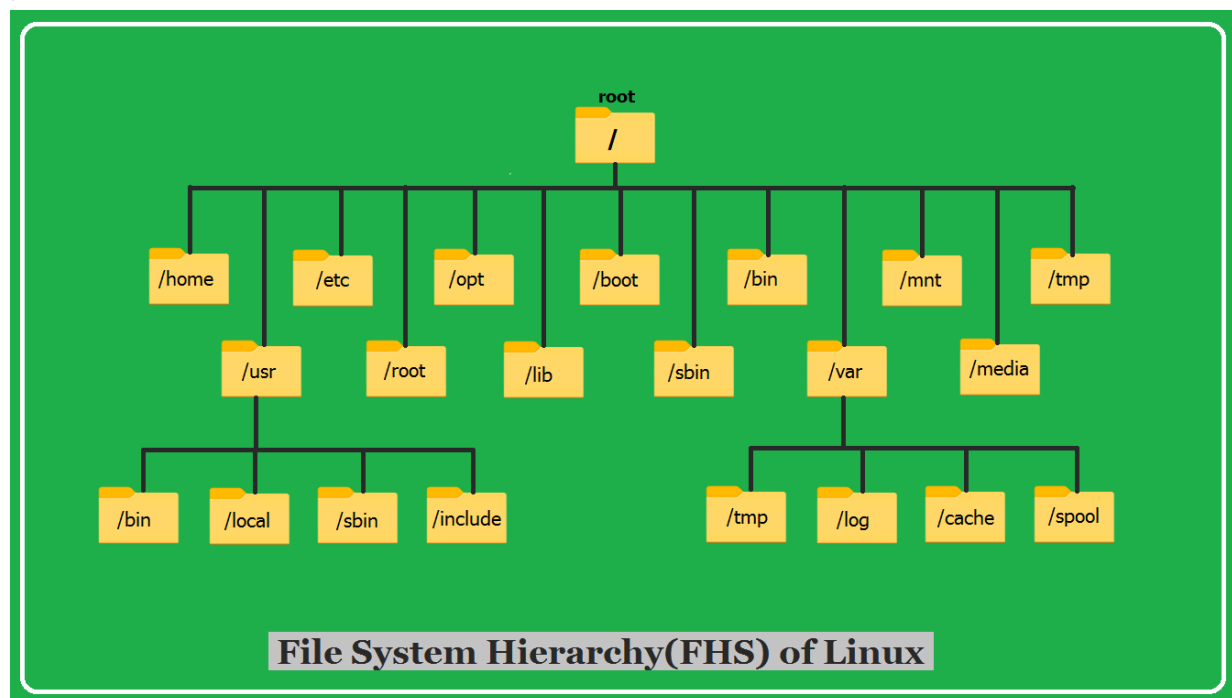


Linux_Basic_to_Advance

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 because i am login on root

```
lazy@DESKTOP-UPTF3I8: /mnt/c/Users/LENOVO
```

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

```
lazy@DESKTOP-UPTF3I8: /tmp
```

