1. lsHow do you use the "cp" command to copy a file named "file.txt" from the current directory to a directory named "backup"?

```
prapti@neha:~$ ls
12            dbda_assi24.sh    dbda_m3.sh        dir3        Pictures
123           dbda_copy.sh      dbda_original.sh  dircopy     pk.txt.bz2
123.txt       dbda_cy.sh        dbda_start.sh     Documents   Public
a             dbda_f2.sh        dbda_xyz.sh       Downloads   sort.txt
backupdir     dbda_file32.sh    db.txt            file32      start.tar
cdac_123      dbda_file432.sh   Desktop           file.txt    start.txt.gz
currdir       dbda_file.sh      dir               li          Templates
current       dbda_geeks.sh     dir1              Music       Videos
currentdir    dbda_m1.sh        dir13             newfile     xaa
db1.txt       dbda_m2.sh        dir2              newname.txt
prapti@neha:~$ mkdir current_dir
prapti@neha:~$ mkdir backup
prapti@neha:~$ cd current_dir
prapti@neha:~/current_dir$ echo "heyyy....">file.txt
prapti@neha:~/current_dir$ cat file.txt
heyyy....
prapti@neha:~/current_dir$ ls
file.txt
prapti@neha:~/current_dir$ cd ..
prapti@neha:~$ cp file.txt /home/neha/backup
cp: cannot create regular file '/home/neha/backup': No such file or directory
prapti@neha:~$ cp file.txt /home/prapti/backup
prapti@neha:~$ cd backup
prapti@neha:~/backup$ ls
file.txt
prapti@neha:~/backup$
```

2. What is the difference between the "rm" and "rm -r" commands in Linux?

```
prapti@neha:~$ rm -r backup
prapti@neha:~$ ls
12            db1.txt           dbda_m2.sh        dir2        newname.txt
123           dbda_assi24.sh    dbda_m3.sh        dir3        Pictures
123.txt       dbda_copy.sh      dbda_original.sh  dircopy     pk.txt.bz2
a             dbda_cy.sh        dbda_start.sh     Documents   Public
backupdir     dbda_f2.sh        dbda_xyz.sh       Downloads   sort.txt
cdac_123      dbda_file32.sh    db.txt            file32      start.tar
currdir       dbda_file432.sh   Desktop           file.txt    start.txt.gz
current       dbda_file.sh      dir               li          Templates
current_dir   dbda_geeks.sh     dir1              Music       Videos
currentdir    dbda_m1.sh        dir13             newfile     xaa
prapti@neha:~$ cd current_dir
prapti@neha:~/current_dir$ la
file.txt
prapti@neha:~/current_dir$ rm file.txt
prapti@neha:~/current_dir$ ls
```

Ans: rm command removes a file from a directory while rm -r command removes a directory from the system.

3. How do you use the "mv" command to rename a file named "oldname.txt" to "newname.txt"?

```
prapti@neha:~/current_dir$ cd ..
prapti@neha:~$ cd current_dir
prapti@neha:~/current_dir$ ls
prapti@neha:~/current_dir$ touch oldfile.txt
prapti@neha:~/current_dir$ ls
oldfile.txt
prapti@neha:~/current_dir$ mv oldfile.txt newfile.txt
prapti@neha:~/current_dir$ ls
newfile.txt
prapti@neha:~/current_dir$
```

4. What does the "pwd" command do in Linux?

   ans: it prints the path of the current working directory

5. How do you create a new empty file named "newfile.txt" in the current directory using the command line?

```
prapti@neha:~/current_dir$ ls
newfile.txt
prapti@neha:~/current_dir$ touch new_file.txt
prapti@neha:~/current_dir$ ls
new_file.txt  newfile.txt
prapti@neha:~/current_dir$
```

6. How do you rename a file named "oldname.txt" to "newname.txt" using the command line?

```
prapti@neha:~/current_dir$ ls
new_file.txt  newfile.txt
prapti@neha:~/current_dir$ touch oldname.txt
prapti@neha:~/current_dir$ ls
new_file.txt  newfile.txt  oldname.txt
prapti@neha:~/current_dir$ mv oldname.txt newname.txt
prapti@neha:~/current_dir$ ls
new_file.txt  newfile.txt  newname.txt
prapti@neha:~/current_dir$
```

7. How do you remove a file named "file.txt" from the current directory using the command line?

```
prapti@neha:~/current_dir$ ls
new_file.txt   newfile.txt
prapti@neha:~/current_dir$ touch oldname.txt
prapti@neha:~/current_dir$ ls
new_file.txt   newfile.txt   oldname.txt
prapti@neha:~/current_dir$ mv oldname.txt newname.txt
prapti@neha:~/current_dir$ ls
new_file.txt   newfile.txt   newname.txt
prapti@neha:~/current_dir$
```

