Instructor
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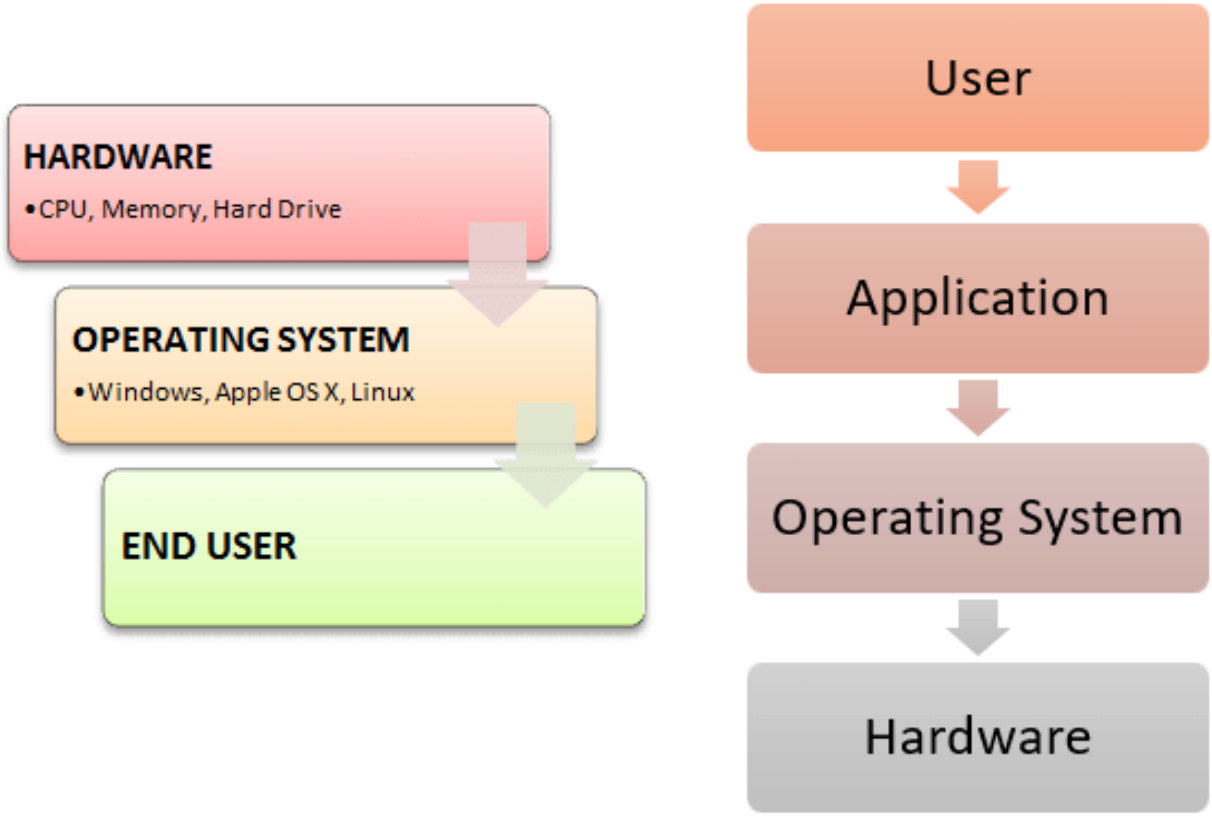
Operating System

