CST 334: Operating Systems

Dr. Glenn Bruns

# Lab: Files and Directories

1. Let’s look at inodes.
   1. Login to mlc104 and go to one of your own directories. Type ‘ls -i’. Explain the output.
   2. Create a hard link to one of your files.
   3. Do ‘ls -i’ again and look at the info provided for the new hard link.
   4. Delete the hard link you created.
2. Let’s play with the ‘stat’ command.
   1. Go to one of your own directories. Run the ‘stat’ command on some of the files in the directory. For example:

$ stat temp.txt

* 1. Create a hard link to one of your own files. Run ‘stat’ on the newly-created file and on the original file. Compare the output of the two ‘stat’ calls.
  2. Try using stat on different kinds of files, such as a directory and a binary.
  3. Try to understand some of the different parts of the output of ‘stat’. Use ‘man stat’ and ‘stat --help’.

1. Read the man pages for ‘mount’ and ‘mkfs’. Then, figure out the partition associated with /home/CLASSES.
2. What file system type is associated with /home/CLASSES?
3. Recreate the commands used to create a file system on a partition and then to mount that partition at /home/CLASSES. Don’t forget to specify the file system type.
4. In Linux, how many file system trees can you have?
5. Run command ‘df’ and explain the output. Read the man page.
6. If you still have time, start work on your own ‘stat’ command.
   1. There is also system call named ‘stat’. However, if you call ‘man stat’ you will get the man page for the user command. Figure out how to get the man page for the system call ‘stat’. (Hint: use ‘man man’ to figure it out.)
   2. Write a small C program called ‘mystat’. It should call the ‘stat’ system call and produce as output some of the same information as ‘stat’ user command. Have your first version do something very simple.
   3. See Question 1 in the Homework section of OSTEP chapter 39 for more details.
7. If you still have time, do some web research to see how to create a disk partition in Linux.