8. Use a command to show the current working directory

```
prapti@neha:~/current_dir$ ls
newfile.txt   newname.txt
prapti@neha:~/current_dir$ pwd
/home/prapti/current_dir
prapti@neha:~/current_dir$
```

9. List the directory contents in the short and long format

```
prapti@neha:~/current_dir$ cd ..
prapti@neha:~$ ls
12            db1.txt             dbda_m2.sh          dir2      newname.txt
123           dbda_assi24.sh      dbda_m3.sh          dir3      Pictures
123.txt       dbda_copy.sh        dbda_original.sh    dircopy   pk.txt.bz2
a             dbda_cy.sh          dbda_start.sh       Documents Public
backupdir     dbda_f2.sh          dbda_xyz.sh         Downloads sort.txt
cdac_123      dbda_file32.sh      db.txt              file32    start.tar
currdir       dbda_file432.sh     Desktop             file.txt  start.txt.gz
current       dbda_file.sh        dir                 li        Templates
current_dir   dbda_geeks.sh       dir1                Music     Videos
currentdir    dbda_m1.sh          dir13               newfile   xaa
prapti@neha:~$ ls -l
total 208
drwxrwxr-x 2 prapti prapti  4096 Aug 29 10:18 12
drwxrwxr-x 2 prapti prapti  4096 Aug 28 18:02 123
-rw-rw-r-- 1 prapti prapti    50 Aug 29 18:34 123.txt
drwxrwxr-x 3 prapti prapti  4096 Aug 29 18:42 a
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:30 backupdir
drwxrwxr-x 2 prapti prapti  4096 Aug 28 17:10 cdac_123
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:35 currdir
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:23 current
drwxrwxr-x 2 prapti prapti  4096 Aug 29 21:49 current_dir
```

10. Explore attributes given in long format e.g. file type, file permissions, file size, file owner etc.

```
prapti@neha:~$ ls -l
total 208
drwxrwxr-x 2 prapti prapti  4096 Aug 29 10:18 12
drwxrwxr-x 2 prapti prapti  4096 Aug 28 18:02 123
-rw-rw-r-- 1 prapti prapti    50 Aug 29 18:34 123.txt
drwxrwxr-x 3 prapti prapti  4096 Aug 29 18:42 a
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:30 backupdir
drwxrwxr-x 2 prapti prapti  4096 Aug 28 17:10 cdac_123
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:35 currdir
drwxrwxr-x 2 prapti prapti  4096 Aug 29 14:23 current
drwxrwxr-x 2 prapti prapti  4096 Aug 29 21:49 current_dir
```
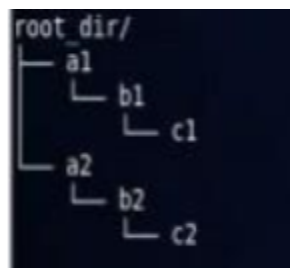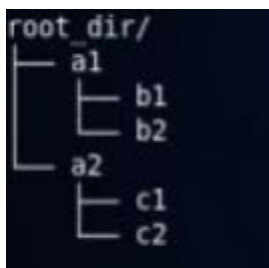
11. List all files along with hidden files in the current working directory.

```
prapti@neha:~$ ls
12            db1.txt          dbda_m2.sh          dir2       newname.txt
123           dbda_assi24.sh   dbda_m3.sh          dir3       Pictures
123.txt       dbda_copy.sh     dbda_original.sh    dircopy    pk.txt.bz2
a             dbda_cy.sh       dbda_start.sh       Documents  Public
backupdir     dbda_f2.sh       dbda_xyz.sh         Downloads  sort.txt
cdac_123      dbda_file32.sh   db.txt              file32     start.tar
currdir       dbda_file432.sh  Desktop             file.txt   start.txt.gz
current       dbda_file.sh     dir                 li         Templates
current_dir   dbda_geeks.sh    dir1                Music      Videos
currentdir    dbda_m1.sh       dir13               newfile    xaa
prapti@neha:~$ ls -a
.                  dbda_m2.sh          file.txt
..                 dbda_m3.sh          .gnupg
12                 dbda_original.sh    li
123                dbda_start.sh       .local
123.txt            dbda_xyz.sh         .mozilla
a                  db.txt              Music
backupdir          Desktop             newfile
.bash_history      dir                 newname.txt
.bash_logout       dir1                Pictures
.bashrc            dir13               pk.txt.bz2
.cache             dir2                .profile
cdac_123           dir3                Public
.config            dircopy             sort.txt
currdir            Documents           .ssh
current            Downloads           start.tar
current_dir        file32              start.txt.gz
currentdir         .file432.txt.swf    .sudo_as_admin_successful
db1.txt            .file432.txt.swg    Templates
dbda_assi24.sh     .file432.txt.swh    .thunderbird
dbda_copy.sh       .file432.txt.swi    .vboxclient-clipboard.pid
dbda_cy.sh         .file432.txt.swj    .vboxclient-display-svga-x11.pid
dbda_f2.sh         .file432.txt.swk    .vboxclient-draganddrop.pid
dbda_file32.sh     .file432.txt.swl    .vboxclient-seamless.pid
dbda_file432.sh    .file432.txt.swm    Videos
dbda_file.sh       .file432.txt.swn    xaa
dbda_geeks.sh      .file432.txt.swo
dbda_m1.sh         .file432.txt.swp
prapti@neha:~$
```

