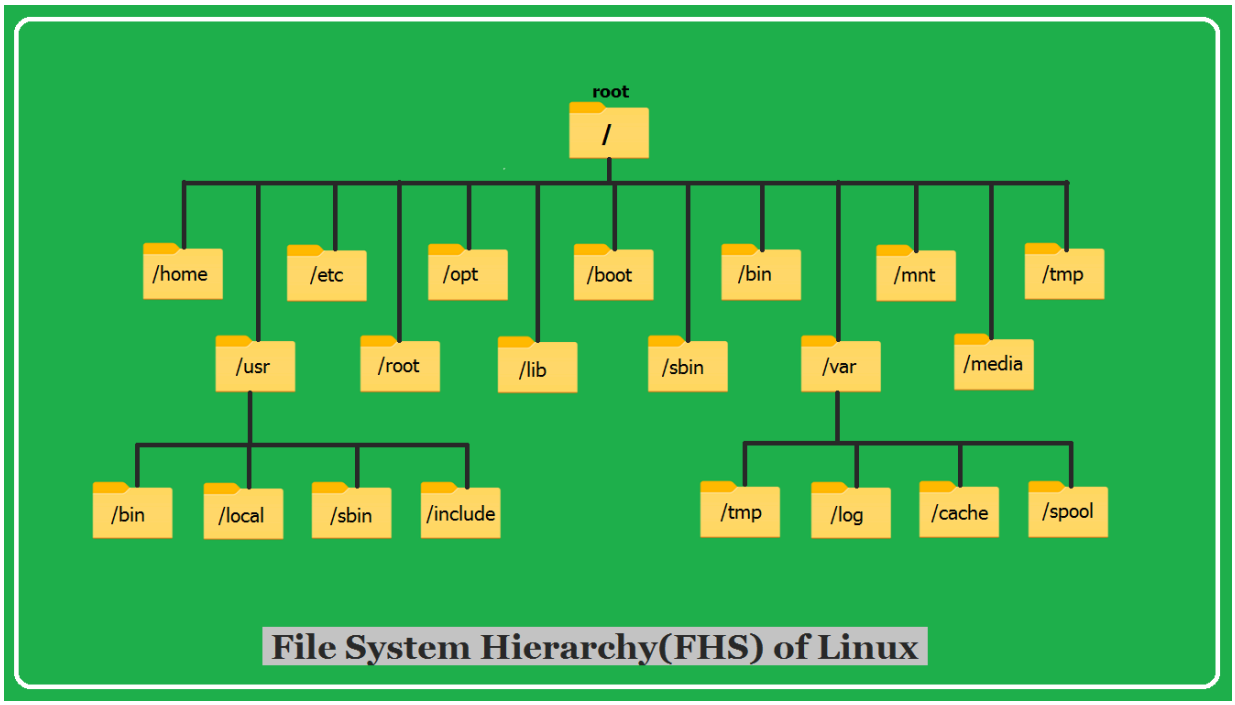
Linux_Basic_to_Advance

Linux is an open-source operating system that's super popular for servers and development. As a DevOps engineer, you'll be setting up and maintaining the infrastructure where applications run. Most servers use Linux, so getting comfortable with it, especially the command line, is a must. Start with learning Bash, which is the most commonly used shell and scripting language in Linux.

The Linux File System

.



Basic commands of linux

1. **Pwd: pwd means Present working Directory.... With this command we can see which directory present we are in**

root@DESKTOP-UPTF3I8: ~

```
root@DESKTOP-UPTF3I8:~# pwd
/root
root@DESKTOP-UPTF3I8:~#
```

2. **Whoami: This command use for login of user which user login**

root@DESKTOP-UPTF3I8: ~

```
root@DESKTOP-UPTF3I8:~# whoami
root
root@DESKTOP-UPTF3I8:~#
```

It showing root beacuse i am loggin on root

lazyperson@DESKTOP-UPTF3I8: /mnt/c/Users/LENOVO

```
lazyperson@DESKTOP-UPTF3I8:/mnt/c/Users/LENOVO$ whoami
lazyperson
lazyperson@DESKTOP-UPTF3I8:/mnt/c/Users/LENOVO$
```

