Assignment: 01

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AIM: Study Of Linux Commands

01. ls

ls: This will list the files and directories in the current working directory.

- ls -l: This will list the files and directories in the current working directory in a long format, which includes additional information such as file permissions, owner, group, size, and timestamp.
- ls -a: This will list all files and directories in the current working directory, including hidden files and directories (those that begin with a dot ".").
- ls -la: This will list all files and directories in the current working directory in a long format, including hidden files and directories.
- ls /home: This will list the files and directories in the "/home" directory.
- ls -R : used to list information about files and directories within the file system.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls
cmds  f4
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls -l
total 8
-rw-rw-r-- 1 ehteshamoddin ehteshamoddin 1491 Jan 22 16:55 cmds
-rw-rw-r-- 1 ehteshamoddin ehteshamoddin   62 Jan 22 16:11 f4
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls -a
.  ..  cmds  f4  .f5.swp
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls -la
total 32
drwxrwxr-x 2 ehteshamoddin ehteshamoddin  4096 Jan 22 16:55 .
drwxr-xr-x 5 ehteshamoddin ehteshamoddin  4096 Jan 22 06:57 ..
-rw-rw-r-- 1 ehteshamoddin ehteshamoddin  1491 Jan 22 16:55 cmds
-rw-rw-r-- 1 ehteshamoddin ehteshamoddin    62 Jan 22 16:11 f4
-rw-r--r-- 1 ehteshamoddin ehteshamoddin 16384 Jan 22 07:21 .f5.swp
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls /home
ehteshamoddin
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ ls -R
.:
cmds  f4
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$
```

02. pwd

The pwd command stands for "print working directory" and it is used to display the current working directory in the command-line interface of Linux and Unix-based operating systems.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/CC$ pwd
/home/ehteshamoddin/Documents/CC
```

03. cd

The cd command stands for "change directory" and it is used to navigate through the file system in the command-line interface of Linux and Unix-based operating systems.
cd: This will change the current working directory to the user's home directory.

- cd /home: This will change the current working directory to the "/home" directory.
- cd ..: This will change the current working directory to the parent directory of the current directory.
- cd -: This will change the current working directory to the previous working directory.
- cd ~/documents: This will change the current working directory to the "documents" directory in the user's home directory.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ cd Documents
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
CC  moved  programming
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cd programming
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/programming$ cd ..
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cd ..
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

04. mkdir

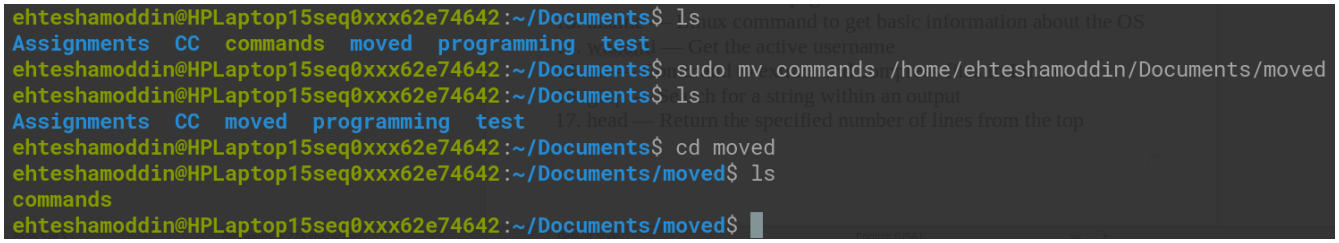
The mkdir command stands for "make directory" and it is used to create new directories in the command-line interface of Linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  CC  moved  programming
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ mkdir test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  CC  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

05. mv

The mv command stands for "move" and it is used to move or rename files and directories in the command-line interface of Linux
mv file.txt /home/user/documents: This will move the "file.txt" from its current location to the "/home/user/documents" directory.

