Introduction to Windows Operating System

Introduction

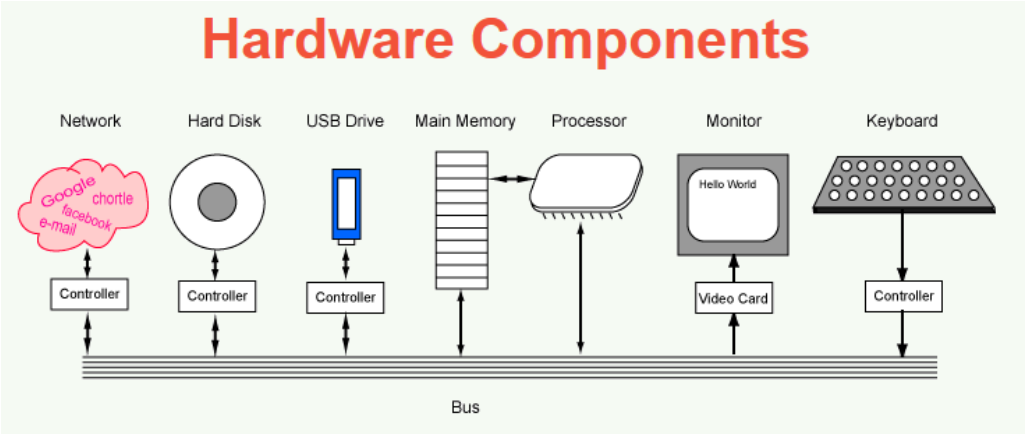
A computer is a complex system consisting of both ***hardware*** and ***software*** components (information stored on hardware). In general the word *hardware* is used for physical devices such as TV sets, DVD players , computers and others, the word *software* is used for the information used with such devices: movies, music, novels, web pages, computer programs, and data. When talking about computer systems, *hardware* means the physical parts of the computer (electronic and mechanical parts), *software* means the programs and data used with the physical computer.

The major hardware components of a computer system are:

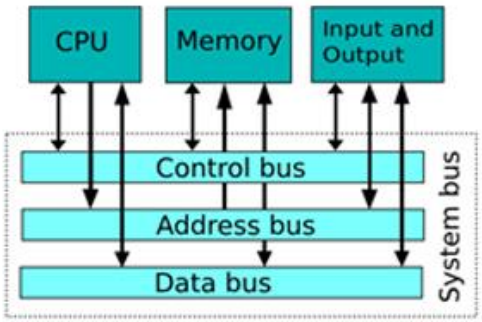
- Processor
- Main memory
- Secondary storage
- Input devices
- Output devices

Many of the components of computer are connected to the main circuit board of the computer, called the motherboard.

The terms *input* and *output* say if data flow into or out of the computer. The picture shows the major hardware components of a computer system. The arrows show the direction of data flow.



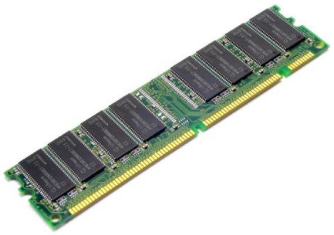
A **bus** is a group of wires on the main circuit board of the computer. It is a pathway for data flowing between components. Most devices are connected to the bus through a controller which coordinates the activities of the device with the bus.



The **processor** is an electronic part about a one inch square, covered in plastic. Inside the square is an even smaller square of silicon containing millions of tiny electrical parts. A modern processor may contain billions of transistors. It does the fundamental computing within the system. The processor is sometimes called the Central Processing Unit or CPU.

