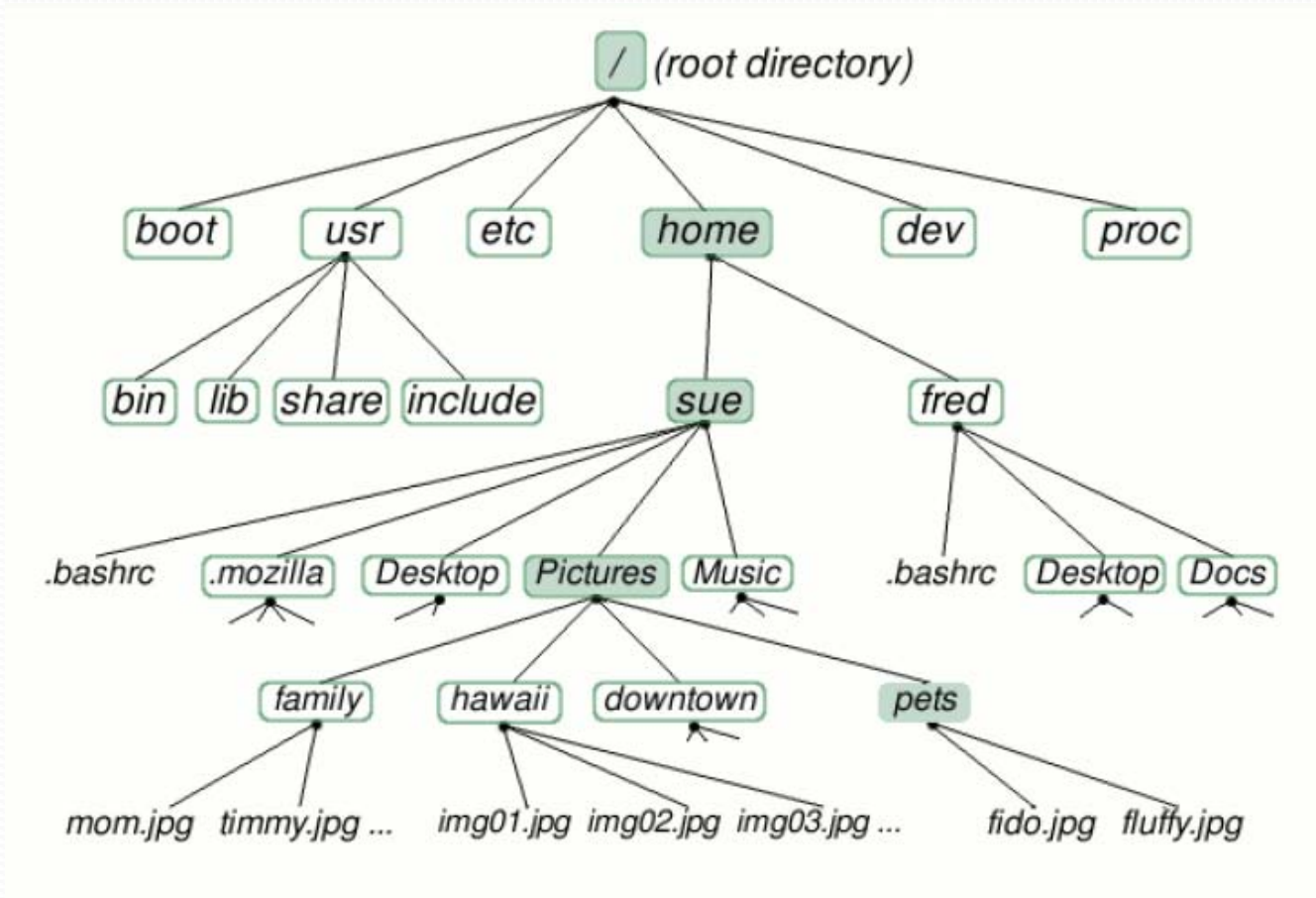


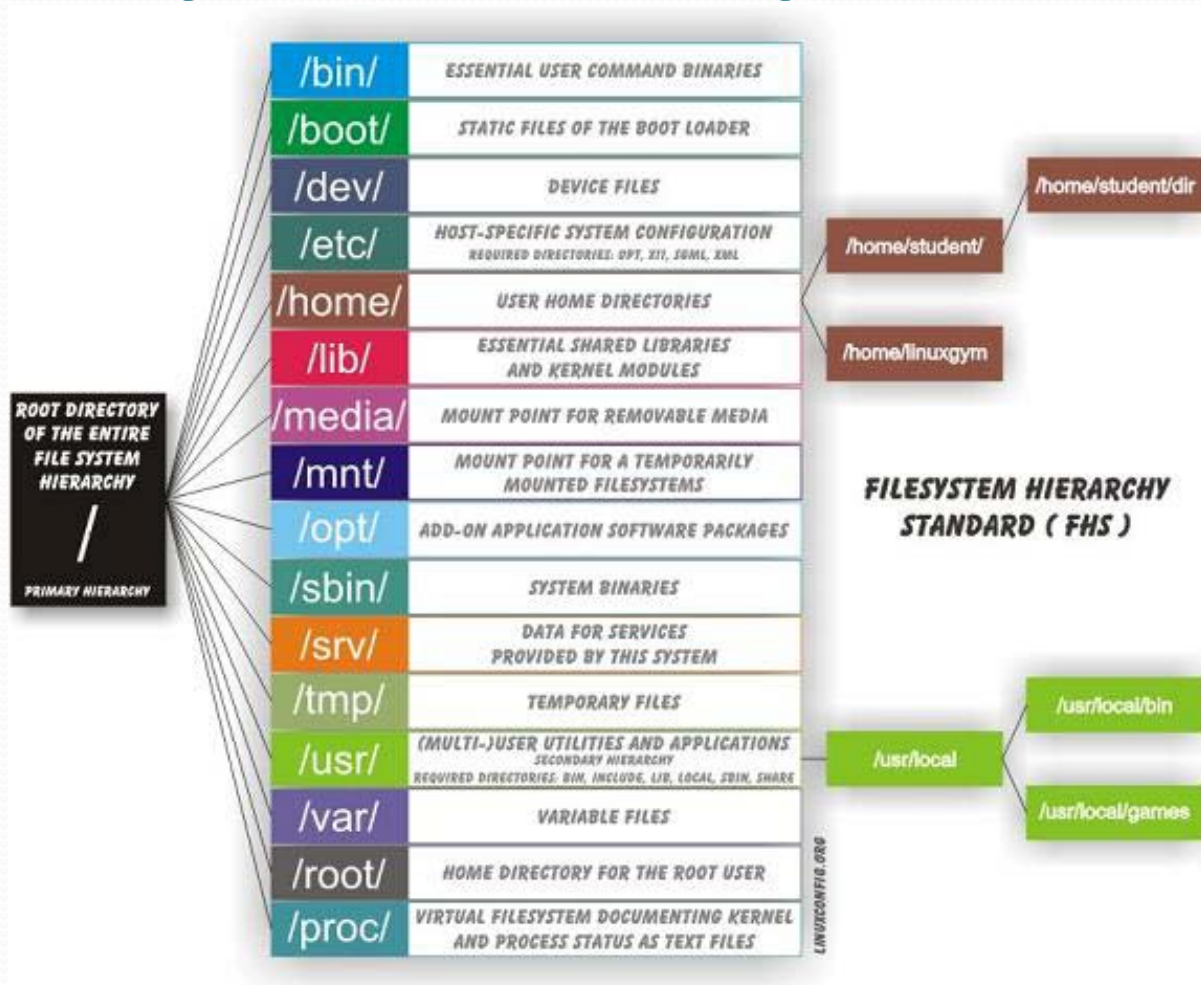
# Linux File System (Basics)

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# Linux Directory Structure



# Linux Filesystem Hierarchy Standard



# Linux Filesystem Hierarchy Standard

- **“/” Root**
  - The Directory Structure starts with the Root file system “/”
  - The partition where / (the root directory) will be located on a UNIX or UNIX-compatible system.
- **/boot**
  - The /boot directory contains the Boot loader files including Grub or Lilo, the Kernel, initrd and system.map config files
- **/sys**
  - This contains the Kernel, Firmware and system related files

# Linux Filesystem Hierarchy Standard

- **/sbin**
  - Contains the essential System Binaries and System Administration tools essential for the system operation and performance
- **/bin**
  - Contains the essential binaries for users and those utilities that are required in single user mode.
- **/lib**
  - Contains the library files for all the binaries held in the /sbin & /bin directories
- **/dev**
  - The /dev directory contains the essential system files and drivers.

