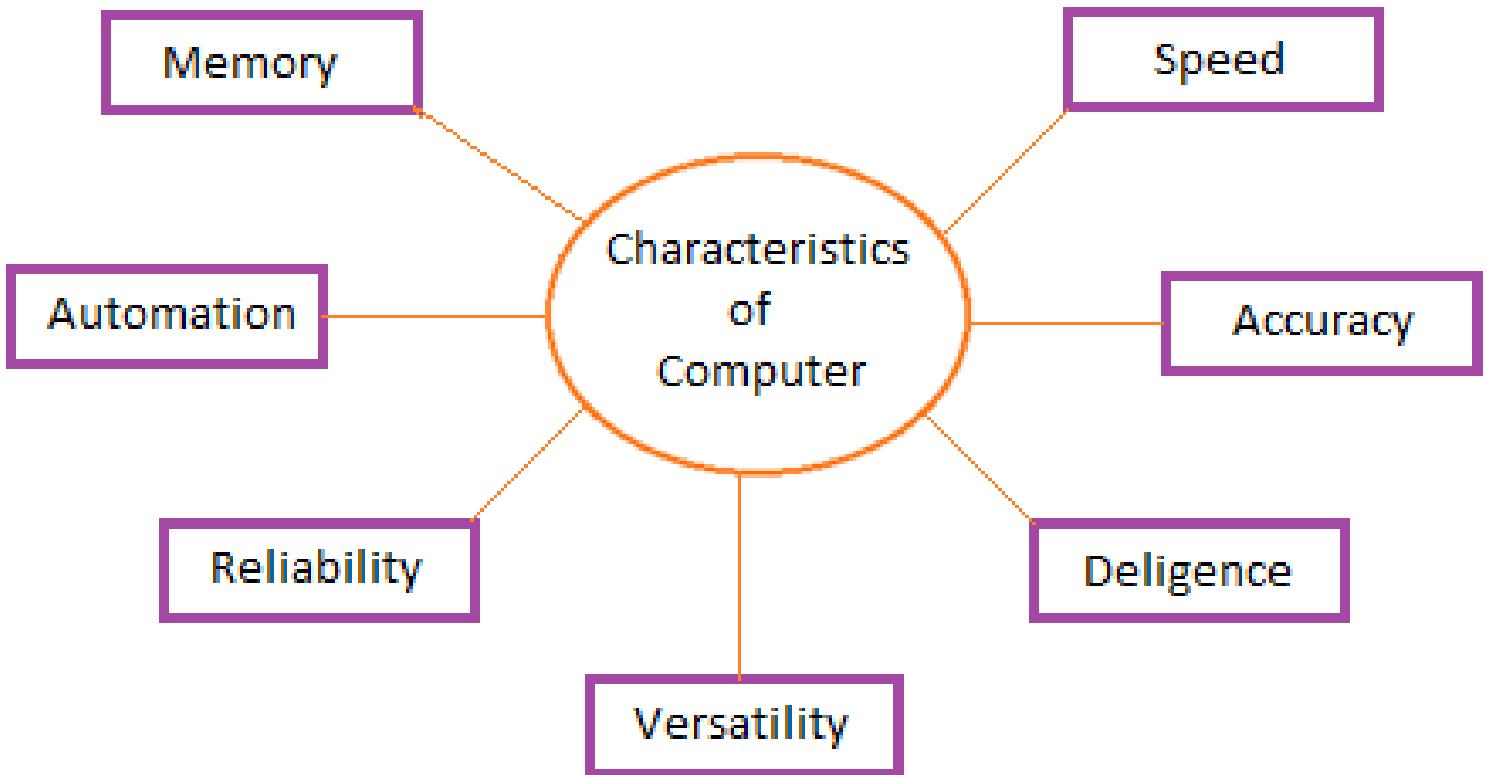


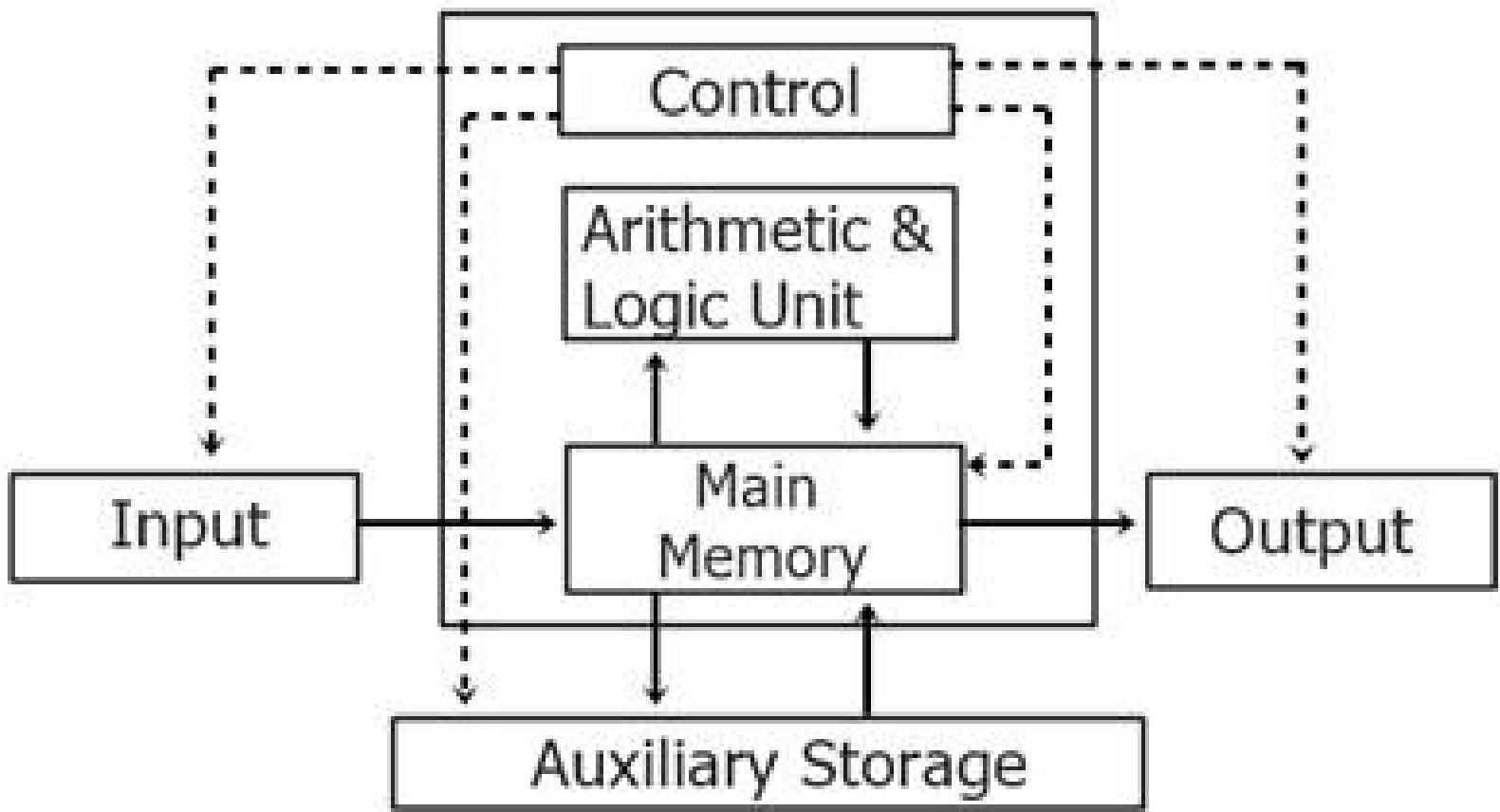
# Introduction to computer

A **computer** is an electronic machine that manipulates data according to a list of instructions.

A **computer** is an electronic machine(device) that accepts input (data), processes it and gives (output)results (information)and save as an electronic file.





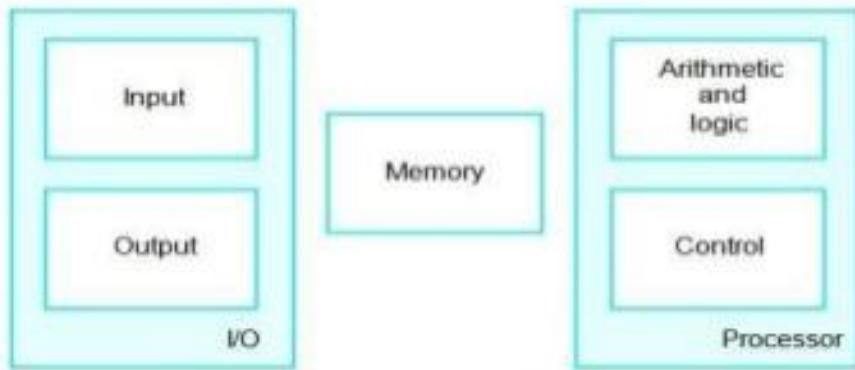


## Block Diagram of Computer

# Functional units

- ✿ Functional units is a part of a CPU that performs the operations and calculations called for by the computer program.
- ✿ Computer consists of five main parts namely,
  - ◆ Input unit,
  - ◆ Central Processing Unit
    - Memory unit
    - Arithmetic & logical unit
    - Control unit
  - ◆ Output unit

## Functional Units



### 1. Input Unit

- Input units are used by a computer, which read the data.

**Ex : Key Board , Mouse**

## Arithmetic and logic unit:

- Most of all the operations of a computer are executed in the ALU of the processor.
- It performs arithmetic operations like addition, subtraction, multiplication, division and also the logical operations like AND, OR, NOT operations.

## Control unit

- Control unit is used to coordinate the operations of the input, output, memory, ALU in some way. It coordinates the operation of all the units using control signals like timing signals.
- Timing signals are the signals determining the time when a given action must take place. A large set of control lines carriers the signals used for timing and synchronization of events in all units.

## Memory unit

Memory unit is used to store programs and data. Two types of memory exist. they are,

- Primary storage, and
- Secondary storage

### Primary storage:

- Primary memory contains a large number of semiconductor storage cells, capable of storing a bit of information.
- The bits of information are grouped into fixed size words.
- The word length of a computer is between 16-64 bits.
- Addresses are used to access the words from memory.
- Addresses are numbers that identifies locations.

- The memory is known as main memory in which program must resides.
- Cache is also a kind of memory which is used to access the data very soon. They are highly coupled with the processor.

Example: RAM, ROM.

### **Advantages:**

- ◆ Small, and
- ◆ Fast

### **Disadvantages:**

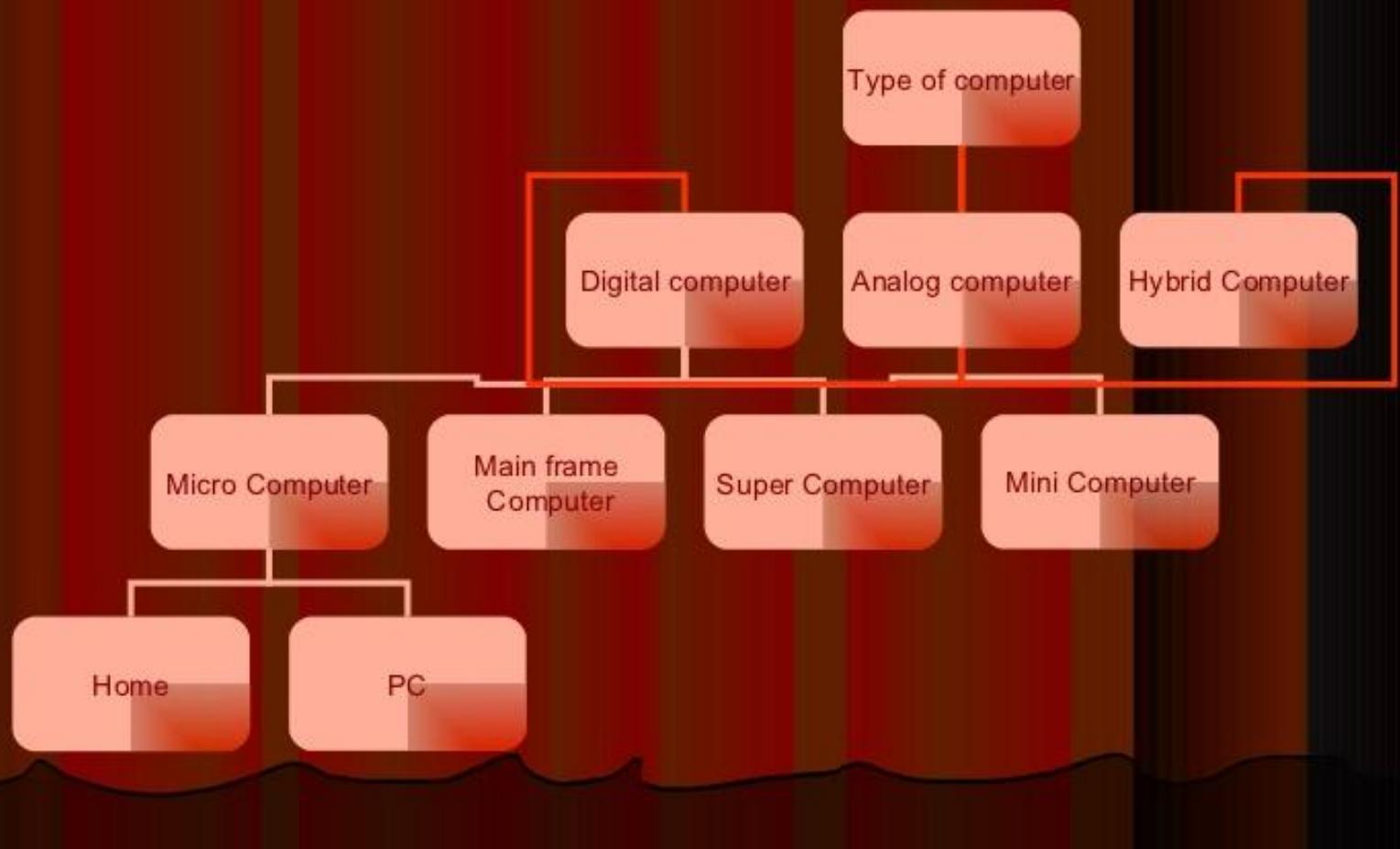
- ◆ less storage capacity, and
- ◆ costly

## Output unit

- ◆ Output units are used to send the processed results to the user.
- ◆ Output devices display information in a way that you can understand. The most common output device is a monitor.
- ◆ Output devices are pieces of equipment that are used to get information or any other response out from computer. These devices display information that has been held or generated within a computer.