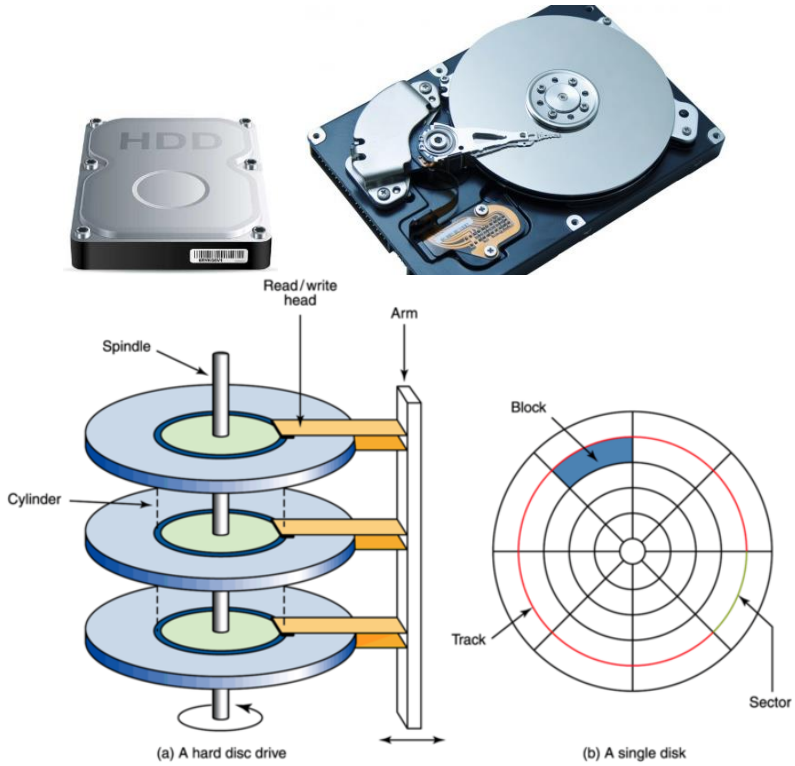
In computing system, **memory** refers to the computer hardware devices used to store information. This memory is of two fundamental types: main memory, and secondary memory, main memory is sometimes called main storage and secondary memory is sometimes called secondary storage or mass storage. The reason for having two types of storage is the difference in **speed** and **capacity**.

Main memory is sometimes called volatile because it loses its information when power is removed. Main memory is where programs and data are kept when the processor is actively using them. When programs and data become active, they are copied from secondary memory into main memory where the processor can interact with them, a copy remains in secondary memory. Main memory is closely connected to the processor, so moving instructions and data into and out of the processor is very fast. Main memory is sometimes called RAM which stands for **R**andom **A**ccess **M**emory, "Random" means that the memory cells can be accessed in any order. It interacts with the processor millions of times per second.



Secondary storage is usually nonvolatile because it retains (keeps) its information when power is removed. Secondary memory is where programs and data are kept on a long-term basis. Common secondary storage devices are the hard disk, floppy disks, CD, DVD, and removable hard disk.

The hard disk has huge storage capacity compared to main memory. The hard disk is used for long-term storage of programs and data. Data and programs on the hard disk are organized into files.



Primary memory

- Fast
- Expensive
- Low capacity
- closely connected directly to and

Secondary memory

- Slow
- Cheap
- Large capacity
- Not connected directly to the processor
- connected to main memory through

works with the processor

- stored data are quickly and easily changed
- holds the programs and data that the processor is actively working with.

the bus and a controller.

- stored data are easily changed, but changes are slow compared to main memory.
- used for long-term storage of programs and data.

Computer Software

Computer Software is all the programs that control the operations of the computer and the service programs, it is embedded in the structure of the computer hardware, a combination of hardware and software forms a usable computing system. Computer Software can be divided into two main type, *system software* and *application software*.

* *System Software* :

In general, it includes all the programs that designed to control the computer system, they are:

- Programming languages (low level-L.L.L. to high level languages-H.L.L.).
- The language processor translators (compiler, interpreter, assembler, and linker).
- Utility (service) programs that help you use the operating system more effectively, they come with the computer's O.S.
- Operating Systems (O.S.) , it is a program installed on a computer that assigns resources, manage tasks, and provides the user a way of interacting with available resources.

* *Application Software* :

This type of software comprises the programs that are written to perform a specific tasks for the user, it can be divided as :

- *Application Systems*:

Such type of systems are written by a special software, e.g. bank system, salary system, etc.

