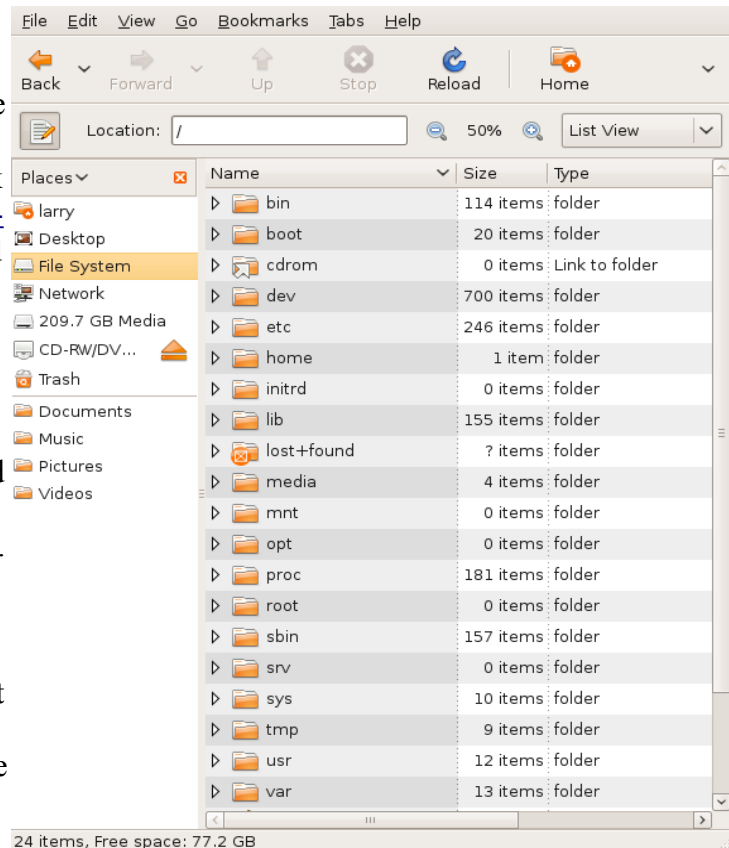


The term “filesystem” is used ambiguously to refer to the physical format of a partition (ext3, NTFS, Solaris, etc) **or** the logical structure of items stored in one or more such physical units. Our focus will be the latter, but typing `sfdisk -T` in a terminal will produce a partial list of known formats. There are good articles on these at http://en.wikipedia.org/wiki/File_systems and http://en.wikipedia.org/wiki/List_of_file_systems for the readers convenience.

Linux considers the logical filesystem to be a single structure of all the devices, files, and directories both real and virtual available to the computer. Quite a mouthful. I recently recommended that SLUG members take a look at <http://www.tuxradar.com/content/take-linux-filesystem-tour> which explains a lot of this and some of the ramifications.

There is a long history of how this structure evolved **and** how standards evolved for it. Note that Windows similarly has a logical structure that went through some evolution and defacto standardization but has not achieved the security and sophistication of *nix systems.

The Nautilus file browser at right shows the structure of directories at the base of the file system. We the structure the article talks about and a few more components. But using a live Nautilus to explore lets us see even more of the structure.



```
File Edit View Terminal Tabs Help
drwxr-xr-x  2 root root  4096 2009-03-14 02:45 bin/
drwxr-xr-x  3 root root  4096 2009-02-10 00:40 boot/
lrwxrwxrwx  1 root root    11 2007-11-04 22:34 cdrom -> media/cdrom/
drwxr-xr-x 14 root root 14120 2009-04-05 04:16 dev/
drwxr-xr-x 139 root root 12288 2009-04-05 04:17 etc/
drwxr-xr-x  3 root root  4096 2007-11-04 22:44 home/
drwxr-xr-x  2 root root  4096 2007-10-15 16:17 initrd/
lrwxrwxrwx  1 root root    33 2009-02-09 23:59 initrd.img -> boot/initrd.i
lrwxrwxrwx  1 root root    33 2009-01-13 18:55 initrd.img.old -> boot/init
drwxr-xr-x 17 root root 12288 2009-02-23 00:51 lib/
drwx----- 2 root root 16384 2007-11-04 22:34 lost+found/
drwxr-xr-x  4 root root  4096 2009-04-05 04:16 media/
drwxr-xr-x  2 root root  4096 2007-10-08 03:47 mnt/
drwxr-xr-x  2 root root  4096 2007-10-15 16:17 opt/
dr-xr-xr-x 140 root root    0 2009-04-04 21:16 proc/
drwxr-xr-x 13 root root  4096 2009-02-10 00:10 root/
drwxr-xr-x  2 root root  4096 2009-04-01 22:45 sbin/
drwxr-xr-x  2 root root  4096 2007-10-15 16:17 srv/
drwxr-xr-x 12 root root    0 2009-04-04 21:16 sys/
drwxrwxrwt 14 root root  4096 2009-04-07 00:41 /
drwxr-xr-x 14 root root  4096 2009-02-09 23:46 usr/
drwxr-xr-x 15 root root  4096 2007-10-15 16:31 var/
lrwxrwxrwx  1 root root    30 2009-02-09 23:59 vmlinuz -> boot/vmlinuz-2.6
lrwxrwxrwx  1 root root    30 2009-01-13 18:55 vmlinuz.old -> boot/vmlinuz
larry@lshooter:~$
```

However, using a terminal window and displaying more detailed information shows some details regarding the security of the system. In fact, you can also make Nautilus display most of this information and it would be easier to explore with but only if the settings to display the additional info were made into the default and you probably would not want that.

Note the ownership and permissions for items in the filesystem. Most items are owned by the root (or super) user and can only be changed by that user. This is most important since most systems do not allow anyone to log in as root.