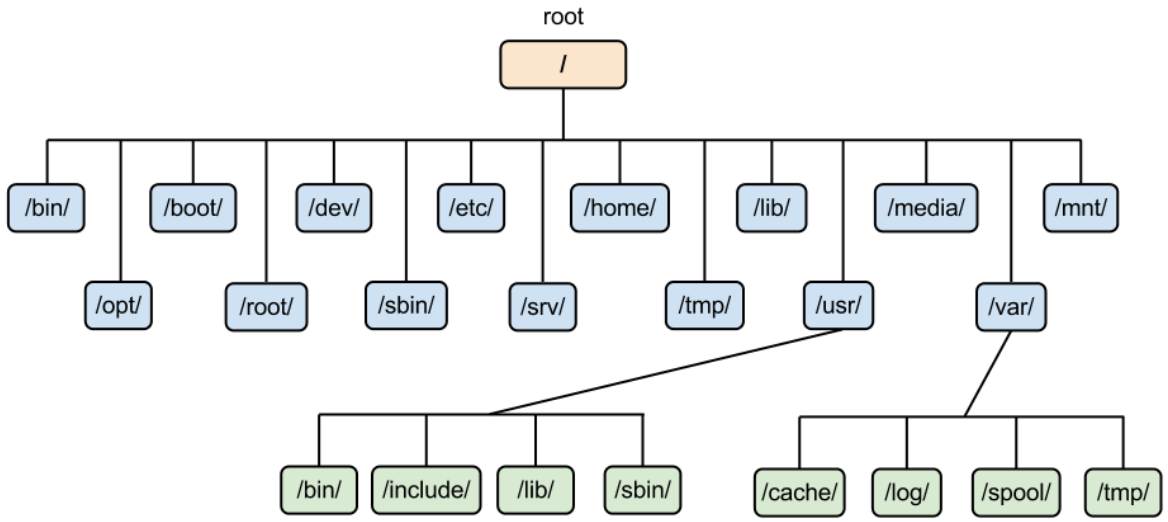
LINUX FILESYSTEM HIERARCHY

The Linux File Hierarchy Structure or the Filesystem Hierarchy Standard (FHS) defines the directory structure and directory contents in Unix-like operating systems. It is maintained by the Linux Foundation.

- In the FHS, all files and directories appear under the root directory /, even if they are stored on different physical or virtual devices.
- Some of these directories only exist on a particular system if certain subsystems, such as the X Window System, are installed.
- Most of these directories exist in all UNIX operating systems and are generally used in much the same way; however, the descriptions here are those used specifically for the FHS and are not considered authoritative for platforms other than Linux.



1. **/ (Root Directory):** This is the top-level directory of the entire filesystem hierarchy. All other directories and files in the system are located under this directory. Think of it as the base of a tree.
2. **/bin (Binaries):** Contains essential user command binaries (executables) that are necessary for basic system functionality, even in single-user mode. Examples include ls, cp, mv, cat, etc. These are available to all users.
3. **/sbin (System Binaries):** Similar to /bin, but contains essential system binaries that are primarily used for system administration tasks. These often require root privileges to execute. Examples include fsck, reboot, ifconfig, fdisk, etc.

4. **/etc (Editable Text Configuration):** This directory holds host-specific system-wide configuration files and shell scripts. It contains settings for various services and applications. Examples include passwd, fstab, network configuration files, etc.
5. **/dev (Devices):** Contains device files, which represent hardware devices and pseudo-devices on the system. These files are interfaces for interacting with hardware and virtual devices. Examples include tty (terminal devices), sda (the first SCSI disk), and null (a special file that discards all data).
6. **/proc (Process Information):** A virtual filesystem that provides an interface to kernel data structures. It contains information about the system's hardware and current state. Files here are dynamically generated and provide real-time information about system performance and configuration. Examples include cpuinfo (processor information), meminfo (memory usage), and directories like /proc/[pid] (process information).
7. **/sys (System Information):** Another virtual filesystem that presents information about the kernel's view of the system's hardware. It's used for configuration and interaction with kernel subsystems. Examples include directories like devices, class, and bus, providing detailed hardware information.
8. **/var (Variable Data):** Contains variable data files that change as the system runs. This includes log files, mail spools, and temporary files that are not cleared on reboot. Examples include subdirectories like log (system logs), mail (user mail spools), and cache (application cache data).
9. **/home (User Home Directories):** Contains the personal directories for each user on the system. Each user has their own subdirectory within /home (e.g., /home/username), where they can store personal files, documents, and settings.
10. **/root (Root User's Home Directory):** This is the dedicated home directory for the root user (the superuser). It's separate from /home to isolate the root user's files from regular user data.
11. **/boot (Boot Files):** Contains files necessary for the system to boot, including the Linux kernel (e.g., vmlinuz), the initial RAM disk (initrd), and boot loader files (e.g., GRUB configuration).
12. **/lib (Libraries):** Contains essential shared libraries and kernel modules required by the binaries in /bin and /sbin.
13. **/mnt (Mount Point for Temporary Filesystems):** Historically used as a temporary mount point for manually mounting removable media or other filesystems. While still present, /media is often preferred for automatic mounting of removable devices.

14. **/media (Mount Point for Removable Media):** This directory is used as a mount point for removable media like USB drives, CD-ROMs, and external hard drives when they are inserted.
15. **/opt (Optional Application Software Packages):** This directory is designated for the installation of optional application software packages that are not part of the core system.
16. **/tmp (Temporary Files):** Contains temporary files created by applications and services. These files are typically cleared upon system reboot.
17. **/usr (Unix System Resources):** This is a secondary hierarchy for read-only user data. It contains the majority of (multi-)user utilities and applications. It has its own subdirectories:

- /usr/bin: Non-essential command binaries for user programs.
- /usr/sbin: Non-essential system binaries for administrators.
- /usr/lib: Libraries for the binaries in /usr/bin and /usr/sbin.
- /usr/local: For locally installed software, usually compiled from source.
- /usr/share: Architecture-independent data, such as documentation, icons, and themes.
- /usr/src: Source code for the kernel and other programs.

18. **/srv (Service Data):** Contains site-specific data that is served by the system, such as data for web servers (e.g., /srv/www), FTP servers, etc.
19. **/run (Runtime Variable Data):** A temporary filesystem (tmpfs) that stores volatile runtime data, following FHS version 3.0. This directory replaces older locations like /var/run and /var/lock for many purposes.