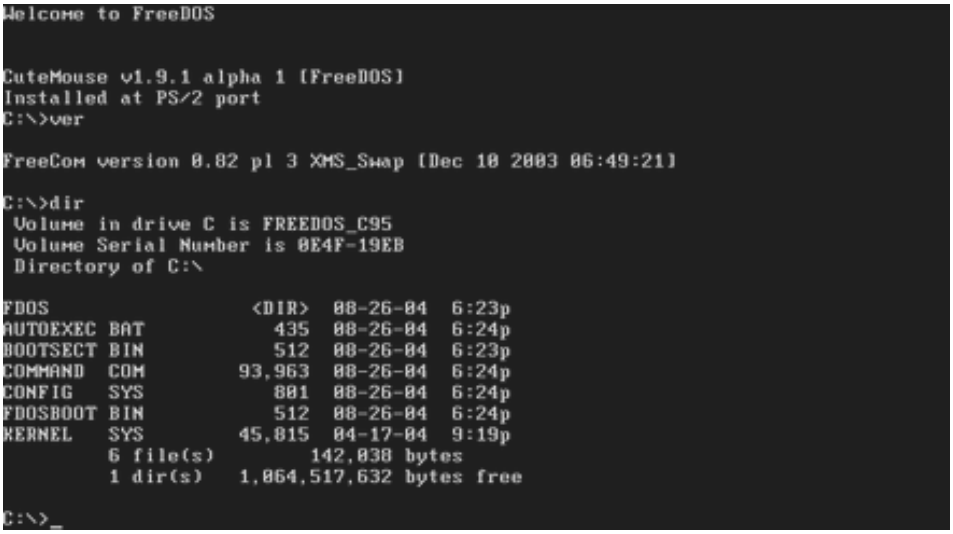
- *Application Programs*:

This type of programs direct the computer to accomplish specific activities, e.g. word processor, graphics programs, games, etc.

Windows Operating System

Operating system (O.S.) is a set of inter related programs (software package) that control how the computer works, link its components, control the basic operations of the computer, manage the execution of the programs, and facilitate the communication between the user and the computer machine. Examples of O.S. : DOS system, Windows system, Macintosh system, Unix system, etc. The operating systems developed during periods of time due to the evolution of computers (generations of the computer).

DOS system (**D**isk **O**perating **S**ystem) was the first widely-installed operating system for personal computers. DOS was (and still is) a non-graphical line-oriented command- or menu-driven operating system, with a relatively simple interface but not overly "friendly" user interface. Its prompt to enter a command.



The most popular operating systems and the most widely used is the *Windows O.S*, it is introduced by Microsoft company.

Windows O.S. is a program that manages the computer since run it until shut down it, it contains interfaces and tools that facilitate user's work.

Types of Windows O.S.

Microsoft produces many types of windows system, such as:

- Used for users and clients devices.
- Used for networks and server devices.
- Used for pocket PC computer devices.

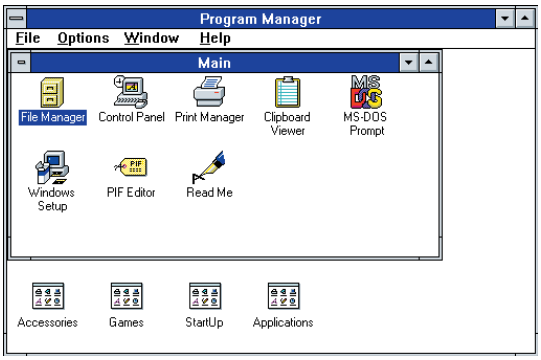
History of Windows O.S. Development

Microsoft produces many publications of windows operating systems, the stages of *windows O.S.* developing for all its publications are:

Earlier publications

They graduate as: *Windows 1.0* (1983), *Windows 2.0* (1987), *Windows 3.0* (1990), and all the *versions of Windows 3.X*, some of their characteristics that are gradually improved by making some modifications:

- *Graphic user interface*/*GUI* (it is the software layer, sometimes called the shell, through which the user communicates with the O.S.) it includes many programs and important tools).
- Simple *control panel*, and windows *maximize, minimize, and resize*.
- Some *operations* like copy, move, delete, etc. are done using *menus*.