- mv /home/user/olddir /home/user/newdir: This will rename the "/home/user/olddir" directory to "/home/user/newdir".
- mv -i file.txt /home/user/documents: This will move the "file.txt" to the "/home/user/documents" directory and prompt the user for confirmation before overwriting an existing file.
- mv -n file.txt /home/user/documents: This will move the "file.txt" to the "/home/user/documents" directory and not overwrite an existing file.



06. touch

touch newfile.txt: This will create a new, empty file named "newfile.txt" in the current working directory.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  CC  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ touch f1
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat > f1
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f1
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

07. cat — Display file contents on the terminal

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  CC  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ touch f1
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat > f1
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f1
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

08. rm — Delete files or directories

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cp f1 f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  f2  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f2
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ rm f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

09. cp — Similar usage as mv but for copying files in Linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cp f1 f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  f2  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f2
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ rm f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
Assignments  cc  f1  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

10. echo — Print any text that follows the command

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ echo "I,Me,Myself"
I,Me,Myself
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

11. ln — Create symbolic links (shortcuts) to other files

The ln command is a command-line utility in Linux and Unix-based operating systems that is used to create links between files. A link is a reference to a file that allows multiple names to refer to the same file on a file system. There are two types of links: hard links and symbolic links.

A **hard link** is an exact copy of the original file and it creates a new directory entry that points to the same inode as the original file. It means if you delete or rename the original file, the hard link will still reference to the existing file.

A **symbolic link**, also known as a soft link or symlink, is a special type of file that contains a reference to another file or directory. If you delete or rename the original file, the symbolic link will become broken, and it will not reference to any file.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ln f1 f4
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  f3  f4  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f4
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ln -s f1 f5
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  f3  f4  f5  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f5
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

12. clear — Clear the terminal display

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

13. less — Linux command to display paged outputs in the terminal

The less command is a command-line utility in Linux and Unix-based operating systems that is used to view the contents of text files. Unlike the cat command, which displays the entire contents of a file in the terminal, less allows you to view the contents of a file one page at a time, making it useful for large or long files.

```
This is f1
Hi, there
f1 (END)
```

14. man — Access manual pages for all Linux commands

```
LS(1)                                   User Commands                                   LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List  information  about the FILEs (the current directory by default).  Sort entries alphabetically if none of -cftuvSUX nor
       --sort is specified.

       Mandatory arguments to long options are mandatory for short options too.

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
              with -l, print the author of each file

       -b, --escape
              print C-style escapes for nongraphic characters

       --block-size=SIZE
              with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

       -B, --ignore-backups
              do not list implied entries ending with ~
```

15. uname — Linux command to get basic information about the OS

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ uname
Linux
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

16. whoami — Get the active username

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ whoami
ehteshamoddin
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

17. date -- used to check the current date, time in linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ date
Mon 23 Jan 2023 01:43:36 PM UTC
```

18. cal — View a command-line calendar

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cal
    January 2023
Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7
 8  9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
```

19. apt, pacman, yum, rpm — Package managers depending on the distro
Ubuntu and Debian: sudo apt-get install libreoffice