Logout from the root and it show who is the user present login

3. **Cd : This command used to change directories**

lazyperson@DESKTOP-UPTF3I8: /tmp

```
lazyperson@DESKTOP-UPTF3I8:~$ cd /etc
lazyperson@DESKTOP-UPTF3I8:/etc$ cd /tmp
lazyperson@DESKTOP-UPTF3I8:/tmp$
```

The prompt changes to lazyperson@DESKTOP-UPTF3I8:/etc indicating that we are in /etc directory

Note:

- **We should use .. to move up one level**
- **We should use ../.. to move up two levels**
- **we should use ../../.. to move up three levels and so on**

root@DESKTOP-UPTF3I8: /etc/1/2/3/4

```
root@DESKTOP-UPTF3I8:/etc/1/2/3/4#
```

I am there in 5 directories

root@DESKTOP-UPTF3I8: /etc/1/2/3

```
root@DESKTOP-UPTF3I8:/etc/1/2/3/4# cd ..
root@DESKTOP-UPTF3I8:/etc/1/2/3#
```

Now i was move to one level cd .. (with this command)

root@DESKTOP-UPTF3I8: /etc/1

```
root@DESKTOP-UPTF3I8:/etc/1/2/3# cd ../..
root@DESKTOP-UPTF3I8:/etc/1#
```

Previously we are present in 3 number directory . when i use cd ../.. command i was directly move up two levels

root@DESKTOP-UPTF3I8: /

```
root@DESKTOP-UPTF3I8:/etc/1# pwd
/etc/1
root@DESKTOP-UPTF3I8:/etc/1# cd ../../..
root@DESKTOP-UPTF3I8:/# pwd
/
root@DESKTOP-UPTF3I8:/#
```

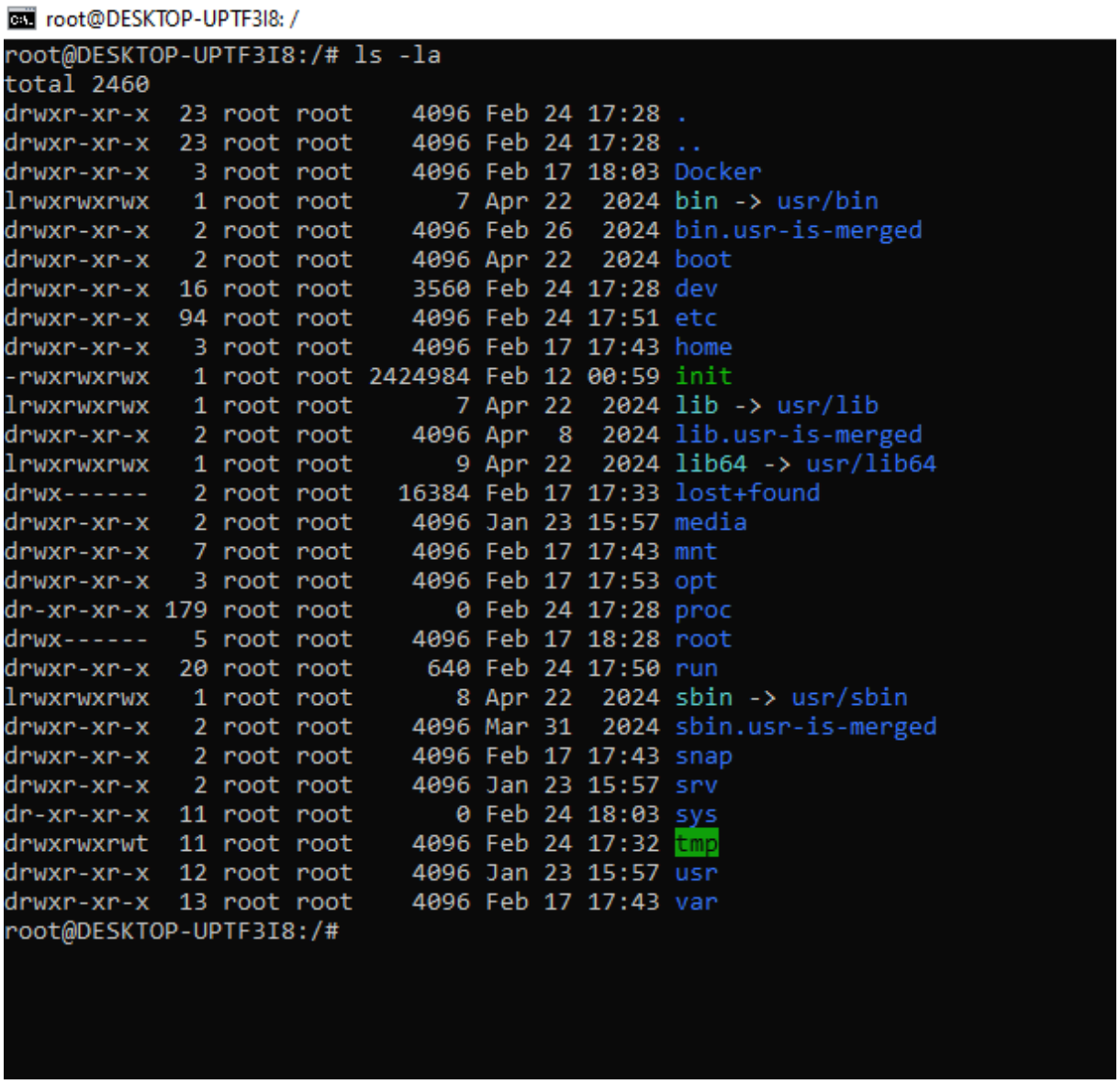
With the help of this command (cd ../../..) i was directly moved up directly three levels

