



Second : Software Components (المكونات البرمجية) :

em programs are several programs that help in the optimal use of the computer. They are responsible for:

1. Turn on the computer.
2. Implementation of application programs.
3. Make the necessary settings for the device, such as identifying the used printer and setting the date and time.
4. Arranging and organizing files on storage units.
5. Protecting the computer from hackers, viruses, and others.

What is the operating system?

First: Operating System Software

The operating system software is one of the most important programs without which the computer cannot function. When the computer is turned on, the first program is loaded into the computer's memory, RAM, After which the computer becomes ready to receive and execute user commands, download and run application programs.

The operating system is the mediator between the hardware components of the computer and the application software. Thus, it provides an environment or user interface through an interface An easy-to-use application that contains windows, menus, icons, etc. enables the user to run application programs without going into details of how these components operate.

The operating system also supervises the operations of the CPU, input/output units, and storage.

Operating system functions:-

- 1) Turn on the computer and get ready for work.

- 2) It represents an interface with the user that enables him to run other software.
- 3) Managing resources and tasks such as managing the main memory, input and output units, and managing the processing unit and management of secondary volumes.
- 4) Monitoring the entire system and re-operating illegal operations.
- 5) Managing and organizing files in folders and indexes, copying and moving them...etc.
- 6) Maintain system confidentiality and prevent unauthorized access to device software data.

❖ Examples of operating systems:

• **Disk Operating System (نظام تشغيل الاقراص)**

It is an old operating system that was used during the eighties and early nineties with **IBM PCs** and compatible computers. The operating system supports DOS on textual interfaces, which require the user to deal with written commands, It only receives letters and symbols from the third user.



• **Windows operating system (نظام تشغيل النوافذ): Microsoft Windows**

The Windows operating system produced by Microsoft is the most popular operating system and the most widespread. This system uses a graphical user interface each represents application **GUIs** consisting of shapes and small **icons**, the Windows interface also contains command menus to facilitate mouse selections.



• **UNIX operating system (نظام التشغيل يونكس)**

This system began to be used with **Mainframe** and **Minicomputers** and has been modified to work on personal computers (PC). It is characterized by the ability to use it with



multiple Multi-users. As well as the possibility of its performance of several functions at the same time Multi-tasking. A modern version of the Unix operating system called Linux has appeared, as it has a graphical interface.

- **Solaris operating system (نظام التشغيل سولا ريز)**

Solaris is based on the Unix operating system where it was developed by Sun Microsystems for Sun computers. This system is used with personal computers, networks and mainframes, and its latest version was Solaris 9.

- **Mac operating system (Mac OS)**

Mac OS is a special operating system for Apple Macintosh computers produced by Apple. This system was the basis for Apple computers and was implemented in 1984 for operating systems with an application interface Graphical User-GUI Interface.



Second: Utility Programs services (برامج الخدمات)

1. File Management Programs:

These programs help the user to arrange and organize files and deal with them, such as copying, moving, deleting, searching for files, changing their names, and other operations.

2. Antivirus Programs:

These programs help the user to eliminate viruses that may infect personal computers or networks. These programs also prevent computers from being infected with viruses and alert them at the time of infection.

3. Disk Management Programs :

These programs evaluate the current status of the disks, identify their problems, and provide recommendations. They also perform the necessary work to repair bad sectors and repair damaged or erased files.

4. File Compression Programs :

These programs compress files and thus reduce the size of these files, which helps to save space on disks, facilitates the process of transferring large files from one location to another, and among the programs that compress files is the Win Zip program.

5. Backup Programs :

These programs help make backup copies of stored programs and files easily and quickly. These programs are mainly used in agencies that save their data periodically.

Third: Application Programs (برامج التطبيقات)

1. Word Processing Programs (برامج معالجة النصوص):

They are programs designed to write texts such as letters, reports, contracts, etc. with the possibility of formatting and processing them, as the text is entered into the computer, modified and retrieved upon request and printed. Among the types of Text processing programs Word Perfect. WordPad and Microsoft Word.



Some of the functions performed by word processing programs:

- 1) Using several languages in writing texts.
- 2) Use different types of fonts and control the size and color of the fonts.
- 3) Format text and paragraphs.
- 4) Insert pictures, shapes and symbols into the document.
- 5) Organizing the text in the form of columns, as in newspapers and magazines.
- 6) Make tables and perform simple mathematical operations on the data.
- 7) Representing table data in graphical charts.
- 8) Use the spelling and grammar checker.

