptop computer, and graphics display.



The flat-panel display is divided into two categories:

- **Emissive Displays** - Emissive displays are devices that convert electrical energy into light. For example, plasma panel and LED (Light-Emitting Diodes).
- **Non-Emissive Displays** - Non-emissive displays use optical effects to convert sunlight or light from some other source into graphics patterns. For example, LCD (Liquid-Crystal Device).

Printers

Printer is an output device, which is used to print information on paper.

There are two types of printers:

- Impact Printers
- Non-Impact Printers

Impact Printers

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

Characteristics of Impact Printers are the following:

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

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.

These printers are of two types -

- Laser Printers
- Inkjet Printers



Characteristics of Non-impact Printers

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

11. Computer Fundamentals – Memory

("How the processor stores and uses immediate data")

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 three types -

- Cache Memory
- Primary Memory/Main Memory
- Secondary Memory

Cache Memory

Cache memory is a very high speed semiconductor memory which can speed up the CPU. It acts as a buffer between the CPU and the main memory. It is used to hold those parts of data and program which are most frequently used by the CPU. The parts of data and programs are transferred from the disk to cache memory by the operating system, from where the CPU can access them.



Advantages

The advantages of cache memory are as follows:

- Cache memory is faster than main memory.
- It consumes less access time as compared to main memory.
- It stores the program that can be executed within a short period of time.
- It stores data for temporary use.

Disadvantages

The disadvantages of cache memory are as follows:

- Cache memory has limited capacity.
- It is very expensive.

Primary Memory(Main Memory)

Primary memory holds only those data and instructions on which the computer is currently working. It has a limited capacity and data is lost when power is switched off. It is generally made up of semiconductor device. These memories are not as fast as registers. The data and instruction required to be processed resides in the main memory. It is divided into two subcategories RAM and ROM.



Characteristics of Main Memory

- These are semiconductor memories. It is known as the main memory.
- Usually volatile memory.
- Data is lost in case power is switched off.
- It is the working memory of the computer.
- Faster than secondary memories.
- A computer cannot run without the primary memory.

Secondary Memory

This type of memory is also known as external memory or non-volatile. It is slower than the main memory. These are used for storing data/information permanently. CPU directly does not access these memories, instead they are accessed via input-output routines. The contents of secondary memories are first transferred to the main memory, and then the CPU can access it. For example, disk, CD-ROM, DVD, etc.



Characteristics of Secondary Memory

- These are magnetic and optical memories. It is known as the backup memory.
- It is a non-volatile memory.
- Data is permanently stored even if power is switched off.
- It is used for storage of data in a computer.
- Computer may run without the secondary memory.
- Slower than primary memories.

12. Computer Fundamentals – Random Access Memory

RAM (Random Access Memory) is the internal memory of the CPU for storing data, program, and program result. It is a read/write memory which stores data until the machine is working. As soon as the machine is switched off, data is erased.

Access time in RAM is independent of the address, that is, each storage location inside the memory is as easy to reach as other locations and takes the same amount of time. Data in the RAM can be accessed randomly but it is very expensive.

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

RAM is of two types -

- Static RAM (SRAM)
- Dynamic RAM (DRAM)



Static RAM (SRAM)

The word **static** indicates that the memory retains its contents as long as power is being supplied. However, data is lost when the power gets down due to volatile nature. SRAM chips use a matrix of 6-transistors and no capacitors. Transistors do not require power to prevent leakage, so SRAM need not be refreshed on a regular basis.

There is extra space in the matrix, hence SRAM uses more chips than DRAM for the same amount of storage space, making the manufacturing costs higher. SRAM is thus used as cache memory and has very fast access.

Characteristic of Static RAM

- Long life
- No need to refresh
- Faster
- Used as cache memory
- Large size
- Expensive
- High power consumption

Dynamic RAM(DRAM)

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

Characteristics of Dynamic RAM

- Short data lifetime
- Needs to be refreshed continuously
- Slower as compared to SRAM
- Used as RAM
- Smaller in size
- Less expensive
- Less power consumption

13. Computer Fundamentals – Read Only Memory

ROM stands for **Read Only Memory**. The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM stores such instructions that are required to start a computer. This operation is referred to as **bootstrap**. ROM chips are not only used in the computer but also in other electronic items like washing machine and microwave oven.



Let us now discuss the various types of ROMs and their characteristics.

MROM (Masked ROM)

The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions. These kind of ROMs are known as masked ROMs, which are inexpensive.

PROM (Programmable Read Only Memory)

PROM is read-only memory that can be modified only once by a user. The user buys a blank PROM and enters the desired contents using a PROM program. Inside the PROM chip, there are small fuses which are burnt open during programming. It can be programmed only once and is not erasable.

EPROM (Erasable and Programmable Read Only Memory)

EPROM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes. Usually, an EPROM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region. The charge is retained for more than 10 years because the charge has no leakage path. For erasing this charge, ultra-violet light is passed through a quartz crystal window (lid). This exposure to ultra-violet light dissipates the charge. During normal use, the quartz lid is sealed with a sticker.

EEPROM (Electrically Erasable and Programmable Read Only Memory)

EEPROM is programmed and erased electrically. It can be erased and reprogrammed about ten thousand times. Both erasing and programming take about 4 to 10 ms (millisecond). In EEPROM, any location can be selectively erased and programmed. EEPROMs can be erased one byte at a time, rather than erasing the entire chip. Hence, the process of re-programming is flexible but slow.

Advantages of ROM

The advantages of ROM are as follows:

- Non-volatile in nature
- Cannot be accidentally changed
- Cheaper than RAMs
- Easy to test
- More reliable than RAMs
- Static and do not require refreshing
- Contents are always known and can be verified

Compare between Read Only Memory (ROM) and Random Access Memory (RAM)

Compare face	ROM	RAM
Writing	No, it is stored by manufacture	yes
Reading	yes	yes
Speed	lower	faster
Lost Data	Keep the data for a long time (foe ever)	Lost data directly when turnoff the electric line.

14. Computer Fundamentals – Motherboard

The motherboard serves as a single platform to connect all of the parts of a computer together. It connects the CPU, memory, hard drives, optical drives, video card, sound card, and other ports and expansion cards directly or via cables. It can be considered as the backbone of a computer.



Features of Motherboard

A motherboard comes with following features:

- Motherboard varies greatly in supporting various types of components.
- Motherboard supports a single type of CPU and few types of memories.
- Video cards, hard disks, sound cards have to be compatible with the motherboard to function properly.
- Motherboards, cases, and power supplies must be compatible to work properly together.

Popular Manufacturers

Following are the popular manufacturers of the motherboard.

- Intel
- ASUS
- AOpen
- ABI

- Biostar
- Gigabyte
- MSI

Description of Motherboard

The motherboard is mounted inside the case and is securely attached via small screws through pre-drilled holes. Motherboard contains ports to connect all of the internal components. It provides a single socket for CPU, whereas for memory, normally one or more slots are available. Motherboards provide ports to attach the floppy drive, hard drive, and optical drives via ribbon cables. Motherboard carries fans and a special port designed for power supply.

There is a peripheral card slot in front of the motherboard using which video cards, sound cards, and other expansion cards can be connected to the motherboard.

On the left side, motherboards carry a number of ports to connect the monitor, printer, mouse, keyboard, speaker, and network cables. Motherboards also provide USB ports, which allow compatible devices to be connected in plug-in/plug-out fashion. For example, pen drive, digital cameras, etc.

15. Computer Fundamentals – 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.

The following table explains the main memory storage units:

Sr. No.	Unit	Description
1	Bit (Binary Digit)	A binary digit is logical 0 and 1 representing a passive or 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	Word	<p>A computer word, like a byte, is a group of fixed number of bits processed as a unit, which varies from computer to computer but is fixed for each computer.</p> <p>The length of a computer word is called word-size or word length. It may be as small as 8 bits or may be as long as 96 bits. A computer stores the information in the form of computer words.</p>

The following table lists some higher storage units:

Sr. No.	Unit	Description
1	Kilobyte (KB)	1 KB = 1024 Bytes
2	Megabyte (MB)	1 MB = 1024 KB
3	GigaByte (GB)	1 GB = 1024 MB
4	TeraByte (TB)	1 TB = 1024 GB
5	PetaByte (PB)	1 PB = 1024 TB

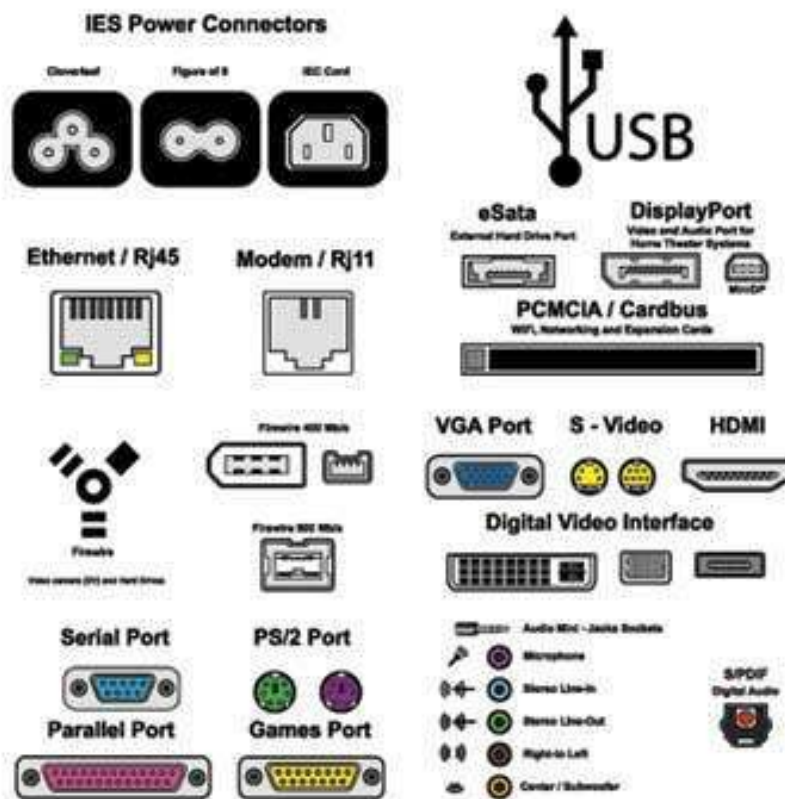
16. Computer Fundamentals – Ports

A port is a physical docking point using which an external device can be connected to the computer. It can also be programmatic docking point through which information flows from a program to the computer or over the Internet.

Characteristics of Ports

A port has the following characteristics:

- External devices are connected to a computer using cables and ports.
- Ports are slots on the motherboard into which a cable of external device is plugged in.
- Examples of external devices attached via ports are the mouse, keyboard, monitor, microphone, speakers, etc.



Let us now discuss a few important types of ports:

Serial Port

- Used for external modems and older computer mouse
- Two versions: 9 pin, 25 pin model
- Data travels at 115 kilobits per second

Parallel Port

- Used for scanners and printers
- Also called printer port
- 25 pin model
- IEEE 1284-compliant Centronics port

PS/2 Port

- Used for old computer keyboard and mouse
- Also called mouse port
- Most of the old computers provide two PS/2 port, each for the mouse and keyboard
- IEEE 1284-compliant Centronics port

Universal Serial Bus (or USB) Port

- It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.
- It was introduced in 1997.
- Most of the computers provide two USB ports as minimum.
- Data travels at 12 megabits per seconds.
- USB compliant devices can get power from a USB port.

VGA Port

- Connects monitor to a computer's video card.
- It has 15 holes.
- Similar to the serial port connector. However, serial port connector has pins, VGA port has holes.

Power Connector

- Three-pronged plug.
- Connects to the computer's power cable that plugs into a power bar or wall socket.

Firewire Port

- Transfers large amount of data at very fast speed.
- Connects camcorders and video equipment to the computer.
- Data travels at 400 to 800 megabits per seconds.
- Invented by Apple.

- It has three variants: 4-Pin FireWire 400 connector, 6-Pin FireWire 400 connector, and 9-Pin FireWire 800 connector.

Modem Port

- Connects a PC's modem to the telephone network.

Ethernet Port

- Connects to a network and high speed Internet.
- Connects the network cable to a computer.
- This port resides on an Ethernet Card.
- Data travels at 10 megabits to 1000 megabits per seconds depending upon the network bandwidth.

Game Port

- Connect a joystick to a PC
- Now replaced by USB

Digital Video Interface, DVI port

- Connects Flat panel LCD monitor to the computer's high-end video graphic cards.
- Very popular among video card manufacturers.

Sockets

- Sockets connect the microphone and speakers to the sound card of the computer.



Learn **Microsoft** **Office PowerPoint 2010**

By Assistant teacher

Sajad M.Abd

Topics:

- 1- What is PowerPoint?
- 2- PowerPoint 2010 Editing Window (Normal View).
- 3- The Ribbon.
- 4- Opening PowerPoint.
- 5- Creating New Presentations.
- 6- PowerPoint Slides.
- 7- Slide Layouts.
- 8- Applying a Them.
- 9- Text.
- 10- Formatting Bulleted Lists.
- 11- Adding Content.
- 12- Tables.
- 13- Charts.
- 14- SmartArt Graphics.
- 15- Pictures.
- 16- Clip Art.
- 17- Videos / Media.
- 18- Viewing Presentations.
- 19- Slide Show Tab.
- 20- Changing the Order of Slides in a Presentation.
- 21- PowerPoint Help.
- 22- Saving a Presentation.
- 23- Printing your Presentation.
- 24- Types of Print Layouts.
- 25- Exiting PowerPoint.

What is PowerPoint?

PowerPoint is a graphical presentation program used to organize and present information. PowerPoint presentations consist of a number of individual pages or "slides." Slides may contain text, graphics, sound, movies, and other objects that can be freely arranged.

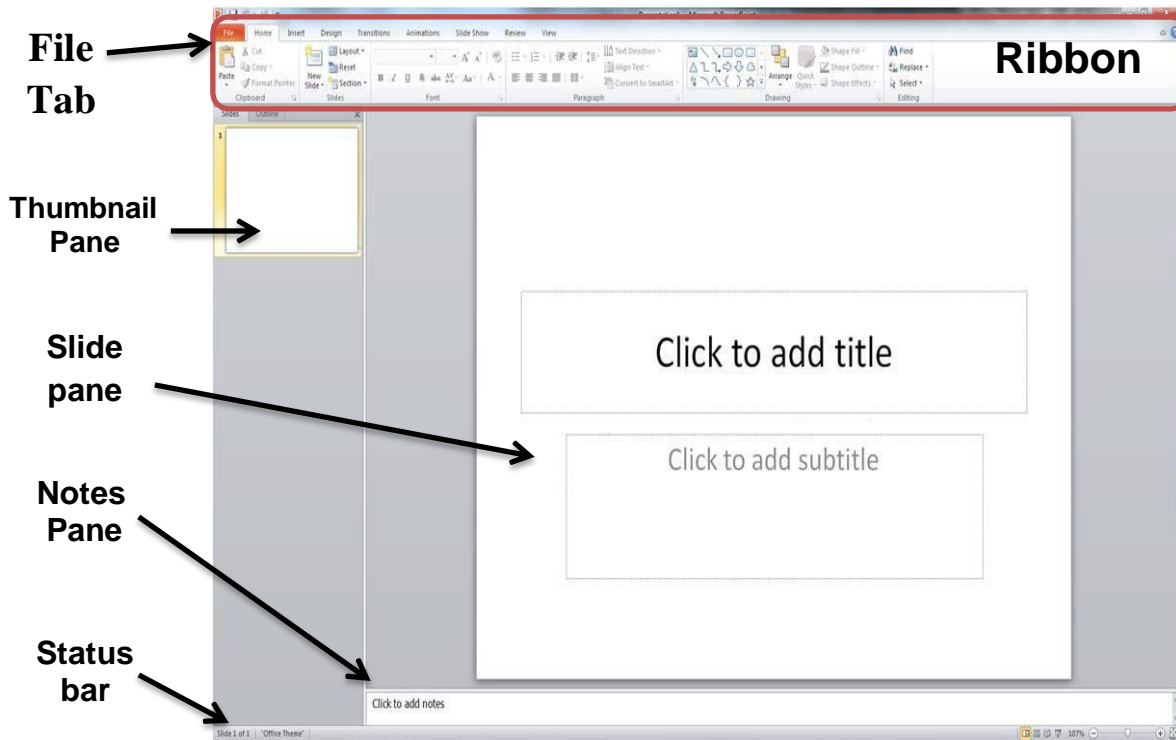
Presentations can be printed, displayed live on a computer, or navigated through at the command of the presenter. For larger audiences, the presentation is often projected onto a large screen. Handouts, speaker notes, or outlines can also be produced from the slides.