**Ex : Printer , Monitor ,  
Speaker**

# Types of computer



Classification of computer on the basis of its size are categorize into following types:

- Microcomputers
- Minicomputers
- Mainframe Computers
- Super Computers

Now let's define all the above types of computer on the basis of its size.

## **Microcomputers**

Desktop computers, laptops, gaming consoles, sound and navigation system of a car, personal digital assistant (PDA), tablets and smartphones are all types of microcomputers.

The microcomputers are widely used and the fastest growing computers. These computers are the cheapest among the other three types of computers.

The microcomputers are specially designed for general purpose usage life entertainment, education, and work purposes.

## Minicomputers

Minicomputers also called as mid-range servers, are more powerful computers than microcomputers in terms of processing power and capabilities.

Minicomputers are mainly multi-user systems where many user simultaneously work on the systems.

Minicomputers posses greater storage capacity and larger memories as compared to microcomputer. These are even capable of handling more input/output devices.

Examples of minicomputers are:

- PDP-11
- VAX
- 7500 MAGNUM

## Mainframe computers

Mainframe computers are designed to handle huge volumes of data and information. These can support more than 100 users at same time. These very large and expensive computers have great processing speed and very large storage capacity and memory as compared to minicomputers.

These computers even posses and work with more than one processor at the same time. Thus one can say these are multi-user, multiprocessor systems.

For mainframe computers, very sophisticated operating systems are needed to control and supervise their operation.

Examples of Mainframe computers are:

- ICL39
- CDC 6600
- VAX 8842
- IBM 3090/600
- IBM 4381

## **Supercomputers**

Supercomputers are the most powerful computers among digital computers. These consists of several processors running together thereby making them immensely faster and powerful.

These computers are capable of handling huge amounts of calculations that are beyond human capabilities.

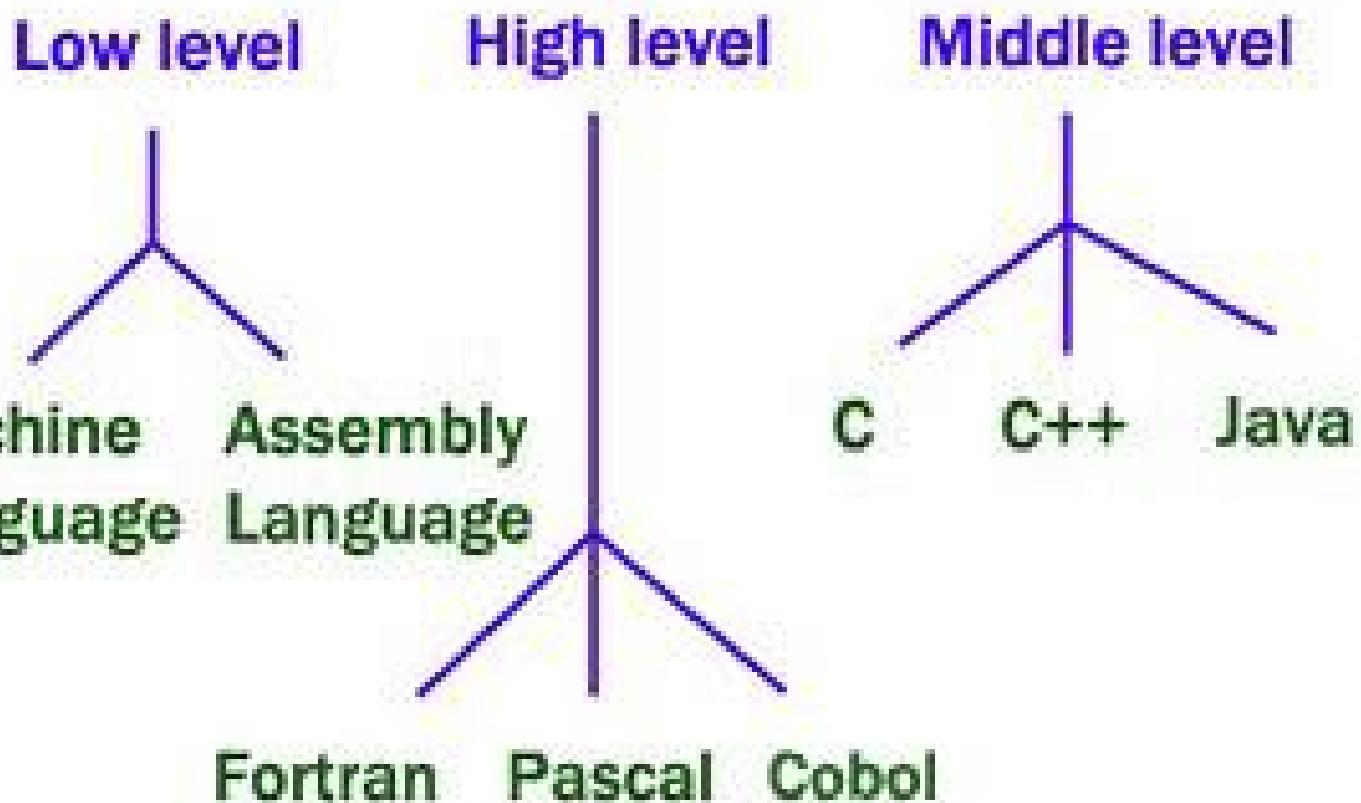
Super computers can perform billions of instructions per second. Some of the today's supercomputers have the computing capability equal to that of 40000 microcomputers.

A Japanese supercomputer has calculated the value of Pi to 16 million decimal places.

Supercomputers are mainly used in following purposes or applications:

- Weather forecasting
- Nuclear science research
- Aerodynamic modelling
- Seismology
- Metrology

## **Types of languages**



## Low Level Language

## High Level Language

1. Low Level Languages are very close to CPU.
2. Programs in low-level languages are fast in execution.
3. Programs in low-level languages are difficult to modify.
4. Low level languages provide facility to interact at hardware level.

1. High Level Languages are easy to learn.
2. Programs in high-level languages are slow in execution.
3. Programs in high-level languages are easy to modify.
4. High level languages do not provide much facility to interact at hardware level.

# What is a Drive ?



- It is an electronic device which will control accurately the output of an electric motor in response to a controlling input.
- An AC Drive generates a variable voltage/frequency output from a fixed frequency supply
- Have inbuilt protection in case of failure of itself or the motor it controls
- To protect against motor overload, the Drive will limit the continuous current into the motor, but provide additional overload current for a finite time



# What is a File System?

- A file system provides an abstraction for storing, organizing and accessing **persistent** data
  - I.e., data survives after process that created the data has terminated, and after machines crashes, reboot
  - This data is stored on **disks, tapes, solid-state drives (SSD) ...**
- File-system data is organized as objects called files
  - Need a way to find files, so files have names and are organized as directories
- Files are accessed via system calls
  - Files can be accessed concurrently by different processes

# Directories

## **What are directories?**

A listing of people or organizations in a systematic way. They cover all topics and geographic areas. They are available in print, CD-ROM, online databases, and files on the internet.

## **Why are directories important in the library?**

They are used to locate, verify, and match people to organizations, institutions, and people. Directories may cover a wide range of topics and are available in many formats.

# C:\Windows\System32\system.ini

-Drive  
-Root

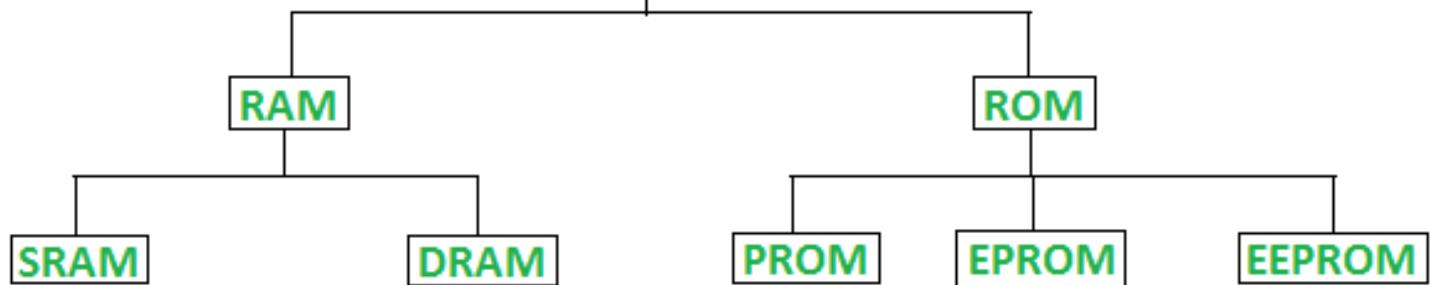
-Parent directory of System32  
-Subdirectory of C:\  
-Child of C:\

-Current Directory  
-Subdirectory of Windows  
-Child of Windows

-File

-File extension

## Types of memory



## Classification of computer memory

<b>RAM</b>	<b>ROM</b>
<b>1. Temporary Storage.</b>	<b>1. Permanent storage.</b>
<b>2. Store data in MBs.</b>	<b>2. Store data in GBs.</b>
<b>3. Volatile.</b>	<b>3. Non-volatile.</b>
<b>4. Used in normal operations.</b>	<b>4. Used for startup process of computer.</b>
<b>5. Writing data is faster.</b>	<b>5. Writing data is slower.</b>

### Difference between RAM and ROM

<b>DRAM</b>	<b>SRAM</b>
<b>1. Constructed of tiny capacitors that leak electricity.</b>	<b>1. Constructed of circuits similar to D flip-flops.</b>
<b>2. Requires a recharge every few milliseconds to maintain its data.</b>	<b>2. Holds its contents as long as power is available.</b>
<b>3. Inexpensive.</b>	<b>3. Expensive.</b>
<b>4. Slower than SRAM.</b>	<b>4. Faster than DRAM.</b>
<b>5. Can store many bits per chip.</b>	<b>5. Can not store many bits per chip.</b>
<b>6. Uses less power.</b>	<b>6. Uses more power.</b>
<b>7. Generates less heat.</b>	<b>7. Generates more heat.</b>
<b>8. Used for main memory.</b>	<b>8. Used for cache.</b>

### Difference between SRAM and DRAM

# PROM VS EPROM VS EEPROM

## PROM

A Read Only Memory (ROM) that can be modified only once by a user.

Stands for Programmable Read Only Memory

Developed by Wen Tsing Chow in 1956

Reprogrammable only once

## EPROM

A programmable ROM that can be erased and reused

Stands for Erasable Programmable Read Only Memory

Developed by Dov Frohman in 1971

Can be reprogrammed using ultraviolet light

## EFPROM

A user-modifiable ROM that can be erased and reprogrammed repeatedly through a normal electrical voltage

Stands for Electrically Erasable Programmable Read-Only Memory

Developed by George Perlegos in 1978

Can be reprogrammed using electrical charge

# **Storage Devices**

**Primary storage:** is the storage provided by memory on a computer system.  
e.g. ROM/RAM.

**Secondary storage:** is storage provided by peripheral devices other than memory.

**Secondary storage:** is required in a computer system for three reasons :

1. The content of memory is usually **volatile**, which means that if power is disconnected the data is lost.
2. The capacity in megabytes of memory is limited.
3. Memory is more expensive than secondary storage.

Several types of **disks** may be used for Secondary storage.

E.g.

- Floppy disks
- Hard disks
- Optical disks (including CD-ROM, writeable CD, DVD)
- Backup Storage Devices  
e.g. tape

**PRINTER:** A printer is any device that prints text or illustrations on paper.

There are many different types of printers.

- **Daisy-wheel**
- **Dot-matrix**
- **Ink-jet**
- **LCD & LED**
- **Line printer**
- **Thermal printer**

# Difference Between Dot.Matr, Inkjet and Laser Printer

✓ Dot Matrix	✓ InkJet	✓ Laser
1. Very Cheap	1. More cost than Dot	1. High Cost
2. Less quality	2. Good quality	2. Excellent quality
3. 20-30 sec-A4	3. 5-10 Sec-A4	3. 1-2 Sec-A4
4. Less Maintenance cost	4. High Maintenance cost	4. Low Maintenance cost

# Dot matrix printer

Definition:

- Dot matrix printers are known as impact printers.
- They create an image on paper by striking pins against an inked ribbon.
- The ink is transferred to the paper as closely shaped dots that form each character.
- The more pins, the better the print quality. 24-pin dot matrix printers can print at near letter-quality.

## Drum printer

- In a typical **drum printer** design, a fixed font character set is engraved onto the periphery of a number of print wheels, the number matching the number of columns (letters in a line) the printer could print.
- The wheels, joined to form a large drum (cylinder), spin at high speed and paper and an inked ribbon is stepped (moved) past the print position.
-

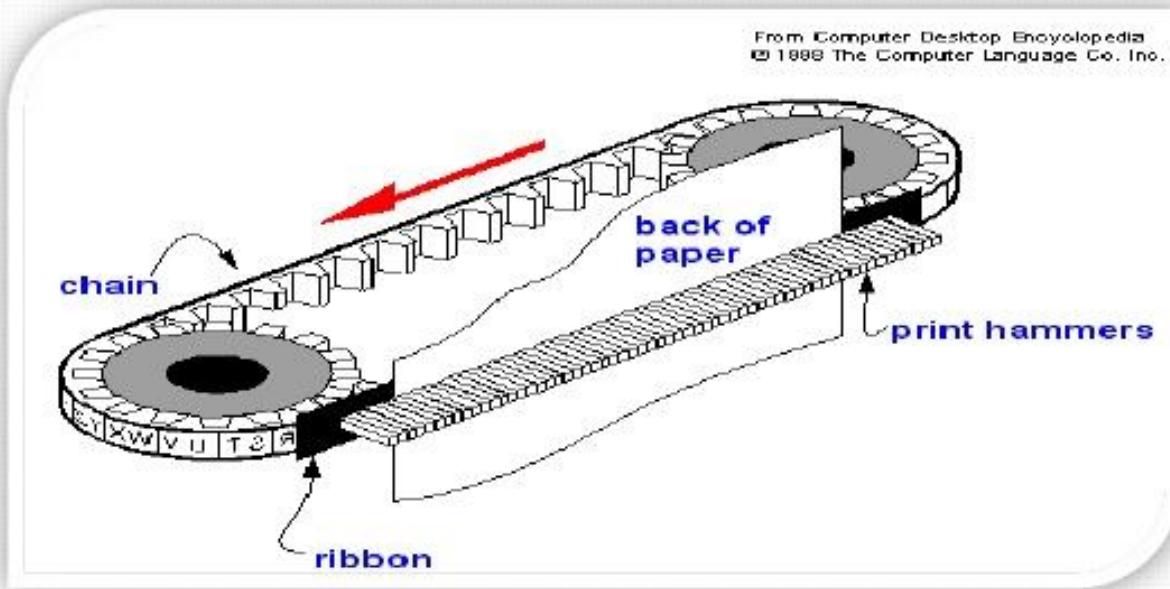
# Ink-Jet Printer

- Inkjet technology was developed in the 1960s, but first commercialized by IBM in 1976.
- Ink-jet printer is type of non-impact printer. It creates output on paper by spraying tiny drops of liquid ink.
- Inkjet printer has print-head that can spray very fine drops of ink. It consists of print cartridge filled with liquid ink and has small nozzles in form of m



# Chain Printers

- An early line printer that used type slugs linked together in a chain as its printing mechanism. The chain spins horizontally around a set of hammers. When the desired character is in front of the selected print column, the corresponding hammer hits the paper into the ribbon and onto the character in the chain. Chain and train printers gave way to band printers in the early 1980s.