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

The prompt changes to lazy@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

root@DESKTOP-UPTF3I8: /

```
root@DESKTOP-UPTF3I8:/# ls -la
total 2460
drwxr-xr-x 23 root root 4096 Feb 24 17:28 .
drwxr-xr-x 23 root root 4096 Feb 24 17:28 ..
drwxr-xr-x 3 root root 4096 Feb 17 18:03 Docker
lrwxrwxrwx 1 root root    7 Apr 22  2024 bin -> usr/bin
drwxr-xr-x 2 root root 4096 Feb 26  2024 bin.usr-is-merged
drwxr-xr-x 2 root root 4096 Apr 22  2024 boot
drwxr-xr-x 16 root root 3560 Feb 24 17:28 dev
drwxr-xr-x 94 root root 4096 Feb 24 17:51 etc
drwxr-xr-x 3 root root 4096 Feb 17 17:43 home
-rwxrwxrwx 1 root root 2424984 Feb 12 00:59 init
lrwxrwxrwx 1 root root    7 Apr 22  2024 lib -> usr/lib
drwxr-xr-x 2 root root 4096 Apr  8  2024 lib.usr-is-merged
lrwxrwxrwx 1 root root    9 Apr 22  2024 lib64 -> usr/lib64
drwx----- 2 root root 16384 Feb 17 17:33 lost+found
drwxr-xr-x 2 root root 4096 Jan 23 15:57 media
drwxr-xr-x 7 root root 4096 Feb 17 17:43 mnt
drwxr-xr-x 3 root root 4096 Feb 17 17:53 opt
dr-xr-xr-x 179 root root    0 Feb 24 17:28 proc
drwx----- 5 root root 4096 Feb 17 18:28 root
drwxr-xr-x 20 root root 640 Feb 24 17:50 run
lrwxrwxrwx 1 root root    8 Apr 22  2024 sbin -> usr/sbin
drwxr-xr-x 2 root root 4096 Mar 31  2024 sbin.usr-is-merged
drwxr-xr-x 2 root root 4096 Feb 17 17:43 snap
drwxr-xr-x 2 root root 4096 Jan 23 15:57 srv
dr-xr-xr-x 11 root root    0 Feb 24 18:03 sys
drwxrwxrwt 11 root root 4096 Feb 24 17:32 tmp
drwxr-xr-x 12 root root 4096 Jan 23 15:57 usr
drwxr-xr-x 13 root root 4096 Feb 17 17:43 var
root@DESKTOP-UPTF3I8:/#
```

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

```

root@DESKTOP-UPTF3I8: /
root@DESKTOP-UPTF3I8: /# docker --help

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
run      Create and run a new container from an image
exec     Execute a command in a running container
ps       List containers
build    Build an image from a Dockerfile
pull     Download an image from a registry
push     Upload an image to a registry
images   List images
login    Authenticate to a registry
logout   Log out from a registry
search   Search Docker Hub for images
version  Show the Docker version information
info     Display system-wide information

Management Commands:
builder  Manage builds
container Manage containers
context  Manage contexts
image    Manage images
manifest Manage Docker image manifests and manifest lists
network  Manage networks
plugin   Manage plugins
system   Manage Docker
trust     Manage trust on Docker images
volume   Manage volumes

Swarm Commands:
swarm    Manage Swarm

Commands:
attach   Attach local standard input, output, and error streams to a running container
commit   Create a new image from a container's changes
cp       Copy files/folders between a container and the local filesystem
create   Create a new container
diff     Inspect changes to files or directories on a container's filesystem
events   Get real time events from the server
export   Export a container's filesystem as a tar archive
history  Show the history of an image

```

with single dash(-)

```
root@DESKTOP-UPTF3I8: /
```

```
root@DESKTOP-UPTF3I8: /# docker -h  
Flag shorthand -h has been deprecated, use --help
```

```
Usage:  docker [OPTIONS] COMMAND
```

```
A self-sufficient runtime for containers
```

```
Common Commands:
```

run	Create and run a new container from an image
exec	Execute a command in a running container
ps	List containers
build	Build an image from a Dockerfile
pull	Download an image from a registry
push	Upload an image to a registry
images	List images
login	Authenticate to a registry
logout	Log out from a registry
search	Search Docker Hub for images
version	Show the Docker version information
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```
Management Commands:
```

builder	Manage builds
container	Manage containers
context	Manage contexts
image	Manage images
manifest	Manage Docker image manifests and manifest lists
network	Manage networks
plugin	Manage plugins
system	Manage Docker
trust	Manage trust on Docker images
volume	Manage volumes

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 (syntax : `find / -type f -name finding file name`)

```

root@DESKTOP-UPTF3I8: /
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 ?        S1   17:28   0:00 /init
root         8  0.0  0.0   2776 132 ?         S1   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 ?        Ss   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-udev
systemd+  143  0.0  0.1  21452 11892 ?        Ss   17:28   0:00 /usr/lib/systemd/systemd-resolved
systemd+  144  0.0  0.0   91028 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 107816 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: /# 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
123451sdlkv;jg kefv
envqsdm
lvm qdv
lqm vc sdql;
vm
qsdcv
kl;qsdmcv sdvm
sd 'cvmk;
qsc m
'svlsdm
vqsdd'
vmqsd
cvl'
qsdmcv
l'qsdmvpk
qsnvcv
k;q s mv
KK:QSVlm sd
;cvdddk;
vmask;
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:/# 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 remove 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#
```