Name of Student			
Lab Experiment No.	2.2	**Roll No.**	
Date Of Perf.:		**Date Of Sub.:**	
Expt. Title	Study UNIX file system		
CO Mapping	LO1, LO2, LO5, LO6		

Aim: To study UNIX file system

Objectives of the Experiment:

To introduce File system hierarchy

A file system is a logical collection of files on a partition or disk. A partition is a container for information and can span an entire hard drive if desired.

Your hard drive can have various partitions which usually contain only one file system, such as one file system housing the **/file system** or another containing the **/home file system**.

One file system per partition allows for the logical maintenance and management of differing file systems.

Everything in Unix is considered to be a file, including physical devices such as DVD-ROMs, USB devices, and floppy drives.

Directory Structure

Unix uses a hierarchical file system structure, much like an upside-down tree, with root (/) at the base of the file system and all other directories spreading from there.

A Unix filesystem is a collection of files and directories that has the following properties −

- It has a root directory (/) that contains other files and directories.
- Each file or directory is uniquely identified by its name, the directory in which it resides, and a unique identifier, typically called an **inode**.

File inode numbers can be seen by specifying the **-i option** to **ls command**.

*The root directory has an **inode** number of ____ and the **lost+found** directory has an **inode** number of ___. Inode numbers _____and _____ are not used.*

- It is self-contained. There are no dependencies between one filesystem and another.

The directories have specific purposes and generally hold the same types of information for easily locating files.

Following are the directories that exist on the major versions of Unix.

S.No.	Directory & Description
1	/ This is the root directory which should contain only the directories needed at the top level of the file structure
2	**/bin** This is where the executable files are located. These files are available to all users
3	**/dev** These are device drivers
4	**/etc** Supervisor directory commands, configuration files, disk configuration files, valid user lists, groups, ethernet, hosts, where to send critical messages
5	**/lib** Contains shared library files and sometimes other kernel-related files
6	**/boot** Contains files for booting the system
7	**/home** Contains the home directory for users and other accounts
8	**/mnt** Used to mount other temporary file systems, such as **cdrom** and **floppy** for the **CD-ROM** drive and **floppy diskette drive**, respectively
9	**/proc** Contains all processes marked as a file by **process number** or other information that is dynamic to the system
10	**/tmp**

	Holds temporary files used between system boots
11	**/usr** Used for miscellaneous purposes, and can be used by many users. Includes administrative commands, shared files, library files, and others
12	**/var** Typically contains variable-length files such as log and print files and any other type of file that may contain a variable amount of data
13	**/sbin** Contains binary (executable) files, usually for system administration. For example, ***fdisk*** and ***ifconfig*** utlities
14	**/kernel** Contains kernel files

The df Command

The first way to manage your partition space is with the **df (disk free)** command. The command **df -k (disk free)** displays the **disk space usage in kilobytes**

The du Command

The **du (disk usage) command** enables you to specify directories to show disk space usage on a particular directory.

Mounting the File System

A file system must be mounted in order to be usable by the system.

Unmounting the File System

To unmount (remove) the file system from your system, use the **umount** command by identifying the mount point or device.

File management in Unix.

All data in Unix is organized into files. All files are organized into directories. These directories are organized into a tree-like structure called the filesystem.

In Unix, there are three basic types of files −

- **Ordinary Files** − An ordinary file is a file on the system that contains data, text, or program instructions. In this tutorial, you look at working with ordinary files.
- **Directories** − Directories store both special and ordinary files. For users familiar with Windows or Mac OS, Unix directories are equivalent to folders.
- **Special Files** − Some special files provide access to hardware such as hard drives, CD-ROM drives, modems, and Ethernet adapters. Other special files are similar to aliases or shortcuts and enable you to access a single file using different names.

ls Command

To list the files and directories stored in the current directory

Hidden Files

An invisible file is one, the first character of which is the dot or the period character (.). Unix programs (including the shell) use most of these files to store configuration information.

Some common examples of the hidden files include the files −

- **.profile** − The Bourne shell (sh) initialization script
- **.kshrc** − The Korn shell (ksh) initialization script
- **.cshrc** − The C shell (csh) initialization script
- **.rhosts** − The remote shell configuration file

ls –a to list hidden files