Section 15 Lab
LPIC-1, Exam 1 (101-500)
By Christine Bresnahan

Recommended Linux Distributions for this exercise:

- CentOS version 7
- Ubuntu Desktop 18.04LTS

Note #1: 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.

Note #2: This lab assumes you have access to an unpartitioned disk. If you are using a virtual system, you can easily add a new virtual disk to the virtual machine's configuration. Review the virtual system managing software's (hypervisor) documentation to determine how to add a virtual disk. If you are unable to add a virtual disk, or have only a physical Linux system for you libs and no access to an unpartitioned disk, then simply read through the lab, instead of attempting the partitioning and formatting commands.

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. View the partition information on your system by typing **cat /proc/partitions** and pressing Enter.
4. View the partition information on your system by typing **lsblk** and pressing Enter. Notice the similarities and the differences between the information produced in this step and the information from the preceding step. (Note: Not only will LVM add some differences, but if you are using Ubuntu, you'll see a lot of information concerning /snap, which is not covered in these lessons.).
5. From the preceding step, record the name of your unpartitioned disk (Example: sdb).
   Hint: It will NOT have any partition names listed after it. (Example: sdb1).
6. Begin the partitioning of your unpartitioned disk by typing **sudo gdisk *disk-devicefile-name*** and pressing Enter. (Don't actually type ***disk-devicefile-name*** but instead put in the device file name of your unpartitioned disk, such as **/dev/sdb**).
7. At the Command (? for help): prompt, type **n** and press Enter to start the process of creating a disk partition.
8. At the next prompt, where the utility is asking for a partition number, press Enter to accept the default and record the default number.
9. At the next prompt, where the utility is asking for the first sector, press Enter to accept the default.
10. At the next prompt, where the utility is asking for the last sector, press Enter to accept the default.
11. At the next prompt, where the utility is asking for the Hex Code or GUID, press Enter to accept the default.
12. At the Command (? for help): prompt, type **w** and press Enter to start the process of writing the partition table. You will receive a warning message.
13. At the Do you want to proceed? (Y/N): prompt, type **Y** and press Enter to write the GUID partition table (GPT) to the disk, which partitions the disk. When you receive a command-line prompt back, the operation is completed.

14. Check on your newly created partition by typing **lsblk** and press Enter. Do you see the disk's device file name followed by a number? You should. (Example: sdb1)
15. Determine if you can use an XFS filesystem on your newly created partition, by typing **grep xfs /proc/filesystems** and pressing Enter. If you see **xfs**, then use **xfs** as your filesystem in step #17, if you get no response then do NOT use **xfs** as your filesystem in step #17.
16. Determine if you can use an ext4 filesystem on your newly created partition, by typing **grep ext4 /proc/filesystems** and pressing Enter. If you see **ext4**, then use **ext4** as your filesystem in step #17, if you get no response then do NOT use **ext4** as your filesystem in step #17.
17. Format your newly created filesystem by typing **sudo mkfs -t *filesystem partition-devicefile-name*** and pressing Enter. (Don't actually type ***filesystem*** but instead use the filesystem type you determined in steps #15 or #16. And don't actually type ***partition-devicefile-name*** but instead use the new disk partition's device file name, such as **/dev/sdb1**) The operation is completed when you get a command-line prompt back.
18. See if your newly formatted partition now has the selected filesystem, by typing **lsblk -f *partition-devicefile-name*** and pressing Enter. (Don't actually type ***partition-devicefile-name*** but instead use the new disk partition's device file name, such as **/dev/sdb1**)
19. View the partition information with the **blkid** utility, by typing **sudo blkid *partition-devicefile-name*** and pressing Enter. (Don't actually type ***partition-devicefile-name*** but instead use the new disk partition's device file name, such as **/dev/sdb1**)
20. Create a temporary directory in your home directory, by typing **mkdir temporary** and pressing Enter.
21. Mount your new filesystem at **temporary**, by typing **sudo mount -t *filesystem partition-devicefile-name* temporary** and pressing Enter. (Don't actually type ***filesystem*** but instead use the filesystem type you determined in steps #15 or #16. And don't actually type ***partition-devicefile-name*** but instead use the new disk partition's device file name, such as **/dev/sdb1**)
22. View the currently mounted partitions by typing **mount** and pressing Enter. You should be able to see your newly created and mounted filesystem (It is most likely at the bottom of the command's output.)
23. Now unmount the filesystem, by typing (Watch the command! There is no "n" in umount): **sudo umount *partition-devicefile-name*** and pressing Enter. (Don't actually type ***partition-devicefile-name*** but instead use the new disk partition's device file name, such as **/dev/sdb1**)
24. Check that the filesystem is no longer mounted by typing **mount** and pressing Enter. You should no longer see your newly created and mounted filesystem in the command's output.
25. Look at the filesystem table, which is used to mount filesystems at boot time, by typing **cat /etc/fstab** and pressing Enter. Record each partition name, filesystem type and the other items for each record, using the materials in the videos and resources as a guide.