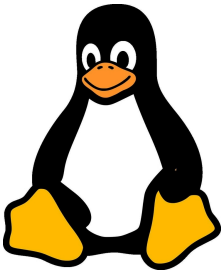
What Is Linux?



Linux is a free and open-source operating system kernel. It powers everything from smartphones and smart TVs to web servers, supercomputers, and even the International Space Station.

"**Free and open-source software**" (FOSS) means anyone can view, copy, modify, and share the source code. You don't have to pay for Linux, and there are no locked-down features or corporate restrictions. It's developed by a global community of volunteers and professionals. The philosophy behind Linux is that software should be transparent, customizable, and available to everyone.

As a refresher: an **operating system** (OS) is the software that manages all the hardware and software on a computer. You're most likely using Windows or macOS right now. Linux is another option, and it's a very powerful one.

Linux was created in 1991 by Linus Torvalds, a Finnish software engineer who wanted a free alternative to Unix, a more expensive and restrictive OS (and the basis for macOS). What started as a personal project quickly grew into a massive global open-source movement.

What is a Linux distribution?

Technically speaking, Linux isn't a complete OS. It's just the **kernel**, the "core" that directly manages hardware. To be fully usable, it needs to be bundled with other software. These complete bundles are called **distributions**, but the cool kids call them "distros."

Each distro is like its own unique flavor of Linux, with its own strengths and intended purpose. There are hundreds (if not thousands) of unique Linux

distros. Some are tailor-made for specific tasks, and some are just minor tweaks of existing distros with slightly different looks or extra features.

Ubuntu is one of the most popular and user-friendly Linux distros. It's great for beginners and widely used for desktops, servers, and cloud computing. For consistency, this is the one we'll be using for this course.

Debian is another very popular choice. It's an older distro known for its stability and forms the foundation for many other distros, including Ubuntu.

Arch is a lightweight, rolling-release distro aimed at more experienced users who want full control and customization.

Many popular distros are based on one of these three. **Linux Mint** (based on Ubuntu) and **Fedora** are also excellent choices for beginners, if you're feeling paralyzed by the number of options.

So, why learn Linux?

Linux is everywhere, often behind the scenes. Most of the internet runs on Linux-based servers. Android is built on Linux. Major companies like Google, Amazon, Meta, NASA, and Tesla rely on Linux for critical parts of their infrastructure.

If you're considering a career in **IT**, **cybersecurity**, **software development**, **DevOps**, **system admin**, or **cloud computing**, learning how to use Linux is non-negotiable.

But even if you're not interested in a tech career, learning Linux can be fun and empowering. Linux is free, fast, secure, highly customizable, and it respects your privacy. Plus, it runs well on older machines that might struggle with newer versions of Windows.

Learning Linux also teaches you a lot about computers in general. You'll gain experience using the command line, managing files and users, installing software, and troubleshooting. These skills will translate across platforms and make you a more confident and capable computer user.

So... why doesn't everyone use Linux?

As cool as Linux is, it isn't the default operating system for most people. There are a few reasons for that:

- **Pre-installed Systems:** Most computers you buy come with Windows or macOS preinstalled. It takes knowledge and effort to replace an OS with Linux, assuming you even know it exists.
- **Software Compatibility:** Some popular programs (including many PC games) are either unavailable or harder to run on Linux. Workarounds exist, but they aren't always beginner-friendly. Fortunately, translation layers like Valve's Proton are making this less of an issue.
- **Learning Curve:** While many Linux distributions are user-friendly today, Linux still expects you to understand your system a little more deeply than Windows or macOS. That can scare away some people.

But here's the good news: thanks to helpful guides and beginner-friendly distros, Linux has never been easier to use. Today, you can try out Linux without wiping your computer by using a virtual machine, or even installing Linux alongside Windows (dual-booting). Learning Linux will give you a deeper understanding of computers, and that knowledge is valuable no matter what operating system you use.