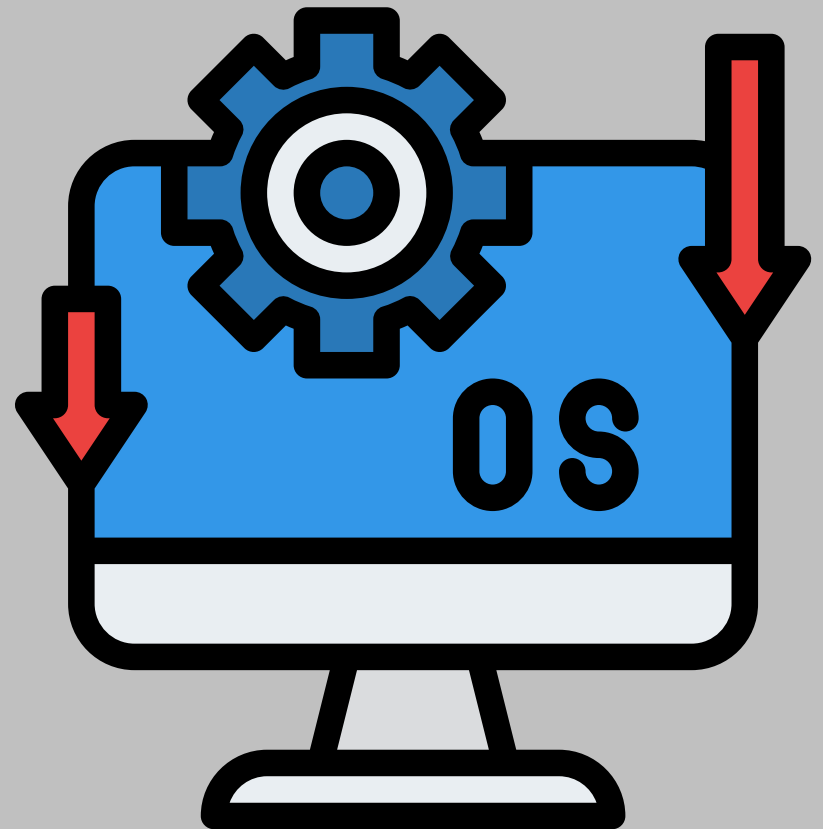# Operating Systems

What is an Operating System?

The most important program that runs on your computer. It manages all other programs on the machine.

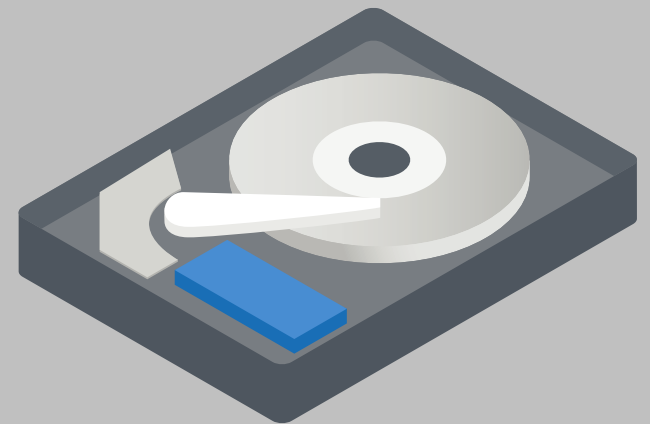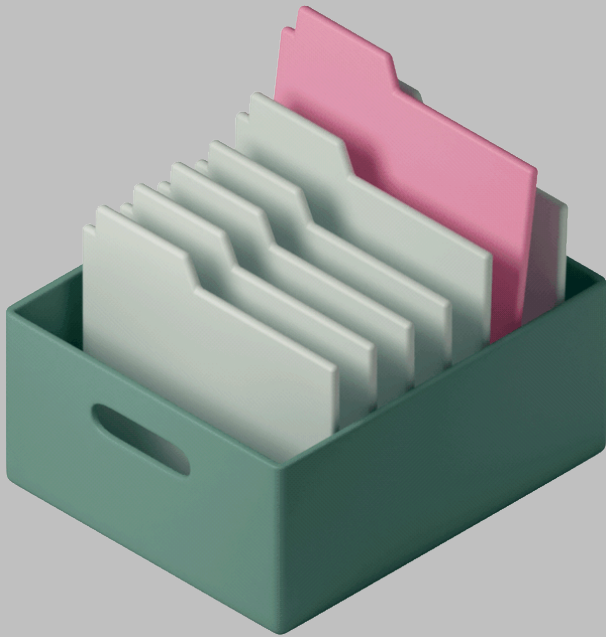Every PC has to have one to run other applications or programs. It's the first thing "loaded".