## LCD

- For the LCD TVs, screens are available to a maximum diagonal size of 60 inches.
- They are more expensive than the Plasma TVs.
- LCD TVs don't consume as much as the Plasma TV.

## Plasma

- There are displays with a size of almost 65 inch diagonal measurement.
- They are cheaper than the LCD TVs.
- Plasma display consumes much more energy than a LCD display.

# Comparing LCD and Plasma

**FOR NUMBER SYSTEM  
(Conversion) SEARCH  
ON YOUTUBE**

# **Algorithm**

---

## **1stDefinition:**

Sequence of steps that can be taken to solve a problem

## **2ndDefinition:**

The step by step series of activities performed in a sequence to solve a problem

## **Better Definition:**

A precise sequence of a limited number of unambiguous, executable steps that terminates in the form of a solution



# Algorithm

- Algorithm is a step-by-step procedure, which defines a set of instructions to be executed in a certain order to get the desired output. Algorithms are generally created independent of underlying languages, i.e. an algorithm can be implemented in more than one programming language.
- From the data structure point of view, following are some important categories of algorithms –
- **Search – Algorithm to search an item in a data structure.**
- **Sort – Algorithm to sort items in a certain order.**
- **Insert – Algorithm to insert item in a data structure.**
- **Update – Algorithm to update an existing item in a data structure.**
- **Delete – Algorithm to delete an existing item from a data structure.**

# Characteristics of an Algorithm

- An algorithm should have the following characteristics –
- **Unambiguous** – **Algorithm should be clear and unambiguous.** Each of its steps(or phases), and their inputs/outputs should be clear and must lead to only one meaning.
- **Input** – An algorithm should have 0 or more well-defined inputs.
- **Output** – An algorithm should have 1 or more well-defined outputs, and should match the desired output.
- **Finiteness** – Algorithms must terminate after a finite number of steps.
- **Feasibility** – Should be feasible with the available resources.
- **Independent** – An algorithm should have step-by-step directions , which should be independent of any programming code.

# Advantages of Algorithm

- It is a step-by-step repetition of a solution to a given problem which is very easy to understand.
- Its easy to first develop an algorithm, then convert it into a flowchart &then into a computer program.
- Its is easy to debug as every step is got its own logical sequence.

# Disadvantages of algorithm.

- Writing algorithm takes a long time.
- An Algorithm is not a computer program, it is rather a concept of how a program should be.

# Example of Algorithm

- Let's try to learn algorithm-writing by using an example.
- **Problem- Design an algorithm to add two numbers**
- **Step 1 – START**
- **Step 2 – declare three integers a, b & c**
- **Step 3 – define values of a & b**
- **Step 4 – add values of a & b**
- **Step 5 – store output of step 4 to c**
- **Step 6 – print c**
- **Step 7 – STOP**

## Cont....

- Algorithms tell the programmers how to code the program. Alternatively, the algorithm can be written as –
  - **Step 1 – START ADD**
  - **Step 2 – get values of a & b**
  - **Step 3 –  $c \leftarrow a + b$**
  - **Step 4 – display c**
  - **Step 5 – STOP**

# Flowchart

- A flowchart is a picture (graphical representation) of the problem solving process.
- A flowchart gives a step-by-step procedure for solution of a problem.
- **Elements of a flowchart:**
  - Various geometrical shaped boxes represent the steps of the solution.
  - The boxes are connected by directional arrows to show the flow of the solution.
- **Uses of a flowchart:**
  - To specify the method of solving a problem.
  - To plan the sequence of a computer program.
  - Communicate ideas, solutions.

# Advantages Of Using FLOWCHARTS

- 1. Communication:** Flowcharts are better way of communicating the logic of a system to all concerned or involved.
- 2. Effective analysis:** With the help of flowchart, problem can be analyzed in more effective way therefore reducing cost and wastage of time.
- 3. Proper documentation:** Program flowcharts serve as a good program documentation, which is needed for various purposes, making things more efficient.
- 4. Efficient Coding:** The flowcharts act as a guide or blueprint during the systems analysis and program development phase.
- 5. Proper Debugging:** The flowchart helps in debugging process.
- 6. Efficient Program Maintenance:** The maintenance of operating program becomes easy with the help of flowcharts, it help the programmer to put efforts more efficiently on that part

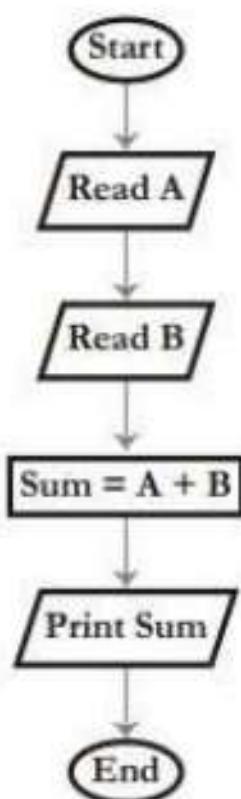
# Disadvantages Of Using FLOWCHARTS:

- 1. Complex logic:** Sometimes, the program logic is quite complicated. In that case, flowchart becomes complex and clumsy. This will become a pain for the user, resulting in a waste of time and money trying to correct the problem.
- 2. Alterations and Modifications:** If alterations are required the flowchart may require re-drawing completely. This will usually waste valuable time.
- 3. Reproduction:** As the flowchart symbols cannot be typed, reproduction of flowchart becomes a problem.

## Flowchart symbols and their purpose

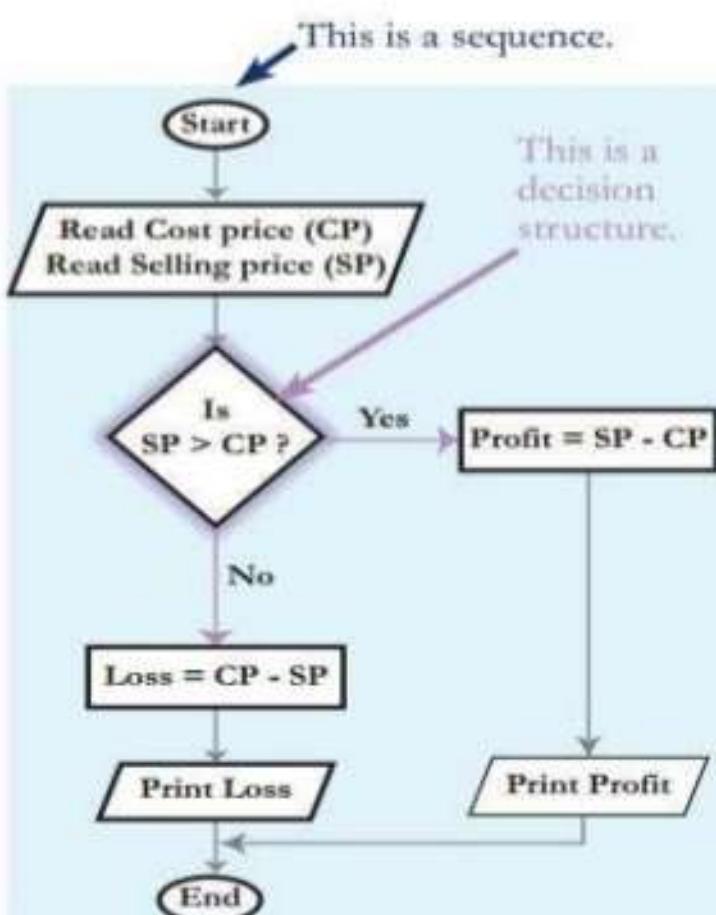
Flowchart symbols	Geometric shape	Purpose
Ellipse		Ellipse is used to indicate the start and end of a flowchart. Start written in the ellipse indicates the beginning of a flowchart. End or Stop or Exit written in the ellipse indicates the end of the flowchart.
Parallelogram		A parallelogram is used to read data (input) or to print data (output).
Rectangle		A rectangle is used to show the processing that takes place in the flowchart.
Diamond		A diamond with two branches is used to show the decision making step in a flowchart. A question is specified in the diamond. The next step in the sequence is based on the answer to the question which is "Yes" or "No".
Arrows		Arrows are used to connect the steps in a flowchart, to show the flow or sequence of the problem solving process.

## Flowchart - How to find sum of two numbers



### Finding sum of 845 and 247

```
Start  
|  
A = 845  
|  
B = 247  
|  
Sum = 845 + 247  
|  
Sum = 1092  
|  
End
```



This is a sequence.

This is a decision structure.

**Finding profit or loss when CP = 325 and SP = 458**

Start

Read CP=325  
Read SP= 458Condition:  
Is 458 > 325? — Profit= 458-325

Profit= Rs. 133

End

## Introduction

The role of DOS is to interpret commands that the user enters via the keyboard.

These commands allow the following tasks to be executed:

- ❖ file and folder management
- ❖ disk upgrades
- ❖ hardware configuration
- ❖ memory optimization
- ❖ program execution

## History OF DOS

- ✓ MS-DOS 1.0 was released in August 1981, and was updated until April 1994 when it was replaced by Windows 95
- ✓ All versions of windows still contain some type of DOS, in windows 95 and 98 you can go to run and type command to get to DOS prompt, in NT, 2000, and XP you can type CMD and get DOS.

## File Manipulation

- **DIR** - Lists files and subdirectories
- Wildcard Characters ? \*
- **EDIT** - creates a new file or modifies an existing file
- **COPY** - copies a file or a group of files
- **XCOPY** - copies all files in a directory (and its subdirectories)
- **DEL** or **ERASE** - deletes a file or a group of files
- **UNDELETE** - undeletes files
- **COPY** (or **XCOPY**) plus **DEL** - moves files
- **DOSKEY** - recalls commands
- **RENAME** or **REN** - renames files
- **TYPE** - displays text files
- **PRINT** - prints a text file
- **COPY** - used to create a file
- **ATTRIB** - sets file properties
- **FC** - compares two files

# Directory Manipulation

MD or MKDIR - creates a directory

CD or CHDIR - changes directory

PROMPT - changes the command prompt

TREE - displays the directory structure

RD or RMDIR - removes a directory

REN - Renaming directories

PATH - creates a search path

# Types of commands

There are two types of commands

✓ Internal commands

These are the commands which reside in the portion of computer's memory and are loaded along with the operating system in to the memory. These commands are always available for execution.

✓ External commands

these are the commands which have to be loaded from the disk into the memory of the computer before we want to execute

<b>Internal Command</b>	<b>External Command</b>
1. Internal commands are faster than External command.	1. External commands are slow than Internal command.
2. This commands are stored in Internal memory (RAM)	2. This commands are stored in secondary memory (Hard disk).
3. Example: Date, Time, Vol, Ver etc.	3. Example: Label, Exit etc.

# Internal commands

- CLS
- VOL
- VER
- PATH
- DEL
- TYPE
- MD
- CD
- REN
- PROMPT
- COPY
- TIME
- DATE
- PAUSE
- DIR

# External Commands

- Backup
- Restore
- Chkdsk
- Tree
- Diskcopy
- Diskcomp
- Copy con
- Print
- Move
- Undelete
- Format
- Deltree

### **Internal commands.**

- DOS stays in the internal memory of your systems unit whenever your PC is turned on. This portion of DOS is called resident DOS. It includes the command processor and also includes many of the DOS commands.
- The commands that are a part of resident DOS are known as internal commands. Because they are always in internal memory, DOS always knows where to find them.
- Also, it does not have to load them from disk storage into internal memory before it can execute them. To use one of these commands, all you ever have to do is enter the command name at the command prompt.

**Example of internal commands are:**

<b>Command</b>	<b>Meaning</b>
<b>DIR</b>	<b>list the directories and files on your disk.</b>
<b>Copy</b>	<b>Copy files from one disk to another</b>
<b>Ren</b>	<b>Rename a file or directory</b>
<b>MD</b>	<b>Make a new Directory</b>
<b>CLS</b>	<b>Clear the screen</b>
<b>CD</b>	<b>Change to another directory</b>
<b>VER</b>	<b>Tell me the DOS version</b>
<b>RMDIR</b>	<b>Remove a directory</b>

### **External commands.**

- If a command is not in resident DOS, it's called an external command. Each of these commands is stored in a disk file called a command file.
- On a MS-DOS system, the names of command files always have an extension of COM or EXE. Usually, these command files are stored in the DOS directory on one of the drives of your PC.
- Before DOS can execute an external command, it must find the command file for the command and load the command into internal memory. But not all systems are set up so DOS is able to find its external commands.

