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A computer is a programmable electronic device that can input, process, output and store data.

Programmable means that a device can be instructed to perform a task or a function.

A computer takes data and converts it into information. **Data** represents text, numbers, graphics, sounds and videos.

Information is data that has been processed so that it can be presented in an organized and meaningful way.

We have four basic computer functions that work in cycle known as the **information processing cycle**

These four functions are:

1-Input the computer gathers data or enables a user to enter data.

2-Process data is manipulated and converted into information.

3-Output information is displayed to the user in a way that is understandable.

4-Storage data and information is stored for future use.

Microcomputer means the main component of a computer is a microprocessor, a powerful chip that is very small in size. The most common types of microcomputers include:

microcomputer	description
Desktop computer	A computer that sits on the desk, floor, or table and has peripheral devices such as a keyboard, mouse or printer.
Gaming computer	A computer that is configured with a fast central processing unit, large amount of memory, a special video card and joystick.
Notebook computer	A portable computer with a built-in screen, keyboard and mouse.
Tablet computer	A portable computer has special features such as an onscreen keyboard.
Mobile devices	Personal digital assistants, handheld computer and smartphones that are ultra-light and portable.

What are Servers? When computers are connected together in a network environment, **servers** provide other computers with access to the network and can handle a variety of functions or may be assigned to just one particular type of task.

Mainframe computers are large computers often found in large businesses, organizations and government agencies. Mainframe computers are often used for high-security applications.

Supercomputers are large, powerful and ultrafast computers that perform specialized tasks.

Embedded computers are small specialized computers built into larger components such as automobiles.

What is computer hardware? Hardware devices are the physical components of the computer. Also known as **peripherals** because they attach to the computer. **Hardware** also consists of the system unit which includes the **motherboard** and the **central processing unit (CPU)**.

What is inside the system unit?

component	description
motherboard	The main computer circuit board into which all components are plugged. It is installed safely inside the box or case called the system unit.
CPU	The central processing unit is responsible for getting data from memory, performing arithmetic and logical operations and converting data to information.
RAM	Temporary storage area where data is stored before processing, output, or storage. RAM is the center of flow of data and information within the information processing cycle.
Expansion slots	Slots or connectors on the motherboard that allow you to connect expansion cards.
EXPANSION cards	Removable circuit boards used to add new peripherals or increase the computers capabilities.
PORTS	Connecting points used as an interface between peripherals and the motherboard.

The processor the CPU is the brain of the computer. It has two main parts- the **control unit** and the **arithmetic logic unit (ALU)**.

Moore's law (formulated in 1965) that current production methods enable CPU capacity to double about every 24 months or so!

A single core CPU can handle multiple applications by rapidly switching between applications. A multiple CPU can divided the work load between processor.

Clock speed which measures the speed at which a CPU process data and is measures in megahertz.

Read only memory rom room chip can't be changed removed contains even if the computer turned off.

Random access memory (ram) is consider volatile because its contains are erased when the computer is turned off.

Dot pitch the diagonal distance between two pixels of the same color. **Refresh rate** is the speed at which the pixels are illuminated and its measures in a cycles hertz (HZ).

There are two categories of printers: impact & non-impact. **impact** printers have small hammers similar to a typewriters that strike an ink ribbon against paper. its popular because of their low cost.

Non-impact don't actually touch the paper when printing.

The inkjet printers they are relatively expensive. Laser printers are generally more expensive to purchase than injak printers.

Print speed is often expressed as pages per minute. For printing purposes resolution is expressed as **dot per inch or dpi**. speaker and multimedia projectors are also examples of output devices.

Digital cameras if connected to a computer serve as an input /output device.

Storage devices are used to store the data and programs for future use this storage is often referred to as **permanent memory** unlike data is in ram. a storage device is a piece of hardware such as hard drive or DVD drive. media is the removable part that actually contains the store data. Media requires a device to read and to write on it.

Data is stored using on of three forms of storeg : **magnetic** use **tracks** and **sectors**.