Operating System

It performs basic tasks, such as:

- Recognising input from the keyboard or mouse
- Sending output to the monitor

•Keeping track of files on the disk, and

•Controlling peripheral devices such as disk drives and printers

Types of Operating Systems

Generally, there are four types of operating systems, based on the type of computer they control and the applications they support.

Single-user, single task

This type manages the computer so that the one user can do one thing at a time

Multi-user, multi-task

Two or more users can run programs at the same time. Some operating systems permit hundreds or even thousands of users to operate at the same time
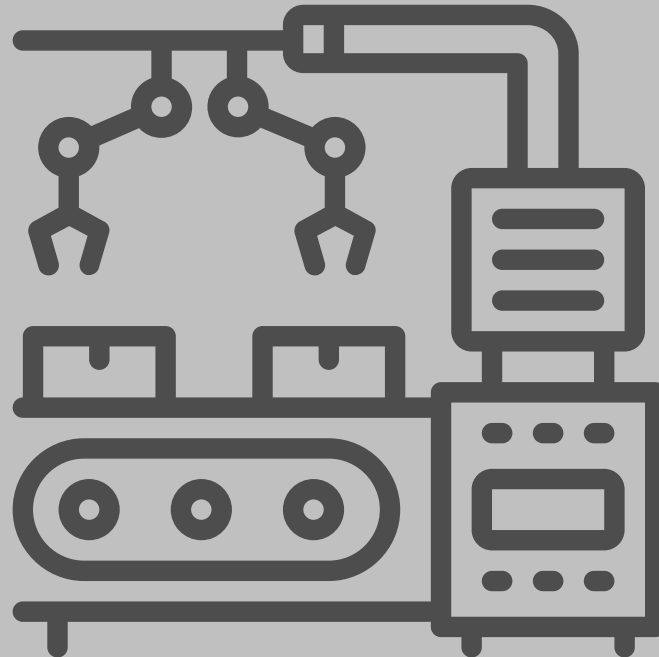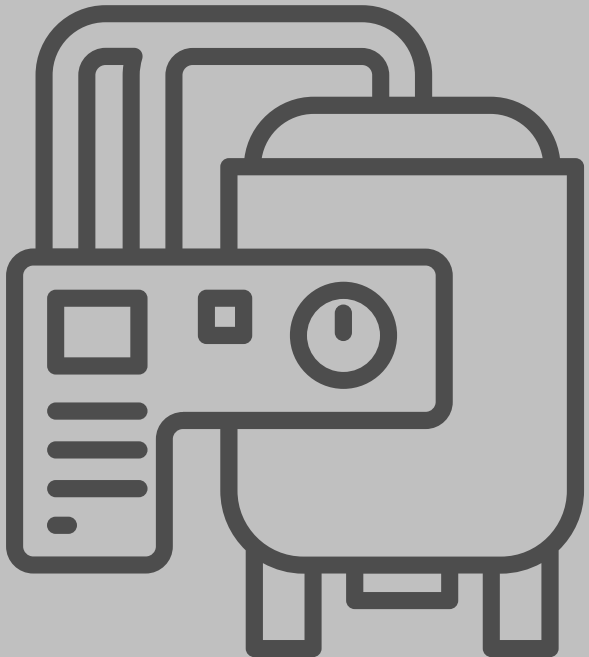
Types of Operating Systems

Real Time Operating Systems

RTOS (Real Time Operating Systems) are used to control machinery, scientific instruments, and industrial systems.

There is typically very little user-interface capability.

Resources are managed so that a *particular operation executes precisely the same every time*.

Types of Operating Systems

Single-user, Multi-tasking

This is the type of operating system most desktops and laptops use today.