12. list only hidden files in the directory

```
prapti@neha:~$ ls
12            db1.txt          dbda_m2.sh        dir2       newname.txt
123           dbda_assi24.sh   dbda_m3.sh        dir3       Pictures
123.txt       dbda_copy.sh     dbda_original.sh  dircopy    pk.txt.bz2
a             dbda_cy.sh       dbda_start.sh     Documents  Public
backupdir     dbda_f2.sh       dbda_xyz.sh       Downloads  sort.txt
cdac_123      dbda_file32.sh   db.txt            file32     start.tar
currdir       dbda_file432.sh  Desktop           file.txt   start.txt.gz
current       dbda_file.sh     dir               li         Templates
current_dir   dbda_geeks.sh    dir1              Music      Videos
currentdir    dbda_m1.sh       dir13             newfile    xaa
prapti@neha:~$ ls -d .*
.                 .file432.txt.swi  .mozilla
..                .file432.txt.swj  .profile
.bash_history     .file432.txt.swk  .ssh
.bash_logout      .file432.txt.swl  .sudo_as_admin_successful
.bashrc           .file432.txt.swm  .thunderbird
.cache            .file432.txt.swn  .vboxclient-clipboard.pid
.config           .file432.txt.swo  .vboxclient-display-svga-x11.pid
.file432.txt.swf  .file432.txt.swp  .vboxclient-draganddrop.pid
.file432.txt.swg  .gnupg            .vboxclient-seamless.pid
.file432.txt.swh  .local
prapti@neha:~$
```

13. Make a directory and name it as **cdac-dir** and change the current working directory to the new directory.(Hint : use **mkdir,cd** commands). 3. Create following nested directories inside the current directory by invoking a single command for only one time. Note : here root_dir is the current directory.

```
root_dir/              root_dir/
├── a1                 ├── a1
│   ├── b1             │   └── b1
│   └── b2             │       └── c1
└── a2                 └── a2
    ├── c1                 └── b2
    └── c2                     └── c2
```

Directory structure 1 Directory structure 2

```
prapti@neha:~$ cd neha
prapti@neha:~/neha$ mkdir -p cdac-dir/{a1/b1,a1/b2,a2/c1,a2/c2}
prapti@neha:~/neha$ ls
cdac-dir
prapti@neha:~/neha$ tree
.
└── cdac-dir
    ├── a1
    │   ├── b1
    │   └── b2
    └── a2
        ├── c1
        └── c2

7 directories, 0 files
```

```
prapti@neha:~/neha$ mkdir -p {a1/b1/c1,a2/b2/c3}
prapti@neha:~/neha$ tree
.
├── a1
│   └── b1
│       └── c1
└── a2
    └── b2
        └── c3

6 directories, 0 files
prapti@neha:~/neha$
```

14.(Hint : explore the man page of **mkdir**).

```
MKDIR(1)                                                                          User Commands

NAME
       mkdir - make directories

SYNOPSIS
       mkdir [OPTION]... DIRECTORY...

DESCRIPTION
       Create the DIRECTORY(ies), if they do not already exist.

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

       -m, --mode=MODE
              set file mode (as in chmod), not a=rwx - umask

       -p, --parents
              no error if existing, make parent directories as needed, with their file modes unaffected by any -m option.

       -v, --verbose
              print a message for each created directory

       -Z     set SELinux security context of each created directory to the default type

       --context[=CTX]
              like -Z, or if CTX is specified then set the SELinux or SMACK security context to CTX

       --help display this help and exit

       --version
              output version information and exit

AUTHOR
       Written by David MacKenzie.

REPORTING BUGS
       GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
       Report any translation bugs to <https://translationproject.org/team/>

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SEE ALSO
       mkdir(2)

       Full documentation <https://www.gnu.org/software/coreutils/mkdir>
       or available locally via: info '(coreutils) mkdir invocation'

GNU coreutils 9.4                                                                  April 2024
~
```

