Ex No:1

Aim: To Illustrate the structure of Linux Operting System

Objective: To understand the structure of Linux Operating System

Theory

What is Linux?
Linux is a community of open-source Unix like operating systems that are based on the Linux Kernel. It was initially released by **Linus Torvalds** on September 17, 1991. It is a free and open-source operating system and the source code can be modified and distributed to anyone commercially or non-commercial under the GNU General Public License. The biggest success of Linux is Android(operating system) it is based on the Linux kernel that is running on smartphones and tablets. Linux is generally packaged in a Linux distribution.
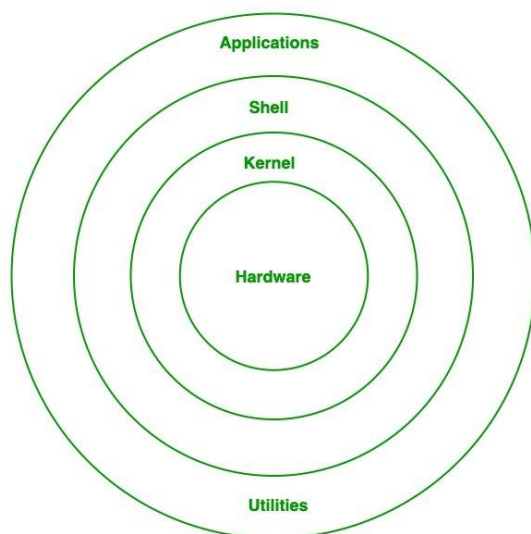
Linux Distribution
Linux distribution is an operating system that is made up of a collection of software based on Linux kern
some of the popular Linux distributions are:

- MX Linux
- Manjaro
- Linux Mint
- elementary
- Ubuntu
- Debian
- Solus
- Fedora
- openSUSE
- Deepin

Architecture of Linux

Linux architecture has the following components:

1. **Kernel:** Kernel is the core of the Linux based operating system. It virtualizes the common hardware resources of the computer to provide each process with its virtual resources. This makes the process seem as if it is the sole process running on the machine. The kernel is also responsible for preventing and mitigating conflicts between different processes. Different types of the kernel are:
   - Monolithic Kernel
   - Hybrid kernels
   - Exo kernels
   - Micro kernels
2. **System Library: Is**the special types of functions that are used to implement the functionality of the operating system.
3. **Shell:** It is an interface to the kernel which hides the complexity of the kernel's functions from the users. It takes commands from the user and executes the kernel's functions.
4. **Hardware Layer:** This layer consists all peripheral devices like RAM/ HDD/ CPU etc.
5. **System Utility:** It provides the functionalities of an operating system to the user.

Result

 Understanded the structure of Linux Operating System

Ex No:2

Aim: To Illustrate file and directory organization of Linux Operting System

Objective: To understand file and directory organization of Linux Operting System

Theory

Linux Directory Structure and File system

In the Linux file structure files are grouped according to purpose. Ex: commands, data files, documentation. All directories are grouped under the root entry "/".
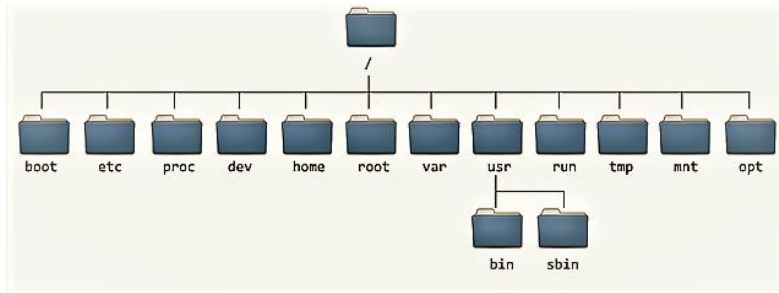
/root - The home directory for the root user
/bin – Binaries
The '/bin' directly contains the executable files of many basic shell commands like
ls, cp, cd etc. This directory contains user applications and a variety of other things for them, like their source codes, and pictures, docs, or config files
/dev – Device files
This directory only contains special files, including those relating to the devices. These are virtual files, not physically on the disk.
/etc – Configuration files
The /etc directory contains the core configuration files of the system, use primarily by the administrator and services, such as the password file and networking files.
/usr – User binaries and program data
in '/usr' go all the executable files, libraries, source of most of the system programs. For this reason, most of the files contained therein is readonly (for the normal user)
- '/usr/bin' contains basic user commands
- '/usr/sbin' contains additional commands for the administrator
- '/usr/lib' contains the system libraries
- '/usr/share' contains documentation or common to all libraries, for example '/usr/share/man' contains the text of the manpage
/home – User personal data
Home directory contains personal directories for the users. The home directory contains the user data and user-specific configuration files.
/lib – Shared libraries
Libraries are basically codes that can be used by the executable binaries. The /lib directory holds the libraries needed by the binaries in /bin and /sbin directories.Libraries needed by the binaries in the /usr/bin and /usr/sbin are located in the directory /usr/lib.
/sbin – System binaries
This is similar to the /bin directory. The only difference is that is contains the binaries that can only be run by root or a sudo user
/tmp – Temporary files
As the name suggests, this directory holds temporary files. Many applications use this directory to store temporary files. Even you can use directory to store temporary files.

/var – Variable data files
Var, short for variable, is where programs store runtime information like system logging, user tracking, caches, and other files that system programs create and manage.
/boot – Boot files
The '/boot' directory contains the files of the kernel and boot image.
/proc – Process and kernel files
The '/proc' directory contains the information about currently running processes and kernel parameters. The content of the proc directory is used by a number of tools to get runtime system information.
/opt – Optional software
Traditionally, the /opt directory is used for installing/storing the files of third-party applications that are not available from the distribution's repository.
/media – Mount point for removable media
When you connect a removable media such as USB disk, SD card or DVD, a directory is automatically created under the /media directory for them. You can access the content of the removable media from this directory.
/mnt – Mount directory
This is similar to the /media directory but instead of automatically mounting the removable media, mnt is used by system administrators to manually mount a filesystem.
/srv – Service data
The /srv directory contains data for services provided by the systemI think this much informa

Result
    Understanded file and directory organization of Linux Operating System