Types of operating systems

Operating systems usually come pre-loaded on any computer you buy. Most people use the operating system that comes with their computer, but it's possible to upgrade or even change operating systems. The three most common operating systems for personal computers are Microsoft Windows,macOS, and Linux.

Modern operating systems use a graphical user interface, or GUI. A GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text.Each operating system's GUI has a different look and feel, so if you switch to a different operating system it may seem unfamiliar at first. However, modern operating systems are designed to be easy to use, and most of the basic principles are the same.

**Microsoft Windows**

Microsoft created the Windows operating system in the mid-1980s. There have been many different versions of Windows, but the most recent ones are Windows 10 (released in 2015), Windows 8 (2012), Windows 7(2009), and Windows Vista (2007). Windows comes pre-loaded on most new PCs, which helps to make it the most popular operating system in the world.

**macOS**

macOS (previously called OS X) is a line of operating systems created by Apple. It comes preloaded on all Macintosh computers, or Macs. Some of the specific versions include Mojave (released in 2018), High Sierra (2017), and Sierra (2016).

computers tend to be more expensive. However, many people do prefer the look and feel of macOS over Windows.

**Linux**

Linux  is a family of open-source operating systems, which means they can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it. The advantages of Linux are that it is free, and there are many different distributions—or versions—you can choose from.

**Functions of Operating System**

* **Processor Management:** An operating system manages the processor’s work by allocating various jobs to it and ensuring that each process receives enough time from the processor to function properly.
* **Memory Management:** An operating system manages the allocation and deallocation of the memory to various processes and ensures that the other process does not consume the memory allocated to one process.
* **Device Management:** There are various input and output devices. An OS controls the working of these input-output devices. It receives the requests from these devices, performs a specific task, and communicates back to the requesting process.
* **File Management:** An operating system keeps track of information regarding the creation, deletion, transfer, copy, and storage of files in an organized way. It also maintains the integrity of the data stored in these files, including the file directory structure, by protecting against unauthorized access.
* **Security:** The operating system provides various techniques which assure the integrity and confidentiality of user data. Following security measures are used to protect user data:
  + Protection against unauthorized access through login.
  + Protection against intrusion by keeping Firefall active.
  + Protecting the system memory against malicious access.
  + Displaying messages related to system vulnerabilities.
* **Error Detection:** From time to time, the operating system checks the system for any external threat or malicious software activity. It also checks the hardware for any type of damage. This process displays several alerts to the user so that the appropriate action can be taken against any damage caused to the system.
* **Job Scheduling:**In a multitasking OS where multiple programs run simultaneously, the operating system determines which applications should run in which order and how time should be allocated to each application.

### Advantages of operating system

**Computing Source**

An operating system acts as an interface between the user and the hardware. It allows users to input data, process it, and access the output. Besides, through the operating system, users can communicate with computers to perform various functions such as arithmetic calculations and other significant tasks.

**User-Friendly Interface**

Windows operating system, when it came into existence, also introduces Graphical User Interface (GUI), which made using computers much more natural than earlier Command Line Interface. Moreover, users can quickly understand, interacts, and communicate with computer machines.

**Resource Sharing**

Operating systems allow the sharing of data and useful information with other users via Printers, Modems, Players, and Fax Machines. Besides, a single user can share the same data with multiple users at the corresponding time via mails. Also, various apps, images, and media files can be transferred from PC to other devices with the help of an operating system.

**No Coding Lines**

With the invention of GUI, operating systems allow accessing hardware without writing programs. Unlike, earlier users don’t have to write code of lines to access the hardware functionality of a computer system.

**Safeguard of Data**

There’s a lot of user data stored on the computer, and that can only be accessed with the help of an OS. Besides, storing and accessing the data, another important task of an OS is to safely and securely manage the data. For example, Windows Defender in Microsoft Windows detects malicious and harmful files and removes them. Also, it secures your data by storing them with a bit to bit encryption.

**Software Update**

An operating system is a software which needs to update regularly to control high fleeting features that are continually increasing. With other apps and software hitting updates to improve their functionality, OS must improve their benchmarks and handle all the working of a computer. An OS can easily be updated without any complexity.

**Multitasking**

An operating system can handle several tasks simultaneously. It allows users to carry out different tasks at the same point in time.