**Examples of external commands are:**

<b>Command</b>	<b>Meaning</b>
<b>Find</b>	<b>Find a file</b>
<b>Edit or Edlin</b>	<b>Start the DOS Text editor</b>
<b>Format</b>	<b>Format the Floppy or Hard Drive</b>
<b>Help</b>	<b>Open the DOS Help Files (Ver 6.0 or higher)</b>
<b>Tree</b>	<b>Display the directory structure</b>
<b>Attrib</b>	<b>Set the attributes of a file or directory.</b>

C:\Windows\system32\cmd.exe

GRAFTABL	Enables Windows to display an extended character set in graphics mode.
HELP	Provides Help information for Windows commands.
ICACLS	Display, modify, backup, or restore ACLs for files and directories.
IF	Performs conditional processing in batch programs.
LABEL	Creates, changes, or deletes the volume label of a disk.
MD	Creates a directory.
MKDIR	Creates a directory.
MKLINK	Creates Symbolic Links and Hard Links
MODE	Configures a system device.
MORE	Displays output one screen at a time.
MOVE	Moves one or more files from one directory to another directory.
OPENFILES	Displays files opened by remote users for a file share.
PATH	Displays or sets a search path for executable files.
PAUSE	Suspends processing of a batch file and displays a message.
POPD	Restores the previous value of the current directory saved by PUSHD.
PRINT	Prints a text file.
PROMPT	Changes the Windows command prompt.
PUSHD	Saves the current directory then changes it.
RD	Removes a directory.
RECOVER	Recover readable information from a bad or defective disk.
REM	Records comments (remarks) in batch files or CONFIG.SYS.
REN	Renames a file or files.
RENAME	Renames a file or files.
REPLACE	Replaces files.
RMDIR	Removes a directory.
ROBOCOPY	Advanced utility to copy files and directory trees
SET	Displays, sets, or removes Windows environment variables.
SETLOCAL	Begins localization of environment changes in a batch file.
SC	Displays or configures services (background processes).
SCHTASKS	Schedules commands and programs to run on a computer.
SHIFT	Shifts the position of replaceable parameters in batch files.
SHUTDOWN	Allows proper local or remote shutdown of machine.
SORT	Sorts input.
START	Starts a separate window to run a specified program or command.
SUBST	Associates a path with a drive letter.
SYSTEMINFO	Displays machine specific properties and configuration.
TASKLIST	Displays all currently running tasks including services.
TASKKILL	Kill or stop a running process or application.
TIME	Displays or sets the system time.
TITLE	Sets the window title for a CMB.EXE session.
TREE	Graphically displays the directory structure of a drive or path.
TYPE	Displays the contents of a text file.
VER	Displays the Windows version.

## Some DOS Commands

C:\WINDOWS\system32\cmd.exe

DOSKEY	Edits command lines, recalls Windows commands, and creates macros.
DRIVERQUERY	Displays current device driver status and properties.
ECHO	Displays messages, or turns command echoing on or off.
ENDLOCAL	Ends localization of environment changes in a batch file.
ERASE	Deletes one or more files.
EXIT	Quits the CMD.EXE program (command interpreter).
FC	Compares two files or sets of files, and displays the differences between them.
FIND	Searches for a text string in a file or files.
FINDSTR	Searches for strings in files.
FOR	Runs a specified command for each file in a set of files.
FORMAT	Formats a disk for use with Windows.
FSUTIL	Displays or configures the file system properties.
FTYPE	Displays or modifies file types used in file extension associations.
GOTO	Directs the Windows command interpreter to a labeled line in a batch program.
GPRERESULT	Displays Group Policy information for machine or user.
GRAFTABL	Enables Windows to display an extended character set in graphics mode.
HELP	Provides Help information for Windows commands.
ICACLS	Display, modify, backup, or restore ACLs for files and directories.
IF	Performs conditional processing in batch programs.
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PAUSE	Suspends processing of a batch file and displays a message.
POPD	Restores the previous value of the current directory saved by PUSHD.
PRINT	Prints a text file.
PROMPT	Changes the Windows command prompt.
PUSHD	Saves the current directory then changes it.
RD	Removes a directory.
RECOVER	Recovery readable information from a bad or defective disk.
REM	Records comments (remarks) in batch files or CONFIG.SYS.
REN	Renames a file or files.
RENAME	Renames a file or files.
REPLACE	Replaces files.
RMDIR	Removes a directory.
ROBOCOPY	Advanced utility to copy files and directory trees

# Batch Files

A batch file is a kind of script file in DOS, OS/2 and Microsoft Windows. It consists of a series of commands to be executed by the command-line interpreter, stored in a plain text file.

The filename extension **.bat** is used in DOS and Windows. A batch file is a text file that contains a sequence of commands for a computer operating system.

## Cont...

- It's called a batch file because it batches (bundles or packages) into a single file a set of commands that would otherwise have to be presented to the system interactively from a keyboard one at a time.
- A batch file is usually created for command sequences for which a user has a repeated need. Commonly needed batch files are often delivered as part of an operating system.
- You initiate the sequence of commands in the batch file by simply entering the name of the batch file on a command line.

# Types of Operating Systems

Following are some of the most widely used types of Operating system.

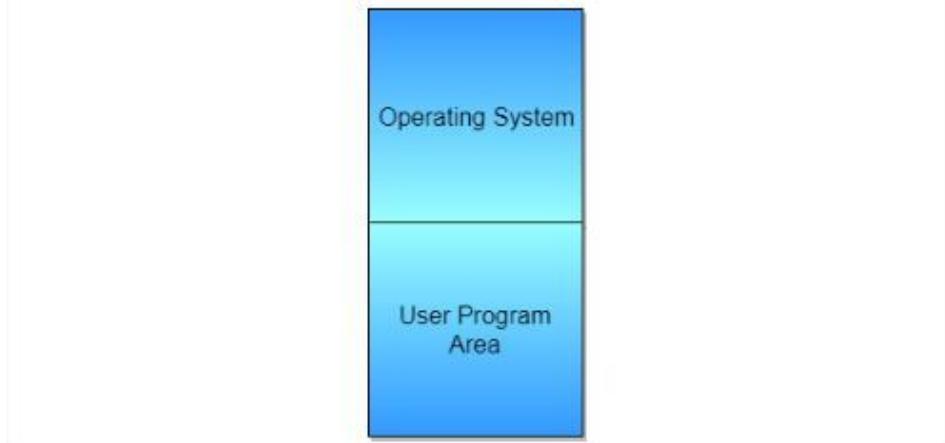
1. Simple Batch System
  2. Multiprogramming Batch System
  3. Multiprocessor System
  4. Desktop System
  5. Distributed Operating System
  6. Clustered System
  7. Realtime Operating System
  8. Handheld System
- An operating system is a system software that manages computer hardware, software resources and provides common services for computer programs. [Wikipedia](#)

# Simple Batch Systems

- In this type of system, there is no direct interaction between user and the computer.
- The user has to submit a job (written on cards or tape) to a computer operator.
- Then computer operator places a batch of several jobs on an input device.
- Jobs are batched together by type of languages and requirement.
- Then a special program, the monitor, manages the execution of each program in the batch.
- The monitor is always in the main memory and available for execution.

## Advantages of Simple Batch Systems

1. No interaction between user and computer.
2. No mechanism to prioritise the processes.



# Multiprogramming Batch Systems

- In this the operating system picks up and begins to execute one of the jobs from memory.
- Once this job needs an I/O operation operating system switches to another job (CPU and OS always busy).
- Jobs in the memory are always less than the number of jobs on disk(Job Pool).
- If several jobs are ready to run at the same time, then the system chooses which one to run through the process of **CPU Scheduling**.
- In Non-multiprogrammed system, there are moments when CPU sits idle and does not do any work.
- In Multiprogramming system, CPU will never be idle and keeps on processing.

**Time Sharing Systems** are very similar to Multiprogramming batch systems. In fact time sharing systems are an extension of multiprogramming systems.

In Time sharing systems the prime focus is on **minimizing the response time**, while in multiprogramming the prime focus is to maximize the CPU usage.



## Multiprocessor Systems

A Multiprocessor system consists of several processors that share a common physical memory. Multiprocessor system provides higher computing power and speed. In multiprocessor system all processors operate under single operating system. Multiplicity of the processors and how they do act together are transparent to the others.

### Advantages of Multiprocessor Systems

1. Enhanced performance
2. Execution of several tasks by different processors concurrently, increases the system's throughput without speeding up the execution of a single task.
3. If possible, system divides task into many subtasks and then these subtasks can be executed in parallel in different processors. Thereby speeding up the execution of single tasks.

## Desktop Systems

Earlier, CPUs and PCs lacked the features needed to protect an operating system from user programs. PC operating systems therefore were neither multiuser nor multitasking. However, the goals of these operating systems have changed with time; instead of maximizing CPU and peripheral utilization, the systems opt for maximizing user convenience and responsiveness. These systems are called **Desktop Systems** and include PCs running [Microsoft Windows](#) and the [Apple Macintosh](#). Operating systems for these computers have benefited in several ways from the development of operating systems for mainframes.

**Microcomputers** were immediately able to adopt some of the technology developed for larger operating systems. On the other hand, the hardware costs for microcomputers are sufficiently low that individuals have sole use of the computer, and CPU utilization is no longer a prime concern. Thus, some of the design decisions made in operating systems for mainframes may not be appropriate for smaller systems.

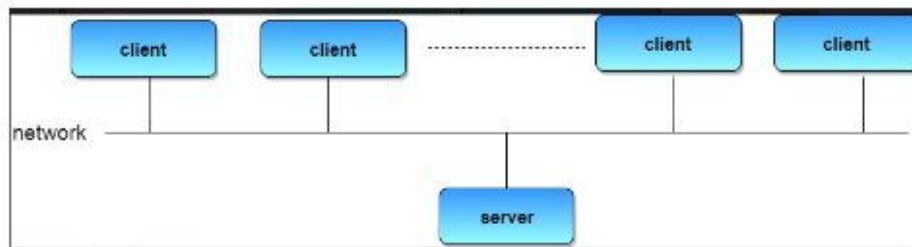
## Types of Distributed Operating Systems

Following are the two types of distributed operating systems used:

1. Client-Server Systems
2. Peer-to-Peer Systems

### Client-Server Systems

Centralized systems today act as **server systems** to satisfy requests generated by **client systems**. The general structure of a client-server system is depicted in the figure below:



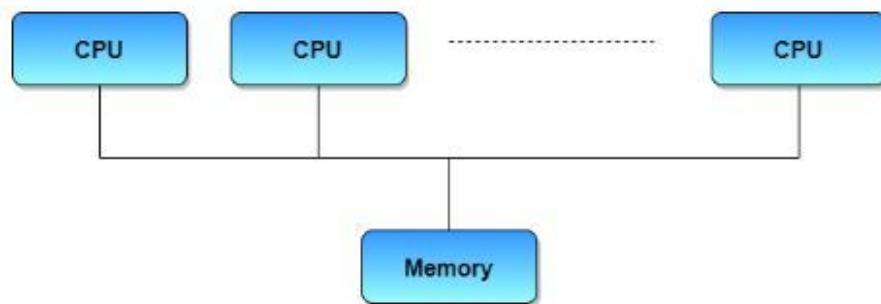
Server Systems can be broadly categorized as: **Compute Servers** and **File Servers**.

- **Compute Server systems**, provide an interface to which clients can send requests to perform an action, in response to which they execute the action and send back results to the client.
- **File Server systems**, provide a file-system interface where clients can create, update, read, and delete files.

## Peer-to-Peer Systems

The growth of computer networks – especially the Internet and World Wide Web (WWW) – has had a profound influence on the recent development of operating systems. When PCs were introduced in the 1970s, they were designed for **personal** use and were generally considered standalone computers. With the beginning of widespread public use of the Internet in the 1990s for electronic mail and FTP, many PCs became connected to computer networks.

In contrast to the **Tightly Coupled** systems, the computer networks used in these applications consist of a collection of processors that do not share memory or a clock. Instead, each processor has its own local memory. The processors communicate with one another through various communication lines, such as high-speed buses or telephone lines. These systems are usually referred to as loosely coupled systems (or distributed systems). The general structure of a client-server system is depicted in the figure below:



## Clustered Systems

- Like parallel systems, clustered systems gather together multiple CPUs to accomplish computational work.
- Clustered systems differ from parallel systems, however, in that they are composed of two or more individual systems coupled together.
- The definition of the term clustered is not concrete; the general accepted definition is that clustered computers share storage and are closely linked via LAN networking.
- Clustering is usually performed to provide **high availability**.
- A layer of cluster software runs on the cluster nodes. Each node can monitor one or more of the others. If the monitored machine fails, the monitoring machine can take ownership of its storage, and restart the application(s) that were running on the failed machine. The failed machine can remain down, but the users and clients of the application would only see a brief interruption of service.
- **Asymmetric Clustering** - In this, one machine is in hot standby mode while the other is running the applications. The hot standby host (machine) does nothing but monitor the active server. If that server fails, the hot standby host becomes the active server.
- **Symmetric Clustering** - In this, two or more hosts are running applications, and they are monitoring each other. This mode is obviously more efficient, as it uses all of the available hardware.
- **Parallel Clustering** - Parallel clusters allow multiple hosts to access the same data on the shared storage. Because most operating systems lack support for this simultaneous data access by multiple hosts, parallel clusters are usually accomplished by special versions of software and special releases of applications.

Clustered technology is rapidly changing. Clustered system's usage and it's features should expand greatly as **Storage Area Networks(SANs)**. SANs allow easy attachment of multiple hosts to multiple storage units. Current clusters are usually limited to two or four hosts due to the complexity of connecting the hosts to shared storage.

---

# Real Time Operating System

It is defined as an operating system known to give maximum time for each of the critical operations that it performs, like OS calls and interrupt handling.

The Real-Time Operating system which guarantees the maximum time for critical operations and complete them on time are referred to as **Hard Real-Time Operating Systems**.

While the real-time operating systems that can only guarantee a maximum of the time, i.e. the critical task will get priority over other tasks, but no assurance of completing it in a defined time. These systems are referred to as **Soft Real-Time Operating Systems**.

## Handheld Systems

Handheld systems include **Personal Digital Assistants(PDAs)**, such as [Palm-Pilots](#) or [Cellular Telephones](#) with connectivity to a network such as the Internet. They are usually of limited size due to which most handheld devices have a small amount of memory, include slow processors, and feature small display screens.

- Many handheld devices have between 512 KB and 8 MB of memory. As a result, the operating system and applications must manage memory efficiently. This includes returning all allocated memory back to the memory manager once the memory is no longer being used.
- Currently, many handheld devices do not use virtual memory techniques, thus forcing program developers to work within the confines of limited physical memory.
- Processors for most handheld devices often run at a fraction of the speed of a processor in a PC. Faster processors require more power. To include a faster processor in a handheld device would require a larger battery that would have to be replaced more frequently.
- The last issue confronting program designers for handheld devices is the small display screens typically available. One approach for displaying the content in web pages is **web clipping**, where only a small subset of a web page is delivered and displayed on the handheld device.