MS Windows 3.1 desktop

Windows 95

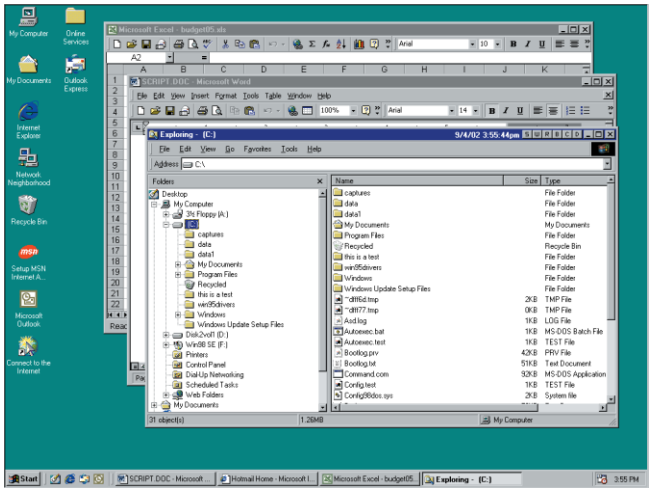
It is important step in the history of windows publications, some of its characteristics:

- New working *interface*.
- All windows elements became *three dimension* form.
- Adding *close button* for all windows and dialog boxes.
- *Desktop* can contain files and folders in addition to set of special symbols as *my computer*, *recycle bin*, etc.
- Microsoft introduced *internet explorer* within O.S.
- *Start menu* appeared that provides accessing to device programs quickly in addition to the taskbar that simplifies the translation between opened programs and windows.

Windows 98

It introduced many additions to the features of windows 95 such as:

- New *help* system.
- *Internet explorer 4.0* which supports HTML 4.0 language.
- Introducing file allocation table system *FAT32* that improved working with hard disks (more than 2 gigabyte size).
- New techniques such as DVD drives, USB ports, etc.



MS Windows 98 desktop with open windows

***Windows 2000* and *Windows Me* (Millennium)**

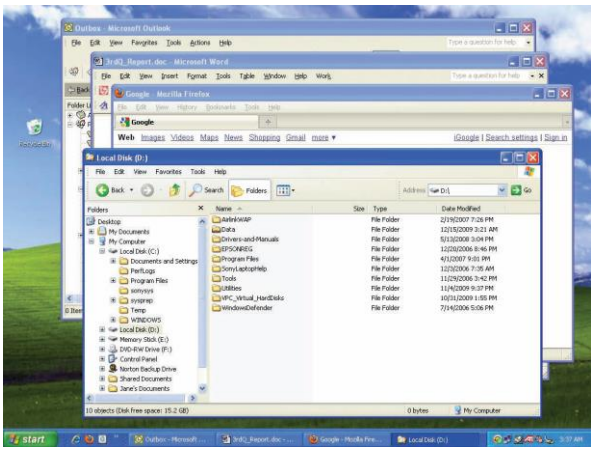
- New possibilities appeared like *device manager* to simplify the operation of adding cards and new equipments to the computer.
- *Computer management* program that provides an unit which controls all the features of system setup.
- New programs for LAN network management.
- *My documents* folder appeared in desktop, it contains pictures folder.
- *Internet explorer 5.5*, *media player 7* to display videos and audios files, etc.

MS Windows 2000 desktop

Windows XP (2001)

It is the most important of windows publications since windows 95, it introduced many improvements, developments, and new adding.

- *Start menu* with new form, which consists of *two columns*, one for abbreviation of important applications and folders such as my computer, my documents, control panel, etc.
- *Improving* the folder and files *searching*, *help system*, and introducing *media player 8.0* , *internet explorer 6*, and others.
- *Internet connection firewall* to protect the computer during connection to the network.