4. **ls : This command use for listing contents in the directory**

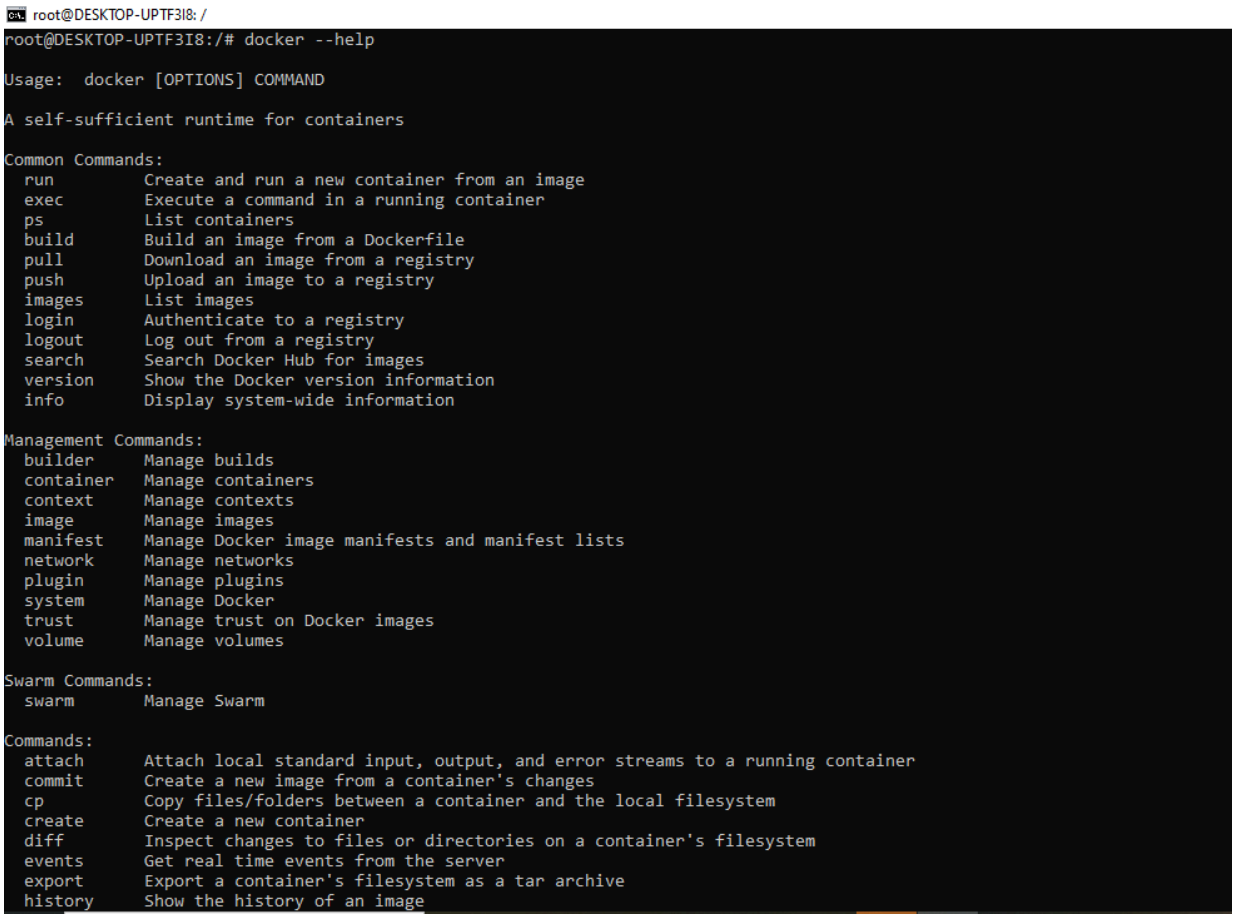
root@DESKTOP-UPTF3I8: /

```
root@DESKTOP-UPTF3I8:/# ls
Docker  bin.usr-is-merged  dev  home  lib              lib64       media  opt   root  sbin              snap  sys  usr
bin     boot               etc  init  lib.usr-is-merged  lost+found  mnt    proc  run   sbin.usr-is-merged  srv   tmp  var
root@DESKTOP-UPTF3I8:/#
```