Some handheld devices may use wireless technology such as **BlueTooth**, allowing remote access to e-mail and web browsing. **Cellular telephones** with connectivity to the Internet fall into this category. Their use continues to expand as network connections become more available and other options such as [cameras](#) and [MP3 players](#), expand their utility.

## Few common services provided by an operating system:

- Program execution
- I/O operations
- File System manipulation
- Communication
- Error Detection
- Resource Allocation
- Protection

# Different Features of Operating System

UNIX	DOS	Mac OS	MS Windows	Linux	Palm OS/Pocket PC
Multi-user, multi-tasking	Single-user, single-tasking	Single-user, multi-tasking	Single-user, multi-tasking	Multi-user, multi-tasking	Single-user, multi-tasking
Command-line user interface	Command-line user interface	GUI	GUI	Command-line user interface, GUI	GUI
UNIX has several versions but they lack interoperability.	DOS has been replaced by MS Windows OS.	Mac OS has easy-to-use GUI.	The first true MS Windows OS is MS Windows 95.	Linux is an open-source software.	They are specifically designed for PDA.
Network OS	Desktop OS	Desktop OS	Desktop OS	Network OS	Mobile OS

## All Control Panel Items

X

Control Panel > All Control Panel Items

Search Control Panel

P

Adjust your computer's settings

# First view of control panel

View by: Small icons ▾

- Action Center
- BitLocker Drive Encryption
- Default Programs
- Ease of Access Center
- Folder Options
- Internet Options
- Mouse
- Phone and Modem
- Recovery
- Speech Recognition
- Taskbar and Navigation
- Windows Firewall

- Add features to Windows 8.1
- Color Management
- Device Manager
- Family Safety
- Fonts
- Keyboard
- Network and Sharing Center
- Power Options
- Region
- Storage Spaces
- Troubleshooting
- Windows Update

- Administrative Tools
- Credential Manager
- Devices and Printers
- File History
- HomeGroup
- Language
- Notification Area Icons
- Programs and Features
- RemoteApp and Desktop Connections
- Sync Center
- User Accounts
- Work Folders

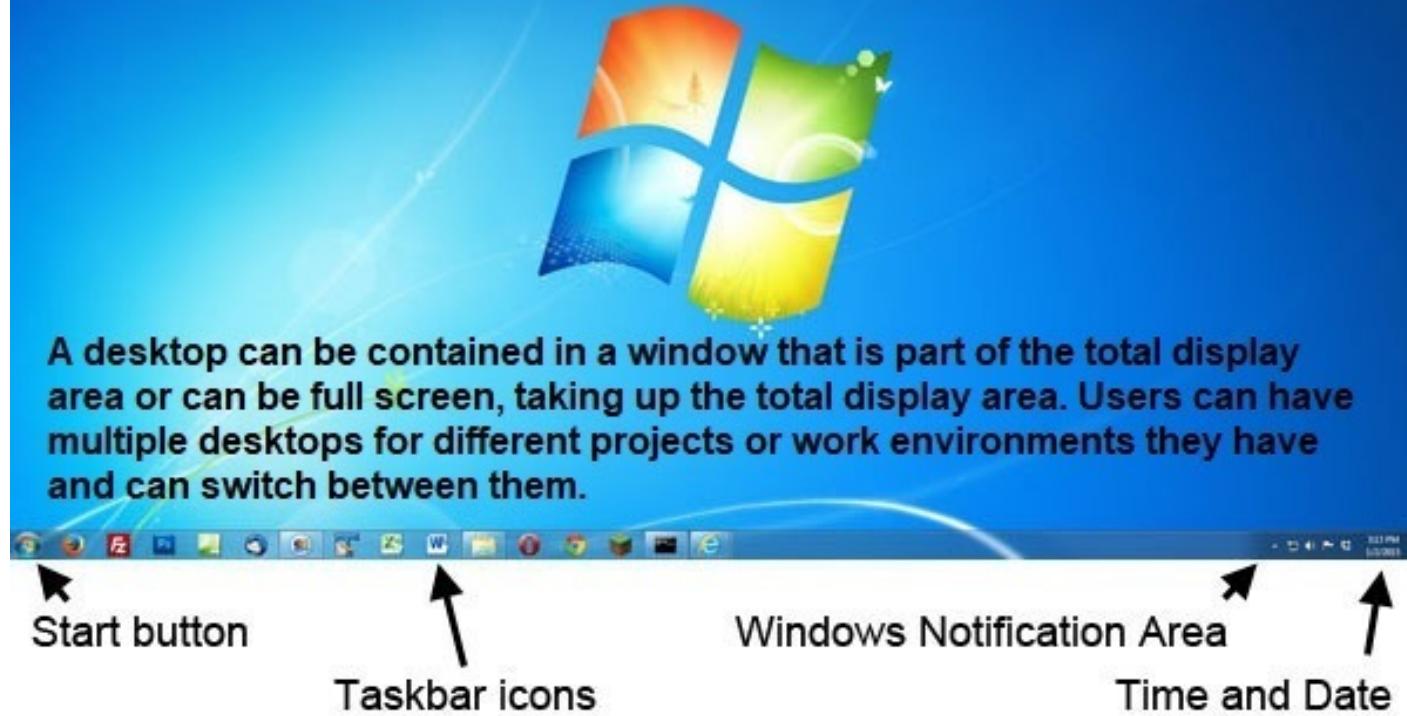
- AutoPlay
- Date and Time
- Display
- Flash Player (32-bit)
- Indexing Options
- Location Settings
- Personalization
- Realtek HD Audio Manager
- Sound
- System
- Windows Defender

## FEATURES OF CONTROL PANEL

Categories	Related Applets
Accessibility Options	Accessibility Options
Add or Remove Programs	Add or Remove Programs
Appearance and Themes	Display, Folder Options, Taskbar and Start menu
Date, Time, Language, and Regional Options	Date and Time, Regional and Language Options
Network and Internet Connections	Internet Options, Network Connections
Performance and Maintenance	Administrative Tools, Power Options, Scheduled Tasks, System
Printers and Other Hardware	Game Controllers, Keyboard, Mouse, Phone and Modem Options, Printers and Faxes, Scanners and Cameras
Sounds, Speech, and Audio Devices	Speech, Sounds and Audio Devices
User Accounts	User Accounts

# Windows 7 Desktop

A desktop is a computer display area that represents the kinds of objects one might find on top of a physical desk, including documents, phone books, telephones, reference sources, writing and drawing tools, and project folders.



## Understanding Icons

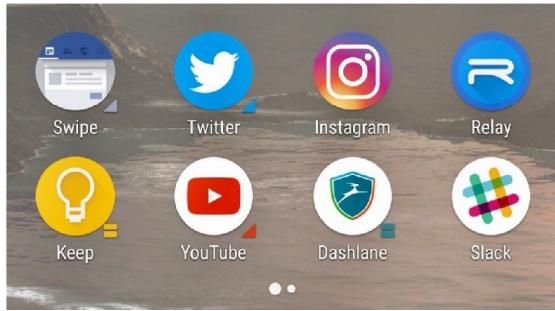
### What are Icons?

- The English term Icon, which means "likeness, image, or representation," comes from the Greek word eikon.
- Iconography is an art form of Christians normally associated with Orthodox Churches.
- St Luke is consider to the first Iconographer.
- It was thought to have originated in the first century A.D. in the catacombs of Rome.
- By the end of the fifth century practiced in Syria, Egypt, and Asia minor.

**A pictogram displayed on a computer screen, a devotional painting of a holy figure, a venerated person who represents a way of life or a set of beliefs.**



**Icons on our monitors represent office equipment, software programs, and social media networks.**



# TASKBAR

**a bar at the edge of the display of a graphical user interface that allows quick access to current or favourite applications.**

Windows Taskbar



Windows 10 Taskbar



Windows 8.1 Taskbar



Windows 7 Taskbar



Windows 98 Taskbar

Windows Accessories

File Home Share View

Pin to Quick access Copy Paste Cut Copy path Paste shortcut Move to Copy to Delete Rename New folder New item Easy access Properties Open Select all Select none Invert selection

Clipboard Organize New Open Select

Local Disk (C:) > ProgramData > Microsoft > Windows > Start Menu > Programs > Windows Accessories

Search Wi... ?

Quick access:

- 1
- 3
- 4
- cfoa

System Tools

Math Input Panel

Paint

Quick Assist

Remote Desktop Connection

Snipping Tool

Steps Recorder

Windows Fax and Scan

Windows Media Player

WordPad

OneDrive

3D Objects

Desktop

Documents

Downloads

Music

Pictures

Videos

Local Disk (C:)

Software & Ap

Linux Tutorials

Movies ,Music

PCUNLOCKER

WIN\_XP (H:)

Hollywood Mo

10 items

**Math Input Panel** is a great little application from Windows which lets you use input devices such as touchscreens, external digitizers or even a mouse, to write mathematical formulas that are automatically recognized and can be inserted into different types of documents.

**Paint** Microsoft Paint is a simple raster graphics editor that has been included with all versions of Microsoft Windows. The program opens and saves files in Windows bitmap, JPEG, GIF, PNG, and single-page TIFF formats.

**Quick Assist** Quick Assist, originally known as Windows Remote Assistance, is a feature of Windows XP and later that allows a user to temporarily view or control a remote Windows computer over a network or the Internet to resolve issues without directly touching the unit. It is based on the Remote Desktop Protocol



Windows Accessories

File Home Share View

Pin to Quick access Copy Paste Cut Copy path Paste shortcut Move to Copy to Delete Rename New folder New item Easy access Properties Open Select all Select none Invert selection

Clipboard Organize New Open Select

Local Disk (C:) > ProgramData > Microsoft > Windows > Start Menu > Programs > Windows Accessories Search Wi... ?

Quick access: 1, 3, 4, cfoa

OneDrive

3D Objects, Desktop, Documents, Downloads, Music, Pictures, Videos

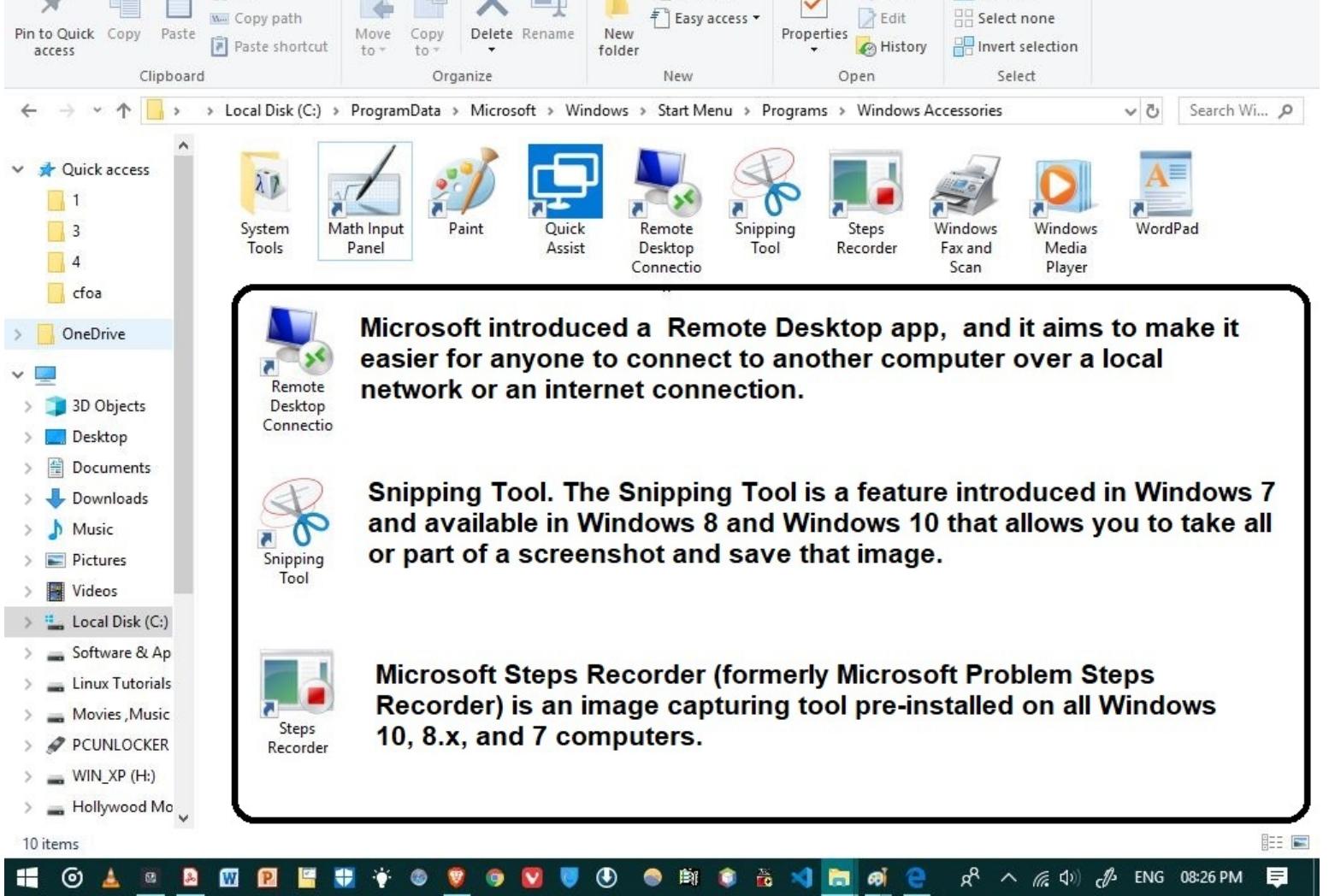
Local Disk (C): Software & Ap, Linux Tutorials, Movies ,Music, PCUNLOCKER, WIN\_XP (H:), Hollywood Mo

10 items

**Microsoft introduced a Remote Desktop app, and it aims to make it easier for anyone to connect to another computer over a local network or an internet connection.**

**Snipping Tool. The Snipping Tool is a feature introduced in Windows 7 and available in Windows 8 and Windows 10 that allows you to take all or part of a screenshot and save that image.**

**Microsoft Steps Recorder (formerly Microsoft Problem Steps Recorder) is an image capturing tool pre-installed on all Windows 10, 8.x, and 7 computers.**



Windows Accessories

File Home Share View

Pin to Quick access Copy Paste Cut Copy path Paste shortcut Move to Copy to Delete Rename New folder New item Easy access Properties Open Select all Select none Invert selection

Clipboard Organize New Open Select

Local Disk (C:) > ProgramData > Microsoft > Windows > Start Menu > Programs > Windows Accessories Search Wi... ?

