LEARNING LINUX COMMAND LINE

1. **Linux** is a general-purpose computer operating system, originally released by Linus Torvalds in 1991.

2. **Linux** is defined by its **KERNEL**, which is the core component of the system.

3. The **KERNEL** interacts with the computer hardware to allow software and other hardware to exchange information.

4. Linux was inspired by **MINIX/UNIX**

5. Intended to be free of cost and free to modify under the GNU General Public License.

6. Major distributions of Linux: **Arch, Debian, Red Hat, Slackware.**

7. Linux Mint, Ubuntu, Kali, etc. are derived from Debian

8. CentOS, Fedora, etc. are derived from Red Hat

9. macOS is derived from BSD/UNIX, not from Linux.

10. CLI:
    - Command-line interface.
    - Send typed commands
    - Display text output
    - Shell or interpreter

11. The general format for commands is **"COMMAND OPTION(s) ARGUMENT(s)"**

12. **ls** (**list command**): List the contents of the current working directory.

13. **ls -l** (-l stands for long listing): It tells the shell program to display files with more information than just the file names.

14. To find the manual page for the command, you can use the command "man command_name". This will display a manual for the command with help and other information.

15. To help you look up a command by its description rather than its name, you can use "**apropos**"

16. **file** command (**file file_name**): Determines the file type
    root@285a952c43e4:~# **file abhishek.txt**
    abhishek.txt: ASCII text

17. **stat** command (**stat file_name**): Tells you an extended information about the file. Displays information, modification information.

```
root@285a952c43e4:~# stat abhishek.txt
  File: 'abhishek.txt'
  Size: 16              Blocks: 8          IO Block: 4096   regular file
Device: 7bh/123d        Inode: 1972296     Links: 1
Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)
Access: 2020-09-22 21:37:39.694886000 +0000
Modify: 2020-09-22 21:37:35.094886000 +0000
Change: 2020-09-22 21:37:35.094886000 +0000
 Birth: -
```

18. Command to **create a directory with a space in the directory name** "Exercise File"

```
root@285a952c43e4:~# sudo mkdir Exercise\ Files
root@285a952c43e4:~# ls
Exercise Files  abhishek.txt
root@285a952c43e4:~#
```

19. Command **ls -R**
    R stands for recursive. The recursive option means that when ls comes across any folder it steps inside and lists anything inside the folder. If it comes across another folder inside that folder it does the same.

20. Command **cd –**
    Switches you back to the last directory you used. Could be really helpful if you are continuously shifting between 2 directories

21. Command **mkdir directory_name**
    Creates a directory with the directory_name you provided.

22. Command **mkdir -p directory_name**
    Creates a directory and if the parent directory is not available it will create that as well. "For example- mkdir -p /Desktop/abhishek/job", even if abhishek directory is not there, it will create abhishek directory and then a job directory under it.

23. Command **rmdir directory_name**

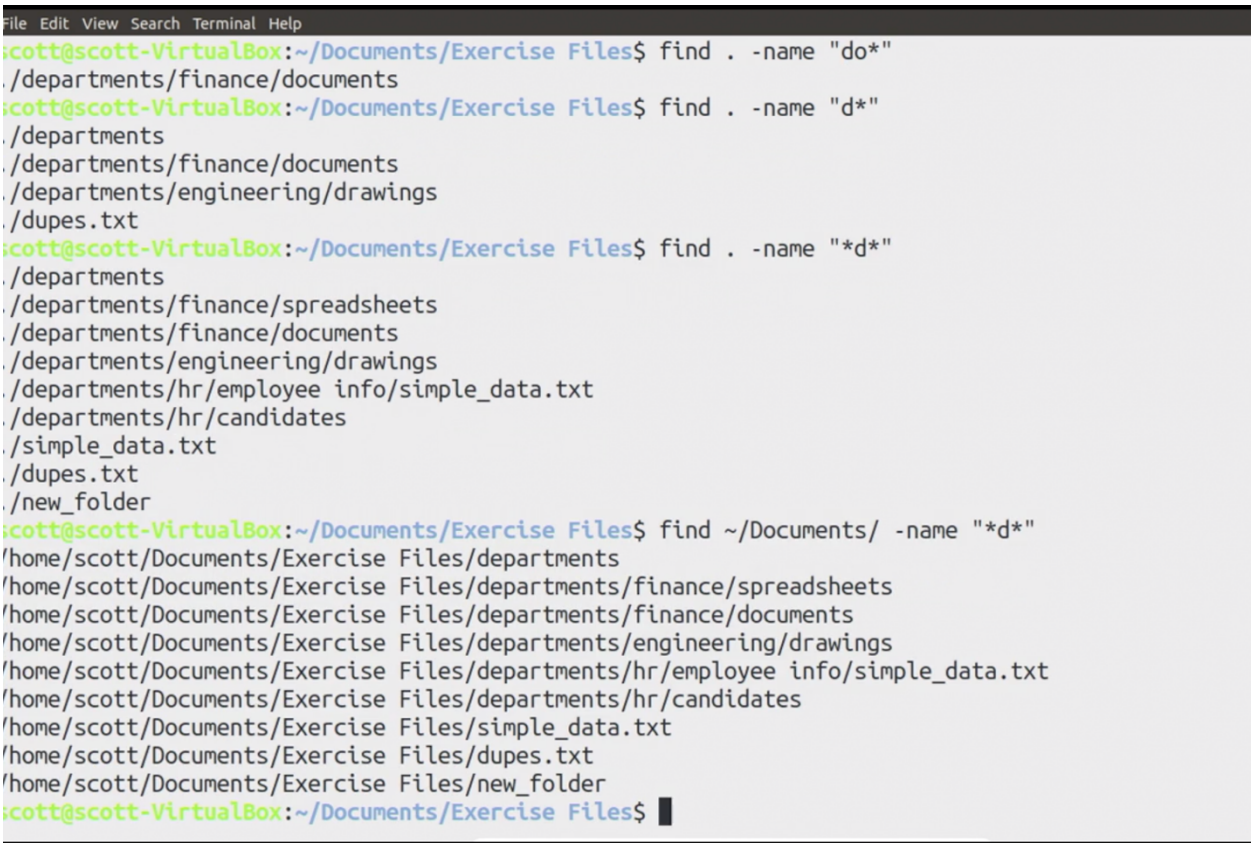
Removes a directory, the command takes directory_name or complete directory path as an argument.
In order to remove a folder like this, the folder has to be empty.