My os is debian based, so I am using apt package manager

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo apt-get install libreoffice
[sudo] password for ehteshamoddin:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  xul-ext-ubufox
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  ca-certificates-java default-jre default-jre-headless firebird3.0-common firebird3.0-common-doc firebird3.0-server-core
  firebird3.0-utils fonts-crosextra-caladea fonts-crosextra-carlito fonts-dejavu fonts-dejavu-extra fonts-linuxlibertine
  fonts-sil-gentium fonts-sil-gentium-basic gstreamer1.0-gtk3 java-common libapache-pom-java libatk-wrapper-java
  libatk-wrapper-java-jni libbsh-java libcdr-0.1-1 libcolamd2 libcommons-logging-java libcommons-parent-java libel-api-java
  libfbclient2 libfreehand-0.1-1 libgif7 libgstreamer-gl1.0-0 libgstreamer-plugins-base1.0-0 libgstreamer1.0-0 libhsqldb1.8.0-java
  libib-util libjsp-api-java libmspub-0.1-1 libpagemaker-0.0-0 libreoffice-base libreoffice-base-drivers libreoffice-calc
  libreoffice-draw libreoffice-gnome libreoffice-gtk3 libreoffice-impress libreoffice-java-common libreoffice-nlpsolver
  libreoffice-report-builder libreoffice-report-builder-bin libreoffice-script-provider-bsh libreoffice-script-provider-js
  libreoffice-script-provider-python libreoffice-sdbc-firebird libreoffice-sdbc-hsqldb libreoffice-sdbc-mysql
  libreoffice-sdbc-postgresql libreoffice-style-elementary libreoffice-wiki-publisher libservlet-api-java libservlet3.1-java
  libsuitesparseconfig5 libtommath1 libunoil-java libvisio-0.1-1 libwebsocket-api-java lp-solve openjdk-11-jre
  openjdk-11-jre-headless
Suggested packages:
  firebird3.0-server firebird3.0-doc libavalon-framework-java libcommons-logging-java-doc libexcalibur-logkit-java liblog4j1.2-java
  libvisual-0.4-plugins java-virtual-machine libhsqldb1.8.0-java-gcj firefox-esr | thunderbird | firefox gpa
  hyphen-hyphenation-patterns imagemagick | graphicsmagick-imagemagick-compat libreoffice-grammarcheck libreoffice-help
  libreoffice-l10n libreoffice-librelogo myspell-dictionary mythes-thesaurus openclipart2-libreoffice | openclipart-libreoffice
  pstoedit unixodbc gstreamer1.0-plugins-ugly gstreamer1.0-plugins-bad gstreamer1.0-libav libofficebean-java libjtds-java
  libsqliteodbc | tdsodbc | odbc-mdbtools libreoffice-evolution seahorse libreofficekit-data postgresql mediawiki
```

20. sudo — Command to escalate privileges in Linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ su root
Password:
su: Authentication failure
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ sudo su root
[sudo] password for ehteshamoddin:
root@HPLaptop15seq0xxx62e74642:/home/ehteshamoddin/Documents#
```

21. w -- to check how many users logged into the linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ w --
 13:48:40 up  1:36,  1 user,  load average: 0.49, 0.52, 0.54
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
ehtesham tty7     :0               17:42    ?      6:43   0.36s /usr/libexec/gnome-session-binary --systemd --builtin --session=panthe
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

22. tar — Command to extract and compress files in Linux

The tar command is a command-line utility in Linux and Unix-based operating systems that is used to create, manage, and extract archive files. It stands for "tape archive" and it is commonly used to compress and group several files or directories into a single archive file.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ tar -cvf archive.tar f1 f2
f1
f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.tar  Assignments  cc  f1  f2  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ tar -xvf archive.tar
f1
f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
```

23. zip — Zip files in Linux

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ zip archive.zip f1 f2
  adding: f1 (stored 0%)
  adding: f2 (stored 0%)
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ unzip archive.zip
Archive:  archive.zip
replace f1? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
 extracting: f1
replace f2? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
 extracting: f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  moved  programming  test
```