Quick access: 1, 3, 4, cfoa

OneDrive

3D Objects, Desktop, Documents, Downloads, Music, Pictures, Videos

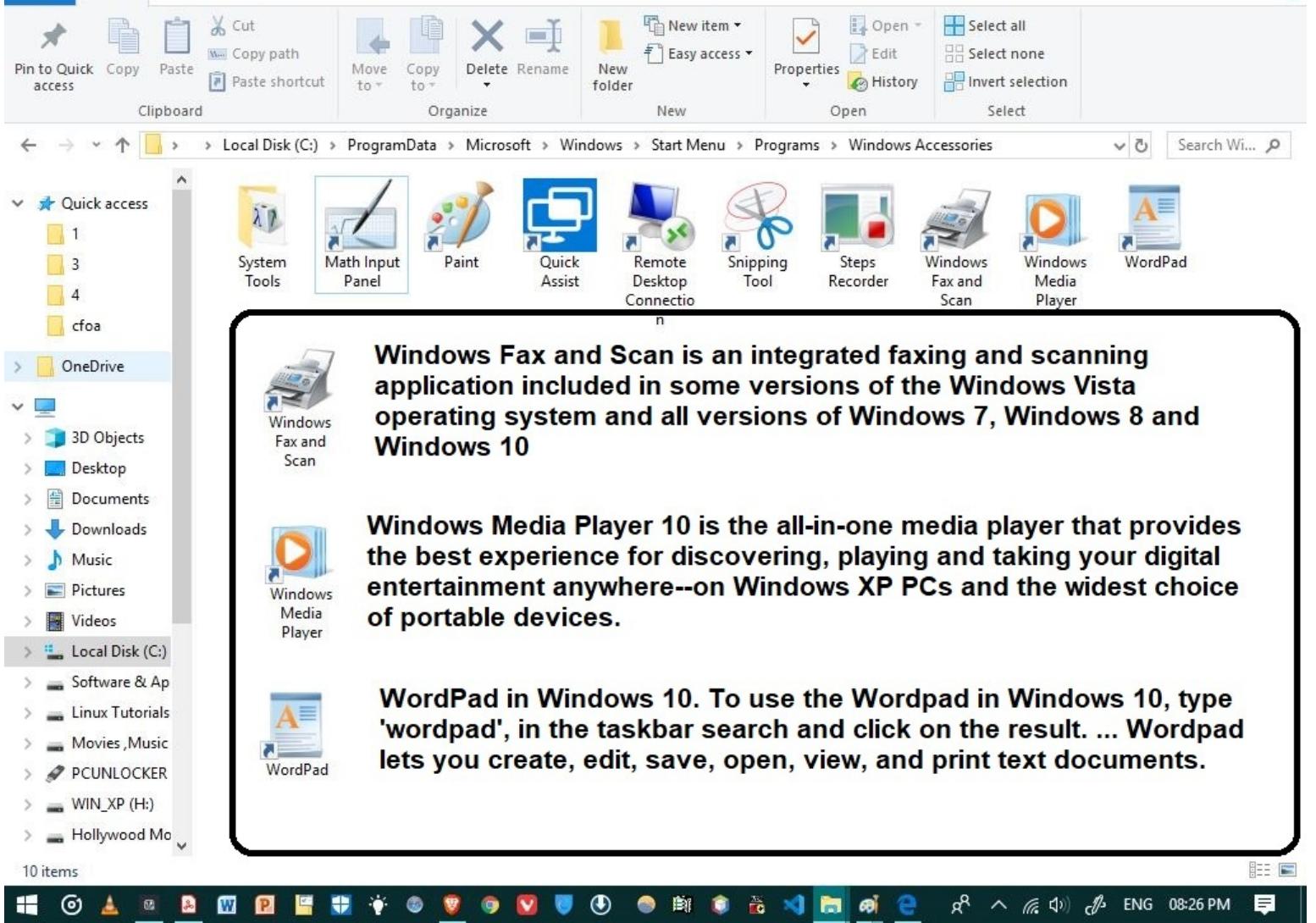
Local Disk (C): Software & Ap, Linux Tutorials, Movies,Music, PCUNLOCKER, WIN\_XP (H:), Hollywood Mo

Windows Fax and Scan, Windows Media Player, WordPad

**Windows Fax and Scan is an integrated faxing and scanning application included in some versions of the Windows Vista operating system and all versions of Windows 7, Windows 8 and Windows 10**

**Windows Media Player 10 is the all-in-one media player that provides the best experience for discovering, playing and taking your digital entertainment anywhere--on Windows XP PCs and the widest choice of portable devices.**

**WordPad in Windows 10. To use the Wordpad in Windows 10, type 'wordpad', in the taskbar search and click on the result. ... Wordpad lets you create, edit, save, open, view, and print text documents.**



# **NOTEBOOK**

**Notepad is a basic plain text editor that you can use to create simple documents. The resulting files typically saved with the .txt extension. This article describes several ways to open Notepad and customize its text in Windows 10.**

## Text Editor

- A text editor is used solely to write and edit text.
- You can copy, cut, paste, undo and redo. Text formatting is not available in those editors.
- Mostly text editors are used for programming purposes to write HTML, CSS, JavaScript, Php and other languages.
- An example of a text editor is sublime text or notepad++.
- Moreover usually in text editors you will keep on typing infinitely in the same line unless you click on enter to go to a new one.

## Word Processor

- A word processor allows you to edit text in addition to multiple other functionalities such as text formatting (italic, bold, underline, etc.).
- In addition to that word processors allow automatic spelling and grammar checks.
- It also comes with a thesaurus for word selections.
- Some word processors come equipped with predefined themes and templates to make it easier for you to start your work.
- Some popular word processors are Microsoft Word and Apple Pages.

# Notepad

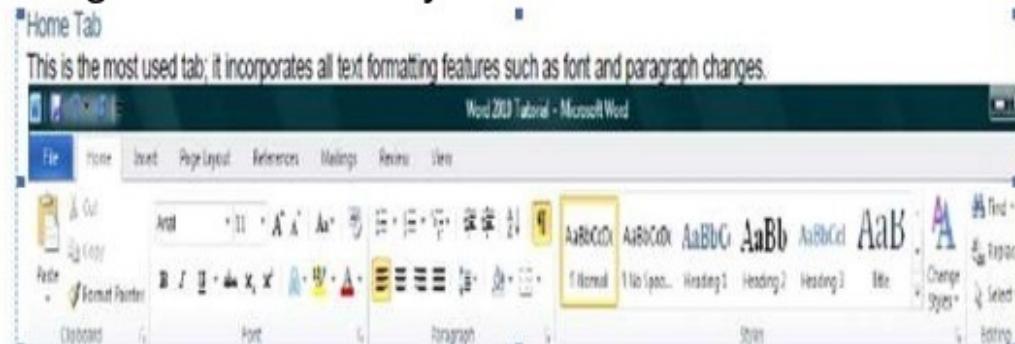
- Notepad is a simple text editor for Microsoft Windows and a basic text-editing program which enables computer users to create documents.
- It was first released as a mouse-based MS DOS program in 1983, and has been included in all versions of Microsoft Windows since Windows 1.0 in 1985.
- Notepad is a common text-only (plain text) editor. The resulting files—typically saved with the .txt extension—have no format tags or styles, making the program suitable for editing system files to use in a DOS environment.
- This is especially useful when creating HTML documents for a Web page because special characters or other formatting may not appear in your published Web page or may even cause errors.

## SHORCUT KEYS FOR MICROSOFT OFFICE

- **CTRL+K** Create a hyperlink
- **CTRL+/** Display HTML tags
- **CTRL+T** Create an Auto Thumbnail of the selected picture
- **CTRL+SHIFT+B** Preview a page in a Web browser
- **SHIFT+ALT+F11** Display the Microsoft Script Editor
- **CTRL+N** Create a new page
- **CTRL+B** Bold
- **CTRL+I** Italic
- **CTRL+U** Underline
- **CTRL+C** Copy
- **CTRL+V** Paste
- **CTRL+Z** Undo
- **CTRL+S** Save
- **CTRL+P** Print
- **CTRL+O** Open

# Microsoft Word 2010

- Microsoft Word 2010 is a word-processing program, designed to help you create professional-quality documents. With the finest document-formatting tools, Word helps you organize and write your documents more



# Cont....

## • Insert Tab

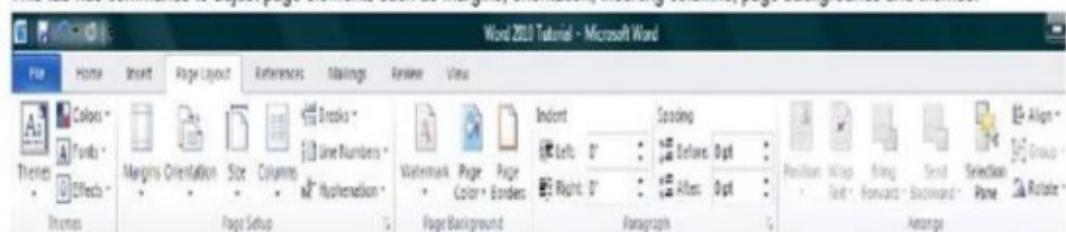
### Insert Tab

This tab allows you to insert a variety of items into a document from pictures, clip art, tables and headers and footers.



## • Page Layout Tab

This tab has commands to adjust page elements such as margins, orientation, inserting columns, page backgrounds and themes.



# Cont...

## • 4. Reference Tab

### Reference Tab

This tab has commands to use when creating a Table of Contents and citation page for a paper. It provides you with many simple solutions to create these typically difficult to produce documents.

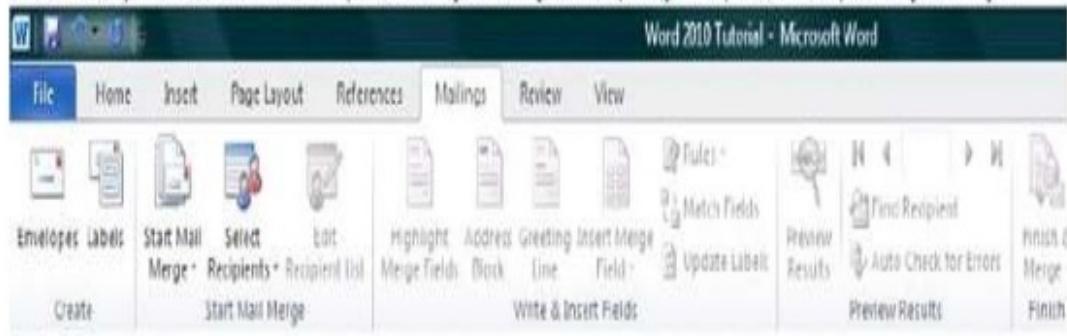


# Cont...

- **Mailing Tab**

## Mailing Tab

This tab allows you to create documents to help when sending out mailings such as printing envelopes, labels and processing mail merges.



# Cont...

- **Review Tab**

## Review Tab

This tab allows you to make any changes to your document due to spelling and grammar issues. It also holds the track changes feature which provides people with the ability to make notes and changes to a document of another person.



# Cont...

- **View Tab**

## View Tab

This tab allows you to change the view of your document to a different two page document or zoom.



# Formatting Text



- **Modifying Fonts**

The **Font** Group allows you to change your text font style, size, color and many other elements.

1. Highlight the text you would like to modify.
2. Click on the drop down arrow of font style and font size and select the changes you would like to make.
3. While text is highlighted you can also click on the color, bold, italics or underline commands to modify the text even more.

## Change Text Case

- You can change the case of selected text in a document by clicking a single button called **Change Case** on the ribbon.
- 1. Highlight the text for which you want to change the case.
- 2. On the **Home** tab, in the **Font** group, click **Change Case**.
- 3. Choose an option from the dropdown list, which includes  
**Sentence case, lowercase, UPPERCASE, Capitalized .**

# Page Orientation

- **Page Orientation** You can choose either portrait (vertical) or landscape (horizontal) orientation for all or part of your document.
- Change Page Orientation
- 1. On the **Page Layout** tab, in the **Page Setup** group,  
click **Orientation**.
- 2. Click **Portrait** or **Landscape**



9/1/2017

# Page Margins

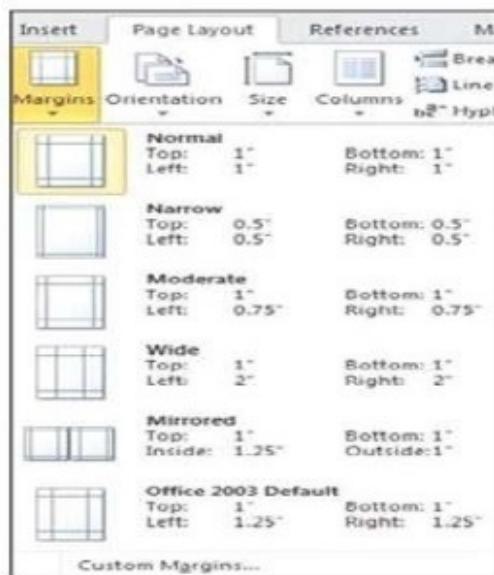
- Page margins are the blank space around the edges of the page. In general, you insert text and graphics in the printable area inside the margins. When you change a document's page margins, you change where text and graphics appear on each page. You can change the page margins either by choosing from one of Word's predefined settings in the Margins gallery or by creating custom margins.
- Setting Predefined Page Margins
  1. On the **Page Layout** tab, in the **Page Setup** group, click **Margins**. The Margins gallery drop down menu will appear.

Cont...

- Create **Custom Margins**

1. On the **Page Layout** tab, in the **Page Setup** group, click **Margins**.
2. At the bottom of the Margins gallery drop down menu, click **Custom Margins**.
3. The **Page Setup** dialog box will appear.
4. Enter new values for the margins in all or some of the Top, Bottom, Left or Right text

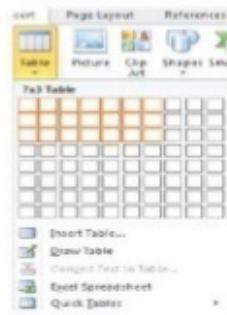
# Margin Screenshot



# Tables

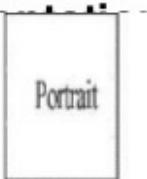
- Inserting a Table

1. Click where you want to insert a table.
2. On the **Insert** tab, in the **Tables** group, click **Table**
3. A drop down box will appear; click and hold your mouse then drag to select the number of rows and columns that you want inserted into your document. You will see your table appearing in your document as you drag on the grid.
4. Once you have highlighted the rows and columns you would like let go of your mouse and the table will be in your document.



