1.  /bin

The /bin directory is for User Binaries.  It is where many of the most common Linux commands are stored.  Specifically, this is where the single user mode binaries are stored.

2.  /sbin

This directory is almost exactly like the /bin directory, with one exception.  The binaries here are primarily used by Administrators for system maintenance.

3.  /etc

The configuration files for your programs and operating system are stored in /etc.

4.  /dev

This is where all of the device files are located.  For example, this is the directory that you would call to in order to mount a drive with a command like: mount /dev/sda2 /mnt/backup

5.  /proc

The /proc directory is one of the most interesting in the whole Linux File System.  It is actually its own virtual file system with a massive amount of text information about system processes.

6.  /var

This is where all of the variable files are stored.  Most commonly, this is where log files and web server files are stored.

7.  /tmp

These are simply temporary files.

8.  /usr

Programs installed by single users get stored here.

9.  /home

This is where all of the user home directories are except for the root user’s home directory which is /root.

10.  /boot

The files that make up the boot loader go in /boot.  Everything from boot loader menus, to the actual kernel files are stored here.

11.  /lib

All of the binary files that are located in /bin and /sbin are supported by the library files located in /lib.

12.  /opt

/opt is short for “optional”.  It is the directory where individual vendors can install optional add-on software for the operating system.

13.  /mnt

The /mnt directory is the mount point that system administrators can use to mount file systems temporarily.

14.  /media

The /media directory serves the same purpose as the /mnt directory except it is specifically for removable devices and can be used by non administrators.

15.  /srv

The /srv directory contains server specific service files.

**1. / – Root**

* Every single file and directory starts from the root directory.
* Only root user has write privilege under this directory.
* Please note that /root is root user’s home directory, which is not same as /.

**2. /bin – User Binaries**

* Contains binary executables.
* Common linux commands you need to use in single-user modes are located under this directory.
* Commands used by all the users of the system are located here.
* For example: ps, ls, ping, grep, cp.

**3. /sbin – System Binaries**

* Just like /bin, /sbin also contains binary executables.
* But, the linux commands located under this directory are used typically by system aministrator, for system maintenance purpose.
* For example: iptables, reboot, fdisk, ifconfig, swapon

**4. /etc – Configuration Files**

* Contains configuration files required by all programs.
* This also contains startup and shutdown shell scripts used to start/stop individual programs.
* For example: /etc/resolv.conf, /etc/logrotate.conf

**5. /dev – Device Files**

* Contains device files.
* These include terminal devices, usb, or any device attached to the system.
* For example: /dev/tty1, /dev/usbmon0

**6. /proc – Process Information**

* Contains information about system process.
* This is a pseudo filesystem contains information about running process. For example: /proc/{pid} directory contains information about the process with that particular pid.
* This is a virtual filesystem with text information about system resources. For example: /proc/uptime

**7. /var – Variable Files**

* var stands for variable files.
* Content of the files that are expected to grow can be found under this directory.
* This includes — system log files (/var/log); packages and database files (/var/lib); emails (/var/mail); print queues (/var/spool); lock files (/var/lock); temp files needed across reboots (/var/tmp);

**8. /tmp – Temporary Files**

* Directory that contains temporary files created by system and users.
* Files under this directory are deleted when system is rebooted.

**9. /usr – User Programs**

* Contains binaries, libraries, documentation, and source-code for second level programs.
* /usr/bin contains binary files for user programs. If you can’t find a user binary under /bin, look under /usr/bin. For example: at, awk, cc, less, scp
* /usr/sbin contains binary files for system administrators. If you can’t find a system binary under /sbin, look under /usr/sbin. For example: atd, cron, sshd, useradd, userdel
* /usr/lib contains libraries for /usr/bin and /usr/sbin
* /usr/local contains users programs that you install from source. For example, when you install apache from source, it goes under /usr/local/apache2

**10. /home – Home Directories**

* Home directories for all users to store their personal files.
* For example: /home/john, /home/nikita

**11. /boot – Boot Loader Files**

* Contains boot loader related files.
* Kernel initrd, vmlinux, grub files are located under /boot
* For example: initrd.img-2.6.32-24-generic, vmlinuz-2.6.32-24-generic

**12. /lib – System Libraries**

* Contains library files that supports the binaries located under /bin and /sbin
* Library filenames are either ld\* or lib\*.so.\*
* For example: ld-2.11.1.so, libncurses.so.5.7

**13. /opt – Optional add-on Applications**

* opt stands for optional.
* Contains add-on applications from individual vendors.
* add-on applications should be installed under either /opt/ or /opt/ sub-directory.

**14. /mnt – Mount Directory**

* Temporary mount directory where sysadmins can mount filesystems.

**15. /media – Removable Media Devices**

* Temporary mount directory for removable devices.
* For examples, /media/cdrom for CD-ROM; /media/floppy for floppy drives; /media/cdrecorder for CD writer

**16. /srv – Service Data**

* srv stands for service.
* Contains server specific services related data.
* For example, /srv/cvs contains CVS related data.

For starters, there is only a single hierarchal directory structure.

Everything starts from the root directory, represented by '/', and then

expands into sub-directories. Where DOS/Windows had various partitions and

then directories under those partitions, Linux places all the partitions

under the root directory by 'mounting' them under specific directories.

Closest to root under Windows would be c:\.

Under Windows, the various partitions are detected at boot and assigned a

drive letter. Under Linux, unless you mount a partition or a device, the

system does not know of the existence of that partition or device. This

might not seem to be the easiest way to provide access to your partitions

or devices but it offers great flexibility.