Magnetic media has read\write capability, which means it is possible to use it over and over again. Hard drives and backup taps are forms of magnetic.

Optical data is saved by using a laser. (CDs)and(DVDs) are examples of optical media.

Flash memory is a completely electronic. Flash memory is quick and easy form of rewritable storage.

What are the main types of storage devices?

1-**hard disk drive** is the computer main internal storage device. 2- **floppy disk drive** device that read\writes that have maximum storage capacity of 1450 MB. 3- **CD or DVD drives** can read and write.

CD can hold 700MB. DVD can stor almost 10GB. 4- **flash drives** are removable storage devices that use flash memory and connect to the computer by USB ports. 5- **backup tape drives** are storage devices that save data to magnetic tape media. They are rarely used for home computers anymore, many businesses still rely on tape backup systems to safeguard data.

Port connector between a systems peripheral device and the computer, enabling data to be exchanged easily.

1- **Ethernet port** used for network access. 2-**phone port** same size and shape as a phone jack.

3-**MIDI port** used to connect electronic musical devices to a computer. 4- **IrDA port** is used to enable devices such as PDAs, keyboards, mice and printers by using infrared light waves.

System software consists of three main programs: 1- **the operating system** is a computer program that is present on every desktop computer. He controls how the computer works. Most current operating system use a point-and-click format known as a **graphical user interface (GUI)**.

There are several popular operating systems available for home computers: first 1- **Microsoft Windows** has the largest market share. 2- **Mac Os** operating system designed specifically for Apple's Macintosh computers. 3-**linux** an alternative operating system based on the UNIX operating system developed for mainframe computers, Linux is an **open source** system.

Utility Programs can be used to help back up important files, remove unwanted files or programs from your system.

Application software is comprised of programs that enable you to accomplish tasks and use the computer in a productive manner. **Applications** are programs created to preform a specific task.

Applications are often fall into one of several categories including 1- financial and business-related

software, 2-graphics and multimedia software, 3-educational and reference software, 4-entertainment software, 5-communication software, and 6- productivity software.

Spreadsheet software enable the user to enter data in rows and columns format. Example for spreadsheet created with Microsoft Excel 2010.

Network consist of two or more connected computers, which can be connected using several media.

Each object connected to a network whether it is a computer or a peripheral device. Is known as a **node**. Most networks use a combination of media and wireless communications.

A network that connects computers reasonably close together is called **local area network(LAN)**.

If the network grows to cover a larger geographic area or includes other networks it becomes a **wide area network(WAN)**.

How are networks configured? Two main categories: **Peer-to-peer or P2 network** are most commonly found in homes and small businesses. Each node can communicate with every other node without a dedicated server or hierarchy among computers.

Client\server network is typically have two different types of computers.

Computer maintenance, 1- Backup utilities enable you to back up your files. **2-Disk cleanup** scans the hard drive and remove unnecessary files such as those found in the Recycle Bin.

3-Disk Defragmenter scans the hard drive, rather than removing files, it attempts to reallocate files so they use the available hard drive space more efficiently.

4-Task scheduler this utility enables you to create a task and select the best time for each task to run.**5-system restore**, Windows creates a **restore point** which records all the settings for your system.

Viruses are malicious codes or software designed to invade your computer system and obtain, alter or destroy data without your knowledge and against your wishes.

Worms malicious programs that spread from computer to computer without any human interaction, worms can replicate themselves.

Trojan horses they don't duplicate themselves or infect other files, they can be just as problematic because they open your system for other intruders. Such as **bots**.

Spyware is software designed to capture personal and confidential information that resides on your system and send it elsewhere.

Key loggers a software program records every key stroke you type. Key logger can capture all sorts of confidential information this way -passwords, credit card numbers and bank account.

Protection yourself and your computer

Personal firewalls, denial of service(DoS) DoS attacks occur when a large number of computers try to access website at the same time effectively overloading it and causing it to shut down.