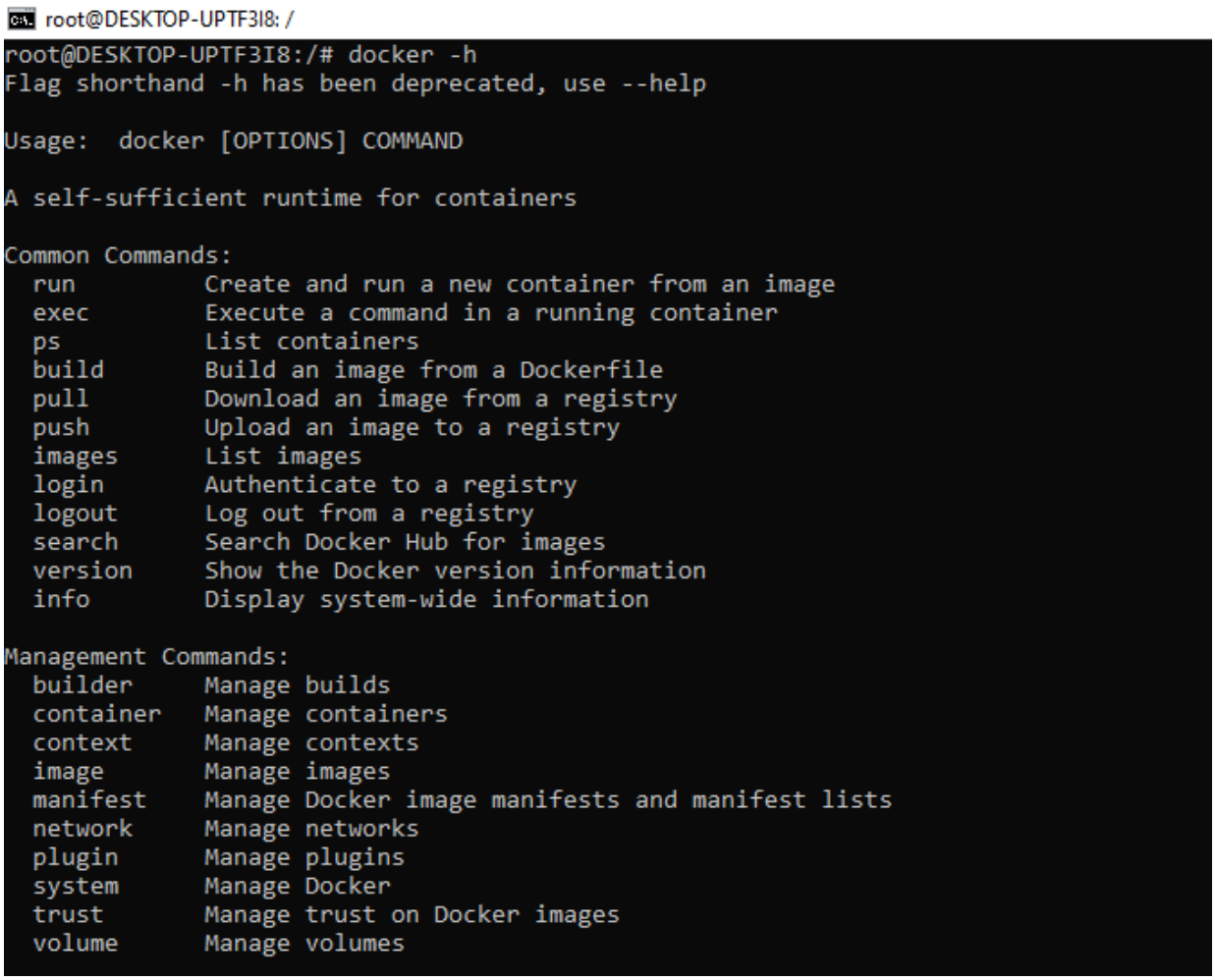
4. **ls-la : By adding flag -la it provides significantly more information**



5. **help : This command user to show short description of command or any tool and we will get guidance and we should must use (--) before the word option such as help and a single dash(-) before single letter option such as -h**



with single dash(-)



6. **Man : man derived as manual page . with the help of man command we get more information such as a description and synopsis of the command or application**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# man docker
```

```
root@DESKTOP-UPTF3I8: /
DOCKER(1)                                Docker User Manuals                                DOCKER(1)

NAME
       docker - Docker image and container command line interface

SYNOPSIS
       docker [OPTIONS] COMMAND [ARG...]

       docker [--help|-v|--version]

DESCRIPTION
       docker is a client for interacting with the daemon (see dockerd(8)) through the CLI.

       The Docker CLI has over 30 commands. The commands are listed below and each has its own man page which explains usage and arguments.

       To see the man page for a command run man docker .

OPTIONS
       --help
         Print usage statement

       --config=""
         Specifies the location of the Docker client configuration files. The default is '~/.docker'.

       -D, --debug=true|false
         Enable debug mode. Default is false.

       -H, --host=[unix:///var/run/docker.sock]: tcp://[host]:[port][path] to bind or unix://[/path/to/socket] to use.
         The socket(s) to bind to in daemon mode specified using one or more
         tcp://host:port/path, unix:///path/to/socket, fd://* or fd://socketfd.
         If the tcp port is not specified, then it will default to either 2375 when
         --tls is off, or 2376 when --tls is on, or --tlsverify is specified.

       -l, --log-level="debug|info|warn|error|fatal"
         Set the logging level. Default is info.

       --tls=true|false
         Use TLS; implied by --tlsverify. Default is false.