# Desktop Publishing

- Desktop Publishing (DTP) allows you to go beyond word processing. You can combine text and graphics to produce creative and well designed publications.
- Along with basic skills and your own imagination it is helpful to be familiar with some basics of graphic design.
- **Page Orientation**
- Select the orientation that suits your message



Cont...

- **Margins**

- Margins are the blank spaces bordering the written or printed area of a document page.

- **TextArt**

- **TextArt is a feature that allows you to create a wide variety of interesting text. It goes beyond what is**

possible



## Cont...

- The TextArt that you created appears as a graphic within your document. You can treat it like any other graphic. Resize or move it to any place on your page.
- **Graphic Images**
- **Adding a Graphic**
- You can add a graphic image to your document from several sources. WordPerfect has some images available in the **Clip Art section**. There are many **more images available on the R: Drive (Word Perfect Only)**. You can find these or a specific image on your G: Drive or floppy disk by browsing to them using the **From File** option.

## Cont...

- From the **Insert** menu, select **Graphic**. From here choose **Clip Art** or **From File** to browse to your image.
- Once it is inserted, a graphic image can be moved or resized by clicking on it and dragging it into place or by using the handles around its outside.
- **Watermark**
- A watermark is as a lightly shaded image that appears behind text and other graphics on a page.
- **Wrap Text**
- When you insert a graphic image into text, funny things can happen to the position of your text.
- To help deal with this, it is good to know how to wrap text around an image.

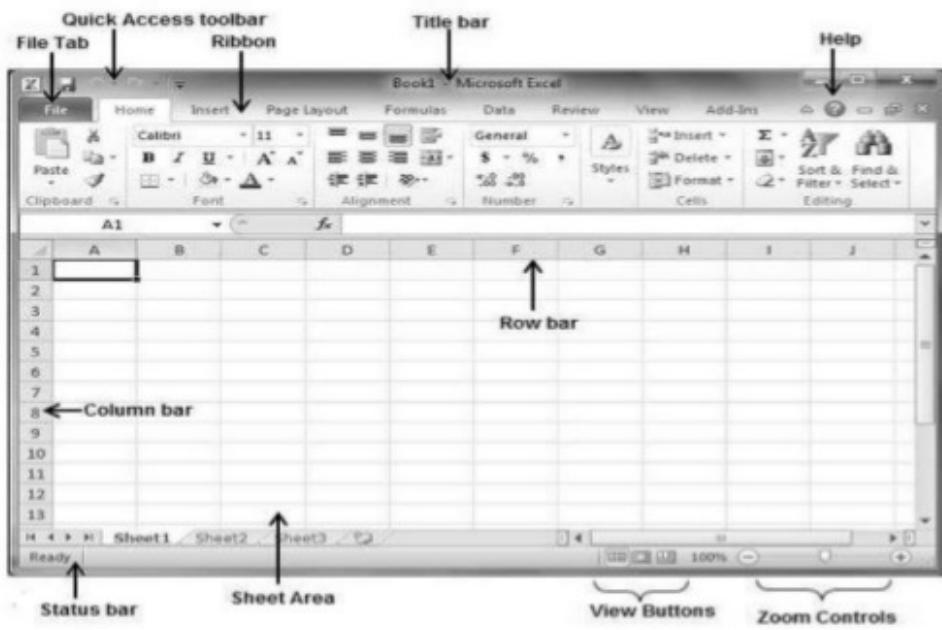
## ***INTRODUCTION TO THE WORKBOOK AND SPREADSHEET***

- A spread sheet looks a lot like a table you might see in any word processing package, but it has some very important features that most tables do not.
- The first is that it is designed to make repetitive and/or complicated calculations very easy to carry out.
- Secondly, most spreadsheet programs have advanced graphing capabilities that make producing graphs from the data on the spread sheet relatively simple.

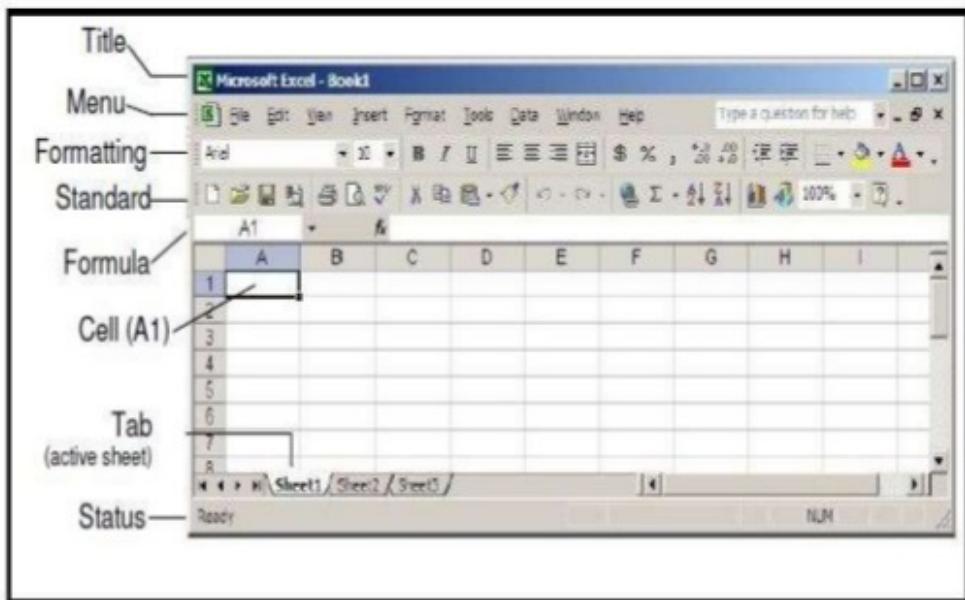
## **CONT....**

- In Excel each document is referred to as a workbook.
- Within each workbook you can have any number of spread sheets, the default is three but you can add as many sheets as you find necessary. At any given time, only one sheet is active in your work book.
- Additionally, when you print, the default for Excel is to only print the sheet that is active.

# MS-EXCEL 2010



# THE EXCEL WINDOW



# **EXCEL TOOLBARS**

Toolbar Name	Usage
Title Bar	Displays the title of the workbook you are currently in.
Menu Bar	Menus, left click menu to see choices.
Formatting Toolbar	Various formatting shortcuts.
Standard Toolbar	Standard Tools, similar to other Microsoft products, and some special tools for Excel.
Formula Bar	Two important fields, the left field shows the cell address of the cell your cursor is currently located in. The right field displays the 'actual' contents of the cell, this field is especially important when you are entering formulas.
Tab Bar	Allows you to move through sheets. Note the active sheet is always highlighted.
Status Bar	Displays a description of what Excel is doing.

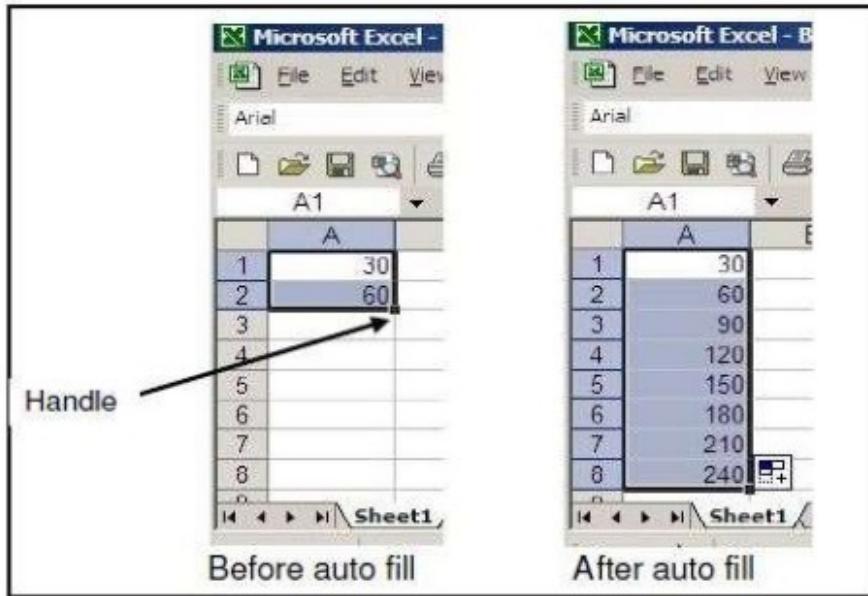
## **CELL ADDRESSING AND ENTERING DATA**

- The spread sheet itself is laid out as a table made up of columns and rows.
- Each column has a letter reference (A, B, C...) and each row has a number reference (1,2, 3...).
- Each square in the spread sheet represents the intersection of 1 row and 1 column and is referred to as a **cell**.
- **Cells are referenced according to the row and column intersection.** For example: cell A1 is the cell in column A and row 1. This unique row and column reference of a cell is referred to as its 'address'.

## EXCEL'S AUTO FILL

- To use auto fill, enter the first two numbers in the series in adjoining cells.
- Now select both cells, grab the common **handle (the little black box in the bottom right hand corner of the selected cells)** and drag down as far as needed.
- You should now have a series of numbers, following the pattern of the first two you entered.
- This trick will work for letters and formulas as well as numbers, and works for columns as well as rows.

# EXCEL'S AUTO FILL



## **ENTERING FORMULAS**

- There are two ways to enter formulas in Excel, either use one of the functions already programmed in Excel, or enter your own from scratch.
- ***Entering your own formula***
- To enter your own formula start by typing an equal sign (this tells Excel you are entering a formula) and then entering the formula using **operands and operators**.
- Standard arithmetic operators are listed in Table 1, but many others are available.
- Operands can either be numbers you enter, or can be cell references.
- To enter a cell reference into a formula either type it, or click the cell.

## **ARITHMETIC OPERATORS**

<b>Arithmetic operator</b>	<b>Meaning (example)</b>
+ (plus sign)	Addition ( $3+3$ )
- (minus sign)	Subtraction ( $3-1$ )
*(asterisk)	Multiplication ( $3*3$ )
/ (forward slash)	Division ( $3/3$ )
% (percent sign)	Percent ( $20\%$ )
^ (caret)	Exponentiation ( $3^2$ )

## **OPERATOR PRECEDENCE IN EXCEL**

Precedence	Operator	Description	
1	:	(colon) (single space) ,	Reference operators
2	-		Negation (as in -1)
3	%		Percent
4	^		Exponentiation
5	* and /		Multiplication and division
6	+ and -		Addition and subtraction
7	&		Connects two strings of text (concatenation)
8	= < > <= >= <>		Comparison

## ***USING EXCEL'S FUNCTIONS***

- The easiest way to understand the implementation of Excel functions is by following a step by step example. To access Excel's functions, click the down arrow next to the sum button.
- This gives you a popup menu showing the five most common Excel functions, and below these, a menu choice titled 'More Functions'. Note that selecting one of the five functions in the pop up menu will work differently then selecting them from the "More Functions" menu.

## EXCEL'S POP UP FUNCTION MENU

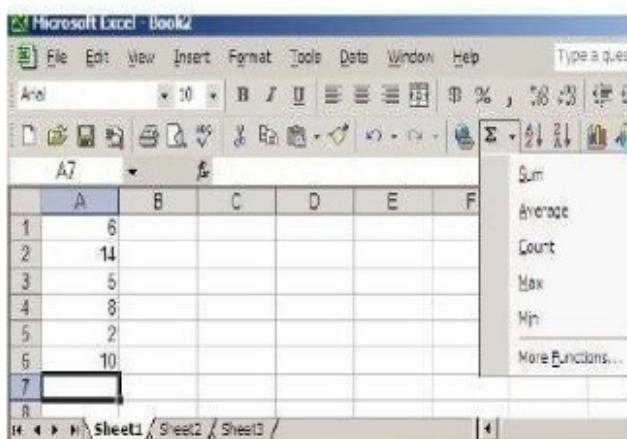


Figure 3. Excel's pop up function menu.

**Step 1.** Start by entering the series of numbers as pictured in Figure 3. Place your cursor in cell A7. Select sum from the list of functions that appears when you click the down arrow next to the sum button (or click the sum button). Excel tries to guess the cells you wish to sum up. Generally it will select all the cells containing numerical data immediately next to the cell you are inserting the function into.

# EXCEL SUM FUNCTION

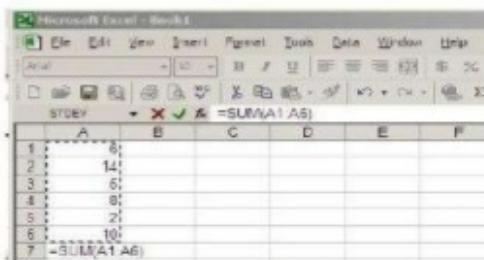


Figure 4. Excel's sum function.

**Step 2.** You can see what cells Excel has chosen in 2 ways. They will be enclosed in a marching dash box, and the range is displayed in the function window. In this case Excel has chosen the correct data. You can always override by selecting the cells yourself, or typing the correct range in the function window.

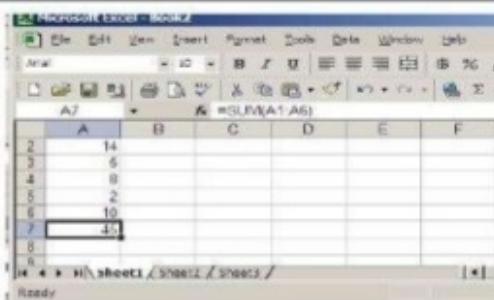


Figure 5. Result of using Excel's sum function.

**Step 3.** When the correct cells have been chosen, press enter. The sum will appear in cell A7. Note that when you select cell A7, the function appears in the function window, but the result will still appear in the cell on the spreadsheet.

## ENTERING FORMULAS

- All formulas start with an = sign.
  - Case is not important when entering the formula.
  - Cells containing non numerical entrees will be ignored in calculations.
  - Excel functions are listed in; Excel Help>Contents>Function Reference
  - The default for auto filling formulas is to use relative addressing.
-

# GRAPHING

- Excel has the capability of making many different styles of graphs. The following example will show you how to make a scatter plot, add a linear regression trend line , and how to fine tune the graphs appearance.