15. List the directories(folders), then remove the **cdac-dir** directory and list the folders again to show that it is no longer present.(Hint : use **rm, ls** command)

```
prapti@neha:~/neha$ ls
a1  a2  cdac-dir
prapti@neha:~/neha$ rm -r cdac-dir
prapti@neha:~/neha$ ls
a1  a2
prapti@neha:~/neha$
```

16. Question-2.

17. Display the **man-page** for **ls**, but redirect the output into **temp.txt**, then use the **cat, less**, and **more** commands to display the new file.

```
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 ~

       -c     with  -lt:  sort  by,  and show, ctime (time of last modification of
              file status information); with -l: show ctime and sort by name; oth-
              erwise: sort by ctime, newest first

       -C     list entries by columns

       --color[=WHEN]
 Manual page ls(1) line 1 (press h for help or q to quit)
```

18. Display the initial 10 lines and final 5 lines of **temp.txt** with the obvious Linux commands.(Hint: use **head** and **tail** commands).

```
prapti@neha:~/neha$ ls
a1  a2  temp.txt
prapti@neha:~/neha$ head -n 10 temp.txt
BTS (Korean: 방탄소년단; RR: Bangtan Sonyeondan; lit. Bulletproof Boy Scouts), also k
nown as the Bangtan Boys, is a South Korean boy band formed in 2010. The band consist
s of Jin, Suga, J-Hope, RM, Jimin, V, and Jung Kook, who co-write or co-produce much
of their material. Originally a hip hop group, they expanded their musical style to i
ncorporate a wide range of genres, while their lyrics have focused on subjects includ
ing mental health, the troubles of school-age youth and coming of age, loss, the jour
ney towards self-love, individualism, and the consequences of fame and recognition. T
heir discography and adjacent work has also referenced literature, philosophy and psy
chology, and includes an alternate universe storyline.

BTS debuted in 2013 under Big Hit Entertainment with the single album 2 Cool 4 Skool.
 BTS released their first Korean and Japanese-language studio albums, Dark & Wild and
 Wake Up respectively, in 2014. The group's second Korean studio album, Wings (2016),
 was their first to sell one million copies in South Korea. By 2017, BTS had crossed
into the global music market and led the Korean Wave into the United States, becoming
 the first Korean ensemble to receive a Gold certification from the Recording Industr
y Association of America (RIAA) for their single "Mic Drop", as well as the first act
 from South Korea to top the Billboard 200 with their studio album Love Yourself: Tea
r (2018). In 2020, BTS became the fastest group since the Beatles to chart four US nu
mber-one albums in less than two years, with Love Yourself: Answer (2018) becoming th
e first Korean album certified Platinum by the RIAA; in the same year, they also beca
me the first all-South Korean act to reach number one on both the Billboard Hot 100 a
nd Billboard Global 200 with their Grammy-nominated single "Dynamite". Follow-up rele
ases "Savage Love", "Life Goes On", "Butter", "Permission to Dance", and "My Universe
" made them the fastest act to earn six US number-one singles since the Beatles in 19
66.
```

```
prapti@neha:~/neha$ tail -n 5 temp.txt

As of 2023, BTS is the best-selling musical act in South Korean history according to
the Circle Chart, having sold in excess of 40 million albums.[2] Their studio album M
ap of the Soul: 7 (2020) is the fourth best-selling album of all time in South Korea,
 as well as the first in the country to surpass both four and five million registered
 sales. They are the first non-English-speaking and Asian act to sell out concerts at
 Wembley Stadium and the Rose Bowl (Love Yourself World Tour, 2019), and were named t
he International Federation of the Phonographic Industry's (IFPI) Global Recording Ar
tist of the Year for both 2020 and 2021. The group's accolades include multiple Ameri
can Music Awards, Billboard Music Awards, Golden Disc Awards, and nominations for fiv
e Grammy Awards. Outside of music, they have addressed three sessions of the United N
ations General Assembly and partnered with UNICEF in 2017 to establish the Love Mysel
f anti-violence campaign. Featured on Time's international cover as "Next Generation
Leaders" and dubbed the "Princes of Pop", BTS has also appeared on Time's lists of th
e 25 most influential people on the internet (2017–2019) and the 100 most influential
 people in the world (2019), and in 2018 became the youngest recipients of the South
Korean Order of Cultural Merit for their contributions in spreading the Korean cultur
e and language.

On June 14, 2022, the group announced a scheduled pause in group activities to enable
 the members to complete their 18 months of mandatory South Korean military service.
Jin, the eldest member, enlisted on December 13, 2022; the others followed in 2023. A
ll members completed their services by June 2025, and in a livestream the group annou
nced that new music is being planned for spring 2026.
prapti@neha:~/neha$
```

