

**Section 22 Lab**  
**LPIC-1, Exam 1 (101-500)**  
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**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. See if the library path environment variable is set on your system, by typing **echo \$LD\_LIBRARY\_PATH** and pressing Enter. Most likely it is not set and you'll just get a blank line, and that's OK.
3. View the library configuration file, by typing **cat /etc/ld.so.conf** and pressing Enter. See if it contains any "include" statements.
4. Determine if there are any library configuration files in the **/etc/ld.so.conf.d/** directory, by typing **ls /etc/ld.so.conf.d/** and pressing Enter. If there are files there, display them with the **cat** command.
5. Look to see if these library directories exist on your system, by issuing the following commands, and recording which directories exist:  
Type **ls -d /lib\*** and press Enter.  
Type **ls -d /usr/lib\*** and press Enter.
6. Pick an existing library file from the previous step's results, and view the libraries in it using the **ls** command (without the **-d** option). Note the names of the libraries and see if they follow the basic library naming standard outlined in this section's sessions. Record your findings.
7. Pretend the **top** program is having a problem. Determine its absolute directory reference, by typing **which top** and pressing Enter.
8. Using the absolute directory reference of the **top** command you determined in the previous step, view its library files by typing **ldd absolute-directory-reference-top** and pressing Enter. (Don't actually type **absolute-directory-reference-top** but instead enter the absolute directory reference for the **top** command, which may be similar to: **/usr/bin/top**.)
9. Find the last library in the output display. Using only its name, see if the library is in the current library cache, by typing **ldconfig -p | grep Library-name** and pressing Enter. (Don't actually type **Library-name**, but instead use the name of the last library in the output display (example: **libgpg-error.so.0**) Did you get the library's information back? If you did, the library is stored in the current library cache.
10. Using the library name and directory location of the last library in the output display from step #9, see if the library is in its directory location by typing **ls directory-location/library-name** and pressing Enter. (Don't actually type **directory-location/library-name** but instead use the directory location of the library and its name. For example: **ls /lib/x86\_64-linux-gnu/libgpg-error.so.0**)