PowerPoint 2010 Editing Window (Normal View):

The **Normal View** in PowerPoint features several commonly used **Tabs**, **Panes**, and **Tools**. We'll use **Normal View** as we create and design our presentation.

The Ribbon:

The Ribbon replaces the menu bar seen in previous versions of PowerPoint. The Ribbon groups items that are most likely to be used together. There are several frequently used tabs, such as **File**, **Home**, **Insert**, **Design** and **View**. Clicking on each tab activates a group of relative commands, menus, and buttons. There are also contextual tabs that only show up only when needed, such as Text Box Tools, Picture Tools, Drawing Tools and Chart Tools. To activate those tools, click on the associated object.



Opening PowerPoint:

To open a PowerPoint 2010 presentation, click on the File tab in the upper left corner.



The most common choices for opening a presentation are:

- New** - allows you to open a Blank presentation or you may choose from a selection of Templates and Themes.
- Open** - lets you navigate to an existing file to view and/or modify a presentation that has already been created.

□ **Recent** – displays a list of your most recently created presentations and their file locations.

Creating New Presentations:

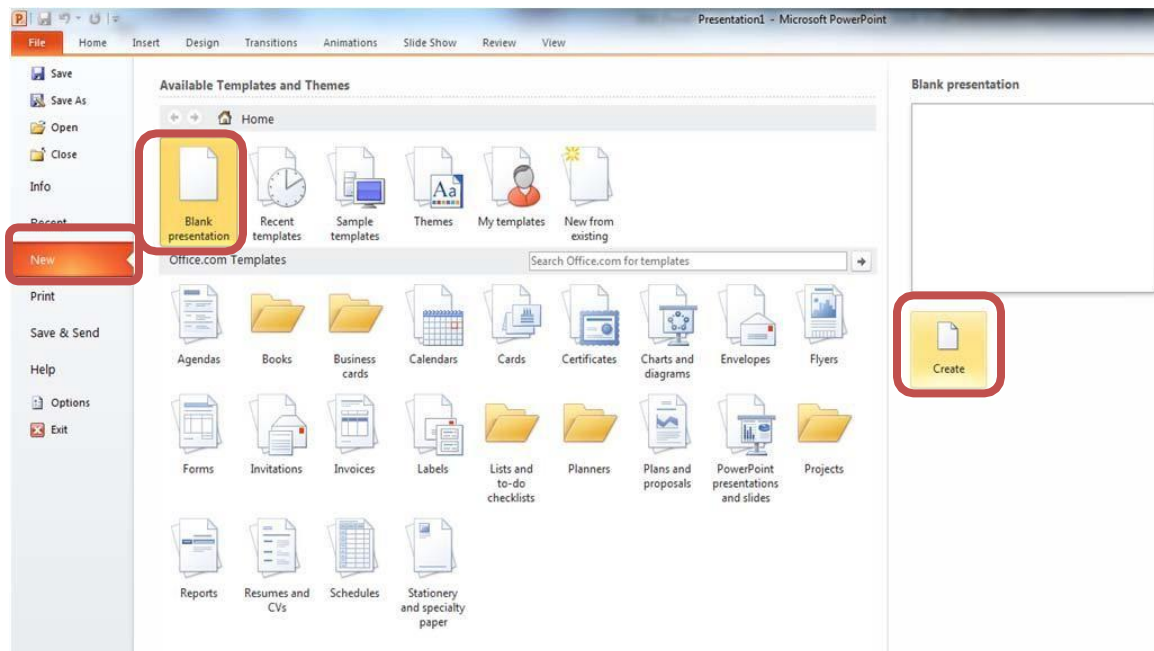
The **New** selection gives you several options:

□ **Blank presentation** creates a new presentation using default settings for text and color. These slides will not include content or design elements.

□ **Templates** and **Themes** are used to create a new presentation based on predesigned slide styles. These options also do not include content.

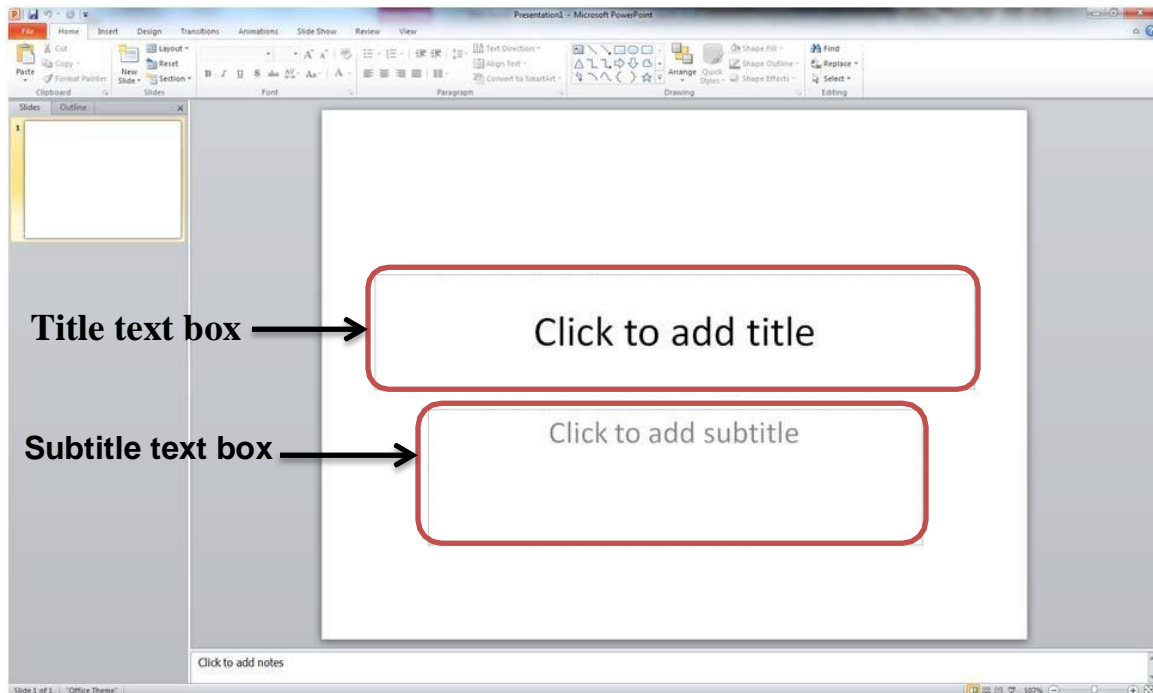
□ **New from existing** will use the formatting of a previously created presentation.

For this exercise, we'll start with a **Blank presentation**. Select **New**, choose **Blank presentation** and click on the **Create** icon.

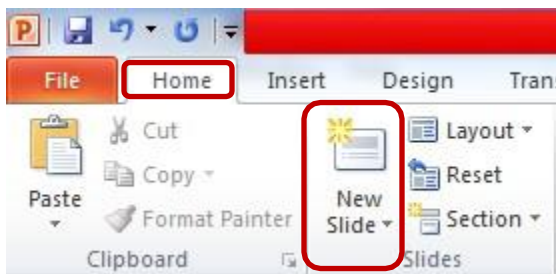


PowerPoint Slides:

When you choose to create a blank presentation, PowerPoint will open a presentation with a **Title Slide**. Once the **Title Slide** is open, you'll see a slide with two placeholder text boxes for a title and a subtitle. Click inside the placeholder box and type to add the title. If you want a subtitle, click and type inside the smaller placeholder. If you don't want a subtitle, you can just ignore its placeholder box.



To add a **New Slide**, make sure you're on the **Home** tab. The **New Slide** button will add slides to your presentation.



The **New Slide** button has two parts:



Clicking on the top part will automatically insert a new slide. If you have just created a **Title** slide, the new default layout will be a **Title and Content** slide (for details, see the section on slide layouts).



Clicking on the bottom will give you a choice of layouts. You can choose which layout you want for your next slide. Select a slide layout by clicking on its image in the **Office Theme** gallery.

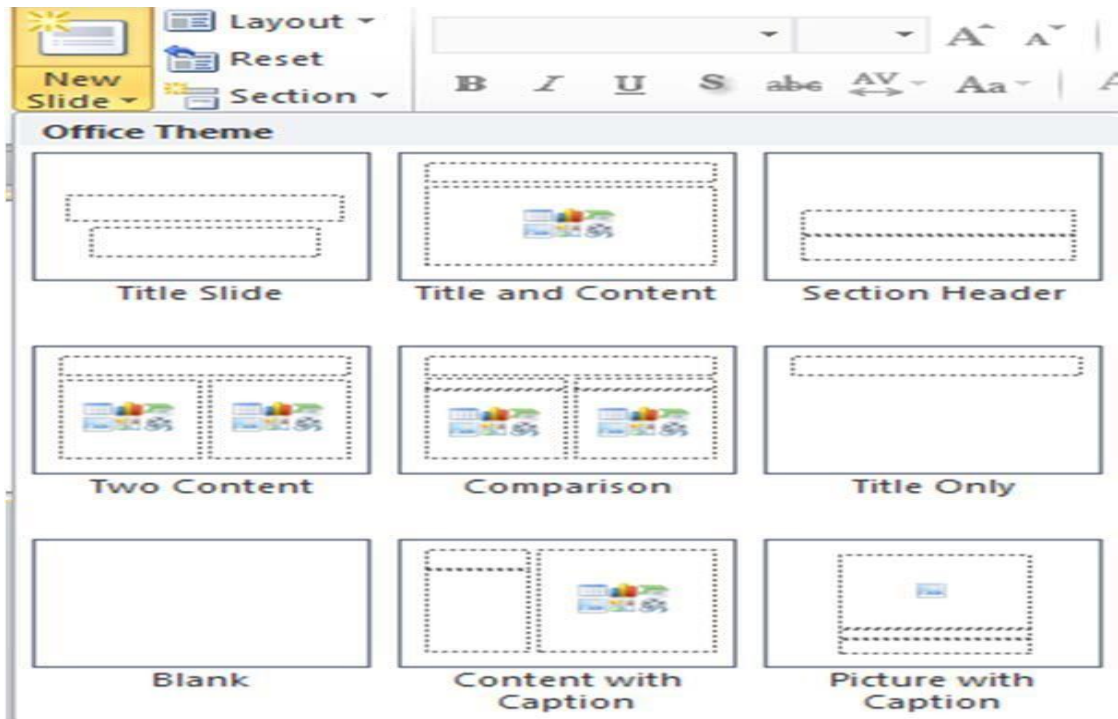
Slide Layouts:

There are several standard slide layouts to choose from when adding new slides.

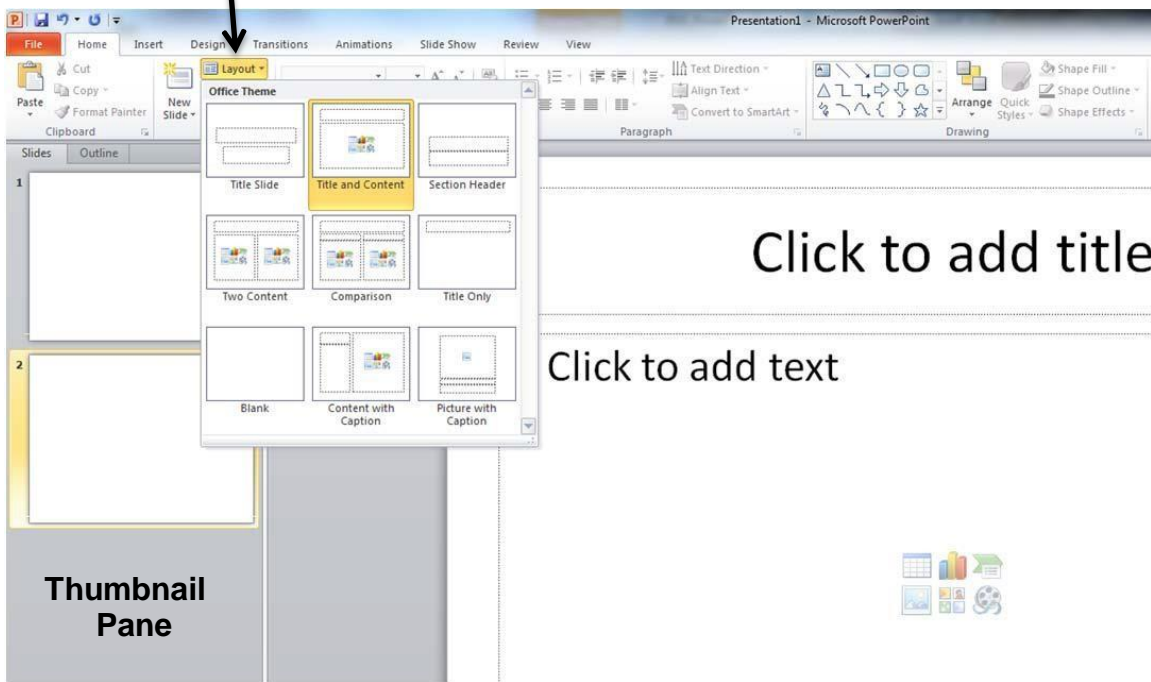
A unique layout can be chosen by clicking on the bottom half of the **New Slide** button in the **Home** tab. When the layout gallery opens, click on the style you want and a new slide with that layout will appear in your presentation.

Each layout caption describes the layout type. Content can be text, tables, charts, graphics, pictures, clip art, or video.

If you decide later that the layout you chose doesn't work well for a particular slide, select the slide by clicking on it in the **Thumbnail** pane. Next, click on the **Layout** button in the **Slides** group of the **Home** tab. Click on a new layout and it will change the layout of the slide.



Layout Bottom



Applying a Theme:

Once a new presentation has been created, a design or color scheme can be added. Remember to use color carefully to enhance your presentation, not detract from it. You'll want to maintain good contrast between the background color and the text color. Consider using a light colored background and dark text (or vice versa), but avoid busy backgrounds and primary colors. Use sans serif fonts like Arial, Calibri, and Helvetica for titles and size them between 44 – 60 points. Sub-headings should be between 32 – 40 points, and body text between 18 – 32 points. Try not to use more than two fonts.

PowerPoint has many pre-set designs and themes that include complimentary colors and fonts. To add a theme to a presentation, go to the **Design** tab in the ribbon. There are several themes immediately available. To use one of the built-in themes, just click on its thumbnail.

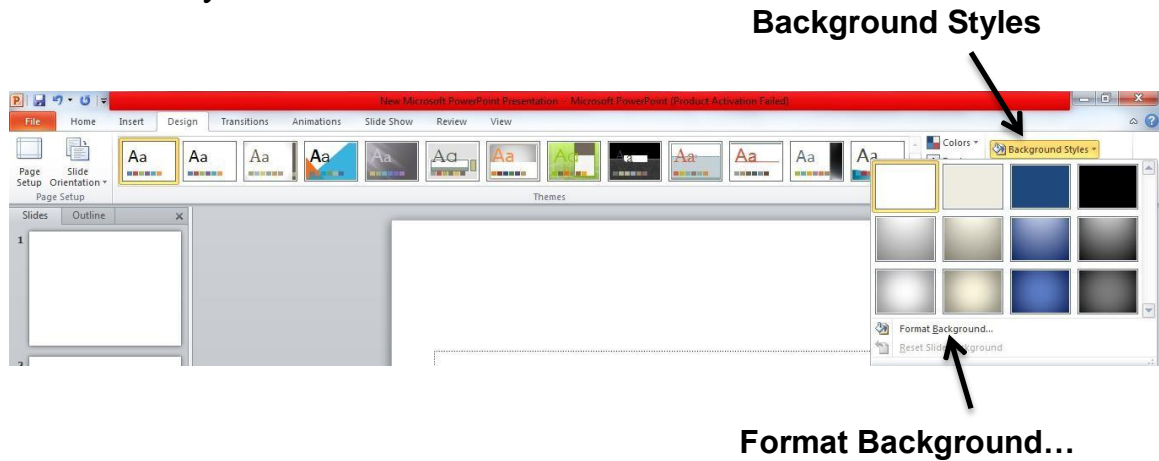
Design Tab



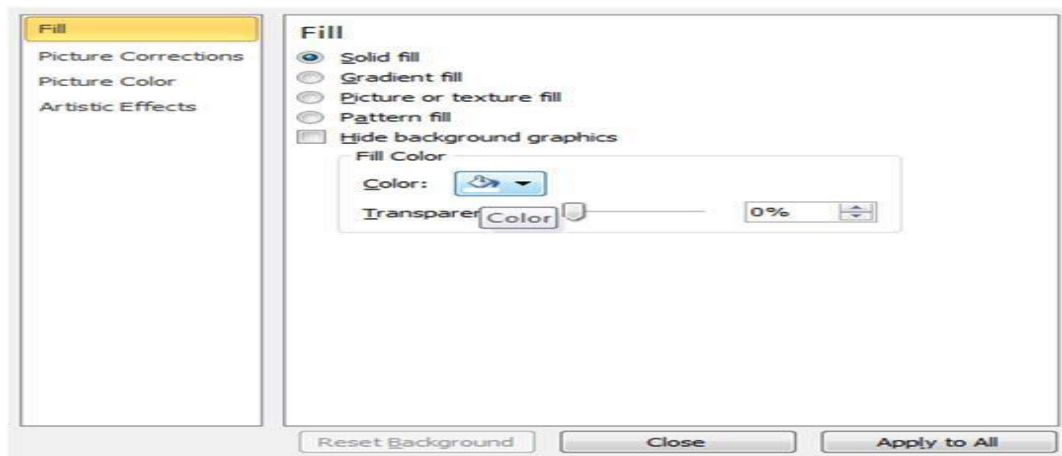
On the right side of the **Theme** thumbnails, there's a scroll bar and an **Arrow Down** button, which will offer more designs, as seen below. If you're online, you can get more themes from Microsoft Office Online. (Your office program must be a genuine Office product to get online templates).



