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Your computer uses two basic types of software: application software and system software.

System software consists of two primary types of programs: the operating system and utility programs. the **operating system (OS)** is a group of programs that controls how your computer functions. The operating system has three primary functions.

- It manages the computer's hardware.
- It provides a consistent means for application software to work with the (CPU).
- It is responsible for the management, scheduling and coordination of tasks.

User interface the desktop, icons and menus that let you communicate with your computer.

A utility program is a small program that perform many of the general housekeeping tasks for your computer, such as system maintenance and file compression.

Common operating systems		
OS name	Developed by	Available on
Windows	Microsoft	Laptops, tablets, desktops, all-in-ones
OS X	Apple	Laptops, desktops, all-in-one
iOS	Apple	Tablets, iPhone, iPod
Android	Google	Cell phones, tablets
linux	Open source	Laptops, desktops, tablets

Real-time operating system (RTOS) is a machinery that performs a repetitive series of specific tasks in an exact amount of time requires. Such as fuel injection system in car engines.

Unix is a multiuser, multitasking OS that is used as a network OS. The UNIX code was initially not proprietary. UNIX now a brand that belongs to the company the open group.

What's special about windows? Windows is an operating environment that incorporates a user-friendly, visual interface like the one that was first introduced with Apple's OS.

What's special about the Mac OS? Mac OS became the first commercially available OS to incorporate the ability to interact with the computer with user-friendly point-and-click technology.

What is Linux?Linux is an open source OS designed for use on personal computers and as a network OS.

Does it matter what OS is on my computer? An OS is designed to run on specific CPUs. CPUs have different designs, which can require modifying the OS software to allow it to communicate properly with each CPU.

The OS coordinates and directs the flow of data and information. The OS provides a user interface that lets you interact with the computer.

The user interface

- **Command driven interface** the interface provide to be too complicated for the average user. Therefore. Were used primarily in business and by professional computer operators.

- The command-driven interface was later improved by incorporating a **menu-driven interface** you choose commands from menus displayed on the screen.
- Current computer and mobile operating systems such as Microsoft Windows and OS X use a **graphical user interface or GUI**.

You are usually asking the CPU to perform several tasks at once. Although the CPU is powerful, it still needs the OS to arrange the execution of all these activities in systematic way. To do so, the OS assigns a slice of its time to each activity that requires the processor's attention. The OS must then switch among different processes billions of time a second to make it appear that everything happening seamlessly.

Interrupt tells the OS that it's in need of immediate attention. Every device has its own type of interrupt.

Interrupt handler a special numerical code that prioritizes the requests.

The task assigned a higher priority before processing a task assigned a lower priority is called **preemptive multitasking**.

Memo is a reminder of what the CPU was doing before it started to work on the interrupt.

Spooler a program that helps coordinate all print jobs currently being sent to the printer.

RAM has limited capacity, most computers sold for home use have between 4 and 16 GB of RAM. When there isn't enough RAM for the OS to store the required data and instructions, the OS borrows from spacious hard drive, the borrowing is called **virtual memory**.

Device driver that facilitates communication between the device and the OS.

Plug and play (PnP) is a software and hardware standard designed to facilitate the installation of new hardware in PCs by including in the OS the drivers these devices need in order to run.

The Boot Process

Boot process consists of four basic steps. Steps of the boot process in detail.

Step1: Activating BIOS

Basic input/output system (BIOS) is a program that manages the exchange of data between the OS and all the input and output devices attached to the system.

Step2: performing the Power On Self-Test

Power-on self-test (POST) compares the result of the POST with the various hardware configuration permanently stored in CMOS.

Step3: Loading the OS

System files the OS loads into RAM from its permanent storage location on the hard drive.

Step4: checking further configurations and customizations

The OS checks **The registry** for configuration of other system components.

Authentication the authentication process blocks unauthorized users from entering the system.

There are often three different ways to accomplish tasks:

- Using a mouse.
- Touching the screen.
- Using keystrokes.

Taskbar displays open and favorite applications for easy access.

The Start menu is divided into two sections. *The right side* has the block tiles. The tiles represent installed software and windows apps in addition to programs. **The left side** of start menu provides access to most used programs as well as to file explorer, settings, power and all apps.

you can choose which application are visible on the start menu through a process **called pinning**.

Although the OS X and the Windows OS aren't **compatible**, they are extremely **similar** in terms of functionality.

Most interfaces based on familiar Windows and OS X paradigms, like Ubuntu.

The C: drive is like a large filing cabinet in which all files are stored. As such as the C: driver us the top of the filing structure of your computer and is referred to as the **root directory**.

A **file** is a collection of program instructions or data that is stored and treated as a single unit.

A **folder** is a collection of files.

You can determine the location of a file by its **file path**.

The backslash character (\), used by Windows is referred to as a **path separator**.

There are different ways to view the folders and files:

- Details view: files and folders are displayed in list form.
- Icons view: the folder are displayed as live icons without opening the folder.
- The preview pane: lets you see the first page of your document without opening it.

Extension or file type, follows the file name and period or dot (.) , like a last name. in Windows OS you don't need to add the extension to the file name, its add automatically for you. Mac and Linux OS don't require file extensions, but if you are using the Mac or Linux OS and will be sending files to Windows users, you should add an extension to your file name so that Windows can more easily open it.

Recycling ben where files deleted from the hard drive reside until you permanently purge them from your system.

File compression utility 1- makes a large file more compact. 2- make it easier and faster to send.

Disk cleanup is a Windows utility program that removes unnecessary files from your hard disk.

Task Manager utility to check on the program or to exit the nonresponsive programs.

Disk defragmentation rearranges fragmented data so that related file pieces are unified.

File History utility you can have Windows automatically create a duplicate of your libraries, desktop, contacts and favorites and copy it to another storage device, such as an external hard drive.

System Restore that lets you roll your system settings back to a specific data when everything was working properly.