24. unzip — Unzip files in Linux

25.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ zip archive.zip f1 f2
  adding: f1 (stored 0%)
  adding: f2 (stored 0%)
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ unzip archive.zip
Archive:  archive.zip
replace f1? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
 extracting: f1
replace f2? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
 extracting: f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  moved  programming  test
```

head — Return the specified number of lines from the top

26.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  f3  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f3
line1
line2
line3
line4
line5
line6
line7
line8
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ head -n 4 f3
line1
line2
line3
line4
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ tail -n 4 f3
line5
line6
line7
line8
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

tail — Return the specified number of lines from the bottom

27. diff — Find the difference between two files

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ diff f1 f2
1,2c1,2
< This is f1
< Hi, there
\ No newline at end of file
---
> This is f2
> Hi there
\ No newline at end of file
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

28. cmp — Allows you to check if two files are identical

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cmp f1 f2
f1 f2 differ: byte 10, line 1
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

29. comm — Combines the functionality of diff and cmp

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ comm f1 f2
This is f1
comm: file 1 is not in sorted order
Hi, there
        This is f2
comm: file 2 is not in sorted order
        Hi there
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

30. sort — Linux command to sort the content of a file while outputting

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ sort f1 f2
Hi there
Hi, there
This is f1
This is f2
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

31. grep — Search for a string within an output

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ cat f1
This is f1
Hi, thereehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ grep "Hi" f1
Hi, there
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```

32. export

The export command is a command-line utility in Linux and Unix-based operating systems that is used to set and export environment variables. Environment variables are values that affect the behavior of programs on a system, and are often used to configure system settings, specify the location of software or data, and other similar purposes.

The basic syntax for the export command is:

export VARNAME=value

33. ssh — Secure Shell command in Linux

The ssh command is a command-line utility in Linux and Unix-based operating systems that is used to securely connect to a remote computer or server. SSH (Secure Shell) is a

protocol that allows you to remotely access and manage a computer or server over a secure and encrypted connection.
For example ,here we are using EC2 instance

34. service — Linux command to start and stop services

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ service mysql status
● mysql.service - MySQL Community Server
     Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
     Active: active (running) since Mon 2023-01-23 17:41:53 UTC; 2h 56min left
   Main PID: 759 (mysqld)
     Status: "Server is operational"
      Tasks: 39 (limit: 6912)
     Memory: 422.1M
     CGroup: /system.slice/mysql.service
             └─759 /usr/sbin/mysqld

Warning: some journal files were not opened due to insufficient permissions.
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

35. ps — Display active processes

```
                                                    /home/ehteshamodd
+    ehtesh...oddin    × ehtesh...oddin    Documents
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ ps
    PID TTY          TIME CMD
   1733 pts/1    00:00:00 bash
  18999 pts/1    00:00:00 ps
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

36. kill and killall — Kill active processes by process ID or name

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ sudo kill -2004 PID
[sudo] password for ehteshamoddin:
```

37. df — Display disk filesystem information

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ df
df: /run/user/1000/doc: Operation not permitted
Filesystem     1K-blocks     Used Available Use% Mounted on
udev             2949376        0   2949376   0% /dev
tmpfs             599616     2028    597588   1% /run
/dev/nvme0n1p7  93914640 20401036  68699988  23% /
tmpfs            2998064   125932   2872132   5% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
tmpfs            2998064        0   2998064   0% /sys/fs/cgroup
/dev/nvme0n1p5    510980    30400    480580   6% /boot/efi
tmpfs             599612       60    599552   1% /run/user/1000
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

38. ifconfig — Display network interfaces and IP addresses

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ ifconfig
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 926  bytes 91842 (91.8 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 926  bytes 91842 (91.8 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 192.168.122.1  netmask 255.255.255.0  broadcast 192.168.122.255
        ether 52:54:00:42:9b:99  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.175.119  netmask 255.255.255.0  broadcast 192.168.175.255
        inet6 2401:4900:52f6:c32f:4406:665a:d9fa:49ab  prefixlen 64  scopeid 0x0<global>
        inet6 2401:4900:52f6:c32f:c902:5362:8353:7d3d  prefixlen 64  scopeid 0x0<global>
        inet6 fe80::cc83:fef:47ff:51a9  prefixlen 64  scopeid 0x20<link>
        ether 64:6c:80:b7:11:5f  txqueuelen 1000  (Ethernet)
        RX packets 3432  bytes 1716596 (1.7 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 3714  bytes 1289992 (1.2 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

39. chmod — Command to change file permissions

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ls
commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ls -l
total 4
-rwxrwxrwx 1 ehteshamoddin ehteshamoddin 3420 Jan 22 06:34 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ chmod 666 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ls -l
total 4
-rw-rw-rw- 1 ehteshamoddin ehteshamoddin 3420 Jan 22 06:34 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

40. useradd and usermod — Add new user or change existing users data

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo useradd ess
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ usermod -l ehte ess
usermod: Permission denied.
usermod: cannot lock /etc/passwd; try again later.
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo usermod -l ehte ess
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo passwd ehte
New password:
Retype new password:
passwd: password updated successfully
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

41. passwd — Create or update passwords for existing users