       --tlscacert=~/.docker/ca.pem
         Trust certs signed only by this CA.
```

This is the manual page docker.. we need to come out from the manual page we have to press "q" letter

7. **locate : It is a easiest command to find appilcation it will go through our entire filesystem**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# locate docker
/etc/docker
/etc/apt/keyrings/docker.asc
/etc/apt/sources.list.d/docker.list
/etc/default/docker
/etc/init.d/docker
/etc/rc0.d/K01docker
/etc/rc1.d/K01docker
/etc/rc2.d/S01docker
/etc/rc3.d/S01docker
/etc/rc4.d/S01docker
/etc/rc5.d/S01docker
/etc/rc6.d/K01docker
/etc/systemd/system/multi-user.target.wants/docker.service
/etc/systemd/system/sockets.target.wants/docker.socket
/home/lazyperson/.docker
/home/lazyperson/.docker/config.json
/home/lazyperson/.docker/contexts
/home/lazyperson/.docker/desktop
/home/lazyperson/.docker/features.json
/home/lazyperson/.docker/run
/home/lazyperson/.docker/desktop/log
/home/lazyperson/.docker/desktop/log/host
/home/lazyperson/.docker/desktop/log/host/docker-desktop-user-distro.log
/home/lazyperson/.docker/desktop/log/host/docker-desktop.log
/mnt/c/Program Files/Docker/Docker/com.docker.service
/mnt/c/Program Files/Docker/Docker/com.docker.service.config
/mnt/c/Program Files/Docker/Docker/com.docker.service.pdb
/mnt/c/Program Files/Docker/Docker/resources/com.docker.admin.exe
/mnt/c/Program Files/Docker/Docker/resources/com.docker.backend.exe
/mnt/c/Program Files/Docker/Docker/resources/com.docker.build.exe
/mnt/c/Program Files/Docker/Docker/resources/com.docker.dev-envs.exe
/mnt/c/Program Files/Docker/Docker/resources/com.docker.diagnose.exe
/mnt/c/Program Files/Docker/Docker/resources/docker-desktop.iso
/mnt/c/Program Files/Docker/Docker/resources/docker-desktop.iso.sha256
/mnt/c/Program Files/Docker/Docker/resources/dockerd.exe
/mnt/c/Program Files/Docker/Docker/resources/bin/docker
/mnt/c/Program Files/Docker/Docker/resources/bin/docker-compose
/mnt/c/Program Files/Docker/Docker/resources/bin/docker-compose.exe
/mnt/c/Program Files/Docker/Docker/resources/bin/docker-credential-desktop.exe
/mnt/c/Program Files/Docker/Docker/resources/bin/docker-credential-ecr-login.exe
/mnt/c/Program Files/Docker/Docker/resources/bin/docker-credential-wincred.exe
/mnt/c/Program Files/Docker/Docker/resources/bin/docker.exe
/mnt/c/Program Files/Docker/Docker/resources/cli-plugins/docker-ai.exe
```

8. **whereis : This command used to locate binary of a files return location and also show if manual pages are available**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# whereis docker
docker: /usr/bin/docker /etc/docker /usr/local/lib/docker /usr/libexec/docker /usr/share/man/man1/docker.1.gz
root@DESKTOP-UPTF3I8:/#
```

9. **which: this command used only to returns the location of the binaries in the path variables in linux**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# which docker
/usr/bin/docker
root@DESKTOP-UPTF3I8:/#
```

10. **Find: this command most powerfull and flexible search in linux . this command (sysntax : find / -type f -name finding file name)**

```
root@DESKTOP-UPTF3I8:/# find /etc -type f -name docker
/etc/default/docker
/etc/init.d/docker
root@DESKTOP-UPTF3I8:/#
```

