Section 16 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. 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 your system's mounted filesystems and their mount points, by typing **lsblk -f** and pressing Enter. Record each disk partition, its filesystem type, and its mount point in the Linux virtual directory structure.
4. View your system's filesystems that are to be mounted at system boot time, by typing **cat /etc/fstab** and pressing Enter. Record each disk partition, its filesystem type, and its mount point in the Linux virtual directory structure. Does this information match what you recorded in the previous step?
5. From the information you recorded in the previous two steps and the material in the Considering Mount Points lecture determine if you have minimal mount points or more than minimal mount points, and whether you are breaking any "rules" concerning mount points on this system.
6. Determine if you have any systemd mount units, by typing **systemctl -t mount list-units** and pressing Enter.
7. If you have an ext3 or ext4 filesystem on your system, view its current parameters by typing **sudo tune2fs -l *devicefile-partitionname*** and pressing Enter. (Don't actually type *devicefile-partitionname* but instead use the device file name for the partition whose filesystem is either ext3 or ext4.)
8. View the various items you can tune on an ext3 or ext4 filesystem, by typing **man tune2fs** and pressing Enter. Record some of the various items you can tune.
9. Determine if the **xfs_admin** utility is on your system, by typing **which xfs_admin** and pressing Enter.
10. If your determined **xfs_admin** is not on your system, open your favorite web browser and type in the following search: **Linux man xfs_admin** and view a website that has man page information on the utility. .
    If **xfs_admin** is on your system, then type **man xfs_admin** and pressing Enter to view the various items you can tune on an XFS filesystem.
11. Record your findings from the previous step on what parameters are modifiable (tuneable) with the utility.
12. Determine if the **xfs_fsr** utility is on your system, by typing **which xfs_fsr** and pressing Enter.
13. If your determined **xfs_fsr** is not on your system, open your favorite web browser and type in the following search: **Linux man xfs_fsr** and view a website that has man page information on the utility. .
    If **xfs_fsr** is on your system, then type **man xfs_fsr** and pressing Enter to view the various items you can tune on an XFS filesystem using this utility.
14. Record your findings from the previous step on what is modifiable (tuneable) with the utility.

15. Determine if the **btrfstune** utility is on your system, by typing **which btrfstune** and pressing Enter.
16. If your determined **btrfstune** is not on your system, open your favorite web browser and type in the following search: **Linux man btrfstune** and view a website that has man page information on the utility. .If **btrfstune** is on your system, then type **man btrfstune** and pressing Enter to view the various items you can tune on an btrfs filesystem using this utility.
17. Record your findings from the previous step on what is modifiable (tuneable) with the utility.
18. Determine if the **mke2fs** utility is on your system, by typing **which mke2fs** and pressing Enter.
19. If your determined **mke2fs** is not on your system, open your favorite web browser and type in the following search: **Linux man mke2fs** and view a website that has man page information on the utility. If **mke2fs** is on your system, then type **man mke2fs** and pressing Enter to view the various items you can tune on an btrfs filesystem using this utility.
20. Record your findings from the previous step on what is modifiable (tuneable) with the utility, and most importantly note how is this utility is different from the **tune2fs** utility.
21. View your current filesystem space usage by typing **df** and pressing Enter. Which filesystem has the most free space on it? Which filesystem is has the least free space on it?
22. Check the number of inodes on each filesystem and how many are used by typing **df -i** and pressing Enter.
23. If you are logged into the root account, log out of it by typing **exit** and pressing Enter.
24. Check the disk space usage for each file in your current working directory, by typing **du** and pressing Enter.
25. Just get the total disk space usage for the files in your current working directory by typing **du -s** and pressing Enter. Does the number match the last number displayed in the previous step? It should.