19. Copy **temp.txt** to another directory and rename it there.

(**Hint**: use **cp** to copy and **mv** command to rename).

```
prapti@neha:~$ cd neha
prapti@neha:~/neha$ ls
a1   a2   temp.txt
prapti@neha:~/neha$ cp temp.txt /home/prapti/current_dir/newtemp.txt
prapti@neha:~/neha$ cd ..
prapti@neha:~$ ls
12            currentdir        dbda_geeks.sh     dir          file.txt      sort.txt
123           db1.txt           dbda_m1.sh        dir1         li            start.tar
123.txt       dbda_assi24.sh    dbda_m2.sh        dir13        Music         start.txt.gz
a             dbda_copy.sh      dbda_m3.sh        dir2         neha          Templates
backupdir     dbda_cy.sh        dbda_original.sh  dir3         newfile       Videos
cdac_123      dbda_f2.sh        dbda_start.sh     dircopy      newname.txt   xaa
currdir       dbda_file32.sh    dbda_xyz.sh       Documents    Pictures
current       dbda_file432.sh   db.txt            Downloads    pk.txt.bz2
current_dir   dbda_file.sh      Desktop           file32       Public
prapti@neha:~$ cd current_dir
prapti@neha:~/current_dir$ ls
newfile.txt   newname.txt   newtemp.txt
prapti@neha:~/current_dir$ 
```

20.Display the number of lines, words and characters in file using Linux command (**Hint**: use **wc** command).

```
prapti@neha:~$ cd neha
prapti@neha:~/neha$ ls
a1   a2   temp.txt
prapti@neha:~/neha$ wc temp.txt
   8   616 3796 temp.txt
prapti@neha:~/neha$ 
```

21. Use history command to display the last 10 commands used. (**Hint**: use **history** command).

```
prapti@neha:~/neha$ history 10
 1151  ls
 1152  cd current_dir
 1153  ls
 1154  cd ..
 1155  cd neha
 1156  ls
 1157  wc temp.txt
 1158  history
 1159  clear
 1160  history 10
prapti@neha:~/neha$ 
```

22.Create a tar archive file of any directory present in your home directory. (**Hint**: use **tar** command)

```
neha@neha-VirtualBox:~$ ls
anjali.txt   Documents   file.txt   Public   Templates
arch.txt     Downloads   Music      shell    Videos
Desktop      f1.txt      mydir      snap
dirneha      f3.txt      Pictures   tar.gz
neha@neha-VirtualBox:~$ ls -l file.txt
-rw-rw-r-- 1 neha neha 28 Sep  3 17:19 file.txt
neha@neha-VirtualBox:~$
```

23. Create a zip file of another directory. (**Hint**: use **zip** command) - list the
contents of the zip file without extracting.

```
neha@neha-VirtualBox:~$ mkdir project
neha@neha-VirtualBox:~$ cd project
neha@neha-VirtualBox:~/project$ touch f1.txt f2.txt f3.txt f4.txt f5.txt
neha@neha-VirtualBox:~/project$ ls
f1.txt  f2.txt  f3.txt  f4.txt  f5.txt
neha@neha-VirtualBox:~/project$ cd ..
neha@neha-VirtualBox:~$ zip -r project.zip

zip error: Nothing to do! (project.zip)
neha@neha-VirtualBox:~$ zip -r project.zip /home/neha/mydir
  adding: home/neha/mydir/ (stored 0%)
  adding: home/neha/mydir/file.txt (stored 0%)
neha@neha-VirtualBox:~$ ls
anjali.txt   Documents   file2.txt       new.txt      snap
arch.txt     Downloads   file.txt        Pictures     softlink.txt
arch.zip     f11.txt     hardlink.txt    project      tar1.gz
Desktop      f1.txt      manunalls.txt   project.zip  tar.gz
dirneha      f3.txt      Music           Public       Templates
dir_tar.tar  file1.txt   mydir           shell        Videos
neha@neha-VirtualBox:~$ unzip -l project.zip
Archive:  project.zip
  Length      Date    Time    Name
---------  ---------- -----   ----
        0  2025-09-03 17:49   home/neha/mydir/
       28  2025-09-03 17:19   home/neha/mydir/file.txt
---------                     -------
       28                     2 files
neha@neha-VirtualBox:~$
```

24. Give read, write & execute permissions to your file. (**Hint**: use **chmod** command)

```
neha@neha-VirtualBox:~$ touch file.txt
neha@neha-VirtualBox:~$ chmod 700 file.txt
neha@neha-VirtualBox:~$ ls -al file.txt
-rwx------ 1 neha neha 0 Sep  3 17:26 file.txt
neha@neha-VirtualBox:~$
```