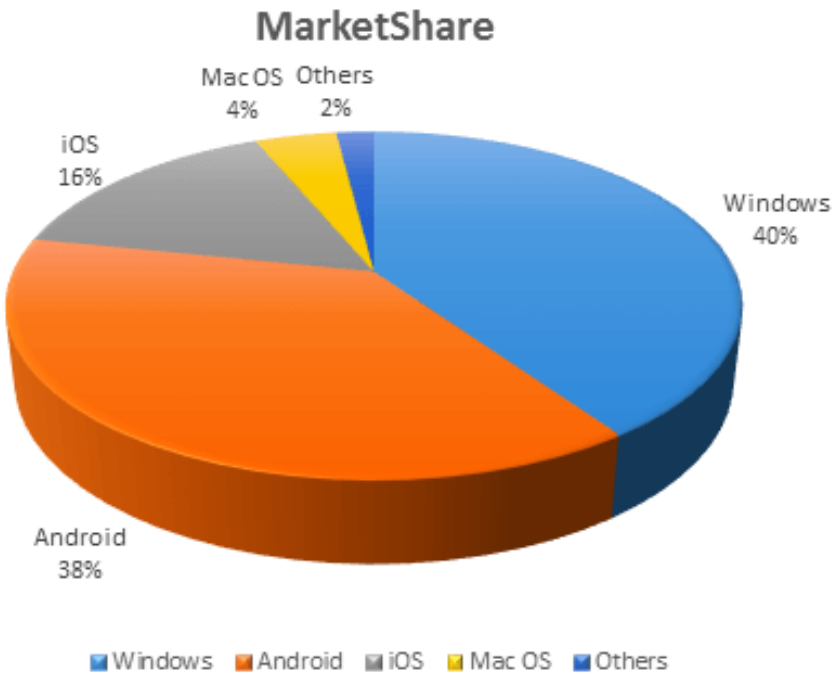
1-What is an Operating System?

An Operating system (OS) is a software which acts as an interface between the end user and computer hardware. Every computer must have at least one OS to run other programs. An application like Chrome, MS Word, Games, etc. needs some environment in which it will run and perform its task. The OS helps you to communicate with the computer without knowing how to speak the computer's language. It is not possible for the user to use any computer or mobile device without having an operating system.



1.1 - History Of OS

- Operating systems were first developed in the late 1950s to manage tape storage
- The General Motors Research Lab implemented the first OS in the early 1950s for their IBM 701
- In the mid-1960s, operating systems started to use disks
- In the late 1960s, the first version of the Unix OS was developed
- The first OS built by Microsoft was DOS. It was built in 1981 by purchasing the 86-DOS software from a Seattle company
- The present-day popular OS Windows first came to existence in 1985 when a GUI was created and paired with MS-DOS.



1.2 - GUI

A GUI (**G**raphical **U**ser **I**nterface) is a system of interactive visual components for computer software. A GUI displays objects that convey information, and represent actions that can be taken by the user. The objects change color, size, or visibility when the user interacts with them.

1.3 - What are the benefits of GUI?

Unlike a command-line operating system or **CUI**, like Unix or MS-DOS, GUI operating systems are much easier to learn and use because commands do not need to be memorized. Additionally, users do not need to know any programming languages. Because of their ease of use and more modern appearance, GUI operating systems have come to dominate today's market.

1.4 - What are examples of a GUI operating system?

- Microsoft Windows
- macOS
- Chrome OS
- Linux variants like Ubuntu using a GUI interface.
- Android
- iOS

