

# Unix Chapter 1 Review

Unix was invented by Ken Thompson and Dennis Ritchie in the late 60's and early 70's at Bell Labs in their spare time.

The project was a reaction to the MULTICS project, which was monolithic and feature rich

Unix developed a philosophy, "Do one thing and do it well"

Unix was the first portable operating system that could run on multiple kinds of hardware

This was made possible by the advent of the C programming language developed at the same time by the same research group at Bell Labs

Unix was naturally open-source and flourished in academic communities

Many software utilities were written for the system and shared

As the 70's progressed it developed into several versions, two primary being BSD and System V

This made the code harder to share.

A standard called POSIX was developed by the IEEE to help maintain compatibility

Unix is composed of a kernel at which the main basic functions of the OS are performed, what happens inside the kernel is known as root space.

The kernel is loaded by the bootloader. Linux's current bootloader is called GRUB.

The BIOS is beneath all of this which provides the computer with basic awareness of and communication with its hardware.

After the kernel, many modules are loaded and settings are initialized.

The shell is either a GUI or a terminal that is used as an interface for end users to interact with the system.

The default Unix shell is known as bash which stands for Bourne Again Shell because is based of another shell named sh

Unix and Linux are designed for server administration

The Unix Wars began as a result of a supreme court ruling which allowed software to be copyrighted

The ecosystem became fragmented as AT&T began close-sourcing the OS and charging for licensing

Microsoft rose out of this, abandoning Unix and POSIX and developing their own consumer-facing operating systems, MS-DOS and Windows

Windows is a graphical-based operating system for consumers. It took off in the late 80's and early 90's. It is proprietary

Because of the Unix Wars, a man named Richard Stallman began a project known as GNU which stands for GNU Not Unix. It was a movement for retaining free software, both free of charge and free to see and change the source code, free as in freedom.

Linus Torvalds wrote the Linux kernel as a GNU-based alternative to Unix in the late 80's and early 90's, it has since become a dominant force in the server market.

Unix and Linux servers account for 70% of the server market currently

Both iOS and Android are Linux based operating systems

OSX for Mac is a Unix-based operating system

The command cat prints output to the screen and can be used to concatenate output streams into a single stream

echo copies whatever is sent to it to standard output

The cal command prints out a calendar

Bash commands take flags or options that alter the program behavior optionally. They usually are issued with a - followed by a letter, with multiple flags often being issued at the same time in combination to create a desired effect

Bash commands also can send arguments or parameters as input to the program being called by typing space delimited words after the command at the command line.

ls is another command that lists the contents of a directory

pwd is a command that stands for present working directory and can tell a user what directory they are in

whoami is a command to figure out what user you are logged in as

cd is a command that stands for change directory and can be used to move throughout the file system.

In Unix everything is a file, even devices, running programs, and network connections

In Unix each program does a simple job and powerful tasks can be accomplished by piping the inputs and outputs of these simple programs into complex chains. The design principle has proven very effective and versatile and has stood the test of time

less is a command that helps you maneuver large amounts of output in the terminal

history is a command that lets you see all of your previous commands

Unix was the first OS to organize files into a tree/directory structure

Unix uses pipes (|) to send streams of data throughout the OS to various utilities

The terminal mirrors the behavior of dot matrix printers which was the common mode of output before monitors

Standard output, Standard Input, and Standard Error are the three places data streams travel. They are the abstraction of hardware input and output devices.

Unix was able to achieve what MULTICS could not because instead of accounting for and recovering from hardware errors, Unix just went into kernel panic and turned off the machine to protect the hardware.

Richard Stallman created GNU because he believed that open-source software was the only way democratic societies could remain free in a digital age.

Linux comes in many flavors, it can generally be divided into Debian and non-Debian versions.

Version of Linux include: Ubuntu, SUSE, CentOS, Fedora, RHEL, Kali, Arch, Mint

RedHat is a company that offers enterprise-level service support for Linux.

Ubuntu is a very popular consumer-facing desktop-based version of Linux

Package managers can be used to install software onto Linux distributions