25.Change ownership of that file.(**Hint**: use **chown** command) p

```
neha@neha-VirtualBox:~$ sudo chown dbda file.txt
neha@neha-VirtualBox:~$ ls -al file.txt
-rw-rw-r-- 1 dbda neha 28 Sep  3 18:16 file.txt
neha@neha-VirtualBox:~$
```

26. List processes running in shell, all running processes(**Hint**: use man page of **ps** command) and show top processes in decreasing order of their resource utilization.(**Hint**: use **top** command).

```
neha@neha-VirtualBox:~$ ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 15:57 ?        00:00:04 /sbin/init splas
root           2       0  0 15:57 ?        00:00:00 [kthreadd]
root           3       2  0 15:57 ?        00:00:00 [pool_workqueue_
root           4       2  0 15:57 ?        00:00:00 [kworker/R-rcu_g
root           5       2  0 15:57 ?        00:00:00 [kworker/R-sync_
root           6       2  0 15:57 ?        00:00:00 [kworker/R-kvfre
root           7       2  0 15:57 ?        00:00:00 [kworker/R-slub_
root           8       2  0 15:57 ?        00:00:00 [kworker/R-netns
root          11       2  0 15:57 ?        00:00:00 [kworker/0:0H-ev
root          12       2  0 15:57 ?        00:00:00 [kworker/u16:0-i
root          13       2  0 15:57 ?        00:00:00 [kworker/R-mm_pe
root          14       2  0 15:57 ?        00:00:00 [rcu_tasks_kthre
root          15       2  0 15:57 ?        00:00:00 [rcu_tasks_rude_
root          16       2  0 15:57 ?        00:00:00 [rcu_tasks_trace
root          17       2  0 15:57 ?        00:00:00 [ksoftirqd/0]
root          18       2  0 15:57 ?        00:00:03 [rcu_preempt]
```

27. Display current time and calendar (**Hint**: use **date, cal** commands) 2. Change the current date and time of the system to following 14th March 2024, 10:10 AM

```
prapti@neha:~$ date
Friday 29 August 2025 10:27:49 PM IST
prapti@neha:~$ cal
     August 2025
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
```

```
prapti@neha:~$ cal 2025
                            2025
        January                 February                 March
Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
          1  2  3  4                        1                        1
 5  6  7  8  9 10 11      2  3  4  5  6  7  8      2  3  4  5  6  7  8
12 13 14 15 16 17 18      9 10 11 12 13 14 15      9 10 11 12 13 14 15
19 20 21 22 23 24 25     16 17 18 19 20 21 22     16 17 18 19 20 21 22
26 27 28 29 30 31        23 24 25 26 27 28        23 24 25 26 27 28 29
                                                  30 31

         April                    May                     June
Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
       1  2  3  4  5               1  2  3      1  2  3  4  5  6  7
 6  7  8  9 10 11 12      4  5  6  7  8  9 10      8  9 10 11 12 13 14
13 14 15 16 17 18 19     11 12 13 14 15 16 17     15 16 17 18 19 20 21
20 21 22 23 24 25 26     18 19 20 21 22 23 24     22 23 24 25 26 27 28
27 28 29 30             25 26 27 28 29 30 31     29 30

         July                   August                 September
Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
       1  2  3  4  5                     1  2      1  2  3  4  5  6
 6  7  8  9 10 11 12      3  4  5  6  7  8  9      7  8  9 10 11 12 13
13 14 15 16 17 18 19     10 11 12 13 14 15 16     14 15 16 17 18 19 20
20 21 22 23 24 25 26     17 18 19 20 21 22 23     21 22 23 24 25 26 27
27 28 29 30 31          24 25 26 27 28 29 30     28 29 30
                        31

        October                November                December
Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
          1  2  3  4                        1      1  2  3  4  5  6
 5  6  7  8  9 10 11      2  3  4  5  6  7  8      7  8  9 10 11 12 13
12 13 14 15 16 17 18      9 10 11 12 13 14 15     14 15 16 17 18 19 20
19 20 21 22 23 24 25     16 17 18 19 20 21 22     21 22 23 24 25 26 27
26 27 28 29 30 31        23 24 25 26 27 28 29     28 29 30 31
                        30
```

```
prapti@neha:~$ cal 3 2024
      March 2024
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
prapti@neha:~$ sudo date -s "2024-03-14 10:10:00"
[sudo] password for prapti:
Thursday 14 March 2024 10:10:00 AM IST
```

28. Explore following commands

29. who, whoami, whatis, whereis, (**Hint**: use man pages).

```
prapti@neha:~$ who
prapti   :0             2025-08-29 09:55 (:0)
prapti@neha:~$ whoami
prapti
prapti@neha:~$ whatis
whatis what?
prapti@neha:~$ whereis
whereis: not enough arguments
Try 'whereis --help' for more information.
prapti@neha:~$ whereis temp.txt
temp:
prapti@neha:~$ █
```