If you don't want to use a theme, you can add **Background Styles**. From this selection, you can add some preset background styles that change according to the colors you've chosen.



Using the **Format Background** feature, you can choose fill colors, gradients, transparencies, textures, or pictures for your background.



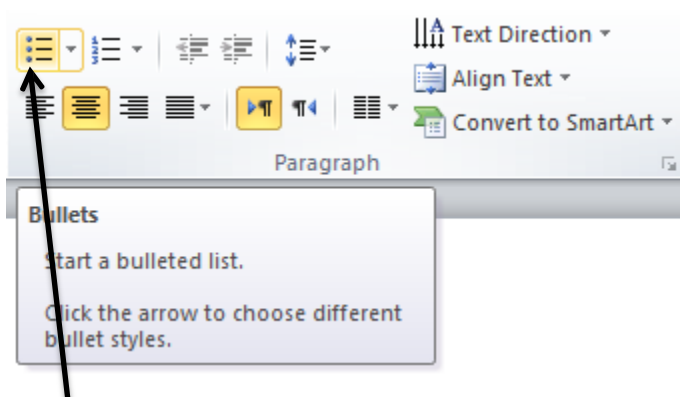
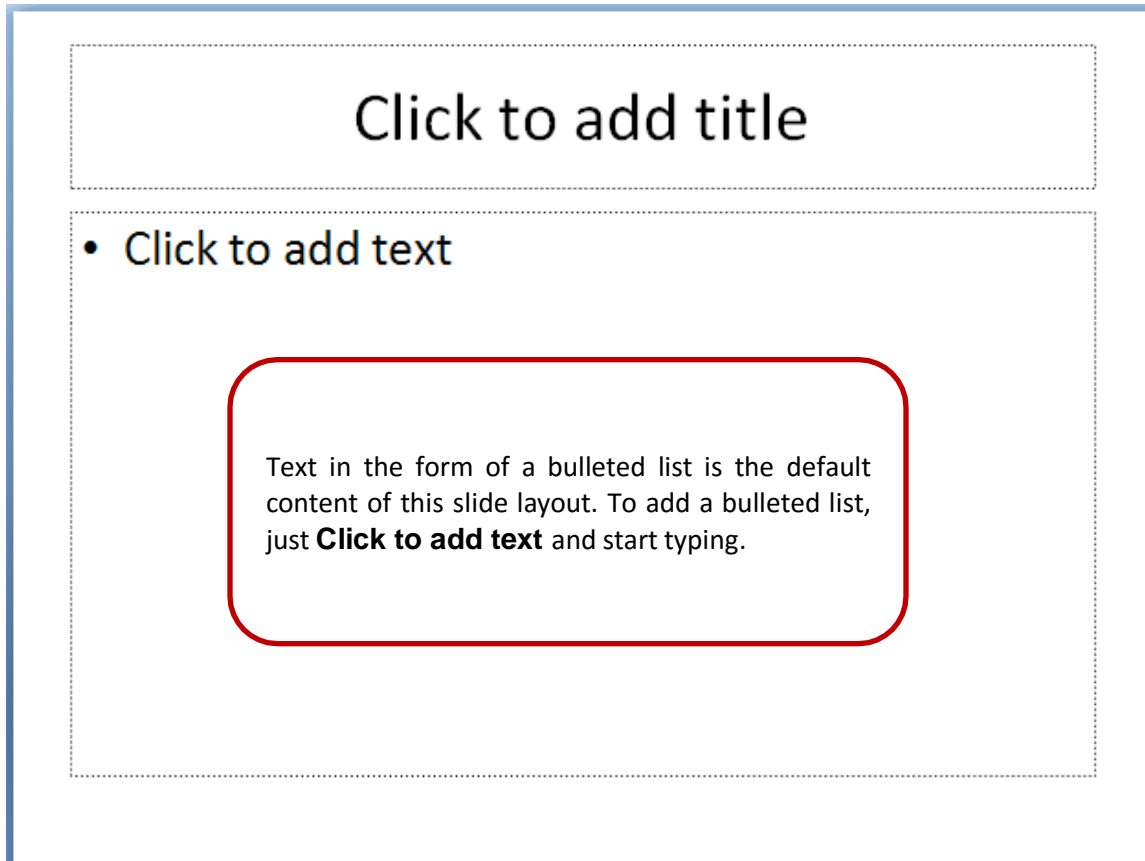
When you have the desired background fill effect, select **Close** to apply it to the selected slide or choose **Apply to All** to add the background to all of the slides in the presentation.

Designs can be added to all of the slides or to selected slides. To select multiple slides, click on a slide in the **Thumbnail** pane of the navigation bar and then hold down the control key and click on any other slides you want to apply the design to.

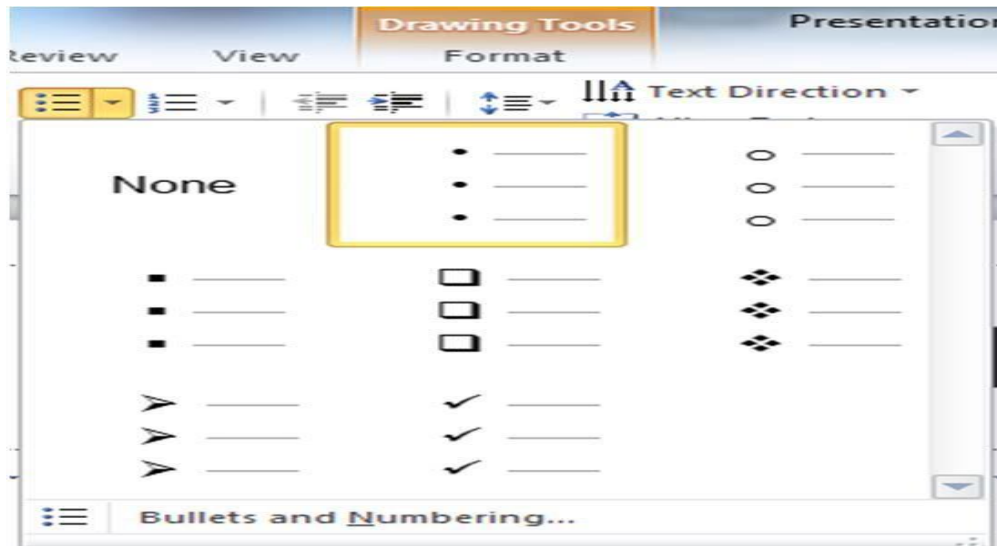
Text:

Formatting Bulleted Lists

In PowerPoint, you can easily modify a slide's default bulleted list. Click inside the text box, and the **Format** tab will automatically be highlighted. Click on the drop down triangle next to the **Bullets** button in the **Paragraph** group.



Bullets Drop Down Button

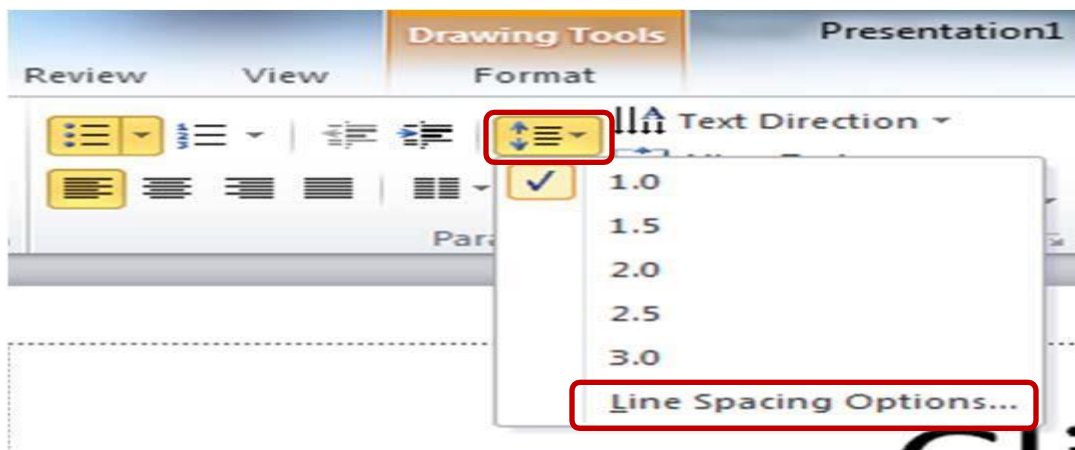


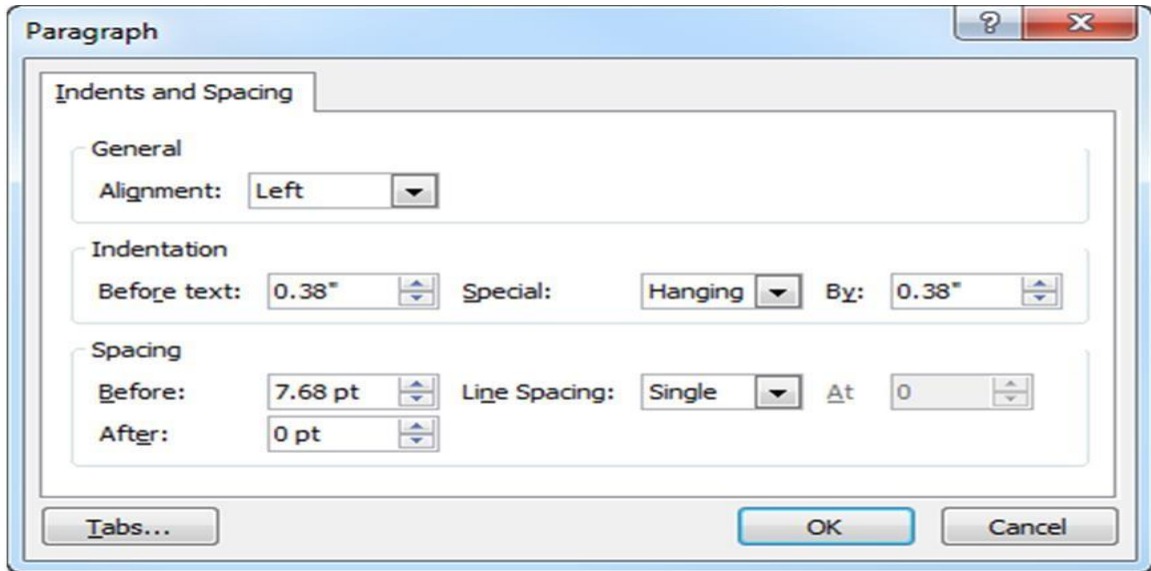
From the **Bullets and Numbering** menu you can make various changes to your list:

- The bullet size relative to the text.
- The color of the bullet.
- The shape of the bullet using either a picture or a character.

You may also want to adjust line spacing between paragraphs or lists. You can do this through the **Paragraph** group of tools by clicking the **Line Spacing** button and selecting **Line Spacing Options**.

Indents and Spacing controls will open in a separate dialog box.

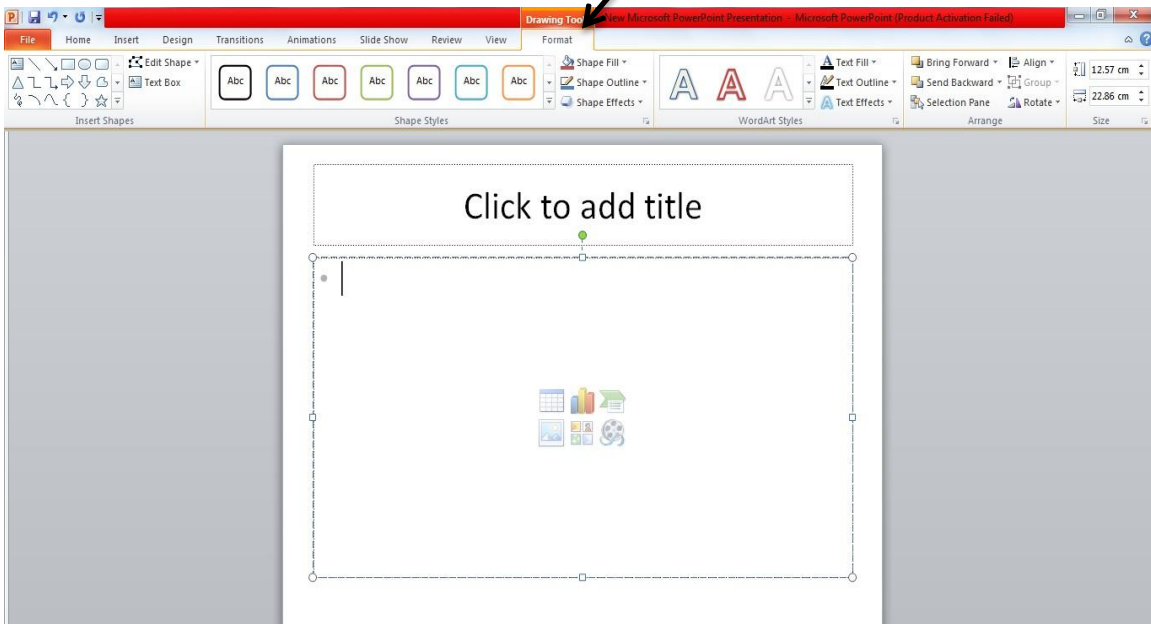




Adding Content:

Text is the default content of the slide below. The format for the default text is a bulleted list. To add text, click and begin typing. To add other content, click on the icon within the content group on the new slide. Each icon will open the appropriate dialog box or task pane in the **Drawing Tools** contextual tab.

Drawing Tools



The icons represent the six standard graphical elements that you might want to insert.



Clicking on an icon will open the associated dialog box. Note that these icons, as well as several other insertion options, are also displayed in the **Insert** tab on the Ribbon.

Tables:

Set the number of columns and rows as needed in the Insert Table dialog box and click OK. Methods for editing and the design and layout of your table are located on the Table Tools contextual tab.

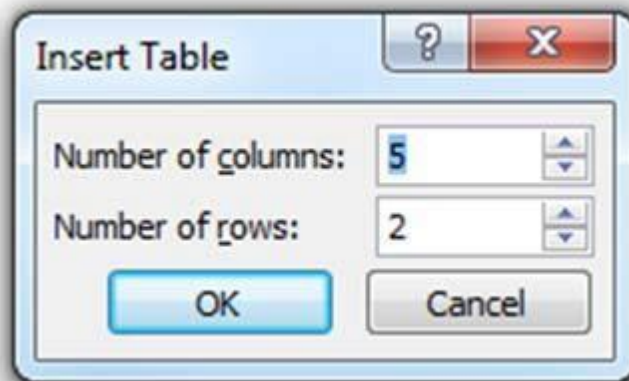
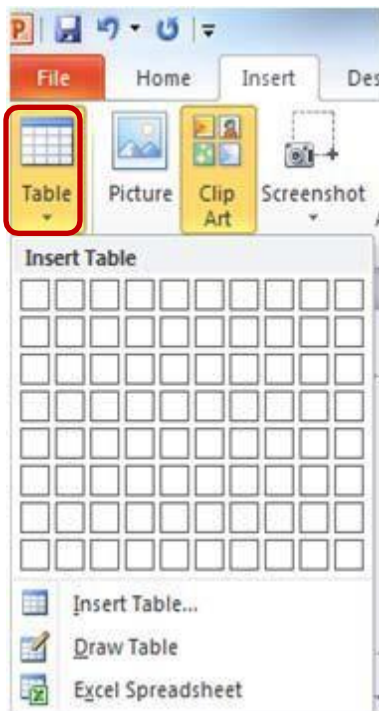


Table Tools



Charts

Select the type of chart you want and click OK. Once inserted into the slide, you can click on the chart to activate the **Chart Tools** contextual tab, where you'll find tools for editing chart data and changing layouts and styles.