Microsoft's Windows and Apple's Mac OS are examples of operating systems that let a single user have several operations at the same time
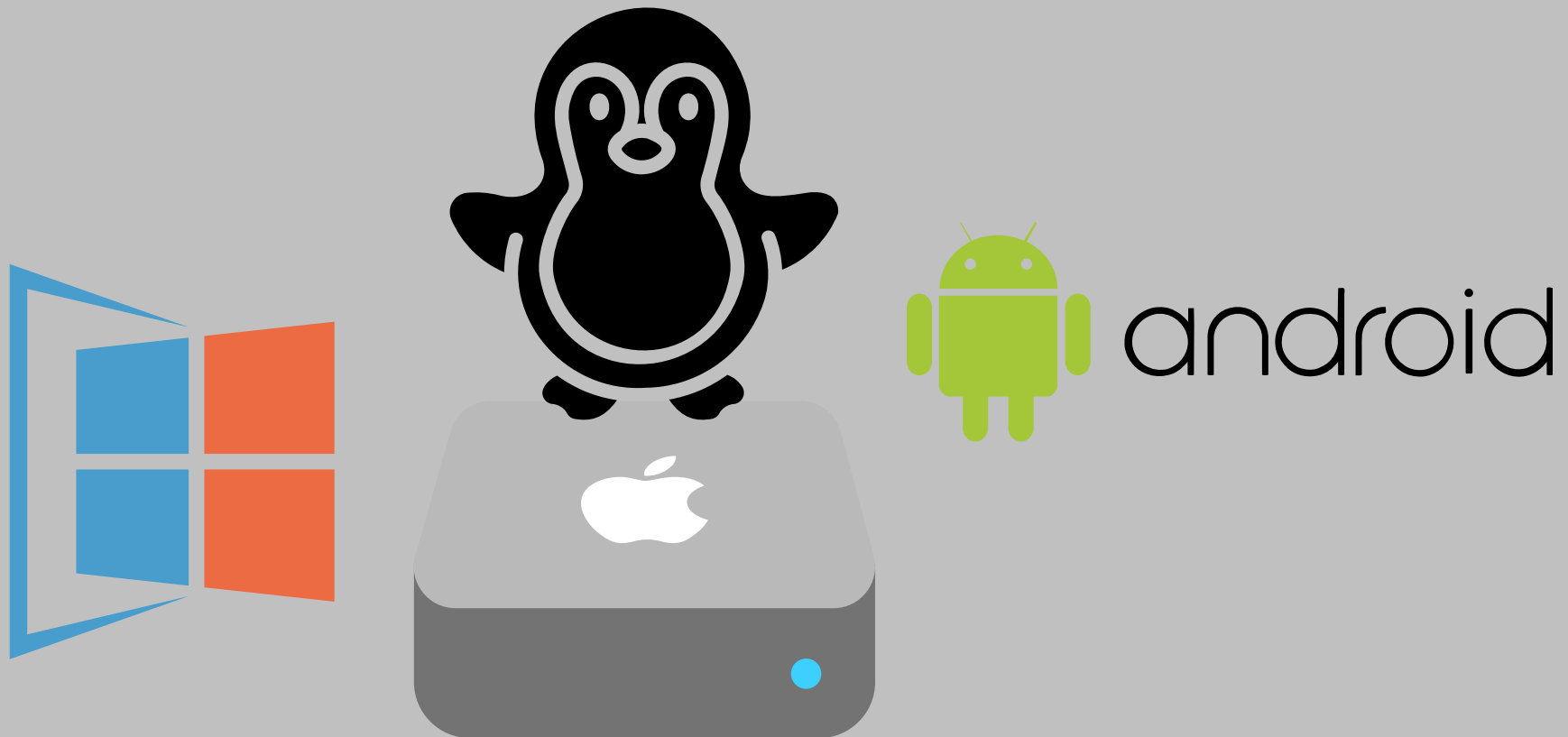
OS's Manage Applications

Operating systems provide a software platform on top of which other "application" programs can run

The application programs must be written to run on a particular operating system
So, your choice of operating system determines what application software you can
run

USER INTERFACES

A user interface is the way users communicate with the OS or other software. Making the user interface easy to use is one of the biggest challenges in developing computer systems.

Types of interfaces:

Command line interface: it is an old interface. The user types in commands and the operating system responds to these commands.

