

**Section 10 Lab**  
**LPIC-1, Exam 1 (101-500)**  
By Christine Bresnahan

**Recommended Linux Distributions for this exercise:**

- CentOS version 7
- Ubuntu Desktop 18.04LTS

**Note:** For a successful lab session, it is assumed you are using the recommended Linux distribution(s) and the recommended version, and that your Linux systems are booted. In addition, it is assumed that you can log into the system as a standard user as well as either the root account or a user with super user privileges. Also, you should have successfully completed the prior sections' labs and sessions & viewed this section's videos.

Follow these actions to explore concepts and commands covered in this section (but please feel free to explore as much as you want. And don't forget that you can get help on the usage of these commands through the man pages. Type in **man** and follow it with the utility name, then press Enter to view information on the utility):

1. Log into either your Ubuntu or CentOS distro tty2 terminal, using the username and password you created when you installed the system.
2. If you are logged into the CentOS distro, and do not have access to use the **sudo** command for super user privileges, log into the root account, by typing **su -** and pressing Enter, then enter the root account's password, you created when you installed the system. You will need to NOT enter **sudo** whenever it is listed for a step. **WARNING:** Be careful in the root account!
3. Create a file by typing **touch lab10.txt** and pressing enter.
4. View the long listing for the file by typing **ls -l lab10.txt** and pressing enter. Record the file's owner and group members.
5. Find a group on the system that is different than the **lab10.txt** file's group, by typing **less /etc/group** and pressing Enter. When you find a group, press **q** to quit the **less** pager. (**Hint:** A typical group on most distributions is: **mail**).
6. Modify the file's group membership by typing **sudo chgrp new-group-name lab10.txt** and pressing Enter. (Don't actually type **new-group-name**, but instead substitute the group name you selected from the previous step.)
7. See if the group membership of the file changed by typing **ls -l lab10.txt** and pressing Enter. If it did not, go back to the previous step and fix any mistakes you may have made.
8. Find a username on the system that is different than the **lab10.txt** file's owner (username), by typing **less /etc/passwd** and pressing Enter. When you find new owner (username), press **q** to quit the **less** pager. (**Hint:** A typical username on most distributions is: **games**).
9. Modify the file's owner by typing **sudo chown new-owner-name lab10.txt** and pressing Enter. (Don't actually type **new-owner-name**, but instead substitute the username you selected from the previous step.)
10. See if the owner of the file changed by typing **ls -l lab10.txt** and pressing Enter. If it did not, go back to the previous step and fix any mistakes you may have made.
11. Change back the owner and the group membership of the **lab10.txt** to its original owner and group membership, by typing **sudo chown old-owner-name:old-group-name lab10.txt** and pressing Enter. (Don't actually type **old-owner-name:old-group-name**, but instead substitute the username and the group name you recorded in step #4, and separate them with a colon(:).)
12. See if the owner and group membership of the file changed by typing **ls -l lab10.txt** and pressing Enter. If it did not, go back to the previous step and fix any mistakes you may have made.
13. Change the file's World permissions using symbolic mode by typing **chmod o+rwx lab10.txt** and pressing Enter.
14. See if the file's World permission are set to rwx, by typing **ls -l lab10.txt** and pressing Enter.
15. Change all the file's permissions using octal mode, by typing **chmod 777 lab10.txt** and pressing Enter  
(**Note:** This won't change the World permissions which are already set to 7 in step #13.)

16. See if the file's permissions are set to `rwxrwxrwx`, by typing `ls -l lab10.txt` and pressing Enter.
17. Modify the file's permissions again, by typing `chmod 664 lab10.txt` and pressing Enter.
18. See if the file's permissions are now set to `rw-rw-r--`, by typing `ls -l lab10.txt` and pressing Enter.
19. Typically there is a special permission set on the `/tmp` directory. View it by typing `ls -ld /tmp` and pressing Enter. Which special permission is it (SUID, SGID, or stick bit)?
20. Typically there is a special permission set on the `passwd` command. First find the absolute directory reference of the `passwd` command, by typing `which passwd` and record the resulting absolute directory reference to the `passwd` command's program.
21. Using the absolute directory reference you recorded in the previous step, view the special permission set on the `passwd` command's program file, by typing `ls -l absolute-directory-reference/passwd` and pressing Enter. (Don't actually type `absolute-directory-reference`, but instead use the absolute directory reference for the `passwd` command you recorded in the previous step.) Which special permission is set on this file (SUID, SGID, or stick bit)?
22. View the current `umask` setting you are using, by typing `umask` and pressing Enter. Record the resulting number.
23. Create a new file by typing `touch lab10New.txt` and pressing Enter.
24. View the permissions set on the `lab10New.txt` by typing `ls -l lab10New.txt` and pressing Enter. Since files are created with the default permissions of 0666, did the `umask` setting properly remove the permissions for the newly created file? (Example: If your `umask` is set to 0002, then creating a file should result in a created file with 0664 octal code permissions, which are `rw-rw-r--`).
25. Create a soft link to your newly created file, by typing `ln -s lab10New.txt lab10Soft` and pressing Enter.
26. View the long listings for both these files by typing `ls -l lab10New.txt lab10Soft` and pressing Enter. You should see some differences in the long listing for the `lab10Soft` file.
27. View the long listing for your original file for this lab by typing `ls -l lab10.txt` and pressing Enter.
28. Create a hard link to your original file for this lab by typing `ln lab10.txt lab10Hard` and pressing Enter.
29. View the long listings for both these files by typing `ls -l lab10.txt lab10Hard` and pressing Enter. You should notice for both files an increased link count.
30. View the inode numbers for these files by typing `ls -i lab10.txt lab10Hard` and pressing Enter. Notice that the numbers match (because they share an inode number).
31. Delete any files you created for this lab using the appropriate command(s).