9) Formatting the page and changing the margins.

The Microsoft Word program, which is within the Microsoft Office package in word processing, as it has many of these features, is one of the most widely used programs.

2. Spreadsheet Programs (برامج الجداول الحسابية):

Spreadsheet programs are used by accountants, administrators, businessmen, and workers in the field of secretarial and office management, at home, and in many fields in order to carry out work related to organizing accounts and processing data, various financial.

Some of the functions performed by spreadsheet programs:

- 1) Enter data into a worksheet that looks like tables.
- 2) Performing mathematical operations on the data.
- 3) Change column width and line height.
- 4) Determine the type and size of the font used in data entry.
- 5) The ability to copy and paste data.
- 6) Using mathematical, engineering and statistical functions.
- 7) Representing data using a graph and then forms (columns - circles - points).
- 8) Use the worksheet as a database.
- 9) Print the worksheet and the graph in one page.

The Microsoft Excel program, which is part of the Microsoft Office package, is considered in the field of spreadsheets, office is one of the most used programs.

3. Presentation Programs:

Presentation programs are programs that help the user to design, create and modify slides and display them using a computer. These programs enable the user to include texts, tables, charts, images, sounds and videos in each of the slides, and add sound and motion effects that increase the effectiveness of the presentation.

4. Programs for pictures and graphics:

These programs are used to create drawings, maps, engineering designs, two- and three-dimensional images, then store them and refer to them when needed and print them in different sizes. These programs are used by all people who deal with computers such as

artists and drawing enthusiasts. Among the types of these programs are Photoshop, Draw, Corel AutoCAD, Paint, and the functions of these programs are: resizing the image, moving the image, rotating the image, adding various effects.

5. Software Multimedia programs:

They are programs that combine several media such as text, audio, and images Images, graphics, animations, and clips video Clips Video Multimedia software adds an essential feature, which is interactivity user with it.

6. Copy CD and DVD Programs:

There are many programs that specialize in copying files in different formats (programs, pictures, music, video) on different discs, **DVD**, **CD**. Most of these programs provide tools for the user, such as cutting audio and video files, and printing disc labels. Among these programs are **DVD** and **CD** Creator Easy Roxio, Nero.

7. Ready-made application software packages.

It usually contains a set of widely used ready-made application programs under one name or one umbrella. This service usually includes word processing programs, spreadsheets, databases, and others. It includes **Lotus SmartSuite**, **Word Perfect Office**, and **Microsoft office software packages**.

8. Electronic Mail Program

- 1) Outlook Express. 2) Ms-Outlook 3) Eudora.
- 4) Lotus cc:mail. 5) Netscape mail

9. Desktop publishing software

These programs are used in the field of preparing periodicals and designing newspapers and magazines, such as designing a magazine cover and designing a specific advertisement. The most famous of these programs is Microsoft Publisher (Ms-Publisher).

10. Web Browsers

- 1) windows explorer. 2) Netscape 3) Google chrome. 4) Mozilla.

❖ Step of the Software Development

Building the software includes several steps, the most important of which are:

- 1) Programming is a series of ordered actions to perform a specific operation.
- 2) Debugging - debugging means identifying errors in the program and fixing them.
- 3) System Testing - i.e. subjecting the system to intensive tests such as beta testing during which the program is issued and distributed to specific users to test it and report any defect they find before the final version.
- 4) Documentation - which is writing the instructions necessary to operate the system after beta testing.
- 5) Quality Control - After the beta test, the developers prepare a list of the required modifications and return it to the programmer's team for modification and give it a version number.

❖ Installing Drivers

It is a specific type of software that pertains to a specific unit, such as a printer, for example. Operating systems automatically recognize new connected devices without the need for driver software. This feature is called Plug and Play.

❖ Software Update and Upgrade

Update:- It is the process of downloading new additions through the Internet, and it is called patching / patching or pack server packages, to update a program, download a file that takes the exe extension.

Upgrade:- Switching to a newer version of software for cash, Meant to upgrade.

❖ Protect the computer from electrical faults

- 1) Use a surge protector
- 2) Use a power supply (UPS).

❖ Connection Ports

Ports are located on the back side of the system unit, and they are external connection points that are used to connect the computer to external devices called peripherals for data transfer.

