The Operating System.

Lesson objectives
1. Define operating system
2. Give examples of operating system
3. Outline the functions of an operating system.
4. State the types of operating system
5. Explain types of operating system interfaces

A computer will not work without an operating system (OS). The main program runs the software.

 What is an operating system?

- It is a collection of programs/software that enables all the hardware in a computer system work together. It also controls the running of other programs.

- A suite/set or collection of programs/software that controls and coordinate /manages the hardware and software of a computer set system.

- A collection of programs that supervises the operations and use of all system resources and peripherals.

Computer operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to display screen, keeping track of files and directories

of the disk, and controlling peripheral devices such as printers.

Operating system is like a traffic cop, coordinating input, output, and other processes. The operating system is either built into the computer or loaded into the computer's memory from a disk when you turn on the computer.

Examples of operating systems
- MS DOS
- MS windows
- Novell
- UNIX
- Linux
- XENIX
- MacOS (AppleMac), IOS (Internetwork OS) (Apple Iphone)
- Mobile OS, Google Andriod

Functions of the operating system
- It serves as the interface between the user and the computer/hardware and software
- Provides an interface between the computer hardware and the programmer to make coding, debugging, and maintenance of applications feasible.
- Simplifies file creation and management
- Provides security features that protect the computer from unauthorized or mischievous intervention such as virus, spyware, malware etc.

- Provides routines that handle the intricate details of input/output programming.

Types of operating system

There are two main types namely
1. Single user operating system
2. Multi user operating system

They are broken into the following
3. Single –user, Single task
4. Single –user, Multi task
5. Multi –user, multi task

1. **Single user operating system:** the operating system makes the computer system independently available to only one user at a time. In other word, only one user can use the computer processor and its resources at a time. Examples Disk operating system (DOS), Microsoft disk operating system (MSDOS), PC-DOS and Windows 3x.
2. **Multi user operating system:** this type of operating system allows more than one user to access and share the computer processors and resources. This is usually used in organization where several computers (terminals) or work stations are connected to a central computer (server) . Examples are UNIX, XENIX, LINUX, Novell, Windows NT, Windows 2003 server, Windows 2000 Mel etc.
   (a)   Batch processing OS
   (b)   Time sharing OS

(c) Real time OS
(d) Distributed OS
(e) Multiprogramming OS
(f) Network OS

Properties of operating system

- Easy to install
- Easy to use
- Error free
- Relatively cheap

Difference between the operating system and the application system

Operating system	Application system
Controls the functioning of the computer/management of the computer resources/system software.	Performs specific task.
Controls the booting process.	Cannot the boot the computer.
Provide services to the computer. Such disk cleanup, virus scan, etc.	Cannot provide utility services.
OS is independent of application software.	AS depends on OS.

Classification of operating systems interfaces
There are 3 class of operating system interfaces

1. Command line interface
2. Graphical user interface
3. Touchscreen interface

Command line interface

CLI is the oldest and the first operating system that existed where the user type the command and use the keyboard. CLI does not make use of images, icons and graphics. All the user sees is a plain black screen.

Because there are no graphics, they require very little computer power. Commands are entered precisely without spelling mistakes. Remembering commands and the exact way to enter them can be difficult and so CLI is considered difficult to use. Examples of OS that uses CLI are MSDOS, PCDOS, IBMDOS etc.

Graphical users interface

GUI is visual (graphical) interface and they are more popular than CLI because they are very easy to use. Although they require more power.
Instead of typing in commands, they can use a mouse to point and click objects on the screen.
The main features include
1. Windows
2. Icons
3. Menus
4. Pointers (WIMP)

Touch screen interface (Post-WIMP)

Portable devices such as mobile phones (PDA) and tablets (iphone, ipad etc) user similar interface to the GUI (WIMP) where icons, menus are used to input commands. However because these devices do not require the use of a mouse, they way the icons and menus are used is quite different from GUI.

Touchscreen technology allows people to use images to select icons and options straight from the device screen. Touch screen are used so that the user's finger takes the place of a mouse and pointer. The finger performs the following

1. Zoom into images
2. Rotate images
3. Select icons
4. Swiping
5. Rotating
6. Pinching
7. Typing

Advantages and disadvantages between command line and GUI interfaces

Advantages

CLI	GUI
The user directly communicate with the computer through the keyboard.	The user uses a medium for quick entering of commands such as mouse clicking.
A wider range of commands to be used. You	You don't need to remember anything…all

must type the correct command	you have to do is just click.
It needs very little computer power.	Less chance of making mistakes.

Disadvantages

CLI	GUI
User must remember complex commands.	Smaller range of commands can be used.
A lot of typing is needed for quite a simple task.	Icons are preprogrammed to set tasks and users cannot change it.
Higher chance of errors when typing commands.	GUI requires more computer power.