11. **grep : this command used to filter the letters what we need**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.1  0.1  21680 12932 ?        Ss   17:28   0:06 /sbin/init
root           2  0.0  0.0   2776  1924 ?        Sl   17:28   0:00 /init
root           8  0.0  0.0   2776   132 ?        Sl   17:28   0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root          53  1.1  0.1  66840 15852 ?        S<s  17:28   0:55 /usr/lib/systemd/systemd-journald
root          98  0.0  0.0  24256  6404 ?        Ss   17:28   0:00 /usr/lib/systemd/systemd-udevd
systemd+     143  0.0  0.1  21452 11892 ?        Ss   17:28   0:00 /usr/lib/systemd/systemd-resolved
systemd+     144  0.0  0.0  91020  6512 ?        Ssl  17:28   0:01 /usr/lib/systemd/systemd-timesyncd
root         160  0.0  0.0   4236  2672 ?        Ss   17:28   0:00 /usr/sbin/cron -f -P
message+     161  0.1  0.0   9620  5224 ?        Ss   17:28   0:05 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
root         168  0.0  0.1  18152  8436 ?        Ss   17:28   0:01 /usr/lib/systemd/systemd-logind
root         171  0.0  0.2 1756096 18244 ?       Ssl  17:28   0:00 /usr/libexec/wsl-pro-service -vv
root         176  0.0  0.0   3160  1184 hvc0     Ss+  17:28   0:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
root         180  0.0  0.0   3116  1200 tty1     Ss+  17:28   0:00 /sbin/agetty -o -p -- \u --noclear - linux
root         181  0.0  0.6 1948788 50012 ?       Ssl  17:28   0:03 /usr/bin/containerd
syslog       194  0.0  0.0 222508  5108 ?        Ssl  17:28   0:00 /usr/sbin/rsyslogd -n -iNONE
root         196  0.0  0.2 107016 22296 ?        Ssl  17:28   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root         262  0.0  1.0 1989668 84764 ?       Ssl  17:28   0:01 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
root         520  0.0  0.0   2780   208 ?        Ss   17:28   0:00 /init
root         521  0.0  0.0   2780   212 ?        S    17:28   0:00 /init
lazyper+     524  0.0  0.0   6072  5168 pts/0    Ss   17:28   0:00 -bash
root         533  0.0  0.0   6692  4616 pts/1    Ss   17:28   0:00 /bin/login -f
lazyper+     586  0.0  0.1  20272 11380 ?        Ss   17:28   0:00 /usr/lib/systemd/systemd --user
lazyper+     587  0.0  0.0  21144  1724 ?        S    17:28   0:00 (sd-pam)
lazyper+     598  0.0  0.0   6072  5232 pts/1    S+   17:28   0:00 -bash
root        1247  0.0  0.0  14316  7536 pts/0    S+   17:50   0:00 sudo -i
root        1252  0.0  0.1  20284 11444 ?        Ss   17:50   0:00 /usr/lib/systemd/systemd --user
root        1253  0.0  0.0  21152  1712 ?        S    17:50   0:00 (sd-pam)
root        1264  0.0  0.0  14316  1264 pts/2    Ss   17:50   0:00 sudo -i
root        1265  0.0  0.0   6068  5196 pts/2    S    17:50   0:00 -bash
polkitd     2312  0.0  0.1 308160  9220 ?        Ssl  18:28   0:00 /usr/lib/polkit-1/polkitd --no-debug
root        2979  0.0  0.0  24260  3376 ?        S    18:49   0:00 (udev-worker)
root        2980  0.0  0.0  24260  3440 ?        S    18:49   0:00 (udev-worker)
root        2983  0.0  0.0   8280  4100 pts/2    R+   18:49   0:00 ps aux
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/# ps aux | grep docker
root         262  0.0  1.0 1989668 84764 ?       Ssl  17:28   0:01 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
root        2987  0.0  0.0   4088  1884 pts/2    S+   18:49   0:00 grep --color=auto docker
root@DESKTOP-UPTF3I8:/#
```

12. **cat : The cat command followed by a file name will display the content of that file this is also know as concatenation**