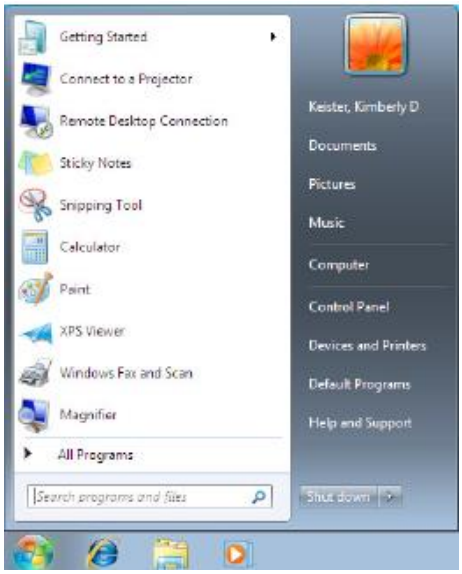


MS Windows XP desktop with open windows

Windows 7 (2009)

It introduced after windows vista, it is more easily and safety than vista, it is Microsoft's most recent iteration of the Windows operating systems.

- Modifying the connection method to the *wireless* network.
- Using *internet explorer 8*, improving search system and cryptography system.
- It features full *64-bit* support, touch screen functionality



MS Windows 7 start menu

Windows 8 (2013)

Windows 8 is a personal computer operating system developed by Microsoft as part of Windows of operating systems. On October 17, 2013, Microsoft released Windows 8.1.

Windows 8 introduced major changes to the operating system's platform and user interface, performance improvements, security enhancements, and improved support for touchscreen devices was positive. Several notable features have been removed in Windows 8, such as the traditional Start menu.

Windows 8 Start screen

Windows Explorer, which has been renamed File Explorer, now includes a ribbon in place of the command bar. File operation dialog boxes have been updated to provide more detailed statistics, the ability to pause file transfers, and improvements in the ability to manage conflicts when copying files.

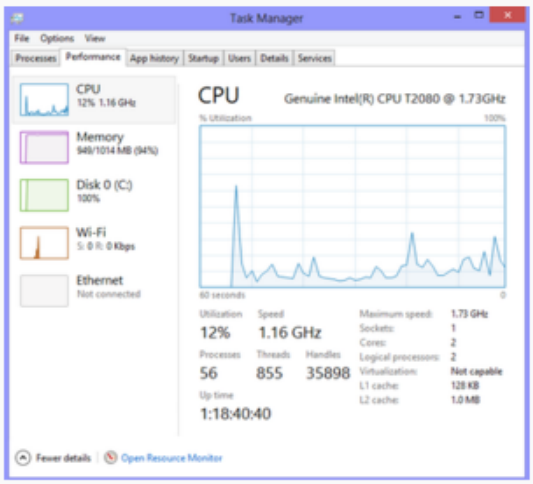
File Explorer showing Windows 8 libraries, with ribbons revealed

Start ***button*** in Windows 7 was replaced with start ***screen***.

Task Manager has been redesigned, including a new processes tab with the option to display fewer or more details of running applications and background processes, a heat map using different colors indicating the level of resource usage, network and disk counters, grouping by process type (e.g. applications, background processes and Windows processes), friendly names for processes and a new option which allows users to search the web to find information about obscure processes.

Task Manager

A component of Microsoft Windows



Screenshot of Task Manager in Windows 8

Compare Windows 7 to Windows 8.1

	Windows 7	Windows 8.1
The familiar desktop	✓	✓
Works with a mouse and keyboard	✓	✓
Works with Word, Excel, Outlook, and other familiar programs	✓	✓
Built for touch PCs and tablets		✓
Apps from the Windows Store		✓
Mail, People, and other built-in apps		✓
Keep your settings and apps on all your PCs and devices		✓
Bing smart search to find things across the web, apps, and your PC		✓
Start screen with live updates		✓
Faster startup times		✓

Windows System Properties

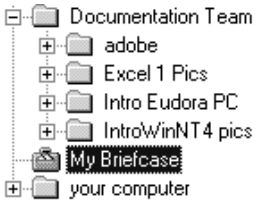
- Using dialog boxes for easy tracking the installation.
- Guide for installing step by step.
- Speed command execution.
- Using graphics, symbols, and icons instead of command writing.