```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo useradd ess
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ usermod -l ehte ess
usermod: Permission denied.
usermod: cannot lock /etc/passwd; try again later.
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo usermod -l ehte ess
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ sudo passwd ehte
New password:
Retype new password:
passwd: password updated successfully
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```


42. chown — Command for granting ownership of files or folders

- chown user:group file: This will change the owner of the file to user and the group to group
- chown -R user:group directory: This will change the ownership of all the files and subdirectories under the directory to user and group recursively.
- chown user file: This will change the owner of the file to user and leave the group unchanged.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ls -l
total 4
-rw-rw-rw- 1 ehteshamoddin ehteshamoddin 3420 Jan 22 06:34 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ sudo chown ehte commands
[sudo] password for ehteshamoddin:
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ls -l
total 4
-rw-rw-rw- 1 ehte ehteshamoddin 3420 Jan 22 06:34 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

43. ls -1 | wc -l — Command to get the count of the files present into directory.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ ls -l | wc -l
13
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$
```

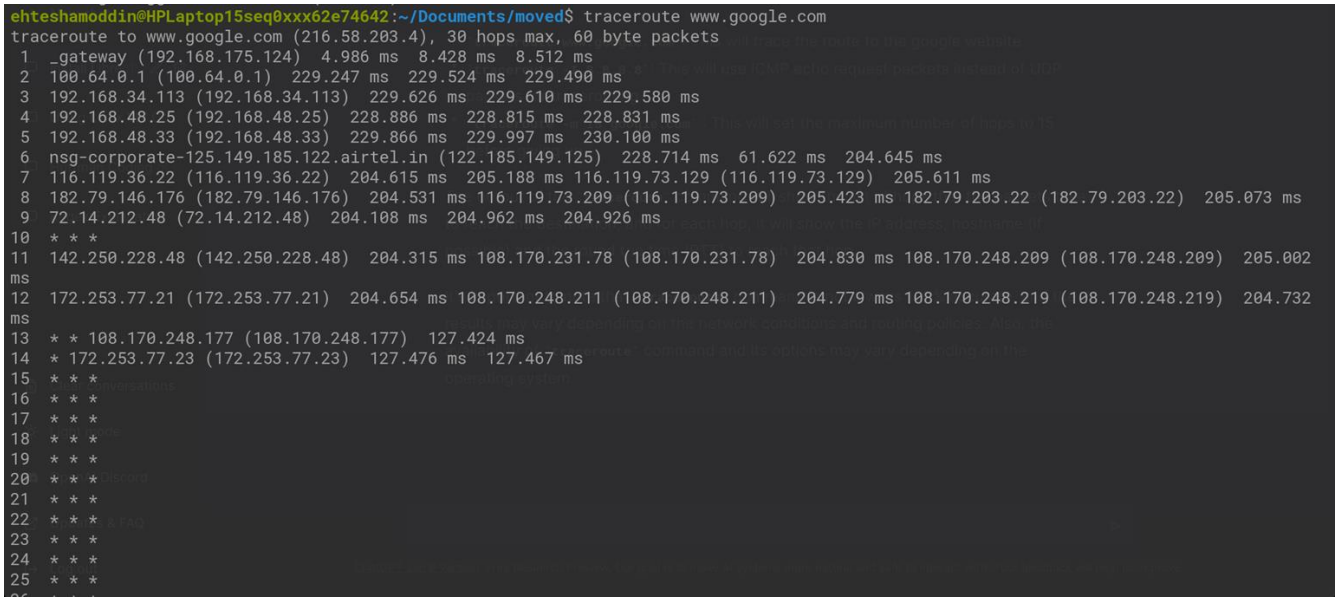
44. mount — Mount file systems in Linux

The mount command is a command-line utility in Linux and Unix-based operating systems that is used to mount file systems. The mount command is used to attach a file system to a directory on the file system hierarchy, making it accessible to the user.

- mount /dev/sda1 /mnt: This will mount the file system on /dev/sda1 partition at the /mnt directory.
- mount -t ext4 /dev/sda1 /mnt : This will mount the ext4 file system on the /dev/sda1 partition at the /mnt directory.
- mount -o rw,user,exec /dev/sda1 /mnt : This will mount the file system on the /dev/sda1 partition at the /mnt directory with the options of read-write access, allowing any user to mount and execute files on the file system.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,noexec,relatime,size=2949384k,nr_inodes=737346,mode=755,inode64)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,noexec,relatime,size=599616k,mode=755,inode64)
/dev/nvme0n1p7 on / type ext4 (rw,noatime,errors=remount-ro)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,inode64)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k,inode64)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755,inode64)
cgroup2 on /sys/fs/cgroup/unified type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,name=systemd)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
efivarfs on /sys/firmware/efi/efivars type efivarfs (rw,nosuid,nodev,noexec,relatime)
none on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/rdma type cgroup (rw,nosuid,nodev,noexec,relatime,rdma)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
```