30. Create one directory named linux. cd to that directory and create one file named **testperms.txt.** Check the permissions of that file. Check the value of **umask**. Change the value of umask and create one new file **newtestperms.txt** and check its permissions. Note down the difference.(Hint: use **umask, ls** command)

```
neha@neha-VirtualBox:~$ mkdir linux
neha@neha-VirtualBox:~$ cd linux
neha@neha-VirtualBox:~/linux$ touch testperms.txt
neha@neha-VirtualBox:~/linux$ ls -l testperms.txt
-rw-rw-r-- 1 neha neha 0 Sep  3 18:37 testperms.txt
neha@neha-VirtualBox:~/linux$ umask
0002
neha@neha-VirtualBox:~/linux$ umask 0077
neha@neha-VirtualBox:~/linux$ touch newtestperms.txt
neha@neha-VirtualBox:~/linux$ ls -l newtestperms.txt
-rw------- 1 neha neha 0 Sep  3 18:38 newtestperms.txt
neha@neha-VirtualBox:~/linux$
```

31. Create a file and name it as file1.txt and create a hardlink to this file. (Hint: use **ln** command).

```
neha@neha-VirtualBox:~$ touch file1.txt
neha@neha-VirtualBox:~$ ls
anjali.txt  dir_tar.tar  f1.txt      manunalls.txt  Public
arch.txt    Documents    f3.txt      Music          shell
Desktop     Downloads    file1.txt   mydir          snap
dirneha     f11.txt      file.txt    Pictures       tar1.gz
neha@neha-VirtualBox:~$ ln file1.txt hardlink.txt
neha@neha-VirtualBox:~$ ls -l file1.txt hardlink.txt
-rw-rw-r-- 2 neha neha 0 Sep  3 18:08 file1.txt
-rw-rw-r-- 2 neha neha 0 Sep  3 18:08 hardlink.txt
neha@neha-VirtualBox:~$
```

32. Create a file and name it as file2.txt and create a softlink to this file. (Hint: use **ln** command).

```
neha@neha-VirtualBox:~$ touch file2.txt
neha@neha-VirtualBox:~$ ls
anjali.txt    Documents    file1.txt        Music      snap
arch.txt      Downloads    file2.txt        mydir      tar1.gz
Desktop       f11.txt      file.txt         Pictures   tar.gz
dirneha       f1.txt       hardlink.txt     Public     Templates
dir_tar.tar   f3.txt       manunalls.txt    shell      Videos
neha@neha-VirtualBox:~$ ln -s file2.txt softlink.txt
neha@neha-VirtualBox:~$ ls -l file2.txt softlink.txt
-rw-rw-r-- 1 neha neha 0 Sep  3 18:10 file2.txt
lrwxrwxrwx 1 neha neha 9 Sep  3 18:11 softlink.txt -> file2.txt
neha@neha-VirtualBox:~$
```

Hard Link	Soft link
Hard line with being a link.	Soft link is a link which indicates path to its parent file.
Since it is a file by itself, if parent file is deleted, child file remains as it was previously.	Since its a path, if parent file is deleted, child doesn't point tp proper path and becomes a zombie file.
Can be used for creating backup files.	Can be used as a shortcut.
Syntax is: In parentfile.ext childfile.ext	Syntax is: In -s parentfile.ext Q childfile.ext (here, -s indicates soft link)

33. Use **ssh** to connect to your friend's shell by specifying **port number** in the **ssh** command. use **exit** command to come out of your friends shell.

(Hint: use **ssh** command)

```
neha@neha-VirtualBox:~$ sudo systemctl start ssh
[sudo] password for neha:
neha@neha-VirtualBox:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: ena>
     Active: active (running) since Wed 2025-09-03 16:33:18 IST; 17min ago
TriggeredBy: ● ssh.socket
       Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 4730 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 4731 (sshd)
      Tasks: 1 (limit: 9435)
     Memory: 3.2M (peak: 4.4M)
        CPU: 131ms
     CGroup: /system.slice/ssh.service
```

```
neha@neha-VirtualBox:~$ hostname -I
192.168.5.66
neha@neha-VirtualBox:~$ ssh anjali@192.168.4.226
The authenticity of host '192.168.4.226 (192.168.4.226)' can't be established.
ED25519 key fingerprint is SHA256:W8nVzQgQ7lATRJXfFgp6T9mokPJJMW7rUk0JAj515fQ.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.4.226' (ED25519) to the list of known hosts.
anjali@192.168.4.226's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-29-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

```
anjali@Anjali:~$ ls
3.sh         crt.sh        Downloads    num_sort_example.txt   snap
a1           crts.sh       dup.txt      op.txt                 sort_example.txt
a2           dbda_rnm3.sh  f11.txt      Pictures               Templates
anjali.txt   Desktop       linux        Public                 temp.txt
ass          direc         linux.tar    rnm1.txt               Videos
a.txt        direct.tar    Music        root-dir               zip_ass.zip
backup       Documents     mydir        shell
anjali@Anjali:~$
```

34.Use **scp** using your friend's credentials to copy a file into a directory **owned by your friend,** inside his home directory, specify port number in **scp** command.