- Command's undo.
- Delete and add through control panel.
- Connect to the internet network.

Files and Directories

Everything on a PC is stored as files and directories. You can think of a PC as a big filing cabinet. Inside this cabinet there are some files and some folders with specific names. Inside the folders there can be text files, pictures, etc. or more folders (directories).

When one directory is inside of another, it is known as a *subdirectory*.

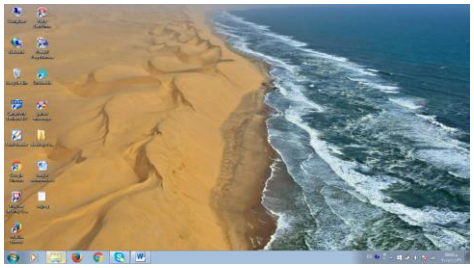


All of these files and directories have to be stored on disks. Hard disks can store a lot of information.

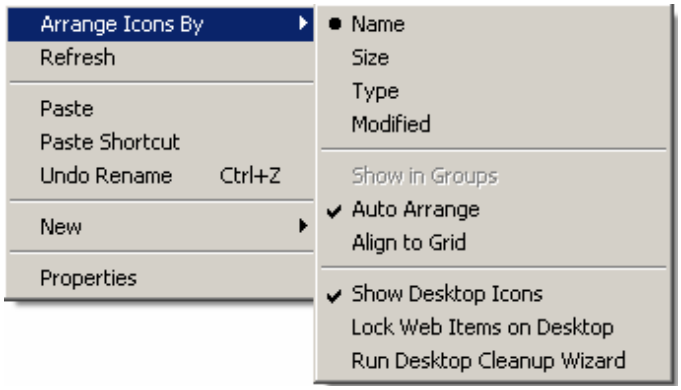
The Windows Desktop

Desktop

The computer screen that is displayed is called the ***Desktop***. As you move the mouse around with your hand, you see the mouse pointer move accordingly on the computer desktop. The icons on the desktop correspond to commonly used programs found in the computer. These icons are actually shortcuts to the programs themselves and double-clicking the icons will launch the programs automatically.



You can also use the right mouse button to open up different commands. Right-click on an empty area of the desktop and arrange the icons by name.



My Computer

The ***My Computer*** icon will show a listing of the computer's disk drives, network drives, and system files/folders. Local files or folders are found on the computer's drives whereas remote files or folders are found on the network drives. Double-clicking on the drive letter will open the contents of that drive.

My Documents

The ***My Documents*** folder is the default folder where most of the Windows programs will save your files.

Icon

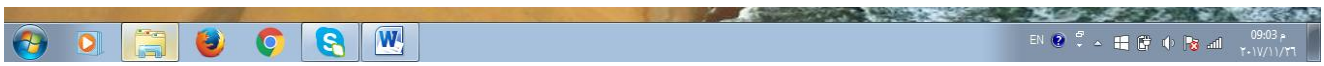
It is as symbol or small picture, it implements link to certain objects that connected to program or folders.

Recycle Bin

It contains all the deleted files, you can restore them.

Taskbar

All open windows will be accessible via the **Taskbar**. You can select them by clicking on the button that they formed when they were first opened.



Time and date are found on the right-hand side of the **Taskbar** and can be changed by double clicking on the numbers that display the time.

Start Menu

The **Start Menu** contains shortcuts to the most commonly used programs that are found on your computer. 

Help

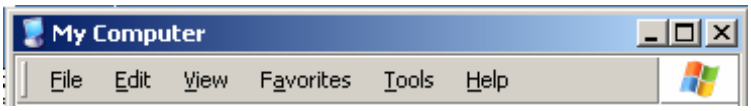
The **Help and Support Center** can be a vital source of information. Click the **Start Menu** and select **Help and Support**.

The Window's Windows

Windows are the main forms of organization and navigation.

Title Bar

The **Title Bar** shows the name of which window you are viewing.



Minimize/Maximize/Restore/Close

Every window in the windows operating system will have a series of buttons on the top right corner of the **Title Bar**.

 Close

 Maximize

 Minimize

 Restore Window