

What is UNIX?

To put it simply: **UNIX** wasn't just a piece of software; it was the "**Big Bang**" moment for modern computing. Developed in the late 1960s and early 70s at AT&T's Bell Labs, it transformed how humans interact with machines.

Before UNIX, operating systems were bulky, difficult to use, and usually tied to one specific type of hardware. UNIX changed the game by being elegant, portable, and focused on a "do one thing and do it well" philosophy.

Why UNIX Was a Big Deal

Most of the technology you use today—from your iPhone (iOS) and Android to the servers powering the internet—can trace its DNA directly back to UNIX.

1. Portability

Most early software was written in "Assembly" (a language unique to specific hardware). UNIX was largely rewritten in the **C programming language** in 1973. This meant it could be moved (ported) to different types of computers with minimal effort—a revolutionary idea at the time.

2. The Multi-User/Multi-Tasking Edge

UNIX was designed so that multiple people could use the same computer at once, running different programs simultaneously without crashing the whole system.

3. The File System Hierarchy

UNIX introduced the concept of a hierarchical file system (folders inside folders), treating almost everything—including hardware devices—as a "file." This made the system incredibly consistent.

The UNIX Philosophy

The creators (notably **Ken Thompson** and **Dennis Ritchie**) followed a specific set of cultural norms that still guide developers today:

- **Modularity:** Write small programs that do one thing well.
 - **Composability:** Use "pipes" (|) to connect these small programs together to perform complex tasks.
 - **Plain Text:** Store data in text files because they are easy for humans to read and for any program to process.
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What is UNIX?

The Family Tree

Because of legal battles and licensing issues in the 80s, UNIX branched out into many "flavours."

<u>Branch</u>	<u>Description</u>
BSD	Berkeley Software Distribution; the foundation for macOS.
System V	The "commercial" branch used by big corporations in the 80s/90s.
Linux	A "Unix-like" kernel created by Linus Torvalds to be free and open-source.
Solaris/AIX	Specialized versions for high-end enterprise servers.

Is UNIX still around?

Technically, "UNIX" (all caps) is now a trademarked brand. To be called UNIX today, a system has to be certified. However, in the broad sense, **UNIX is everywhere**. If you open the "Terminal" on a Mac or use a Linux server, you are using a system that looks, feels, and acts exactly like the original UNIX from 50 years ago.

What are the differences between UNIX and LINUX?

The easiest way to think about it is that **UNIX is the parent** (the original blueprint and philosophy), while **LINUX is the wildly successful spiritual successor** that took those ideas and made them free for everyone.

While they look and feel almost identical on the command line, their origins, costs, and "under the hood" legalities are quite different.

The Core Differences

<u>Feature</u>	<u>UNIX</u>	<u>LINUX</u>
Origin	Created at AT&T Bell Labs in the 1960s/70s.	Created by Linus Torvalds in 1991.
License	Proprietary (usually expensive licenses).	Open Source (Free to use and modify).
Development	Developed by specific companies (IBM, HP, and Oracle).	Developed by a global community of volunteers and companies.
Portability	Often tied to specific, high-end hardware.	Runs on almost everything (phones, PCs, cars, supercomputers).
The "Kernel"	A complete, integrated operating system.	Technically just a "kernel" (the brain), paired with GNU tools.

What is UNIX?

1. The "Genetic" Difference

UNIX is a trademarked brand. To be called "UNIX," an operating system must pay a fee and pass a battery of tests to prove it meets the Single UNIX Specification. Examples include **macOS**, **IBM AIX**, and **Oracle Solaris**.

Linux is "Unix-like." It was written from scratch to *behave* like UNIX, but it doesn't contain any of the original AT&T code. It was designed to be a free alternative for people who wanted the power of UNIX on their personal home computers.

2. Open Source vs. Closed Source

This is the biggest practical difference.

- **LINUX is Open Source:** Anyone can look at the code, find bugs, and suggest improvements. This is why it dominates the internet; if a company needs a specific feature, they can just build it into the Linux kernel themselves.
- **UNIX is Proprietary:** If you use a version of UNIX like **HP-UX**, you cannot see or change the source code. You rely entirely on the vendor (HP) for updates and security patches.

3. Hardware vs. Software

In the 80s and 90s, if you bought "UNIX," you were usually buying a massive, expensive server from a company like Sun Microsystems. The software and hardware were sold as a single package.

LINUX broke that mold. It was designed to run on "commodity hardware"—the same cheap Intel processors used in everyday PCs. This affordability is what eventually led to Linux "winning" the server war.

Where you find them today

- **UNIX:** Mostly found in "legacy" environments—big banks, government agencies, or high-end specialized workstations (and, of course, the foundation of your **Mac**).
- **LINUX:** Everywhere else. It powers 100% of the world's top 500 supercomputers, the majority of web servers, your Android phone, and even the smart fridge in your kitchen.