```
root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8:/# cat hello.txt
12345lsdkv;jg kejv
envqsdm
lvm qdv
lqm vc sdql;
vm
qsdcv
kl;qsdmcv sdvm
sd 'cvmk;
qsc m
'svlsdm
vqsdd'
vmqsd
 cvl'
qsdmcv
l'qsdmvpk
qsncv
k;q      s mv
KK:QSvlm         sd
;cvwddk;
vmsk;
dvqsk;c
 vmsdl;
svk;
sdm v
l;       sdmv
olsd v
kdk
v; sdvsd
vv
d vsdk;

sdsdnmkl;c
sd
cvmsdk;
vm
wd;l
dml;
wdml;
```

If you don't use the redirect symbol , linux will split back the content of your file ... To add or append more content on a text file with the help of cat we use (>>)... If you

want to overwrite the file information with new information we use single redirect (>)

root@DESKTOP-UPTF3I8: /

```
root@DESKTOP-UPTF3I8:/# cat hello.txt
hello am learnig linux
root@DESKTOP-UPTF3I8:/# cat >> hello.txt
linux is easy
root@DESKTOP-UPTF3I8:/# cat hello.txt
hello am learnig linux
linux is easy
root@DESKTOP-UPTF3I8:/#
```

root@DESKTOP-UPTF3I8: /

```
root@DESKTOP-UPTF3I8:/# cat hello.txt
hello am learnig linux
linux is easy
root@DESKTOP-UPTF3I8:/# cat > hello.txt
bye bye
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/# cat hello.txt
bye bye
root@DESKTOP-UPTF3I8:/#
```

13. **mkdir: By using this command we can create directory**

root@DESKTOP-UPTF3I8: /linux

```
root@DESKTOP-UPTF3I8:/linux# mkdir learning_linuc
root@DESKTOP-UPTF3I8:/linux# ls
learning_linuc
root@DESKTOP-UPTF3I8:/linux#
```

14.**cp : with the help of cp we can copy the files**

root@DESKTOP-UPTF3I8: /linux/learning_linuc

```
root@DESKTOP-UPTF3I8:/# ls
1234567890  bin               boot  etc     home  lib              lib64  lost+found  mnt  proc  run   sbin.usr-is-merged  srv  tmp  var
Docker      bin.usr-is-merged  dev   hi.txt  init  lib.usr-is-merged  linux  media       opt  root  sbin  snap                sys  usr
root@DESKTOP-UPTF3I8:/# cp hi.txt ../linux/learning_linuc
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/#
root@DESKTOP-UPTF3I8:/# cd /linux/learning_linuc
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
root@DESKTOP-UPTF3I8:/linux/learning_linuc# ls
hello.txt  hi.txt
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
```

15. **mv : this command used to move the file or directory to a new file name**

root@DESKTOP-UPTF3I8: /linux/learning_linuc

```
root@DESKTOP-UPTF3I8:/linux/learning_linuc# mv hello.txt hi.txt
root@DESKTOP-UPTF3I8:/linux/learning_linuc# ls
hi.txt
root@DESKTOP-UPTF3I8:/linux/learning_linuc# cat hi.txt
bye bye
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
```

16. **rm : this command used for removie or delete a file]**

root@DESKTOP-UPTF3I8: /linux/learning_linuc

```
root@DESKTOP-UPTF3I8:/linux/learning_linuc# ls
hi.txt
root@DESKTOP-UPTF3I8:/linux/learning_linuc# rm hi.txt
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
root@DESKTOP-UPTF3I8:/linux/learning_linuc# ls
root@DESKTOP-UPTF3I8:/linux/learning_linuc# ls -la
total 8
drwxr-xr-x 2 root root 4096 Feb 24 19:15 .
drwxr-xr-x 3 root root 4096 Feb 24 19:06 ..
root@DESKTOP-UPTF3I8:/linux/learning_linuc#
```

17. **rm -r : this command same as rm by adding flag -r now this command used to delete directories**

root@DESKTOP-UPTF3I8: /linux

```
root@DESKTOP-UPTF3I8:/linux# ls
'learning_=linuc'   learning_linuc
root@DESKTOP-UPTF3I8:/linux#
root@DESKTOP-UPTF3I8:/linux# rm -r learning_linuc
root@DESKTOP-UPTF3I8:/linux# ls
'learning_=linuc'
root@DESKTOP-UPTF3I8:/linux#
```