45. traceroute — Trace all the network hops to reach the destination



46. wget — Direct download files from the internet

wget http://example.com/file.zip: This will download the file "file.zip" from the website "http://example.com"

- wget -c http://example.com/largefile.zip: This will continue a stopped download from where it left off
- wget -r -np -nH http://example.com : This will recursively download all files from example.com and not create any directories and not create any host-prefixed directories.
- wget --limit-rate=200k https://example.com/largefile.zip: This will download the file "largefile.zip" with a maximum download rate of 200KB/s

47. ufw — Firewall command

ufw enable: This will enable the firewall.

- ufw default deny: This will set the default policy to deny all incoming connections and allow all outgoing connections.
- ufw allow ssh: This will allow incoming connections to the ssh service.
- ufw status: This will show the status of the firewall, including the default policy and the list of active rules.
- ufw disable: This will disable the firewall and remove all the rules.

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ service ufw status
● ufw.service - Uncomplicated firewall
     Loaded: loaded (/lib/systemd/system/ufw.service; enabled; vendor preset: enabled)
     Active: active (exited) since Mon 2023-01-23 14:54:01 UTC; 1h 42min ago
       Docs: man:ufw(8)
    Process: 377 ExecStart=/lib/ufw/ufw-init start quiet (code=exited, status=0/SUCCESS)
   Main PID: 377 (code=exited, status=0/SUCCESS)

Warning: some journal files were not opened due to insufficient permissions.
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

48. iptables — Base firewall for all other firewall utilities to interface with

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~$ iptables -h
iptables v1.8.4

Usage: iptables -[ACD] chain rule-specification [options]
       iptables -I chain [rulenum] rule-specification [options]
       iptables -R chain rulenum rule-specification [options]
       iptables -D chain rulenum [options]
       iptables -[LS] [chain [rulenum]] [options]
       iptables -[FZ] [chain] [options]
       iptables -[NX] chain
       iptables -E old-chain-name new-chain-name
       iptables -P chain target [options]
       iptables -h (print this help information)