24. Command cp file_name1 file_name2
    Makes copies of a file

25. Command mv file_name new_file_path
    Move command has 2 uses. It can used to move files from one directory to another or it can be used to rename a file.

26. Command mv *.txt new_directory_path
    This command moves all files with .txt extension to the new directory path. This can be used in scenarios where all files of a certain extension have to be moved.

27. Command find . -name “pattern you are trying to search”
    Find command can be used to a pattern or all files with a certain extension. The ‘.’ Represents the current directory, it can be modified to find in different directories as well.



28. Different type of Users in Linux:

    Normal User: Modify their own files, cannot make system changes. They can't install software, can't make changes to the system files and can't browse another users home folder.
    Superuser(root): modify any file, make system changes, can install software, can stop and start services

    Normal users can be temporarily granted the ability to use root's power by using the command "sudo"

29. File Permission in Linux:

    chmod command: We can change the permissions of a file by modifying the file mode bits.

File Permissions

Two methods to represent permissions

Octal (e.g., 755, 644, and 777)

Symbolic (e.g., a=r, g+w, and o-x)

Octal File Permissions

	Read (4)	Write (2)	Execute (1)	Result
User	r	w	x	7
Group	r	-	x	5
Others	r	-	-	4

Octal Values

Octal Value	Mode	Octal Value	Mode
0	- - -	4	r - -
1	- - x	5	r - x
2	- w -	6	r w -
3	- w x	7	r w x

Comparing Octal and Symbolic Values

Octal Value	Symbolic Value	Result
777	a+rwx	rwxrwxrwx
755	u+rwx,g=rx,o=rx	rwxr-xr-x
644	u=rw,g=r,o=r	rw-r--r--
700	u=rwx,g-rwx,o-rwx	rwx------

30. Command **chown**
    Syntax: chown *new_owner file_name*
    Changes ownership of a file.

31. Command **chgrp**
    Syntax: chgrp *new_owner file_name*
    Changes ownership of a file.

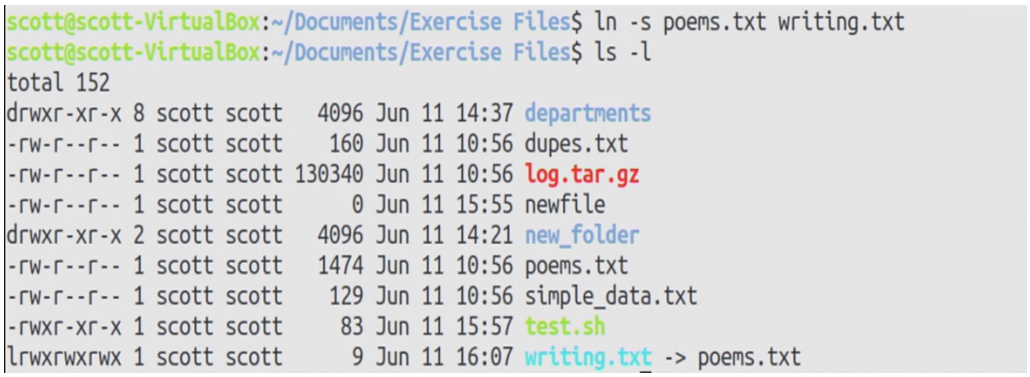
32. **LINKS IN LINUX:**
    There are 2 types of links in Linux-
    - **HARD LINK-** Hard links point to data on disk

      Syntax: **ln** *source_file name_of_link_youWantToCreate*

      NOTE: A hard link appears to be a regular file in the file listing. But it's also just a pointer to the original file, actually a pointer to the data. Hard links can be moved around the system doesn't matter if the original file is moved or not

    - **SOFT LINK (SYMBOLIC LINK):** Points to a file on disk

      Syntax: **ln -s** *source_file name_of_link_youWantToCreate*



      NOTE: If you edit the soft link you created, you will be editing the actual file as well. Soft link is just a pointer to the original file. This kind of link is relative that is if you move the link somewhere else on the file system the system won't be able to reference the original file anymore and also if you move the original file the link will break as well.

33. Command Parts of a Linux File System

Common Parts of a Linux Filesystem

/	root (highest level of filesystem hierarchy)
home	stores user home folders
root	stores root's home folder
etc	configuration files for many tools
bin	stores binaries (programs)
sbin	stores binaries (programs)

lib	libraries and shared modules
dev	represents devices on the system
mnt	where local and remote filesystems are mounted
media	where removable storage is mounted
proc	virtual filesystem representing processes
sys	virtual filesystem representing kernel values

34.