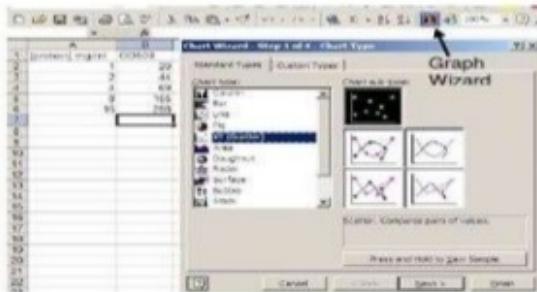


Figure 10. Excel's chart wizard, step 1, selecting the chart type.

**Step 1.** Let's start with a typical set of data for establishing a standard curve. Enter the data into Excel as picture in Figure 10. Now click the chart wizard button.

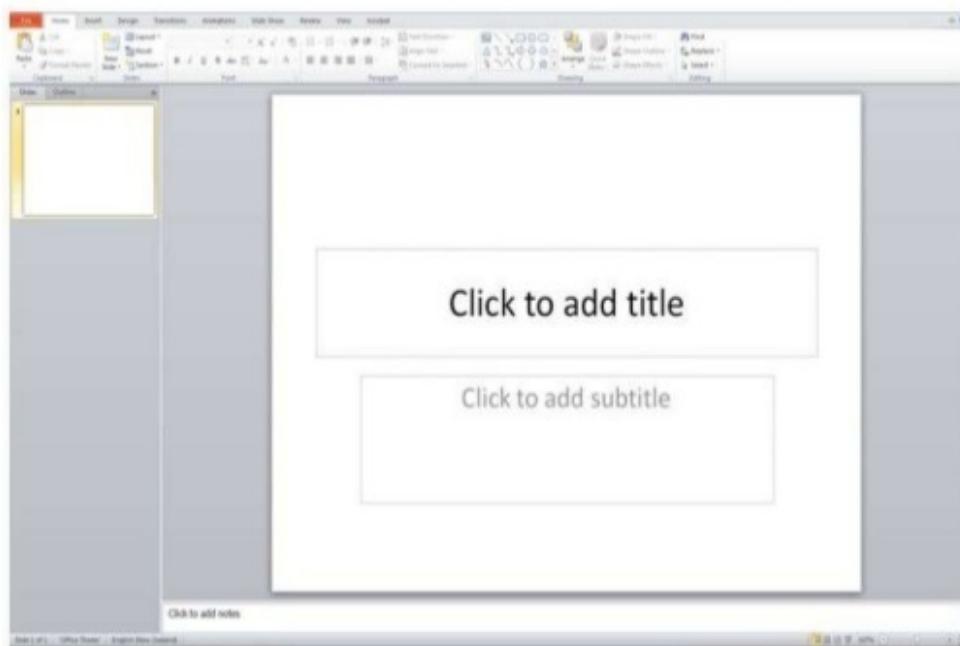
Click the XY scatter plot button. Do not use line graph, this will not give us what we want.

Select the first option for graph sub-type (the one with just dots, no line drawn), and click next.

## MS POWERPOINT

- ◉ Microsoft PowerPoint is an electronic presentation program that helps people present a speech using a collection of slides.
- ◉ A PowerPoint presentation is a collection of slides that can be used to create oral presentations.
- ◉ Inserting a New Slide
- ◉ **Home << New Slide**

# STANDARD FIRST SLIDE OF A POWERPOINT PRESENTATION



## VIEWS

- ⦿ There are four different views in PowerPoint :
- ⦿ Normal
- ⦿ Slide sorter
- ⦿ Notes page
- ⦿ Slide show
- ⦿ Each view is used for a different step in creating your PowerPoint presentation.
- ⦿ Normal View
- ⦿ **View >> Normal**
- ⦿ This view is used when creating and designing your slides.
- ⦿ Selecting a Slide
- ⦿ To select a slide, click the slide in the slides panel (a thick borderline appears around the slide).

# SLIDE SORTER VIEW

- **View >>Slide Sorter**

- This view is good to use when organizing your slides. Use when you want to delete, copy, paste or move your slides.



## SLIDE SHOW

- ⦿ View >> Slide Show
- ⦿ It shows your presentation in full screen. It can also be used to check any animations, transitions or timing at the final stage of preparation for your presentation
- ⦿ **Note:** Press ESC key to return to normal view.
- ⦿ Notes Page
- ⦿ View >> Notes Page
- ⦿ **Note:** You can add and view your notes for each slide.

# NOTES PAGE



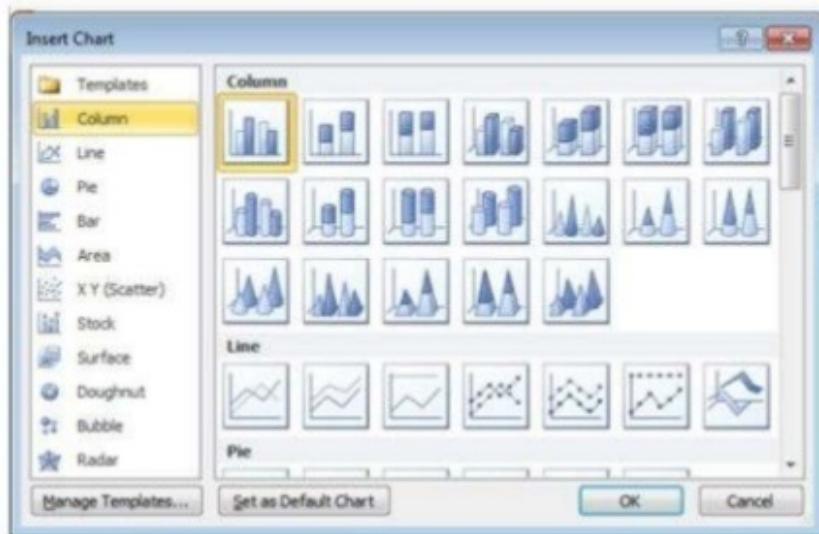
# INSERTING A GRAPH

- Select the slide you are going to put the chart on
- Insert << Chart



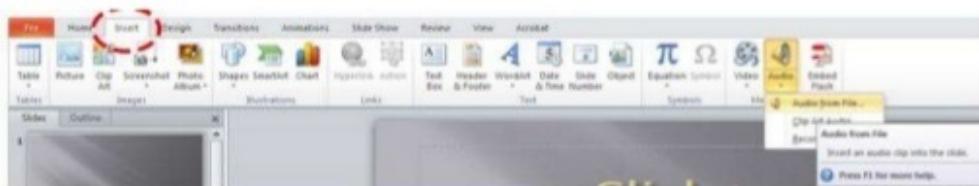
# CHART

- Choose the type of chart you want to use <<  
OK



# INSERTING A SOUND

- Select the slide you are going to put the sound on
- **Insert << Audio >> Audio from File**
- Browse for your sound file >> Insert
- When you click on the sound icon your sound will start playing automatically



## INSERTING A SOUND



## PASSWORD IN POWERPOINT

- To set a password in power point
- Go to File > Click on Info
- Click on protect presentation
- Under which there is an option, “Encrypt with Password” , click on it
- Hit “OK” once you enter the password
- Now it will again ask to Re-enter the password
- OK Exit

## RECORD A SLIDE SHOW IN POWERPOINT

- To record a slide show in power point
- Click the slide show tab, then locate the Set Up group
- Click the Record Slide Show drop down arrow. Select either “Start recording from current slide” or “ Start recording from Beginning”
- A dialog box will appear, select the desired options “Select and animation timings” and second option is “ Narration and laser pointer” and then click on “ Start Recording” option.

## **CONT...**

- ⦿ Soon you click on “Start Recording” your presentation will open on a full screen
- ⦿ Perform your slide show, when you are ready to move to the next slide, click “Next” button represented with an arrow mark on the “Recording Toolbar”

## VIDEO IN POWERPOINT

- Select the file tab
- Select Export and then click Create a Video , video export option will appear on the right
- Click the drop down arrow next to Computer and HD Displays for the size and quality of your video
- Select the option according whether you want to record narration or not
- Click Create Video and then save the video

## PLAY MUSIC FOR THE DURATION

- Download or store music to your PC hard drive and from there upload it to PowerPoint
- In the main menu on the “Insert” tab, click “Audio” and then click on “Audio on my PC”
- Locate and double click the music file
- Click on “Play in Background” under “Playback” tab

## MS ACCESS

- ◉ Microsoft Access database is a relational database management system which combines GUI (Graphical User Interface) with Microsoft Jet database engine.
- ◉ It can import and use data from Access, SQL, Oracle, etc.
- ◉ This software is used to build application software.
- ◉ Microsoft Access is just one part of Microsoft's overall data management product strategy.

## CONT...

- It stores data in its own format based on the Access Jet Database Engine.
- Like relational databases, Microsoft Access also allows you to link related information easily.
- It can also import or link directly to data stored in other applications.
- Access can work with most popular databases that support the Open Database Connectivity (ODBC) standard, including SQL Server, Oracle, and DB2.

## **CONT...**

- ⦿ Software developers can use Microsoft Access to develop application software.
- ⦿ Microsoft Access stores information which is called a database.
- ⦿ To use MS Access, you will need to follow these **four** steps:
  - 1.Database Creation** - Create your Microsoft Access database and specify what kind of data you will be storing.
  - 2.Data Input** - After your database is created, the data of every business day can be entered into the Access database.

## **CONT...**

3. **Query** - This is a fancy term to basically describe the process of retrieving information from the database.
4. **Report (optional)** - Information from the database is organized in a nice presentation that can be printed in an Access Report.

## EXTENSION FOR MS ACCESS

- Access database.accdb
- Access project.adp
- Access project.mdw
- Access blank project template.adn
- Access workgroup.mdw
- Protected access database.accde

## TABLE

- Table is an object that is used to define and store data.
- When you create a new table, Access asks you to define fields which is also known as column headings.
- Each field must have a unique name, and data type.
- Tables contain fields or columns that store different kinds of data, such as a name or an address, and records or rows that collect all the information about a particular instance of the subject, such as all the information about a customer or employee etc.

## **CONT...**

- ⦿ You can define a primary key, one or more fields that have a unique value for each record, and one or more indexes on each table to help retrieve your data more quickly.

## QUERY

- An object that provides a custom view of data from one or more tables. Queries are a way
- of searching for and compiling data from one or more tables.
- □ Running a query is like asking a detailed question of your database.
- □ When you build a query in Access, you are defining specific search conditions to
- find exactly the data you want.

## **CONT....**

- In Access, you can use the graphical query by example facility or you can write Structured Query Language (SQL) statements to create your queries.
- You can define queries to Select, Update, Insert, or Delete data.
- You can also define queries that create new tables from data in one or more existing tables.

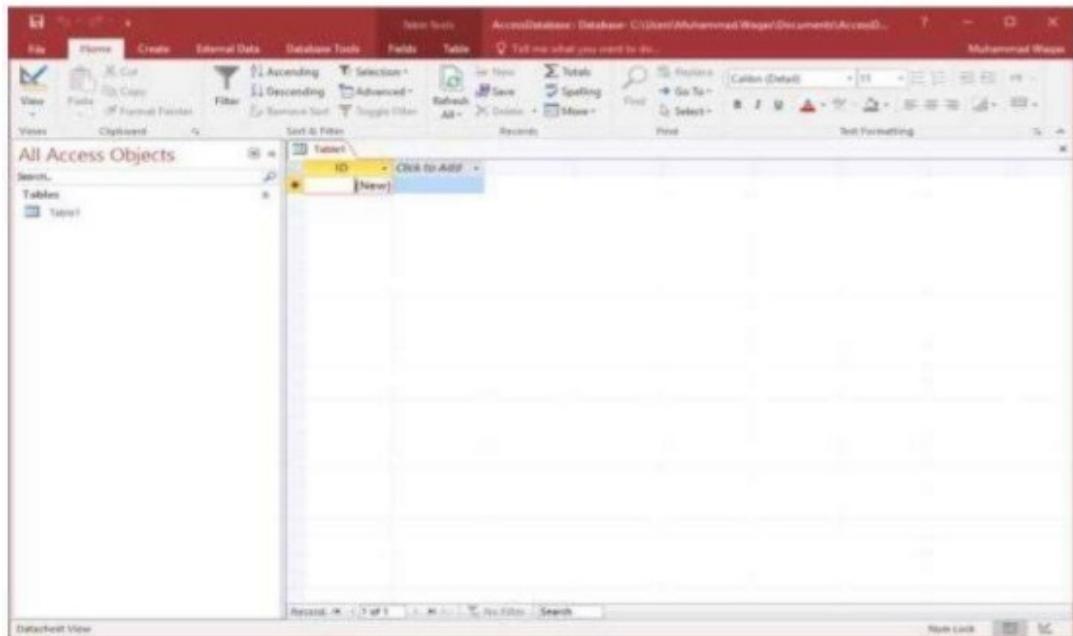
## FORM

- Form is an object in a desktop database designed primarily for data input or display or for control of application execution.
- You use forms to customize the presentation of data that your application extracts from queries or tables.
- Forms are used for entering, modifying, and viewing records.
- The reason forms are used so often is that they are an easy way to guide people toward entering data correctly.
- When you enter information into a form in Access, the data goes exactly where the database designer wants it to go in one or more related tables.

# REPORT

- Report is an object in desktop databases designed for formatting, calculating, printing, and summarizing selected data.
- You can view a report on your screen before you print it.
- If forms are for input purposes, then reports are for output.
- Anything you plan to print deserves a report, whether it is a list of names and addresses, a financial summary for a period, or a set of mailing labels.
- Reports are useful because they allow you to present components of your database in an easy-to-read format.
- You can even customize a report's appearance to make it visually appealing.
- Access offers you the ability to create a report from any table or query.

# BLANK DATABASE



## MS ACCESS – QUERY

- ⦿ A query is a request for data results, and for action on data.
- ⦿ You can use a query to answer a simple question, to perform calculations, to combine data from different tables, or even to add, change, or delete table data.
- ⦿ As tables grow in size they can have hundreds of thousands of records, which makes it impossible for the user to pick out specific records from that table.
- ⦿ With a query you can apply a filter to the table's data, so that you only get the information that you want.
- ⦿ Queries that you use to retrieve data from a table or to make calculations are called select queries.

## CONT...

- Queries that add, change, or delete data are called action queries.
- You can also use a query to supply data for a form or report.
- In a well-designed database, the data that you want to present by using a form or report is often located in several different tables.
- The tricky part of queries is that you must understand how to construct one before you can actually use them.