Commands:
Either long or short options are allowed.
  --append  -A chain            Append to chain
  --check   -C chain            Check for the existence of a rule
  --delete  -D chain            Delete matching rule from chain
  --delete  -D chain rulenum
                                Delete rule rulenum (1 = first) from chain
  --insert  -I chain [rulenum]
                                Insert in chain as rulenum (default 1=first)
  --replace -R chain rulenum
                                Replace rule rulenum (1 = first) in chain
  --list    -L [chain [rulenum]]
                                List the rules in a chain or all chains
  --list-rules -S [chain [rulenum]]
                                Print the rules in a chain or all chains
```

49. alias — Create custom shortcuts for your regularly used commands

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ alias
alias alert='notify-send --urgency=low -i "$([ $? = 0 ] && echo terminal || echo error)" "$(history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s
*//;s/[;&|]\s*alert$//'\'')"'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -alF'
alias ls='ls --color=auto'
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ alias ll='ls -l'
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ ll
total 4
-rw-rw-rw- 1 ehte ehteshamoddin 3420 Jan 22 06:34 commands
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

50. dd — Majorly used for creating bootable USB sticks

- dd if=/dev/sda of=/dev/sdb: This will copy the contents of the disk drive at /dev/sda to the disk drive at /dev/sdb.
- dd if=/dev/sda of=backup.img: This will create a backup image of the disk drive at /dev/sda and save it to the file "backup.img".

- dd if=backup.img of=/dev/sda: This will restore the backup image from the file "backup.img" to the disk drive at /dev/sda.
- dd if=/dev/sda bs=1M count=256 | gzip > backup.img.gz: This will create a compressed backup image of the first 256MB of the disk drive at /dev/sda and save it to the file "backup.img.gz".

51. whereis — Locate the binary, source, and manual pages for a command

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ whereis -m man
man: /usr/share/man/man7/man.7.gz /usr/share/man/man1/man.1.gz
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

52. whatis — Find what a command is used for

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$ whatis chown
chown (1)            - change file owner and group
chown (2)            - change ownership of a file
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents/moved$
```

53. top — View active processes live with their system usage

```
top - 16:50:34 up  1:56,  1 user,  load average: 0.31, 0.36, 0.37
Tasks: 299 total,   2 running, 297 sleeping,   0 stopped,   0 zombie
%Cpu(s):  1.1 us,  0.5 sy,  0.0 ni, 98.1 id,  0.0 wa,  0.0 hi,  0.2 si,  0.0 st
MiB Mem :   5855.6 total,   1821.4 free,   2222.2 used,   1812.0 buff/cache
MiB Swap:   8203.5 total,   8203.5 free,      0.0 used.   3351.7 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
    810 root      20   0 1457928 109012  62124 S   5.0   1.8   6:23.20 Xorg
   2514 ehtesha+  20   0  525488  63108  41384 S   3.0   1.1   1:14.66 io.elementary.t
   1541 ehtesha+  20   0 2239496 201556  92120 S   2.7   3.4   3:03.40 gala
   8119 root      20   0       0      0      0 I   0.7   0.0   0:00.31 kworker/u32:4-phy0
    247 root      -2   0       0      0      0 S   0.3   0.0   0:40.89 gfx
    544 root     -51   0       0      0      0 S   0.3   0.0   0:09.23 irq/64-rtw88_pc
    829 mysql     20   0 2384704 391396  37128 S   0.3   6.5   0:28.44 mysqld
   1819 ehtesha+  20   0   32.4g 119316  90736 S   0.3   2.0   0:28.64 chrome
   2918 rstudio+  20   0  110100  12620  10876 S   0.3   0.2   0:00.97 rserver
   4767 ehtesha+  20   0 1130.0g 209976 125004 S   0.3   3.5   5:13.11 chrome
   8039 root      20   0       0      0      0 I   0.3   0.0   0:00.21 kworker/4:1-mm_percpu_wq
   8179 ehtesha+  20   0   49892   3932   3160 R   0.3   0.1   0:00.03 top
      1 root      20   0  167680  11536   8376 S   0.0   0.2   0:02.14 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
      9 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     10 root      20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_rude_
     11 root      20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_trace
     12 root      20   0       0      0      0 S   0.0   0.0   0:00.32 ksoftirqd/0
     13 root      20   0       0      0      0 I   0.0   0.0   0:04.25 rcu_sched
     14 root      rt   0       0      0      0 S   0.0   0.0   0:00.02 migration/0
```

54. rm -rf -- remove directory with the files

```
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  f3  moved  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ rm -rf moved
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$ ls
archive.zip  Assignments  cc  f1  f2  f3  programming  test
ehteshamoddin@HPLaptop15seq0xxx62e74642:~/Documents$
```