This kind of layout, known as the unified filesystem, does offer several

advantages over the approach that Windows uses. Let's take the example of

the /usr directory. This directory off the root directory contains most of

the system executables. With the Linux filesystem, you can choose to mount

it off another partition or even off another machine over the network. The

underlying system will not know the difference because /usr appears to be

a local directory that is part of the local directory structure! How many

times have you wished to move around executables and data under Windows,

only to run into registry and system errors? Try moving c:\windows\system

to another partition or drive.

Another point likely to confuse newbies is the use of the frontslash '/'

instead of the backslash '\' as in DOS/Windows. So c:\windows\system would

be /c/windows/system. Well, Linux is not going against convention here.

Unix has been around a lot longer than Windows and was the standard a lot

before Windows was. Rather, DOS took the different path, using '/' for

command-line options and '\' as the directory separator.

To liven up matters even more, Linux also chooses to be case sensitive.

What this means that the case, whether in capitals or not, of the

characters becomes very important. So this is not the same as THIS or ThIs

for that matter. This one feature probably causes the most problems for

newbies.

We now move on to the layout or the directory structure of the Linux

filesystem. Given below is the result of a 'ls -p' in the root directory.

bin/ dev/ home/ lost+found/ proc/ sbin/ usr/

boot/ etc/ lib/ mnt/ root/

/sbin - This directory contains all the binaries that are essential to the

working of the system. These include system administration as well as

maintenance and hardware configuration programs. Find lilo, fdisk, init,

ifconfig etc here. These are the essential programs that are required by

all the users. Another directory that contains system binaries is /usr/sbin.

This directory contains other binaries of use to the system administrator.

This is where you will find the network daemons for your system along with

other binaries that only the system administrator has access to, but which are

not required for system maintenance, repair etc.

/bin - In contrast to /sbin, the bin directory contains several useful

commands that are used by both the system administrator as well as

non-privileged users. This directory usually contains the shells like

bash, csh etc. as well as much used commands like cp, mv, rm, cat, ls.

There also is /usr/bin, which contains other user binaries. These binaries

on the other hand are not essential for the user. The binaries in /bin

however, a user cannot do without.

/boot - This directory contains the system.map file as well as the Linux

kernel. Lilo places the boot sector backups in this directory.

/dev - This is a very interesting directory that highlights one important

characteristic of the Linux filesystem - everything is a file or a

directory. Look through this directory and you should see hda1, hda2 etc,

which represent the various partitions on the first master drive of the

system. /dev/cdrom and /dev/fd0 represent your CDROM drive and your floppy

drive. This may seem strange but it will make sense if you compare the

characteristics of files to that of your hardware. Both can be read from

and written to. Take /dev/dsp, for instance. This file represents your

speaker device. So any data written to this file will be re-directed to

your speaker. Try 'cat /etc/lilo.conf > /dev/dsp' and you should hear some

sound on the speaker. That's the sound of your lilo.conf file! Similarly,

sending data to and reading from /dev/ttyS0 ( COM 1 ) will allow you to

communicate with a device attached there - your modem.

/etc - This directory contains all the configuration files for your system.

Your lilo.conf file lies in this directory as does hosts, resolv.conf and

fstab. Under this directory will be X11 sub-directory which contains the

configuration files for X. More importantly, the /etc/rc.d directory

contains the system startup scripts. This is a good directory to backup

often. It will definitely save you a lot of re-configuration later if you

re-install or lose your current installation.

/home - Linux is a multi-user environment so each user is also assigned a

specific directory which is accessible only to them and the system

administrator. These are the user home directories, which can be found

under /home/username. This directory also contains the user specific

settings for programs like IRC, X etc.

/lib - This contains all the shared libraries that are required by system

programs. Windows equivalent to a shared library would be a DLL file.

/lost+found - Linux should always go through a proper shutdown. Sometimes

your system might crash or a power failure might take the machine down.

Either way, at the next boot, a lengthy filesystem check using fsck will

be done. Fsck will go through the system and try to recover any corrupt

files that it finds. The result of this recovery operation will be placed

in this directory. The files recovered are not likely to be complete or

make much sense but there always is a chance that something worthwhile is

recovered.

/mnt - This is a generic mount point under which you mount your filesystems

or devices. Mounting is the process by which you make a filesystem

available to the system. After mounting your files will be accessible

under the mount-point. This directory usually contains mount points or

sub-directories where you mount your floppy and your CD. You can also

create additional mount-points here if you want. There is no limitation to

creating a mount-point anywhere on your system but convention says that

you do not litter your file system with mount-points.

/opt - This directory contains all the software and add-on packages that

are not part of the default installation. Generally you will find KDE and

StarOffice here. Again, this directory is not used very often as it's

mostly a standard in Unix installations.

/proc - This is a special directory on your system. We have a more detailed

article on this one [here](http://www.freeos.com/articles/2879/).

/root - We talked about user home directories earlier and well this one is

the home directory of the user root. This is not to be confused with

/tmp - This directory contains mostly files that are required temporarily.

Many programs use this to create lock files and for temporary storage of

data. On some systems, this directory is cleared out at boot or at

shutdown.

/usr - This is one of the most important directories in the system as it

contains all the user binaries. X and its supporting libraries can be

found here. User programs like telnet, ftp etc are also placed here.

/usr/doc contains useful system documentation. /usr/src/linux contains the

source code for the Linux kernel.

/var - This directory contains spooling data like mail and also the output

from the printer daemon. The system logs are also kept here in

/var/log/messages. You will also find the database for BIND in /var/named

and for NIS in /var/yp.

This was a short and basic look at the Linux filesystem. You do need to

have at least this basic knowledge of the layout of the filesystem to

fully utilize its potential. One good place to read about the filesystem

is this detailed document at [www.pathname.com/fhs/1.2/fsstnd-toc.html](http://www.pathname.com/fhs/1.2/fsstnd-toc.html) that

specifies the standard structure of the Linux filesystem.