# Linux Filesystem Hierarchy Standard

- **/etc**
  - The /etc/directory contain essential System configuration files including /etc/hosts, /etc/resolv.conf, nsswitch.conf, defaults and network configuration files.
- **/home**
  - All the user home directories are held under this directory with the exception of the root home directory which is kept under /root directory.
- **/media**
  - A generic mount point for removable media like CD-ROM, USB, Floppies etc
- **/mnt**
  - A generic mount point for temporary file systems.

# Linux Filesystem Hierarchy Standard

- **/opt**
  - A rarely used directory in Linux for Optional Software Packages.
- **/usr**
  - Contains user specific utilities and applications.
- **/var**
  - The /var directory is mostly mounted as a separate filesystem under the root where in all the variable content like logs, spool files for printers, crontab, at jobs, mail, running process, lock files etc.
- **/tmp**
  - A temporary file system which hold temporary files which are cleared at system reboot.

# Linux Filesystem Hierarchy Standard

- /tmp vs /var/tmp
  - /var/tmp directory holds files that are protected at system reboot.
  - But files resides in /tmp are cleared at system reboot

# Absolute and Relative Paths

- Absolute path
  - Exact path from root directory
  - ex. /var/www
- Relative path
  - Relative to the current path
  - ./ means current directory
  - ../ means parent directory
  - ~/ home directory
- Case sensitive

# cd command

- cd [directory-name]
  - ex.
    - /home/amir\$ cd /var/www
    - /var/www\$ cd ../
    - /var\$ cd ./www
    - /var/www\$ cd /root
    - /root\$ cd -
    - /var/www\$ cd
    - /home/amir\$
  - pwd
    - Print Working Directory

# ls command

- ls [options]... [pathnames]..
  - List information about files

Options	Means
-a , --all	Do not hide entries starting with .
-d, --directory	List directory entries instead of contents
-l	Long listing format
-s, --size	Print size of each file, in blocks
-k, --kilobytes	Use 1kbyte blocks
-R	Includes the contents of subdirectories

## ls command (continue...)

Permissions	Directories/ Hard Links	User	Group	Size	Date	Directory or File
drwxr-xr-x	4	amir	amir	4096	2008-12-26 01:22	Desktop
drwxr-xr-x	2	amir	amir	4096	2008-12-26 01:22	Documents
drwxr-xr-x	2	amir	amir	4096	2008-12-26 01:22	Download
drwxr-xr-x	2	amir	amir	4096	2008-12-26 01:22	Public

- **Permissions** - The permissions of the directory or file.
- **Directories/Hard link** - The amount of links or directories within the directory. The default amount of directories is going to always be 2 because of the . and .. directories.
- **Group** - The group assigned to the file or directory
- **Size** - Size of the file or directory.
- **Date** - Date of last modification.
- **Directory of file** - The name of the file or file.

## ls command (continue...)

- Here is list of most common colors:
  - Normal file : Normal
  - Directory: Blue
  - Symbolic link : Cyan
  - Archives or compressed : Red (.tar, .gz, .zip, .rpm)
  - Image files : Magenta (.jpg, .gif, .bmp, .png, .tif)
- Where is color of ls command defined?
  - /etc/DIR\_COLORS

# cp commands

- `cp [options]... Source Dest`
  - Copy one or more files to another location
- `cp [options]... Source... Directory`
  - Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.

Options	Means
-f, --force	remove existing destinations, never prompt
-R, --recursive	copy directories recursively
-v, --verbose	explain what is being done

# rm/rmdir commands

- `rm [options]... file...`

Options	Means
<code>-f, --force</code>	remove existing destinations, never prompt
<code>-R, --recursive</code>	remove directories recursively
<code>-v, --verbose</code>	explain what is being done

- `rmdir folder(s)...`
  - Remove directory, this command will only work if the folders are empty

# mv command

- `mv [options]... Source Dest`
  - `mv' moves each other given file into a file with the same name in that directory
- `mv [options]... Source... Directory`
  - it renames the first as the second

Options	Means
-f, --force	remove existing destinations, never prompt
-v, --verbose	explain what is being done

# Others

- `stat [directory/file]`
  - See more detailed info about a dir/file
- `du -sh [directory]`
  - See a Directory size
- `df -k`
  - See all partitions
- `fdisk -l`
  - See all storages