File System

CST – 221 : Operating Systems Concepts

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CST – 221 File System

**Linux File System Table**

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| **Directory** | **Purpose** |
| / | This directory is the root. It is the default directory that houses all other directories, which is also known as the top level directory of a system.  http://www.linfo.org/root.html |
| /bin | The bin is a subdirectory of the root that typically contains executable programs, this is programs that are ready to run. These programs are typically needed to boot and repair the system. Bin stands for binaries.  http://www.linfo.org/bin.html |
| /dev | The dev is where special files or device files are held. Some examples are the hda1 and hda2 which represent partitions within the system. Essentially all system components are abstracted into either files or directories and held here. Dev stands for devices.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/dev.html |
| /etc | The etc is the essential ‘nerve center’ of the system where all system related configuration files are contained. These files are used to control program operations. They are typically static and cannot be listed as executable binary.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/etc.html |
| /lib | The lib holds kernel modules and library images like the C programming code library. These make use of binaries in /bin and /sbin to boot the system and run commands in the root filesystem. A windows equivalent of would be a dynamically linked library, DLL.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/lib.html |
| /boot | The boot directory contains the files needed for the boot process. These files are used to start the kernel process. This directory does not contain configuration files needed for boot time, however.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/boot.html |
| /home | The home, also known as login directory, is a subdirectory of the root that is made up of a user’s home directories. This serves as a storage location for a user’s personal files, directories and programs. Each user has their own /home.  http://www.linfo.org/home.html |
| /mnt | The mnt is a subdirectory of the root which is used as a temporary location for the purpose of mounting storage devices. These could be CDROMs, floppy disks, USB drives, etc. Mnt stands for mount. http://www.linfo.org/mnt.html |
| /proc | This directory is a virtual filesystem which is like a pseudo-file system for information processing. Instead of holding ‘real’ files it holds runtime system information like what devices are mounted, the hardware configuration, system memory, etc. It is commonly referred to as an information center for the kernel.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/proc.html |
| /tmp | This directory contains files that are only ever required temporarily. A program might create a lock file for temporary storage of information and, as such, they are important for currently running processes.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/tmp.html |
| /usr | One of the largest subdirectories (in terms of space consumption) as it is the standard first tier directory under root. Most standard programs along with manuals and most libraries are kept here.  http://www.linfo.org/usr\_bin.html |
| /var | The var is a subdirectory of the root which holds the files that the system writes to during its operations. Var is unique to each computer and it not shared on a network with other computers.  http://www.linfo.org/var.html |
| /sbin | The sbin exists within root and within /usr. The /usr/sbin is a directory that holds non-vital system utilities that are utilized after booting has been completed. The /sbin contains vital system utilities that are used before the /user directory has been mounted.  http://www.linfo.org/usr\_sbin.html |
| /kernel | I had a difficult time finding more about /kernel. Askubuntu.com tells me that The kernel directory is located within /lib/modules/$(uname -r)/build where the uname -r defines the installed kernel details. I also read that the /kernel is in the /boot directory. But then <https://www.tldp.org/LDP/tlk/sources/sources.html> tells me that the /kernel contains the main kernel code. |

**Ubuntu File System Table**

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| **Directory** | **Purpose** |
| /bin, /boot, /dev, /etc, /home, /lib, /mnt, /proc, / (/root), /sbin, /tmp, /usr, /var | See previous table above. |
| /cdrom | /cdrom is the mount point directory for any CDROM. This mount point is prepared to read CDROM data using the ISO9660 filesystem standard.  https://docs.oracle.com/cd/E10926\_01/doc/owb.101/b12150/appbcdmount.htm |
| /lib32, /lib64, /libx32 | Alternative directories for /lib. These contain variants of existing /lib binaries which is needed to support 32-bit or 64-bit systems which need libraries of the same names but different formats.  https://unix.stackexchange.com/questions/74646/difference-between-lib-lib32-lib64-libx32-and-libexec |
| /media | Media is an alternative directory to house mount points for removable media like floppy disks, cdroms and zip disks.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/media.html |
| /opt | The opt directory is for additional software and add-on packages that are not included with default installations. This could be extra fonts, clipart, database files, etc.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/opt.html |
| /run | The run directory contains a record of system information regarding the system since its boot time. This used to be a part of /var/run and /var/run will continue to exist for backwards compatibility. Files in /run must be cleared at the beginning of the boot process.  https://refspecs.linuxfoundation.org/FHS\_3.0/fhs/ch03s15.html |
| /snap | Snap is a mounting point for files within the /var/lib/snapd directory to be mounted while running.  https://snapcraft.io/docs/system-snap-directory |
| /srv | The srv directory holds site specific data which is served by the system. Its main purpose is to provide a location of data files for a particular service. This provides a convenience so services that need only a single tree can place their data.  https://www.tldp.org/LDP/Linux-Filesystem-Hierarchy/html/srv.html |
| /sys | This is a directory for exporting kernel objects. It is essentially a pseudo filesystem that houses kernel data structures. It will provide information on devices, kernel modules, filesystems and other kernel components.  https://man7.org/linux/man-pages/man5/sysfs.5.html |

**Flowchart**

**A close up of a map

Description automatically generated**