6. File System Hierarchy

Aim

File system hierarchy in a common Linux distribution, file and device permissions, study of system configuration files in /etc, familiarizing log files for system events, user activity, network events.

Procedure

1. /root – Root User Directory
   This is the home directory of the root user. The root user's home directory is located at /root. Which is noteworthy because it is, unlike the rest of the users' home directories, not located in /home.

2. /bin – essential utilities
   The directory contains the core system programs and important utilities. For example, commonly used and well known commands such as "cat" are located in "/bin". The reason for this is that if these utilities are not stored in this directory, there is no certainty that the system will have access to them if there isn't a file system mounted.

3. /etc – Configuration files
   The configuration files of BIOS and other similar files can be found in /etc. You can edit these configuration files in a text editor as you see fit. Basically, every single kind of configuration file is located in /etc, including but not limited to system configuration files.

4. /sbin – System Administration Programs
   The /sbin directory is similar to the /bin directory in that it contains essential programs. But it differs with the addition that it is intended to be used by the root user.

5. /usr – User Shared Read-Only Data
   The /usr directory is used to contain applications and files that are used and shared by and between users.

6. /var – Variable Data
   The /var directory is used like the /usr directory, only instead of being read-only, it is writable. This directory contains system logs and other various variable data.

7. /dev – Devices or Files
   Linux displays connected devices as files and the /dev directory contains these files. Though, the thing is, as you can see by the title, these are not "actual" files, they just appear as files. /dev is also where physical drives can be mounted.

8. /home – Home Folder Containment
   There's a home folder for every user on your system and each one is contained together in the /home directory. These folders are created using the name of your username.
   For example, your user name is jaise, so your home folder would be located in /home/jaise.
   These home folders contain your user data files and configuration files that are specific to the user, which is also the one of the only types of configuration files that are stored elsewhere besides /etc as we explained above. If one wants to modify other files on a system, they must become the root user, as each user only has write permissions for their own home folder.
9. /lib – Libraries for Programs

Each program or binary uses specific libraries to function and the /lib directory is where these libraries can be located.

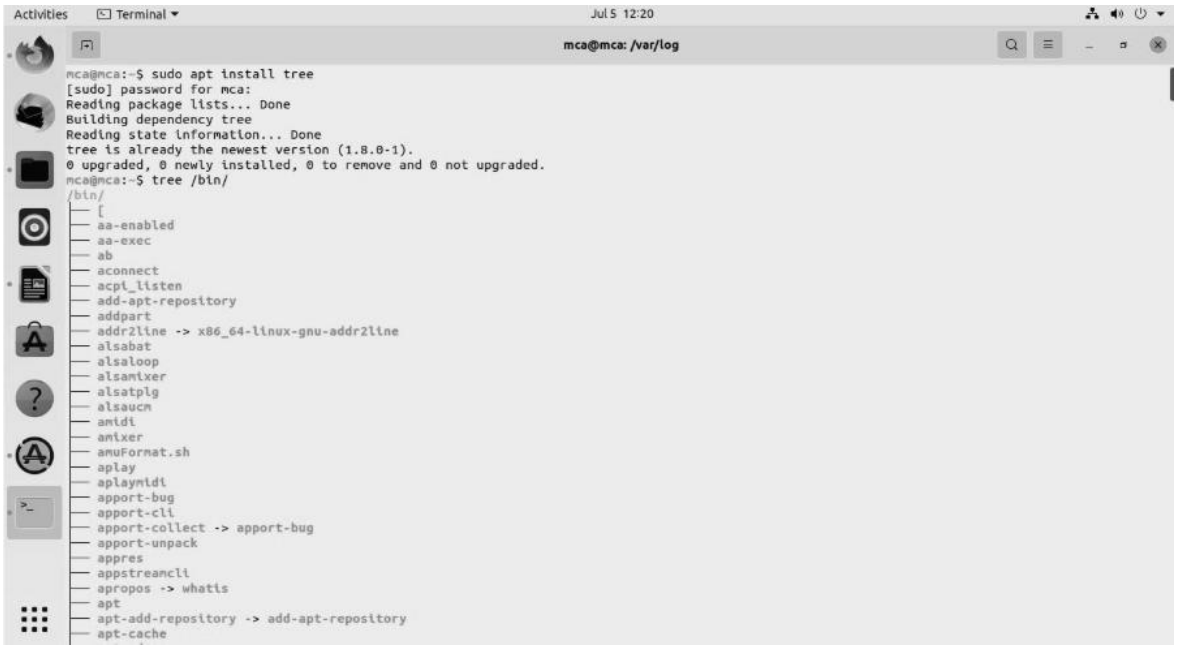
10. /mnt – Temporary Mounts
    This directory is used for mounting temporary file systems. If you are using a file system for a very specific purpose and for a relatively brief period of time, you would probably mount it in /mnt. Though you can mount it anywhere on the system if you so choose.

11. /opt – Optional Packages
    The /opt directory contains a set of subdirectories where optional software packages are located and managed by the package manager.

12. /proc – Kernel and Process Pseudo Files
    The /proc directory is another interesting case of a directory that contains these "fake" files, very similarly to the /dev directory that we discussed earlier in this list. These files are special files that are actually, and interestingly, system and process information.