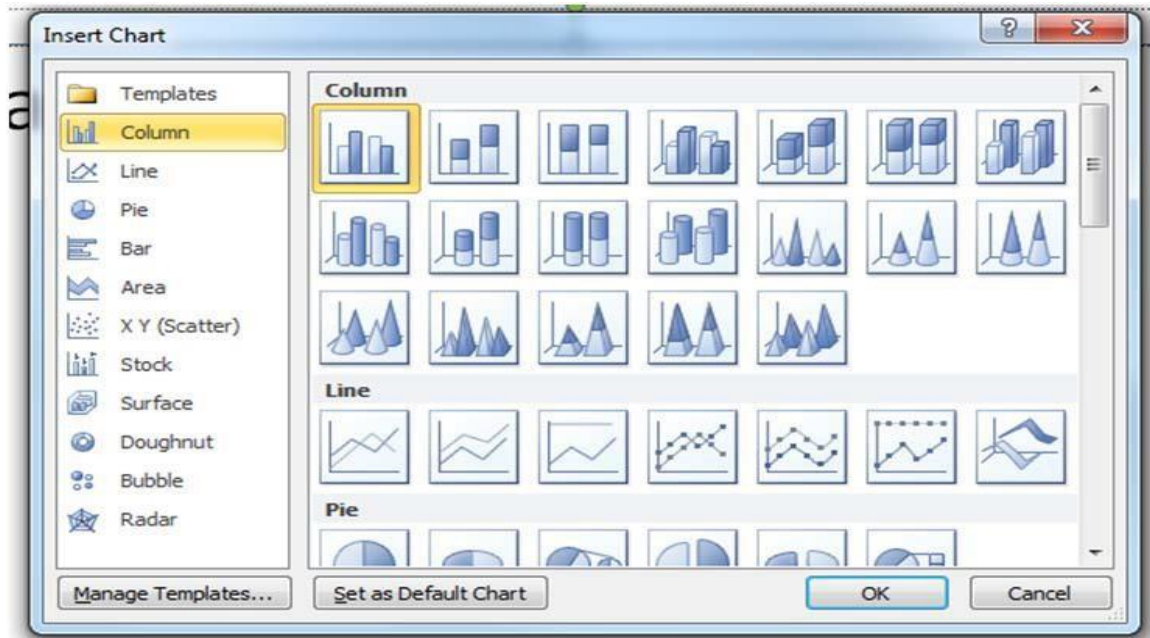
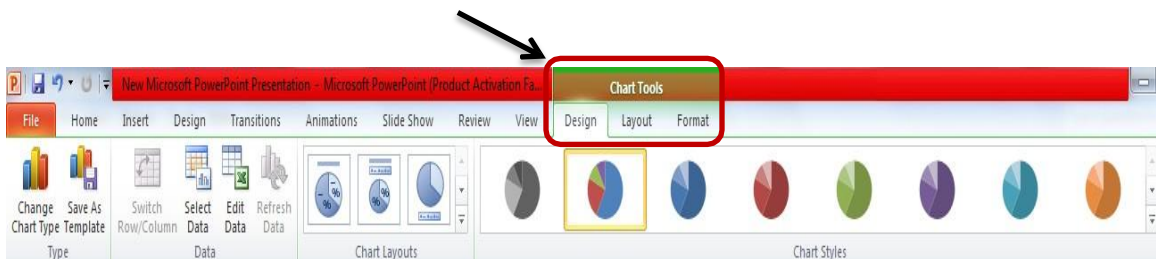
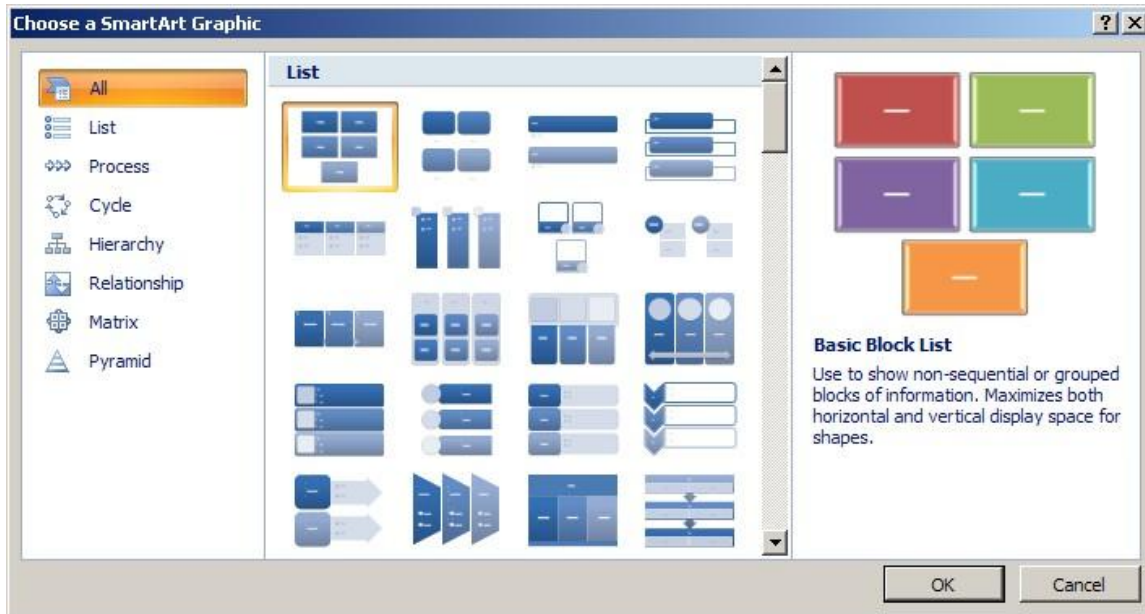


Chart Tools



SmartArt Graphics

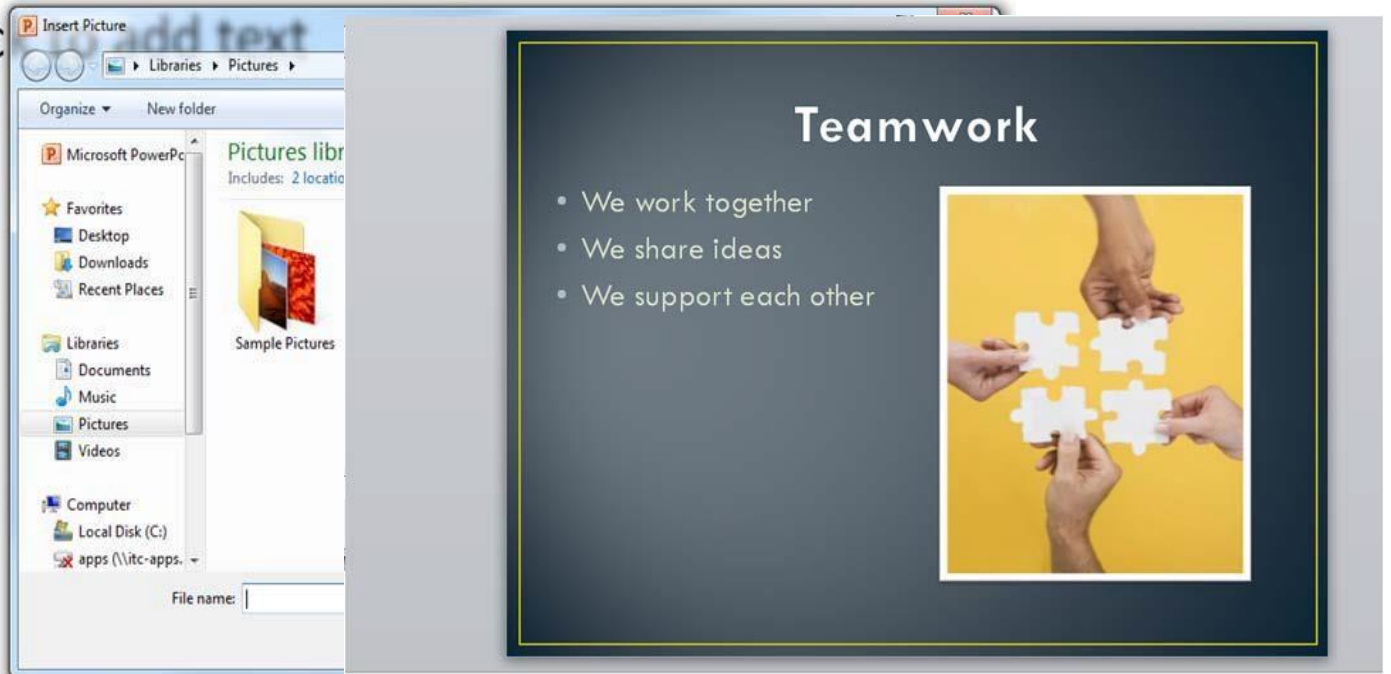
SmartArt graphics are shapes that are designed to represent the relationship between things or people. You might use SmartArt for an organizational chart or a timeline. SmartArt styles and layouts can be formatted in the **SmartArt Tools** contextual tab.



Pictures

Rather than using too much text on your slides, consider using *pictures along with text* as a more interesting way to communicate your ideas. You can put lots of text into the **Notes Section** and refer to that as you're speaking.

When browsing for images, keep in mind that pictures imported from web sites are low resolution, and are typically used for on-screen presentations and web pages. If you're going to print handouts, be sure to use images that are at least 180 dpi (dots per inch).



Note section →

- How do we Succeed as a Team?
- Team building is creating a work culture that values collaboration
 - In a *teamwork* environment, people understand and believe that thinking, planning are better done cooperatively
 - We're open and receptive to ideas and input from others on the team.
 - At *Whatever Corporation*, we believe that we're only as strong as our team
 - "None of us is as good as all of us"

Clip Art

To locate Clip Art, enter a keyword in the **Search for** box and click **Go**. You may need to try different words to find exactly what you're looking for.

A word about Clip Art:

Many of the images are a bit "cartoonish" and should be used sparingly, so if you're looking for an image for teamwork...

Try something like this...

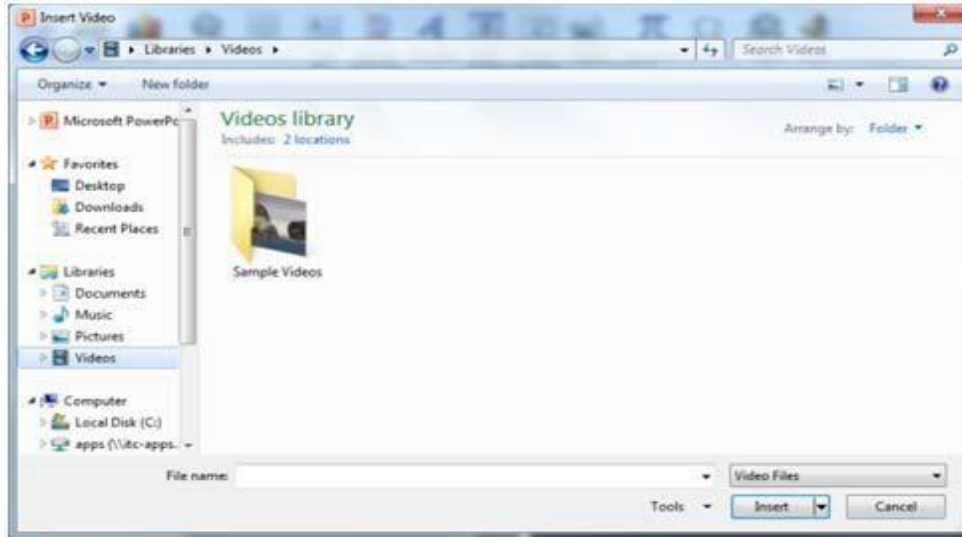


Not this!



Videos / Media

You can embed a video or link to a video from your presentation. If you want to limit the size of your file, you can link to a video file on your local drive or to a video file that you uploaded to a web site, such as YouTube.



All options to insert video or audio are located on the **Insert** tab, in the **Media** group.

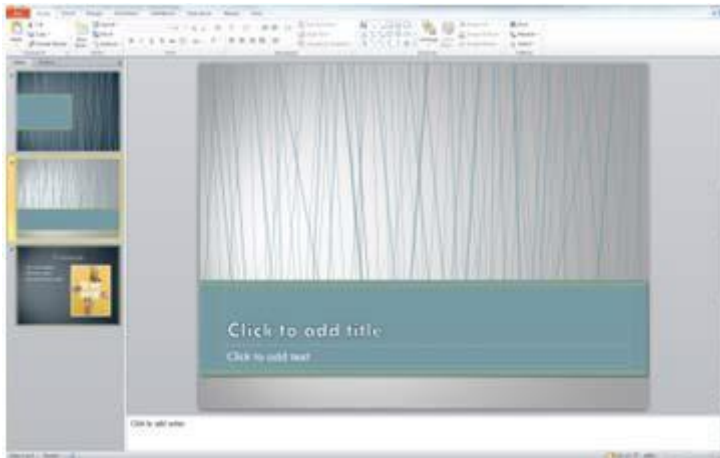


Viewing Presentations:

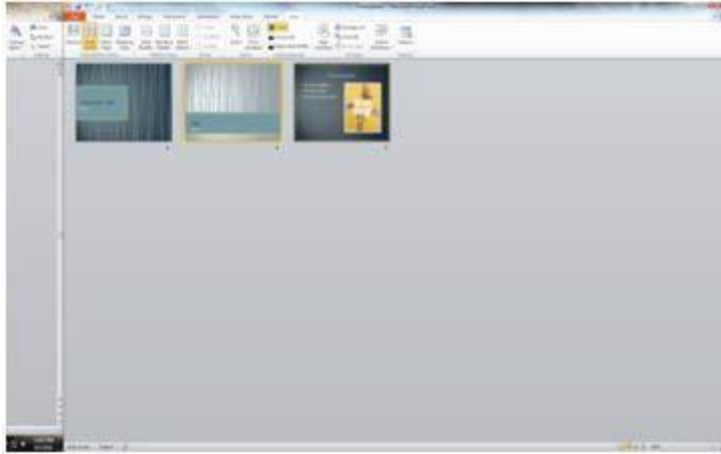
There are four different ways to view your presentation in PowerPoint. The views can be accessed using the buttons in the status bar, or by using the **View Tab** on the Ribbon.



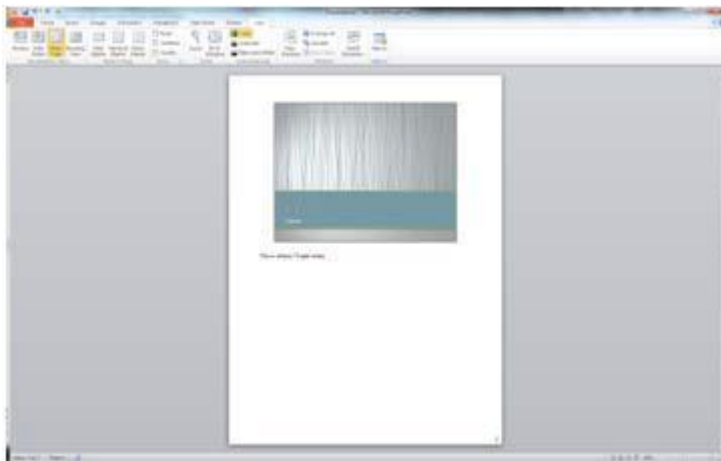
Normal View displays a single slide as it appears in the presentation, as well as thumbnails and an outline tab, where you can organize the structure. Speaker notes can be added in the bottom section of this window. This view is used to create and edit slides.



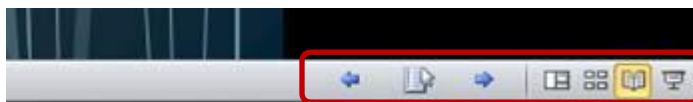
Slide Sorter View shows thumbnails of your slides. From this view you can reorder slides by dragging and dropping them, or you can set the timing for the slide show. You can also hide slides in this view. Hiding a slide will keep it in the file, but it will not show when you view the presentation.



