

Name: _____

Career Account ID (email): _____

Homework 5

Due: November 24th (Sunday), 11:59 pm on Blackboard

This homework requires you to think about files and directories in a Unix file system (e.g., Linux). You may need to look up details on the web.

A user with user ID 100 and group ID 200 enters the commands below. For purposes of this homework, we will assume the time when a user starts is 4298400 (decimal), and that each command takes 1 second to enter. Thus, line 2 is executed at time 4298401 and so on.

Line number	Command
1	<code>mkdir a</code>
2	<code>mkdir b</code>
3	<code>mkdir c</code>
4	<code>touch a/x</code>
5	<code>ln a/x b/y</code>
6	<code>echo hi there > a/x</code>
7	<code>cp a/x c/z</code>
8	<code>mv b/y ./g</code>
9	<code>echo bye > g</code>

1. You should already understand a Unix umask. If you do not, look up the meaning. Suppose the user umask is 022. What will the permissions be for directory `./a` after line 1? Why?
2. Suppose the inode number for `./a` (line 1) is 19375. What will the inode contain after line 1 has been executed?
3. Does inode 19375 change after line 2 has been executed? If so, what changes?

4. Suppose the inode for a/x created in line 4 is 20030. What do the pointers in the inode contain after line 4?
5. Do the pointers in inode 20030 change after line 5?
6. After line 5, what inode numbers will the directory entries for a/x and b/y contain? Why?
7. Do the pointers in inode 20030 change after line 6?
8. When line 7 is executed, will any value in inode 20030 change? If so what? If not, why not?
9. When line 8 is executed, does the "modified" time stamp in the inode corresponding to b/y change? Why or why not?
10. After line 9, what are the contents of a/x and c/z? Why?