13. /root – Root User Directory
    Every user has his own home directory. This is the home directory of the root user. The root user's home directory is located at /root.
    Which is noteworthy because it is, unlike the rest of the users' home directories, not located in /home. Like we've said above, in an earlier section of this article, /root is different from the root directory "/", and this fact should be committed to memory if possible.

Output




Activities
Terminal
Jul 5 12:25
mca@mca: /var/log
znew
1 directory, 1463 files
mca@mca:~$ tree /sbin/
/sbin/
├── a2disconf -> a2enmod
├── a2dismod -> a2enmod
├── a2dissite -> a2enmod
├── a2enconf -> a2enmod
├── a2enmod
├── a2ensite -> a2enmod
├── a2query
├── aa-remove-unknown
├── aa-status
├── aa-teardown
├── accessdb
├── acpid
├── addgnupghome
├── addgroup -> adduser
├── add-shell
├── adduser
├── agetty
├── alsa
├── alsabat-test
├── alsactl
├── alsa-info
├── anacron
├── apache2
├── apache2ctl
├── apachectl -> apache2ctl
├── apparmor_parser
├── apparmor_status -> aa-status
├── applygnupgdefaults
├── aptd
├── arpd
├── arptables -> /etc/alternatives/arptables
├── arptables-nft -> xtables-nft-multi
├── arptables-nft-restore -> xtables-nft-multi
└── arptables-nft-save -> xtables-nft-multi


Activities
Terminal
Jul 5 12:26
mca@mca: /var/log
├── xtables-monitor -> xtables-nft-multi
├── xtables-nft-multi
├── zic
└── zramctl
0 directories, 391 files
mca@mca:~$ tree /etc/
/etc/
├── acpi
│ ├── asus-keyboard-backlight.sh
│ ├── asus-wireless.sh
│ ├── events
│ │ ├── asus-keyboard-backlight-down
│ │ ├── asus-keyboard-backlight-up
│ │ ├── asus-wireless-off
│ │ ├── asus-wireless-on
│ │ ├── ibm-wireless
│ │ ├── lenovo-undock
│ │ ├── thinkpad-cmos
│ │ └── tosh-wireless
│ ├── ibm-wireless.sh
│ ├── tosh-wireless.sh
│ └── undock.sh
├── adduser.conf
├── alsa
│ └── conf.d
│ ├── 10-samplerate.conf -> /usr/share/alsa/alsa.conf.d/10-samplerate.conf
│ ├── 10-speexrate.conf -> /usr/share/alsa/alsa.conf.d/10-speexrate.conf
│ ├── 50-arcam-av-ctl.conf -> /usr/share/alsa/alsa.conf.d/50-arcam-av-ctl.conf
│ ├── 50-jack.conf -> /usr/share/alsa/alsa.conf.d/50-jack.conf
│ ├── 50-oss.conf -> /usr/share/alsa/alsa.conf.d/50-oss.conf
│ ├── 50-pulseaudio.conf -> /usr/share/alsa/alsa.conf.d/50-pulseaudio.conf
│ ├── 60-upmix.conf -> /usr/share/alsa/alsa.conf.d/60-upmix.conf
│ ├── 60-vdownmix.conf -> /usr/share/alsa/alsa.conf.d/60-vdownmix.conf
│ ├── 98-usb-stream.conf -> /usr/share/alsa/alsa.conf.d/98-usb-stream.conf
│ ├── 99-pulseaudio-default.conf.example
│ └── 99-pulse.conf -> /usr/share/alsa/alsa.conf.d/pulse.conf
├── alternatives
│ ├── arptables -> /usr/sbin/arptables-nft


Activities
Terminal
Jul 5 12:26
mca@mca: /var/log
│ ├── reqtimeout.conf -> ../mods-available/reqtimeout.conf
│ ├── reqtimeout.load -> ../mods-available/reqtimeout.load
│ ├── setenvif.conf -> ../mods-available/setenvif.conf
│ ├── setenvif.load -> ../mods-available/setenvif.load
│ ├── status.conf -> ../mods-available/status.conf
│ └── status.load -> ../mods-available/status.load
├── ports.conf
├── sites-available
│ ├── 000-default.conf
│ └── default-ssl.conf
└── sites-enabled
└── 000-default.conf -> ../sites-available/000-default.conf
├── apg.conf
├── apm
│ ├── resume.d
│ └── 20alsa -> ../scripts.d/alsa
│ ├── scripts.d
│ └── alsa
└── suspend.d
└── 80alsa -> ../scripts.d/alsa
├── apparmor
│ ├── init
│ └── network-interface-security
└── sbin.dhclient -> ../../../apparmor.d/sbin.dhclient
└── parser.conf
├── apparmor.d
│ ├── abstractions
│ ├── apache2-common
│ ├── apparmor_api
│ ├── change_profile
│ ├── examine
│ ├── find_mountpoint
│ ├── introspect
│ └── is_enabled
│ ├── aspell
│ ├── audio
│ ├── authentication
│ ├── base
│ ├── bash