Notes Page View allows the speaker to create notes to use during a presentation. Each page corresponds to one slide. These can be printed to assist the presenter during the presentation. Use this view when you're composing speaking topics.



Reading View/Slide Show View displays the slides as an audience will see them. Use the arrows and icons on the lower right side of the **Status Bar** to advance slides or switch views.

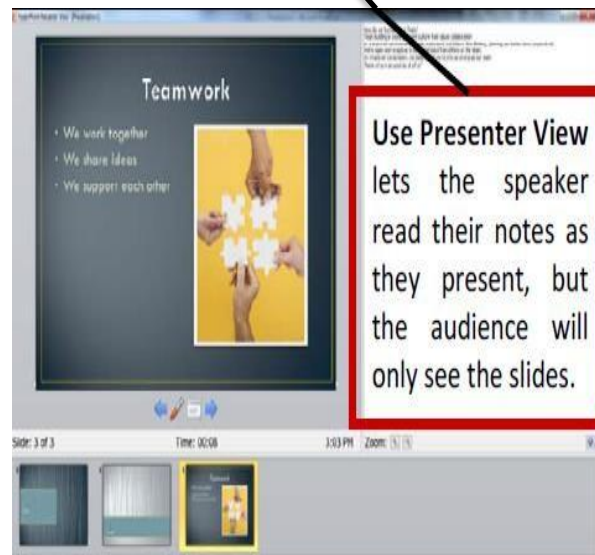
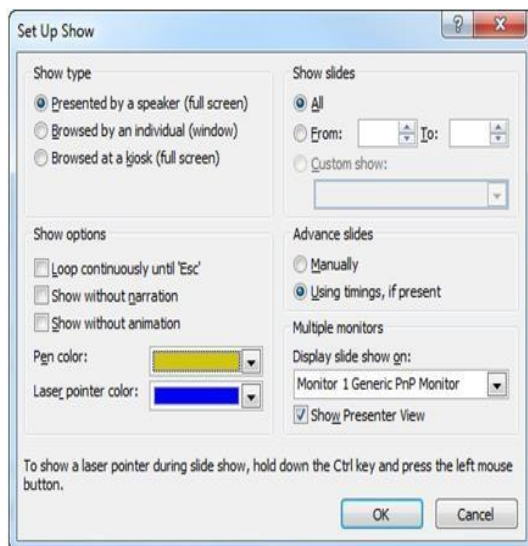




Use the **Esc** key to return to Normal View.

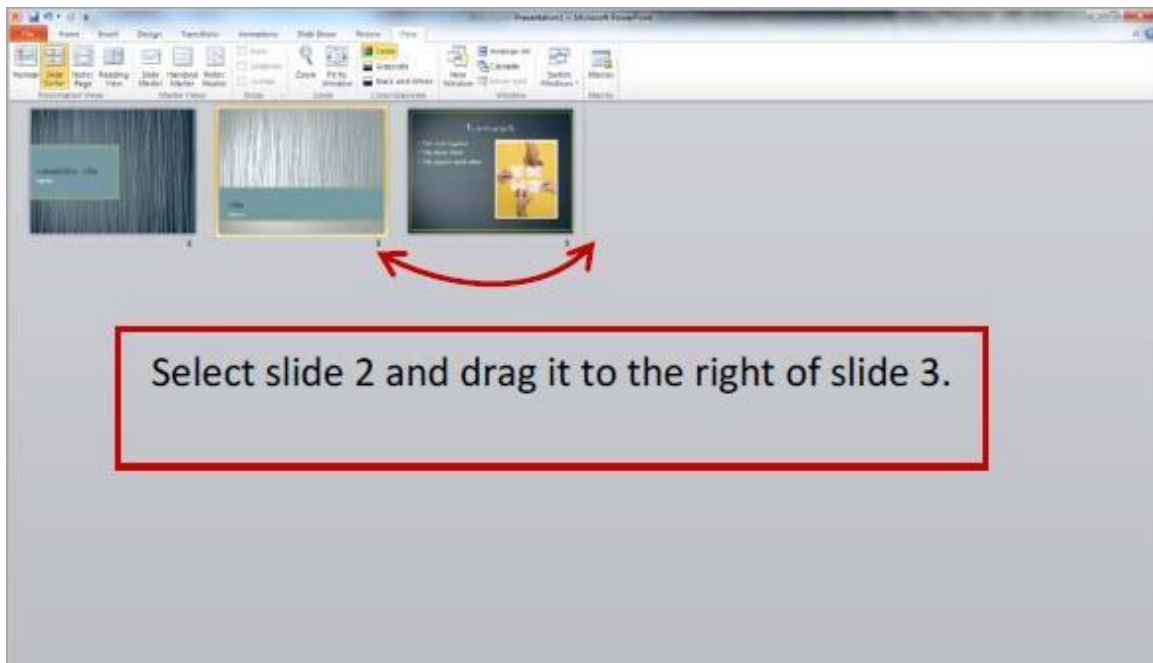
Slide Show Tab:

The **Slide Show Tab** allows you to review the slide show from beginning to end or from the current (active) slide. You can also control how the show will be presented and rehearse timings in the **Set Up Slide Show** drop down box.



Changing the Order of Slides in a Presentation:

In the slide sorter view, click and hold down the left mouse button and drag the slide to a new location. You'll see a line where the slide will be placed when you release the mouse button. This can also be done in the Thumbnail pane area of the Navigation bar.

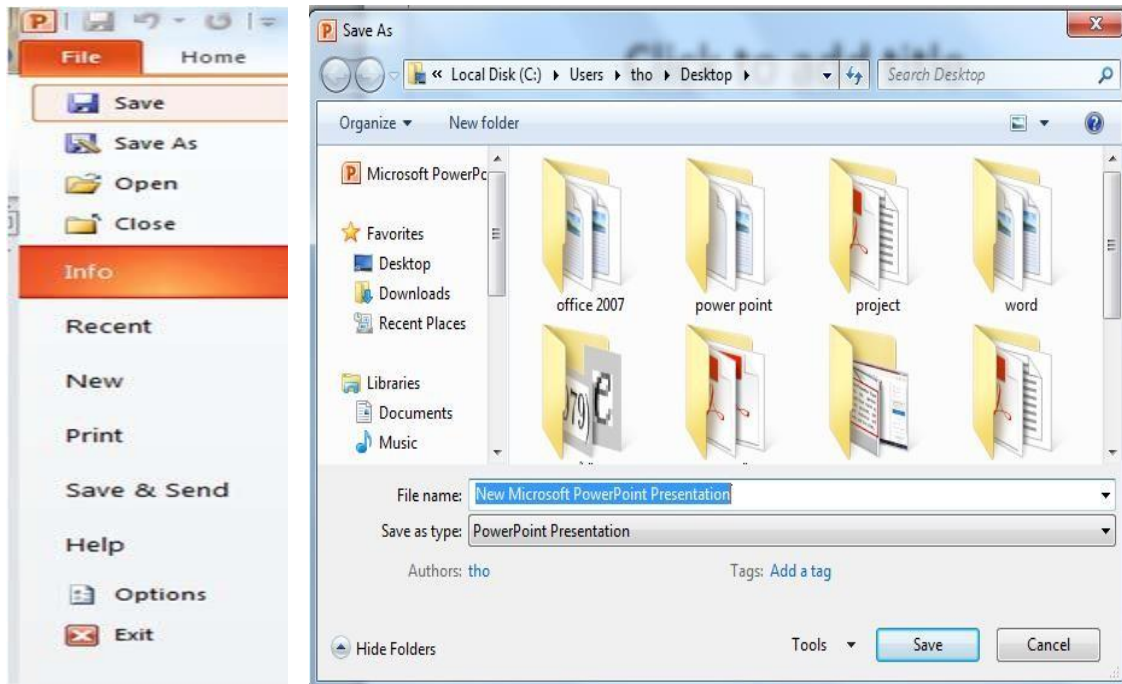


PowerPoint Help:

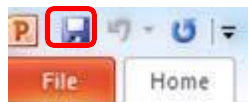
If you need help at any point while you're creating or presenting a PowerPoint slide show, you can press the F1 key on your keyboard to get content-specific help.

Saving a Presentation:

You can save a file by clicking the **File** tab, choosing **Save**, typing a descriptive name into the **File Name** window, and then clicking the **Save** button.

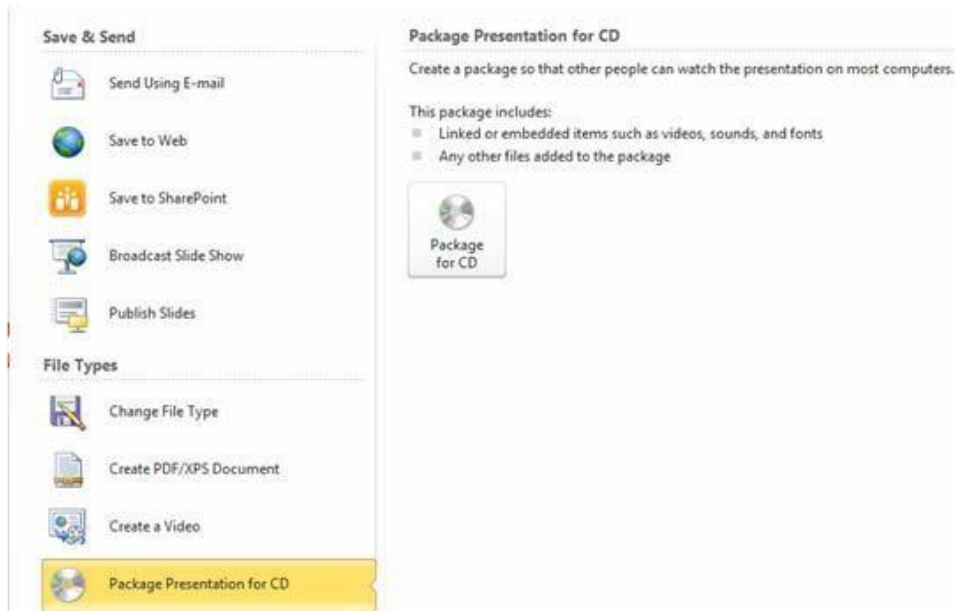


You can also use the **Save** button on the **Quick Access Toolbar** in the **top left corner**.



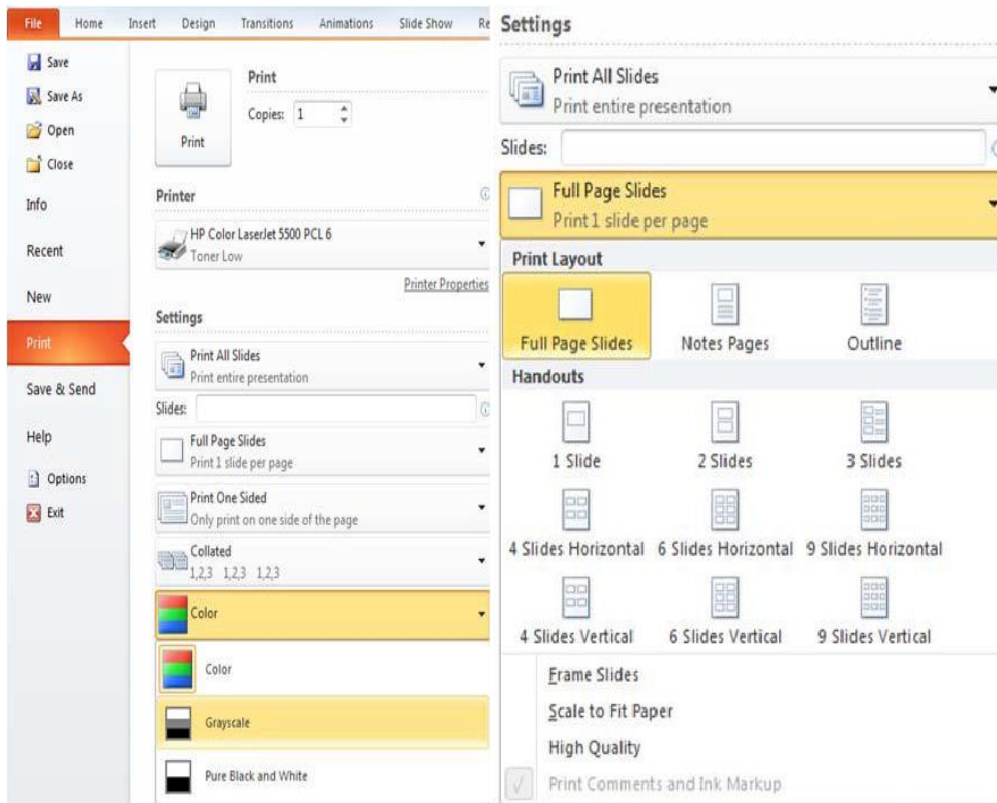
If others will need to open your file with previous versions of PowerPoint, use the **Save As** option and select **PowerPoint 97 – 2003 Presentation** from the **Save as type** menu.

You have the option to **Package Presentation for CD**. This allows you to add other files or to add a PowerPoint Viewer so that the presentation can be run on a computer that does not have the PowerPoint program. You can also add any linked files such as video or audio.



Printing your Presentation:

PowerPoint offers several print options to help you prepare your presentation. You can print slides, handouts, and/or notes to support your presentation.



Types of Print Layouts

- Print All Slides** prints out the entire presentation, one slide per page, usually landscape. If you have color graphics on your slides and a large number of pages to print, you may want to print in Gray scale or Pure Black and White.
- Notes Pages** will print one slide per page and have room for your presentation notes (if you type them in).
- You can print a text outline of your slides with the **Outline** option.
- Handouts** can be printed with one, two, three, four, six or nine slides per page. When printing handouts with multiple slides per page, you also have the option to print the pages horizontally or vertically.

Exiting PowerPoint:

There are several ways to close your file and exit PowerPoint. From the **File Button**, click **Close**, if you have not saved your presentation, PowerPoint will prompt you to save. Click **Yes** to save your presentation and your changes, click **No** to discard your changes and close the file.

To close the presentation and exit the program, choose **Exit** or use the **X** in the upper right corner of the PowerPoint window. You'll be prompted to save the presentation if any changes have not been saved.



Learn **Microsoft** **Office Word 2010**

By Assistant teacher

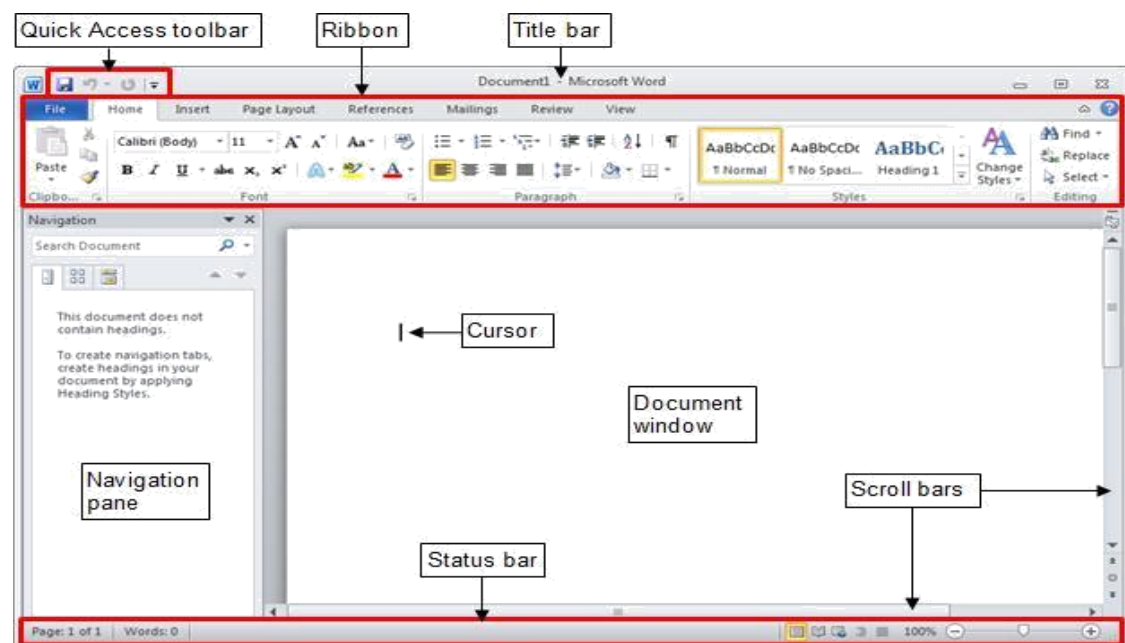
Sajad M.Abd

Introduction

Microsoft Word 2010 is a word-processing program that can be used to create professional looking documents such as reports, resumes, letters, memos, and newsletters. It includes many powerful tools that can be used to enhance the appearance of documents and collaborate with others. This handout provides an overview of the Word 2010 user interface and covers how to perform basic tasks such as creating, saving, editing, formatting, and printing documents, as well as getting help.