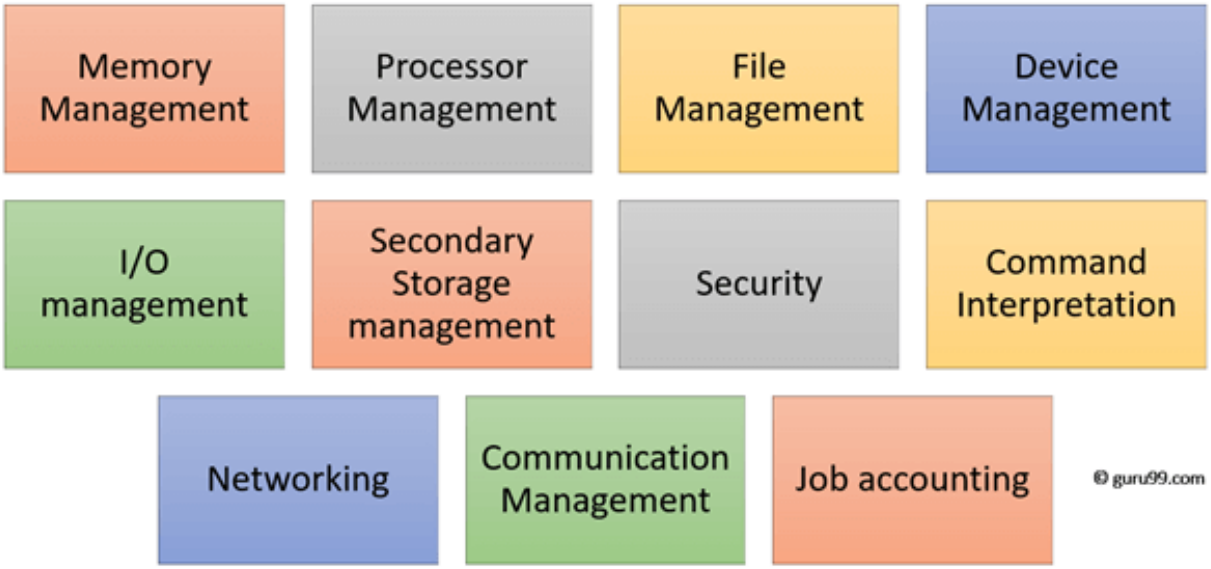
2- Features of Operating System

Below is the commonly found important list of an Operating System features:

- Program Execution
- Memory management
- Handling I/O operations
- Manipulation of the file system
- Error Detection and handling

- Resource allocation
- Information and Resource Protection

3- Functions of an Operating System



In an operating system software performs each of the function:

1. **Process management**: Process management helps OS to create and delete processes. It also provides mechanisms for synchronization and communication among processes.

2. **Memory management**: Memory management module performs the task of allocation and de-allocation of memory space to programs in need of this resources.

3. **File management**: It manages all the file-related activities such as organization storage, retrieval, naming, sharing, and protection of files.

4. **Device Management**: Device management keeps tracks of all devices. This module also responsible for this task is known as the I/O controller. It also performs the task of allocation and de-allocation of the devices.

5. **I/O System Management**: One of the main objects of any OS is to hide the peculiarities of that hardware devices from the user.

6. **Secondary-Storage Management**: Systems have several levels of storage which includes primary storage, secondary storage, and cache storage. Instructions and data must be stored in primary storage or cache so that a running program can reference it.

7. **Security**: Security module protects the data and information of a computer system against malware threat and authorized access.

8. **Command interpretation**: This module is interpreting commands given by the and acting system resources to process that commands.

9. **Networking**: A distributed system is a group of processors which do not share memory, hardware devices, or a clock. The processors communicate with one another through the network.

10. **Job accounting**: Keeping track of time & resource used by various job and users.

11. **Communication management**: Coordination and assignment of compilers, interpreters, and another software resource of the various users of the computer systems.

4- The advantage of using Operating System

- Offers an environment in which a user may execute programs/applications
- The operating system must make sure that the computer system convenient to use
- Operating System acts as an intermediary among applications and the hardware components
- It provides the computer system resources with easy to use format
- Acts as an intermediator between all hardware's and software's of the system

5- Disadvantages of using Operating System

- If any issue occurs in OS, you may lose all the contents which have been stored in your system
- It is never entirely secure as a threat can occur at any time

6- Microsoft Windows 7

Code-named **Vienna** and **Blackcomb**, Windows 7 is an operating system and the successor to **Windows Vista**. It was officially released by Microsoft to the public on October 22, 2009. Below is an image of the Windows 7 desktop.

6.1 - Windows 7 new features

Some of the new features introduced in Windows 7 include the following:

- Faster start-up time (i.e. Windows loads faster).
- Support for multi-touch on touch screen displays (i.e. using 2 fingers for scrolling).

- Virtual hard disk support.
- A better overall performance compared to previous versions of Windows.

6.2- Windows 7 Hardware Minimum Requirements

Table below describes the minimum hardware requirements for installing Windows 7. Part of the Project Planning SMF is collecting a hardware inventory. Compare the hardware requirements in Table below show to your hardware inventory to identify any computers that require upgrades or replacements.

Minimum Hardware Requirements for Windows 7 Computers

Hardware	Minimum Requirement
Processor	1 GHz or faster 32-bit or 64-bit processor
Memory	1 GB for 32-bit computers, or 2 GB for 64-bit computers
Graphics Processor	DirectX 9 graphics processor with Windows Display Driver Model (WDDM) 1.0 or later driver
Free Hard Disk Drive Space	16 GB