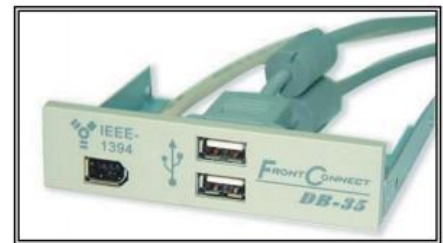
✓ **Ports**

All computer units are connected to the motherboard through various ports and sockets. Port Serial, Port Parallel, IDE, USB, and FireWire hotline interfaces.



✓ **Serial Port**

It is usually used to connect the mouse and keyboard and contains **9 pins** arranged in two rows and replace the current one with port **PS/2**, Instead, most modern devices have a **PS/2** port serializer.

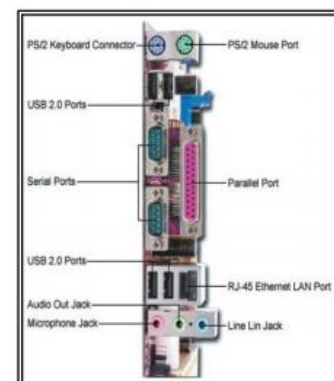


✓ **monitor port.**

It contains **15 holes** distributed in three rows and is used to connect the Projector. and projector monitor the screen.

✓ **Parallel Port**

It is used to input or output data and is connected to the printer. Through it, data is transmitted in one batch through the Bus, and the length of the parallel port cable cannot exceed **3meters** due to internal interference. It is denoted in operating systems as LPT2/LPT1.



✓ **Universal Serial Bus-USB**

With the increase in the number of additional devices that can be connected to a personal computer, such as printers, scanners, digital



cameras, etc., it has become necessary to develop technology for ports and connection methods, so this carrier was produced to keep pace with the steady increase in the number of devices used.

The size and speed of information transfer to and from it. This carrier can be used with all types of devices prepared for this type of connection, so it is called universal, and this carrier is characterized by high speed and ease of use.

✓ **Fire wire**

It uses IEEE 1394 specification technology and is used to connect some devices such as a digital camera and scanner to improve the quality of images and movies, and its speed reaches **400 megabytes per second for each unit**, and the next generation of it will bear the name 1394b, it will jump in speed to **800 megabytes per second for each unit**.

✓ **Small Computer System Interface (SCSI) port**

Used to connect an external hard disk and scanner.

✓ **Bus Lines**

It is a large group of fine wires installed on the motherboard that allows data to be transferred between the different parts of the computer.

There are three types of transmission lines

1. Address Bus Lines Address Bus Lines.
2. Data Bus Lines.
3. Lines Bus Control transmission lines



✓ **Drives Disk**

The main system unit contains a group of different disk drives and drivers that are connected to the motherboard via wire connections. The connections of the disk drives to the motherboard are installed directly with special sockets. For this, there is a special socket for connecting the floppy disk drive Disk Floppy and two sockets for connecting compact disk drives such as CD-ROM, DVD disks and hard disks.