Overview of the User Interface

All the Microsoft Office 2010 programs share a common user interface so you can apply basic techniques that you learn in one program to other programs. The Word 2010 program window is easy to navigate and simple to use.



Word 2010 Program Window

Name	Description
Title bar	Appears at the top of the program window and displays the name of the document and the program. The buttons on the right side of the Title bar are used to minimize, maximize, restore, and close the program window.
Quick Access toolbar	Appears on the left side of the Title bar and contains frequently used commands that are independent of the tab displayed on the Ribbon.
Ribbon	Extends across the top of the program window, directly below the Title bar, and consists of a set of tabs, each of which contains groups of related commands.
Navigation pane	Appears on the left side of the program window and enables you to navigate long documents, search for specific text, and reorganize content.
Document window	Appears below the Ribbon and displays the contents of the document.
Cursor	Indicates where text or graphics will be inserted.
Scroll bars	Appear along the right side and bottom of the document window and enable you to scroll through the document.
Status bar	Appears at the bottom of the program window and displays information about the document (number of pages, number of words, etc.). The tools on the right side of the Status bar can be used to display the document in a variety of views and to change the magnification of the document.

Getting Started


Now that you have an understanding of where things are located, let's look at the steps needed to create a document.

Opening Outlook

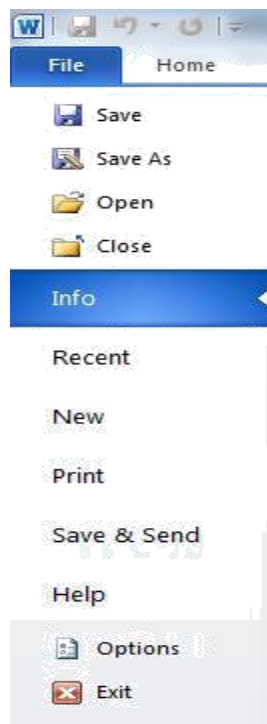
You may have a shortcut to Word on your desktop, if so double click the icon and Word will open. If not, follow the steps below:

1. Click on the Start button
2. Highlight Programs
3. Highlight Microsoft Office
4. Click on Microsoft Word 2010

How to select in Microsoft office word 2010:

- 1- To select a word:** Double left click on the word.
- 2- To select a line:** Move the mouse pointer to the left or right of the required line (the mouse pointer becomes ) then left click.
- 3- To select a sentence:** move the mouse pointer to the required sentence and press continuously on the key Ctrl then left click on the required sentence.
- 4- To select a paragraph:** press on the keys (Ctrl+A).

1- File menu:



The most important commands are:

Save: To save the changes on the current document.

Save As: To Save the document with a new name and new location.

Open: To open an exist document in the computer.

Close: To close the current document.

Recent: To open the recently opened documents and recent places that the documents exist.

New: To create new document.

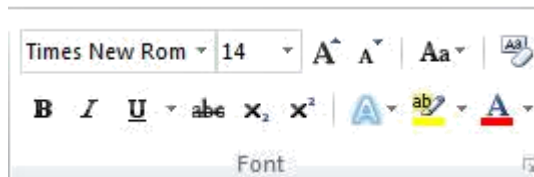
Print: To print the current document.


Help: To get the help about Microsoft office word.

Exit: To close the word program.


2- Home tab:


2-1 Font group:




 To make the text bold.


 To make italic text.


 To make the text underlined with the possibility of determining the underline type by clicking on the arrow next.


 Draw a line through the middle of the selected text.


 Create small letters below the text baseline.


 Create small letters above the line of text.


 Change the status of the characters in the English language.


 Distinguish the text with a specific color.

 Change the text color.

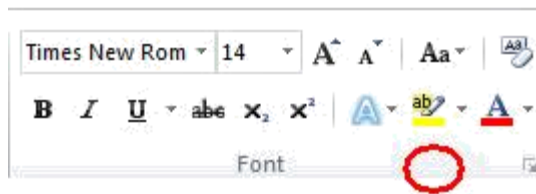
 Change the text size.

 Decrease the font size.

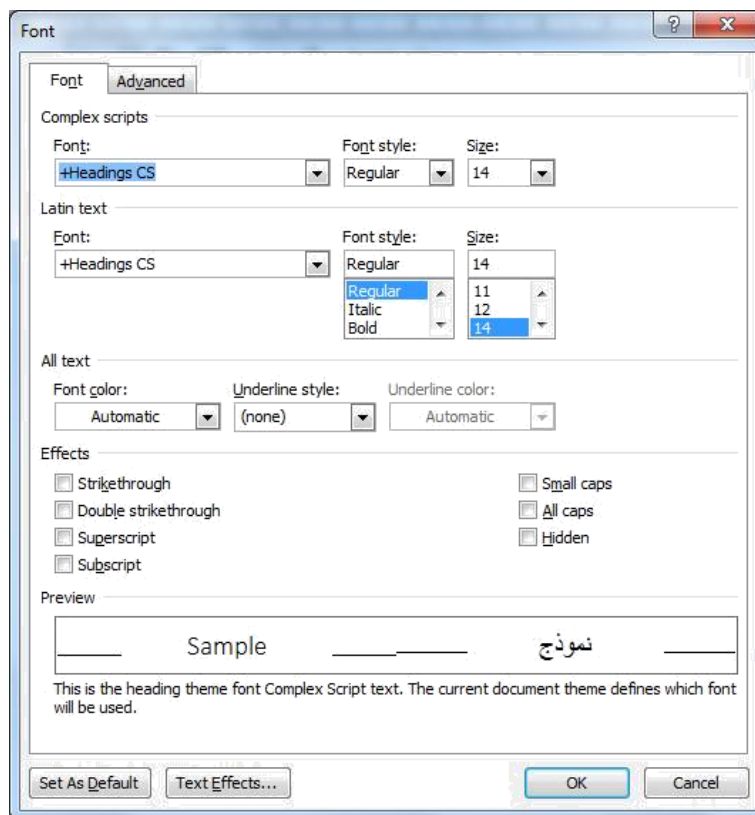
 Decrease the font size.

 Remove text formatting.

Font dialog box:

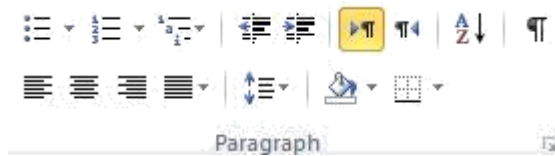


Press on the keys (Ctrl+D) or by pressing on the arrow that located on the lower right, then Font dialog box will be shown.





If you want to open the program each time with a specific formatting, then select the text formatting from Font dialog box and left click on **(Set As Default)**.


2-2 Paragraph group




 Align text to the left.


 Center the text.

 Align text to the right.


 Align the text to the left and right.




 Change the line spacing.

 Coloring the text background.

 Setting borders on text.


 Start a bulleted list.


 Start a numbered list.

 Start a multileveled list.

 Left-to-Right text direction.

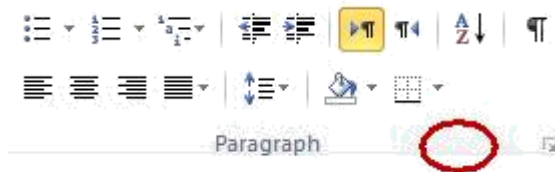
 Right-to-left text direction.

 Alphabetize the selected text or sort numerical data.

 Show or hide paragraph marks and other hidden formatting symbols.

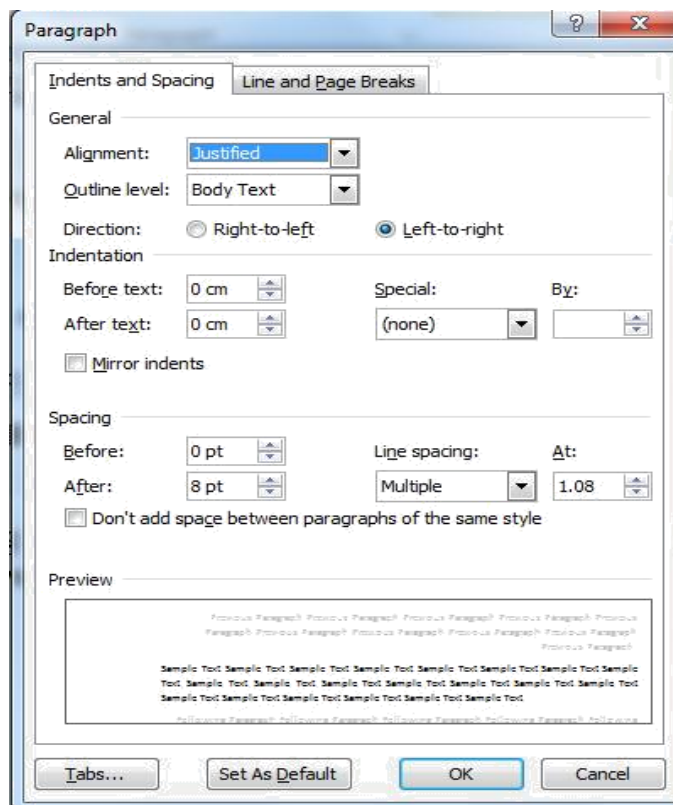
 Decrease and increase indent.

Paragraph dialog box:

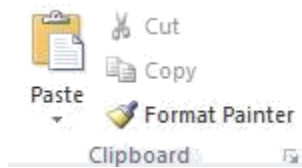


By pressing on the arrow that located on the lower right, then paragraph dialog box will be shown.

If you want to open the program each time with a specific formatting, then select the text formatting from paragraph dialog box and left click on **(Set As Default)**.



2-3 Clipboard group:



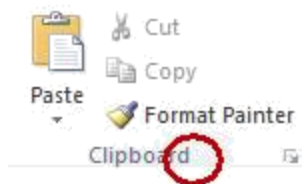
Cut (Ctrl+X): Cut the selection and put it on the clipboard.

Copy (Ctrl+C): Copy the selection and put it on the clipboard.

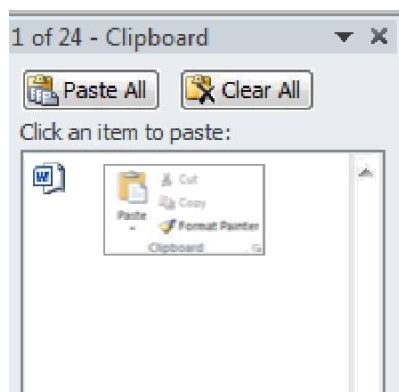
Paste (Ctrl+V): Paste the contents of the clipboard.

Format Painter (Ctrl+Shift+C): Copy formatting from one place and apply it to another.

Office clipboard task pane:



By pressing on the arrow that located on the lower right, then **Office clipboard task pane** will be shown.




- 1- You can select the item from the menu and paste it to other location or delete it.
- 2-you can select **Paste All** the clipboard contents.
- 3- Select **Clear All** the clipboard contents.

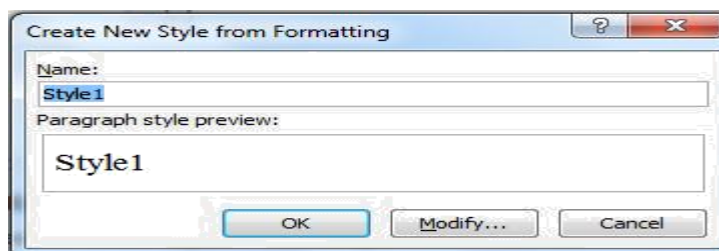
2-4 Styles group:



Select the text and then choose the style you want from set of styles.

To make new style selected by the user:

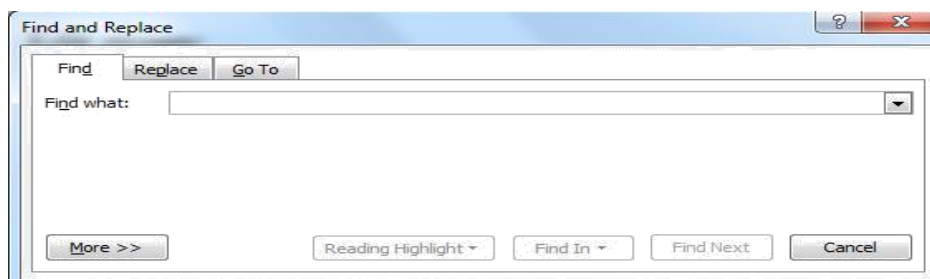
Select the text with a new formatting and press on the arrow  that located in the lower right corner, then select **Save selection as a new quick style**, new window will be shown and enter the name of the style and press on **Ok**.(you can find it in the Styles group).



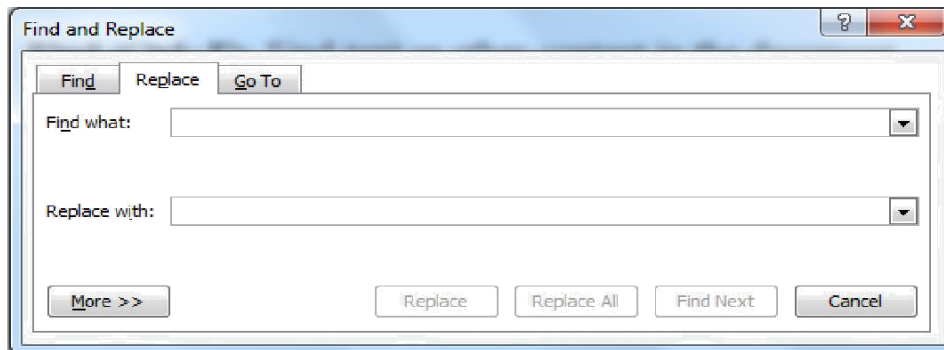
2-5-Editing group:



Find (Ctrl+F): Find text or other content in the document .

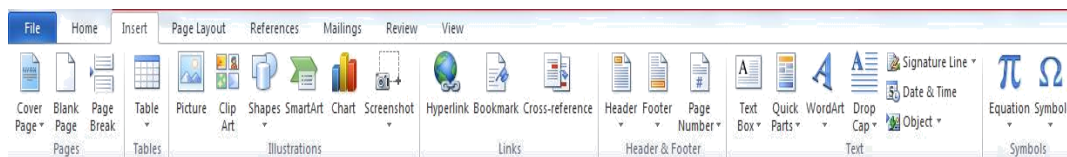


Replace (Ctrl+H): Replace text in the document.



Select: Select text or objects in the document.

3-Insert tab:



3-1 Pages group:

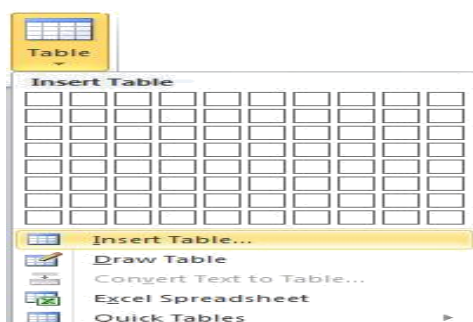
Cover page: Insert a fully formatted cover page.

Blank page: Insert a new blank page at the cursor position.

Page break: Start the next page at the current position.

3-2- Tables:

Left click on tables and select **Insert table**



Then, new window will be shown and set the number of rows and columns and press on **Ok**.



New tabs will be shown (Design, Layout).

4- Design tab:



4-1-Table styles: Different styles for the table.

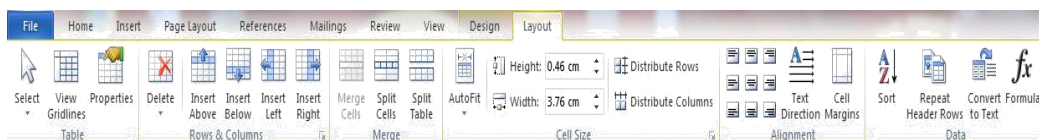
4-2- Draw table:

Borders: Customize the borders of the selected cells or text.

Draw table: Draw the borders of the table.

Eraser: Erase the borders of the table.

5-Layout tab:



5-1- Table group:

Select: Select the current cell, row, column or entire table.

View Gridlines: Show or hide the gridlines with in the table.

Properties: Show the table properties dialog box to change advanced table properties such as indentation and text wrapping options.

5-2- Rows and Columns:

Delete: Delete rows, columns, cells or the entire table.

Insert Above: Add a new row directly above the selected row.