Menu interface: it shows a list of commands, organised under various menus. The user selects a key on the keyboard corrisponding to that option. The commands are already arranged and the user doesn't have to learn the commands

Graphical user: it is the most popular and used one. Users can see how the command is carried out by looking at the icons. Windows is a graphical user interface

Touchscreen graphical user interface: it is very similar to a graphical user interface. Instead of clicking with the mouse on the icons, users can touch the screen

LINUX AND ANDROID

LINUX is an open-source OS. It was created by Linux Torvalds in 1991. Linux has been historically used as a server operating system, and its low cost, and flexibility make it suitable for a wide range of applications. It was criticised in the past for being too complex to be used. Linux has changed its interface which is very similar to other operationg systems.

ANDROID is another Linux based OS, but it is designed maily for touch screen mobile devices such as smarphones and tablets. Being an open source OS, it is always enriched (ARRICCHITO) by new APPS.
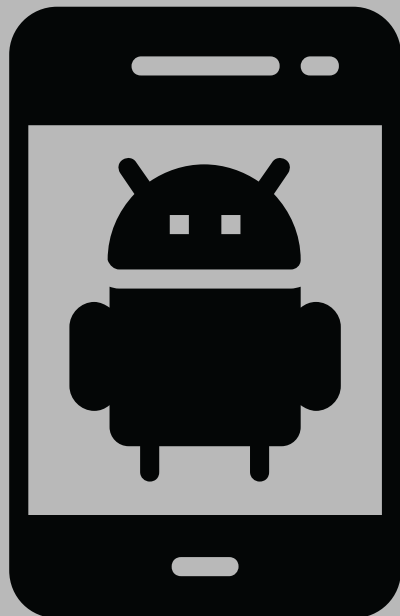
WINDOWS

Windows is a group of operating systems. It was originally created for personal computers, and later adapted to servers and mobile devices.

It dominates the personal computer world with a market share of 80%.

HISTORY OF WINDOWS VERSIONS:
- Windows 1.0 and 2.0 were offered to the public between 1985-87. They were considered an innovation, because the user could click and point to give commands. Other older versions were: Windows 95, Windows 2000
- Windows XP, the longest OS used. It was offered to the users in 2001 and it stopped running in 2014. It is considered one of the best versions of Windows, despite the security problems.

- Windows Vista innovative for its multi-touch input.

WINDOWS

HISTORY OF WINDOWS VERSIONS:

- Windows 7 released in 2009
- Windows 8 innovative for its touch screen use and rapidity
- Windows 10 released with a new browser, Microsoft Edge. It was important because it could work on all systems: personal computers, smart phones, tablets, and video game consoles
- Windows 11 released in November 2021 for PCs and tablets.

EVOLUTION OF MICROSOFT WINDOWS
1993 - 2020

MACINTOSH

Mac operating systems was developed by Apple in 1984. The first OS was called Classic Mac OS.

In 2022, the new OS, called Mac Os X, had a new structure, in order to eliminate the technical problems of Mac OS.

All the Mac OS share a common set of graphic user interface (same icons....)

MAC OS (the older version)

- Graphical Interface – One of the first OS to use windows, icons, and a mouse (very user-friendly at the time).
- Single-Tasking (early versions) – Could only do one thing at a time in the beginning.
- No Command Line – It was made for users, not tech experts. No need to type commands.
- Plug and Play – Easy to connect devices like printers without much setup.
- Limited Multitasking – Later versions added basic multitasking, but not very powerful.
- Closed System – Worked mainly on Apple's own hardware, not PCs.
- Not Very Stable – Could crash more often compared to modern systems.
- No Protected Memory – Programs could affect each other and cause problems.

MAC OS X (later version)

macOS (Mac OS X) is the operating system used by Apple computers like MacBooks and iMacs. Here are its basic characteristics:

1. User-Friendly – It's easy to use with a clean and simple interface.
2. Visual Design – Looks smooth and modern, with nice graphics and animations.
3. Stable and Secure – It doesn't crash often and protects your computer from viruses.
4. Built for Apple – It works perfectly with other Apple devices like iPhones and iPads.
5. Pre-installed Apps – Comes with useful apps like Safari (web browser), Mail, and Photos.
6. Regular Updates – Apple gives free updates to improve features and fix bugs.
7. Unix-based – Underneath, it's built on Unix, which makes it powerful and good for developers too.

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