Floppy disk drive



CD-ROM drive



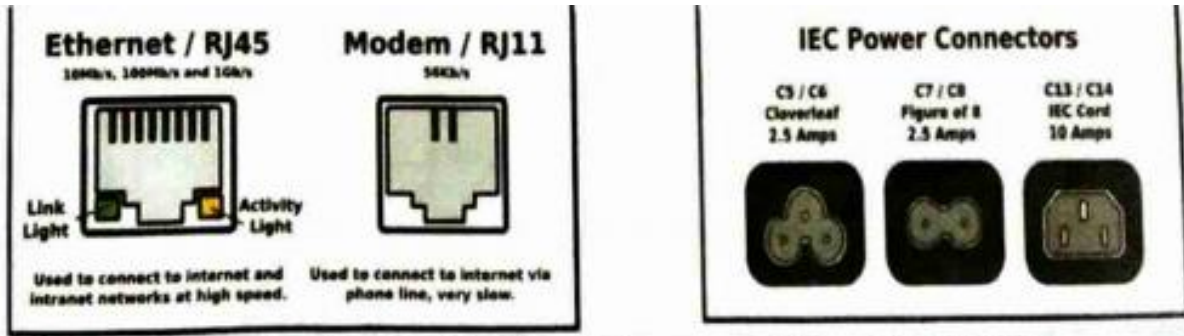
Hard disk drive



✓ Power Supply

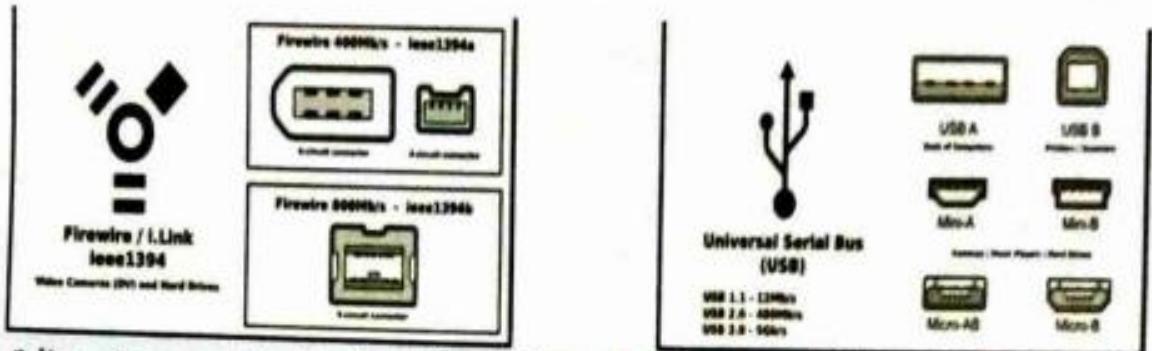
It is an integrated electronic device that converts AC 110 or 220 AC electric current into direct current DC to be used to feed all components inside the system case with the electricity necessary for its operation.





(على الأيمن) منفذ المودم لربط الإنترنت بالهاتف
وهو بطيء (على اليسار) للربط بشبكة الإنترنت
وهو أسرع.

منافذ الطاقة الكهربائية



FireWire واجهة ذات سرعة عالية قابلة للتبديل لأنه التشغيل وتقوم بتوصيل الأجهزة الطرفية بالحاسوب. ويمكن لمنفذ FireWire واحد في الحاسوب دعم ما يصل إلى 63 جهاز. كما يمكن تشغيل بعض الأجهزة من خلال منفذ FireWire، ويستخدم FireWire معيار IEEE 1394 (Institute of Electrical and Electronics Engineers)، كما يُعرف بـ i.Link.

منافذ USB اختصاراً Universal Serial Bus ناقل التسلسلي العلم (ربط الكاميرات، الطابعات، الماسحات الضوئية وأجهزة التخزين...)، صُممت في الأصل لتحل محل التوصيلات التسلسلية والمتوازية، وتعد أجهزة قابلة للتبديل لأنه التشغيل (توصيلها وفصلها والحاسوب يعمل). كما يمكن أيضاً تشغيل بعض الأجهزة بواسطة منفذ USB، مما يعني الاستغناء عن مصدر طاقة خارجي

Table of the terms and its named in English and Arabic:

Terms	The name in English	The name in Arabic
Ctrl	Control	السيطرة
Alt	Alternate	متناوب
Esc	Escape	الهروب
PrtSc	print screen	شاشة الطباعة
USB	Universal Serial Bus	الناقل التسلسلي العالمي
PC	Personal Computer	الحاسوب الشخصي
Fn	Function	مهمه
RAM	Random Access Memory	ذاكرة الوصول العشوائية
DVD	Digital Video Disc	القرص الفيديو الرقمي
CD	Compact Disc	القرص المضغوط
ALU	Arithmetic-Logic Unit	وحدة المنطق الحسابية
CU	Control Unit	وحدة السيطرة
CPU	Central Processing Unit	وحدة معالجة مركزية
ROM	Read Only Memory	ذاكرة القراءة فقط
HD	High Definition	عالي الدقة
SD	Secure Digital	الأمان الرقمي
HVD	Hosted Virtual Desktops	أجهزة الكمبيوتر المكتبية الافتراضية المستضافة
IC	Integrated Circuit	الدوائر المتكاملة
BIOS	basic input/output system	نظام الإدخال والإخراج الأساسي
POST	Short for power-on self-test	اختصار للاختبار الذاتي للتشغيل
CMOS	Complementary metal-oxide-semiconductor	أكسيد معدني متمم أشباه الموصلات
DVI	Digital Visual Interface	واجهة بصرية رقمية
HDMI	High Definition Multimedia Interface	واجهة الوسائط المتعددة عالية الوضوح