Insert Below: Add a new row directly below the selected row.

Insert Left: Add a new column directly to the left of the selected column.

Insert Right: Add a new column directly to the right of the selected column.

5-3- Merge groups:

Merge Cells: Merge the selected cells into one cell.

Split Cells: Split the selected cells into multiple new cells.

Split Table: Split the table into two tables.

5-4- Cell Size group:

AutoFit: Automatically resize the column widths based on the size of text in them.

Height: Set the height of the selected cells.

Width: Set the width of the selected cells.

Distribute Rows: Distribute the height of the selected rows equally between them.

Distribute Columns: Distribute the width of the selected columns equally between them.

5-5- Alignment group:



Align top left, Align top center, and Align top right.

Align center left, Align center, and Align center right.

Align bottom left, Align bottom center, and Align bottom right.

Text Direction: Change the text direction with in the selected cells.

Cell Margins: Customize cell margins and the spacing between cells.

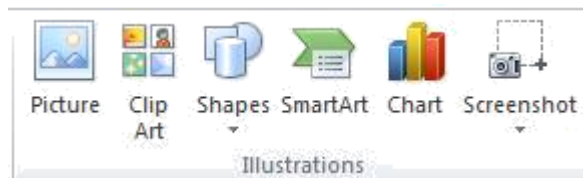
5-6- Data Groups:

Repeat header rows: Repeat header rows on every page.

Convert to text: Convert the table to regular text.

Formula: Add a formula to a cell to perform a simple calculation such as average, sum or count.

3-3- Illustrations:



Picture: Insert picture from a file.

Clip Art: Insert clip art into the document, including drawing, movies, sounds or stock photography to illustrate a specific concept.

Shapes: Insert ready made shpes, such as rectangles and circles, arrows etc.

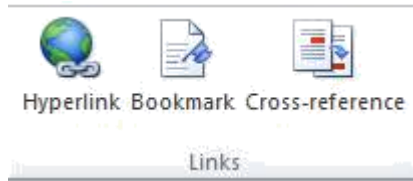
SmartArt: Insert a smartArt graphic to visually communicate information.

Chart: Insert a chart to illustrate and compare data.

Screenshot: Insert a picture of any program that is not minimized to the taskbar.

Click screen clipping to insert a picture of any part of the screen.

3-4- Links group:

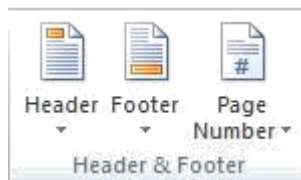


Hyperlink: Create a link to a web page, a picture, an email address, or a program.

Bookmark: Create a bookmark to assign a name to a specific point in a document.

Cross-reference: Refer to items such as headings, figures, and tables by inserting a cross reference such as "See table 6".

3-5- Header and Footer:

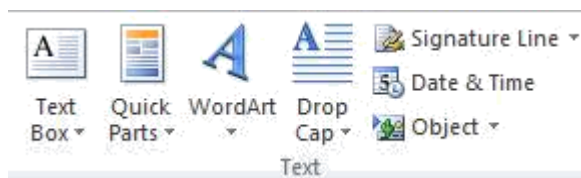


Header: Edit the header of the document.

Footer: Edit the footer of the document.

Page number: Insert page number into a document.

3-6- Text group:



Text Box: Insert a preformatted text boxes.

WordArt: Insert decorative text in your document.

Drop cap: Create a larger capital letter at the beginning of the paragraph.

Date and time: Insert the current date or time into the current document.

Object: Insert an embedded object.

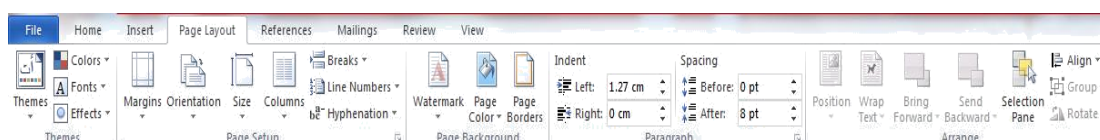
3-7- Symbols group:



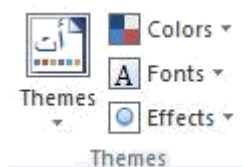
Equation: Insert common mathematical equations or build up your own equations using a library of math symbols.

Symbol: Insert symbols that are not on your keyboard such as copyright, trademark symbols, paragraph marks, and unicode characters.

6- Page layout tab:



6-1- Themes:



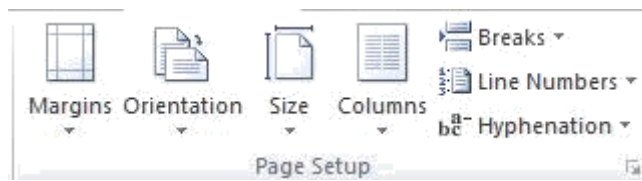
Themes: change the overall design of the entire document, including colors, fonts, and effects.

Colors: change the colors for the current theme.

Fonts: change the fonts for the current theme.

Effect: change the effects for the current theme.

6-2- Page Setup:



Margins: Select the margin sizes for the entire document or the current section.

Orientation: Switch the pages between portrait and landscape layouts.

Size: Choose a paper size for the current section.

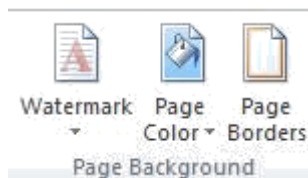
Column: Split the text into two or more columns.

Breaks: Add page, section, or column breaks to the document.

Line number: Add line numbers in the margin alongside of each line of the document.

Hyphenation: turn on hyphenation, which allows words to break lines between the syllables of words.

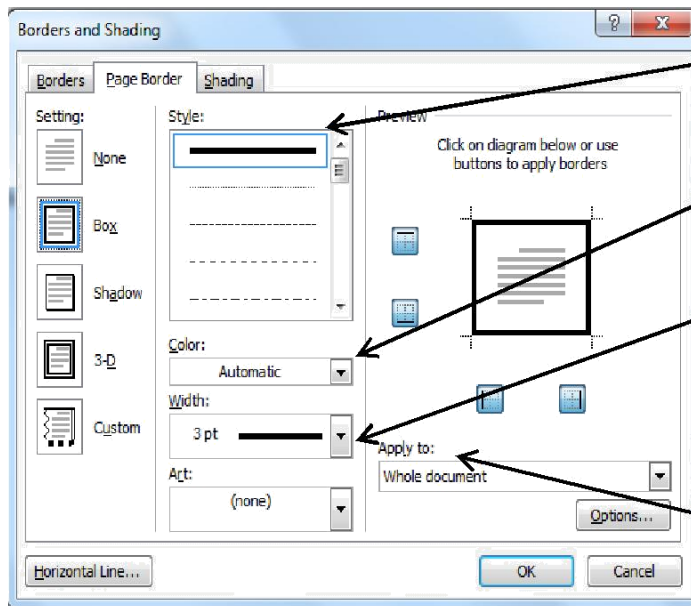
6-3- Page background:



Watermark: Insert ghosted text behind the content on the page.

Page color: Choose the color for the background of the page.

Page border: Add or change the border around the page.



Select the style of the border

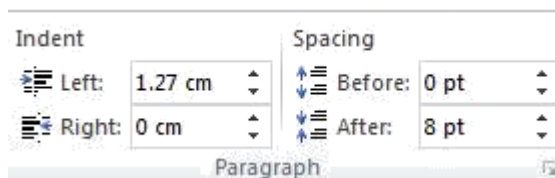
Select the color of the border

Select the width of the border

Drawing / image for the border

Apply to (Whole document, this section, this section-First page only, and this section-all except first page).

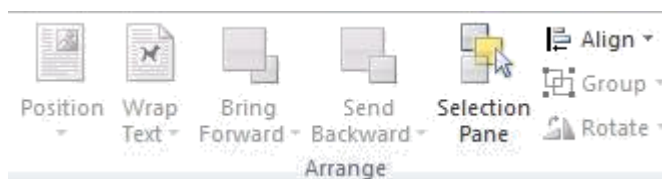
6-4- Paragraph group:



Spacing (Before): Change the spacing between paragraphs by adding space above the selected paragraphs.

Spacing (After): change the spacing between paragraphs by adding space below the selected paragraphs.

6-6- Arrange group:



Position: position the selected object on the page.

Wrap Text: Change the way text wraps around the selected object.

Bring Forward: Bring the selected object forward so that it is hidden by fewer objects that are in front of it.

Send Backward: Send the selected object backward so that it is hidden by fewer objects that are in front of it.

Align: Align the edges of multiple selected objects.

Group: Group objects together so that they can be treated like a single object.

Rotate: Rotate or flip the selected object.

7- Review tab:

Spelling and Grammer (F7): Check the spelling and grammar of text in the document.

Translate: Translate words or paragraphs into a different language by using bilingual dictionaries or machine translation.

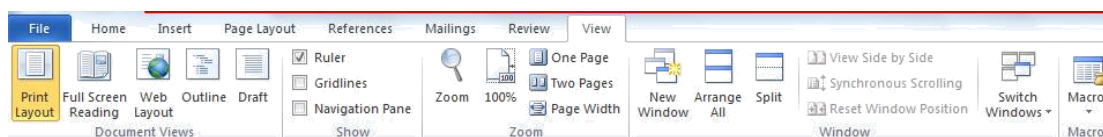
New comment: Add a comment about the selection.

Delete: Delete the selected comment.

Previous: Navigate to the previous comment in the document.

Next: Navigate to the next comment in the document.

8- View tab:



8-1- Document Views:



Print layout: View the document as it will appear on the printed page.

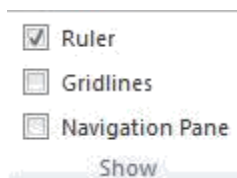
Full screen reading: View the document in full screen reading view in order to maximize the space available for reading or commenting on the document.

Web layout: View the document as it would look as a web page.

Outline: View the document as an outline and show the outlining tools.

Draft: View the document as a draft to quickly edit the text.

8-2- Show group:

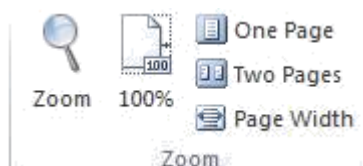


Ruler: View the rulers, used to measure and line up objects in the document.

Gridlines: Turn on gridlines to watch you can align objects in the document.

Navigation Pane: Open the navigation pane, which allows you to navigate through the document by heading, by page, or by searching for text or objects.

8-3- Zoom group:



Zoom: Show the zoom dialog box to specify the zoom level of the document.

100%: Zoom the document to 100% of the normal size.

One page: Zoom the document so that an entire page fits in the widow.

Two page: Zoom the document so that two pages fit in the widow.

Page width: Zoom the document so the width of the page matches the width of the widow.

8-4- Window group:



New window: Open a new window containing a view of the current document.

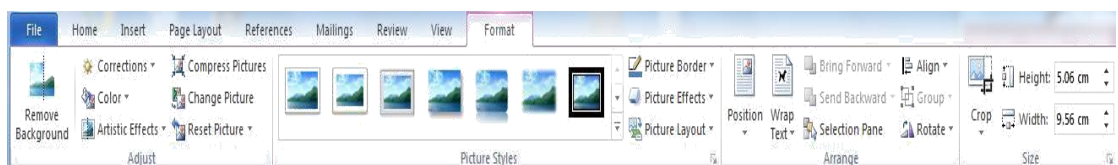
Arrange All: Tile all open program windows side-by-side on the screen.

Split: Split the current window into two parts so that you can view different sections of the document at the same time.

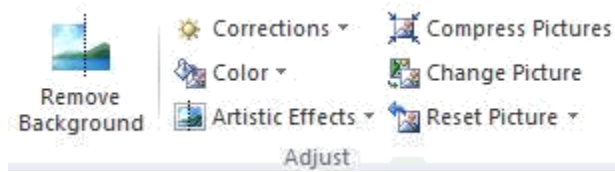
Switch widows: Switch to a different currently open widow.

■ **When you double click on any image in the document, new tab (Format tab) will be shown.**

9- Format tab:



9-1- Adjust group:



Remove Background: Automatically remove unwanted portions of the pictures.

Corrections: Improve the brightness, contrast, or sharpness of the picture.

Color: Change the color of the picture to improve quality or match document content.

Artistic Effects: Add artistic effects to the picture to make it look more like a sketch or painting.

Compress pictures: Compress pictures in the document to reduce its size.

Change picture: Change to a different picture, preserving the formatting and size of the current picture.

Reset picture: Discard all of the formatting changes you made to this picture.

9-2- Picture styles:

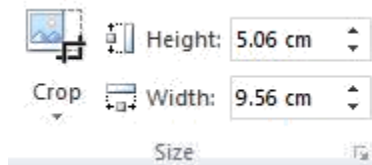
Choose the overall visual style for the picture.

Picture border: Specify the color width and line style for the outline of the selected shape.

Picture Effects: Apply a visual effects to the picture such as a shadow, glow, reflection, or 3-D rotation.

Picture layout: Convert the selected picture to a smartArt graphic to easily arrange caption, and resize the pictures.

9-3- Size group:



Crop: Crop the picture to remove any unwanted parts.

Height: Change the height of the shape or picture.

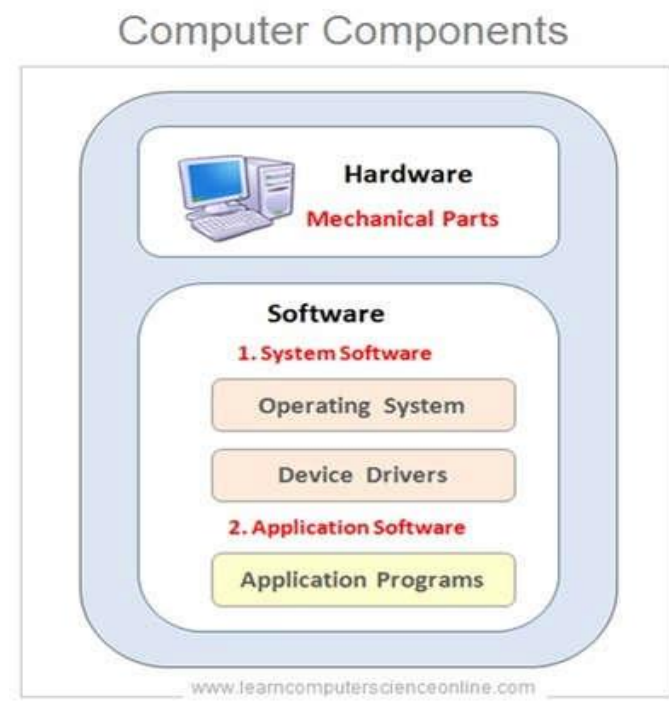
Width: Change the width of the shape or picture.

17. Computer Fundamentals – Software

Software is a set of programs, designed to perform a well-defined function. A program is a sequence of instructions written to solve a particular problem.

There are two types of software -

- System Software
- Application Software



System Software (Operating 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. These software products comprise of programs written in low-level languages, which interact with the hardware at a very basic level. System software serves as the interface between the hardware and the end users.

Some examples of system software are Operating System, Compilers, Interpreter, Assemblers, etc.



Here is a list of some of the most prominent features of a system software:

- Close to the system
- Fast in speed
- Difficult to design
- Difficult to understand
- Less interactive
- Smaller in size
- Difficult to manipulate
- Generally written in low-level language

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 the following:

- Payroll Software
- Student Record Software
- Inventory Management Software
- Income Tax Software
- Railways Reservation Software
- Microsoft Office Suite Software
- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint



Features of application software are as follows:

- Close to the user
- Easy to design
- More interactive
- Slow in speed
- Generally written in high-level language
- Easy to understand
- Easy to manipulate and use
- Bigger in size and requires large storage space

18. Computer Fundamentals – Language

COMPUTER LANGUAGE(Programming Language)

Computer language or programming language is a coded syntax used by computer programmers to communicate with a computer. Computer language establishes a flow of communication between software programs. The language enables a computer user to dictate what commands the computer must perform to process data. These languages can be classified into following categories (Fig. 1.10).

1. Machine language
2. Assembly language
3. High level language

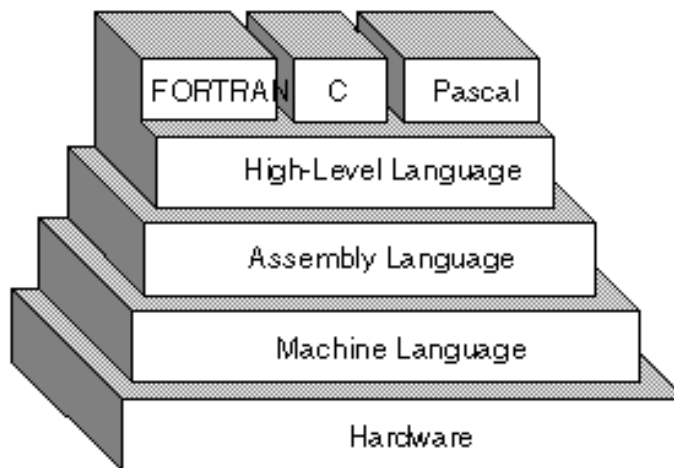


Fig. 1.10: Computer Languages

They are languages for communication between the programmer and the computer, and they have their rules and origins, and they are divided into:

- A. Low Level Language: These are languages that use the binary system (0,1) to express the orders that make up the program and depend on(the machine language).
- B. Middle Level Language: Languages that are medium between machine language and high-level languages and use a mixture of symbols and signs and is called the(Assembly Language)
- C. High Level Language: These are the languages that programmers use to write their

Computers 1, Collage of Dentistry.

programs without needing to know the details of how the computer executes these programs. It uses expressions similar to the natural language used by humans and is characterized by the ease of writing and the ease of discovering programming errors such as the Pascal language and C ++.

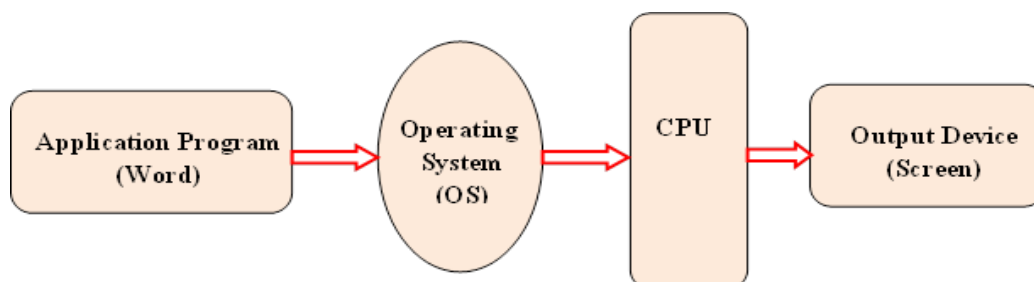
Examples of High-level Language:

- ❖ C
- ❖ C ++
- ❖ JAVA
- ❖ BASIC
- ❖ COBOL
- ❖ PASCAL
- ❖ PHYTON



The relationship between software components

1. The user deals directly with Application Software (or with high-level languages) by entering data and giving commands.
2. The application program converts these commands to Instructions and then converts them to the Operating System.
3. The operating system, in turn, sends these instructions to the hardware components that perform the calculations, processing and extracting the results, then performing the process of converting the results in a reverse chain to show the results to the user through the output units.



19. Computer Fundamentals – Operating System

The most important part of the software is that no computer device is devoid of it and it is a program written in a language and its main function is to communicate between the computer and electronic parts on the one hand and the user on the other hand (it is considered as an intermediary between the user and the programs). Among the **tasks performed by the operating system**:

1. Start the computer
2. Learn about the physical components of a computer.
3. Managing and arranging tasks during the operation of the computer and ensuring that they do not overlap.
4. Connecting the component parts and organizing the data flow.
5. Detect and fix defects
6. Control the input and output devices.



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.

Operating Systems Classification

First: According to the nature of the operating systems:

1. Built-in operating systems: They are part of the device industry and are integrated in it and cannot be updated or repaired because they are installed on electronic chipsets that are placed inside the devices (operating systems of cars and home appliances).
2. Flexible (non-embedded) operating systems: such as operating systems that are stored on disks or that are loaded through Internet networks.

Second: According to the tasks:

1. Multitasking systems.
2. Single Tasking systems.

Third: According to the users:

1. Multi-User systems.
2. Single-User systems.

Examples of some operating systems

1. MS-DOS

It is an operating system prepared by Microsoft Corporation, as it is the interface between the calculator and the user, and it is an abbreviation (Disk Operating System), i.e. disk operating systems. This system appeared in 1981 with the first generations of computers and is considered one of the systems with a linear interface style (single line commands that require My mental effort to remember the instructions).

```
Welcome to FreeDOS
C:\>dir
Volume in drive C is FREEDOS_C95
Volume Serial Number is 0E47-19EB
Directory of C:\

FDOS          <DIR>    00-26-04    6:23p
AUTODEKEC.BAT 435    00-26-04    6:24p
BOOTSECT.B18  512    00-26-04    6:23p
COMMAND.COM   93,953  00-26-04    6:24p
CONFIG.SYS    881    00-26-04    6:24p
FREEBOOT.B18  512    00-26-04    6:24p
KERNEL.SYS    45,815  04-17-04    9:19p
 6 file(s)    142,838 bytes
 1 dir(s)    1,864,517,632 bytes free
```

2. Mac OS

It is an operating system developed by Apple in 1984 and based on the use of the GUI: User Interface. This system is characterized by the following specifications:

- Easy to deal with the system (the user does not need to write commands, but put the mouse pointer over the application that consists of a simple drawing and its name)
- The system allows multitasking for one user.
- High ability to deal with images and graphics.

System compatibility for many applications in different fields.

The ability to connect with one or more devices to share resources (such as a printer) via a Mac network.

Ease of adding new computers to the computer and adding modern hard disk software.



3. Linux operating system

It is an operating system based on the Unix system (UNIX) prepared by Bell Laboratories in 1969 and is one of the most famous examples of free software and open source software, meaning that anyone can modify or develop in it and add or remove anything from its code. Which is available to everyone on the contrary from the Windows system. This system allows for multiple users, where each user has his own account, and the operating system has a Unix graphical environment (Graphical) such as that found in Windows, as well as has a textual environment similar to (DOS).

4. Android OS

It is an operating system that is mainly prepared for mobile phones, and currently Google owns these systems.



5. Microsoft Windows

It is an operating system developed by Microsoft, which is considered one of the operating systems with a graphical interface style as it allows the use of mouse technology and graphic symbols. The Windows system is considered one of the most used operating systems in a personal computer. The system name (Windows), which means (windows), comes from its dependence on using windows-like windows for each application so that we can see on the screen more than one window at the same time, and we can move from a window To the next. Windows operating system features:

Microsoft Windows features

1. It has a graphical user interface in which images, words and symbols are used on the screen and is controlled using the Mouse.
2. Included or supplemented programs, including two simple programs for handling graphics and texts.



3. The ability to view multiple documents and run several programs at once.
- 4- Speed.

WINDOWS 10

The Microsoft Windows 10 operating system is a preemptive multitasking client operating system for microprocessors implementing the Intel IA-32, AMD64, ARM, and ARM64 instruction set architectures (ISAs). Windows 10 released in July 2015 it is the latest in a series of Microsoft operating systems .



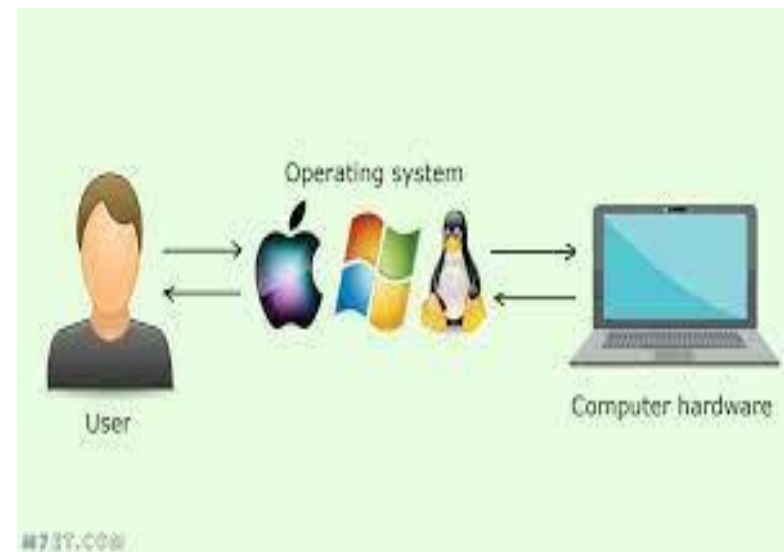
Windows 10 Features:

- New Start Menu
- Cortana Integration
- Microsoft Edge Web Browser
- Virtual Desktops
- Universal Apps
- Improved Multitasking
- Office Apps Get Touch Support
- Action Center.

(Operating Systems)

What is an operating system ?!

It is a set of basic software that manages a computer and controls all programs and applications





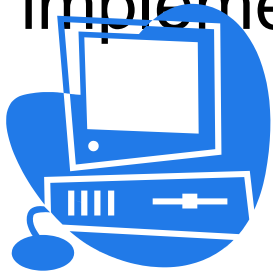
Operating system tasks

- Control the data path
 - Download the application software
 - Control of the main memory unit
 - Control of input and output units
 - Detecting faults and fixing them
- To maintain computer efficiency



How does the operating system work?

- Read and execute instructions and commands from the Memory.
- Check computer units to ensure their safety.
- Control the way each of these parts works.
- Receive device user commands.
- Download the application software and implement its instructions.



Classification of operating systems

First: According to the nature of the operating systems:

1- Built-in operating systems:

Home appliances and automobile operating systems.

2- Flexible (non-embedded) operating systems:

Operating systems stored on floppy disks or downloaded from the Internet.

Classification of operating systems

Second: Operating systems are divided in terms of tasks into two parts:

- Multi-Tasking(أنظمة متعددة المهام)
- Single-Tasking(أنظمة وحيدة المهام)



Classification of operating systems

Third: The operating systems are also divided in terms of the user into two parts:

- Multi-user (أنظمة متعددة المستخدمين)
- Single-user (أنظمة وحيدة المستخدم)



Types of operating systems

1-single-user Single-tasking

This system is designed to work on personal computers that one user deals with and performs one function at the same time. The most prominent example is the MS-DOS operating system ..



Types of operating systems

2- Multi-user Single-tasking

This type of system allows a number of users to work together, but only one program is run per user. An example of this system is Windows NT.



Types of operating systems

3-Single-user Multi- tasking

It is the most common system currently used on personal computers and workstations, as it allows one user the ability to implement more than one program at the same time. Example, Windows, Mac.



Types of operating systems

4- Multi-user Multi-tasking

It is the most powerful system and is the predominant one on central and medium computers. This system has recently begun to crawl on personal computers. In this system, each user deals with the computer as if the computer is working for him alone, due to its high speeds in operation and execution of commands. Also, any mistake committed by a user does not affect the rest of the users and does not disrupt the work of the computer, and an example of this is the UNIX system. .

Examples of popular operating systems

Disk Operating System(DOS)

- ✓ It is called a personal computer operating system.
- ✓ It is considered one of the systems with linear confrontation method.
- ✓ An abbreviation for "Disk Operating System", any disk operating system.
- ✓ From single-task systems. This system appeared in 1981 and was produced by IBM.
- ✓ A very powerful system consisting of a set of programs and commands that enables the user to do what is required.

(DOS)

```
VERKNÜ~1 LNK          375  29.10.01  19:49 Verknüpfung mit Nfs2sea.lnk
      11 Datei(en)                770.817 Bytes
      2 Verzeichnis(se)          377.380.864 Bytes frei
```

```
C:\WINDOWS\Desktop>mem
```

Speichertyp	Gesamt	=	Belegt	+	Frei
Konventionell	640K		63K		577K
Oberer	0K		0K		0K
Reserviert	0K		0K		0K
XMS-Speicher	65.472K		?		129.860K
-----	-----		-----		-----
Speicher gesamt	66.112K		?		130.437K
Ges. unter 1 MB	640K		63K		577K
EMS-Speicher gesamt					64M (67.108.864 Bytes)
Freier EMS-Speicher					16M (16.777.216 Bytes)
Max. Größe für ausführbares Programm					577K (590.352 Bytes)
Größter freier oberer Speicherblock					0K (0 Bytes)
MS-DOS ist resident im hohen Speicherbereich (HMA).					

```
C:\WINDOWS\Desktop>_
```

Examples of popular operating systems



(Mac OS)

The first to start with graphical user interfaces (GUI), as these systems were introduced in 1984.

It is an operating system for Apple Mac computers and does not work on IBM computers. This system is distinguished from the windows system by its ability and efficiency in dealing with images and graphics.

The system allows multi-tasking for one user.



Examples of popular operating systems

(UNIX)

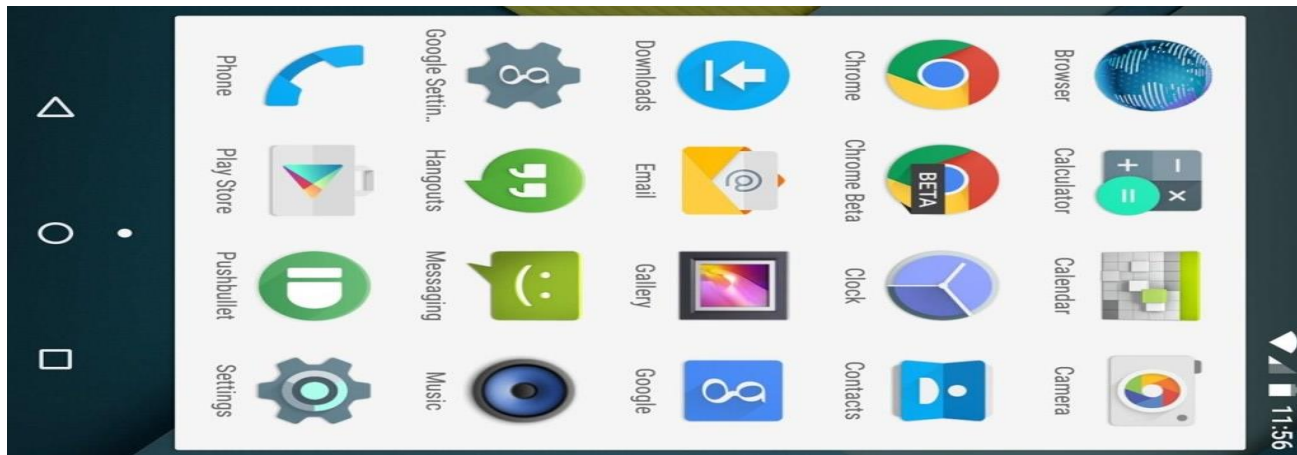
The UNIX logo, featuring the word "UNIX" in a bold, sans-serif font with a diagonal slash through the letter "X".

This system was produced in the telephone laboratories of the American company AT&T in 1969 for use in server computers and in dealing with networks. This system is distinguished from others by many advantages, including:

- **Unix was the first system to allow multi-tasking programming.**
- **Provides a security system to protect documents to prevent others from viewing them.**
- **This system is very strong in the field of networks because most of the programs that deal with and manage networks depend on this system, such as the communication protocol (TCP / IP).**

Androide OS

This system was mainly prepared for mobile phones, as it began to develop a small company to be the first mobile operating system based on the Linux kernel, and later Google acquired this company.



Examples of popular operating systems

(Windows)

- ✓ Produced by Microsoft Corporation
- ✓ It is considered one of the official confrontational operating systems, as it allows the use of mouse technology and graphic icons.
- ✓ Several versions of this system appeared, the most important of which are:
 - ✓ windows 3.1 و windows 3.11
 - windows 95
 - windows 98
 - windows Millennium
 - windows XP



Operating sys.(Windows)

- **This system has many benefits, including:**



- Ease of use.
- The ability to run multiple programs and applications.
- The ability to use Arabic and other languages as an application interface for the operating system.
- There are many accessories and applications supporting this system, such as maintenance programs, scanning disks, ... and others, and other uses of the mouse such as installing settings, copying and deleting files, and many other areas.
- This system enables multimedia programs to be played.

Microsoft	Mac OS	Linux/ UNIX	BB*	Android	iOS*	
✓	✓	✓	✓	✓	✓	Flexible
✓	✓	✓	×	×	×	Multi-User
✓	✓	✓	✓	✓	✓	Multi-Task
						Virus Protection
×	✓	✓	✓	×	✓	الحماية من الفيروسات
✓	✓	✓	✓	×	×	Windows
×	×	✓	✓	✓	✓	Mobile
×	×	✓	×	✓	×	Open Source
×	✓	✓	✓	×	✓	Secure
×	×	✓	✓	✓	✓	Multi-touch gestures

Examples of popular operating systems

(windows NT) ✓

windows 2003 , windows 2000 ✓

نظام Net-ware من إنتاج شركة Novell . ✓



Questions



Thank you for your attention