```
neha@neha-VirtualBox:~$ ls
Desktop     Downloads   f2.txt   Music     Public   Templates
Documents   f1.txt      f3.txt   Pictures  snap     Videos
neha@neha-VirtualBox:~$ scp /home/neha/f2.txt anjali@192.168.4.226:/home/anjali/
anjali@192.168.4.226's password:
f2.txt                                        100%    0     0.0KB/s   00:00
neha@neha-VirtualBox:~$
```

35.Use **scp** using your friend's credentials to copy **directory** into a directory **owned by you**, inside your home directory, specify port number in **scp** command

```
neha@neha-VirtualBox:~$ scp /home/neha/f2.txt anjali@192.168.4.226:/home/anjali/
anjali@192.168.4.226's password:
f2.txt                                          100%    0     0.0KB/s   00:00
neha@neha-VirtualBox:~$ mkdir dirneha
neha@neha-VirtualBox:~$ scp -r /home/neha/dirneha anjali@192.168.4.226:/home/anj
ali/
anjali@192.168.4.226's password:
neha@neha-VirtualBox:~$
```

36. Use **scp** using your friend's credentials to copy **directory** into a directory **owned by you**, inside your home directory, specify port number in **scp** command

```
neha@neha-VirtualBox:~$ scp /home/neha/f2.txt anjali@192.168.4.226:/home/anjali/
anjali@192.168.4.226's password:
f2.txt                                          100%    0     0.0KB/s   00:00
neha@neha-VirtualBox:~$ mkdir dirneha
neha@neha-VirtualBox:~$ scp -r /home/neha/dirneha anjali@192.168.4.226:/home/anj
ali/
anjali@192.168.4.226's password:
neha@neha-VirtualBox:~$
```

37. Connect to any publicly available **ftp** server from the terminal and try to download, upload and delete files. If you get error in any process (connect, upload, download or delete), justify the reasons behind them.(Hint: use **ftp** command) Example: Try to access **ftp.netbsd.org** username : **anonymous** password : **anonymous**

38. How do you remove a directory named "mydir" and all of its contents using the command line?

```
prapti@neha:~/neha$ mkdir mydir
prapti@neha:~/neha$ ls
a1  a2  mydir  temp.txt
prapti@neha:~/neha$ rmdir mydir
prapti@neha:~/neha$ ls
a1  a2  temp.txt
prapti@neha:~/neha$
```

39. How do you use the "ls" command to list all files and directories in the current directory?

```
neha@neha-VirtualBox:~$ ls
anjali.txt  Documents  f2.txt  Pictures  snap
Desktop     Downloads  f3.txt  Public    Templates
dirneha     f1.txt     Music   shell     Videos
neha@neha-VirtualBox:~$
```

40. How do you create a new file named "myfile.txt" in the directory "/home/user/documents" using the command line?

```
neha@neha-VirtualBox:~$ touch /home/neha/Documents/myfile
.txt
neha@neha-VirtualBox:~$ cd Documents
neha@neha-VirtualBox:~/Documents$ ls
myfile.txt
neha@neha-VirtualBox:~/Documents$
```

41. How do you use the "grep" command to search for a specific word or phrase in multiple files at once?

```
neha@neha-VirtualBox:~$ ls
anjali.txt  Documents   f2.txt  Pictures  snap
Desktop     Downloads   f3.txt  Public    Templates
dirneha     f1.txt      Music   shell     Videos
neha@neha-VirtualBox:~$ nano f2.txt
neha@neha-VirtualBox:~$ grep 'the' f1.txt f2.txt f3.txt
f2.txt:the
neha@neha-VirtualBox:~$
```

42. How do you create a new directory named "mydir" and set its permissions to read, write, and execute for the owner and read and execute for everyone else?

```
neha@neha-VirtualBox:~$ mkdir -m 755 mydir
neha@neha-VirtualBox:~$ ls -ln mydir
total 0
neha@neha-VirtualBox:~$ ls -l mydir
total 0
neha@neha-VirtualBox:~$ ls -al mydir
total 8
drwxr-xr-x  2 neha neha 4096 Sep  3 17:21 .
drwxr-x--- 18 neha neha 4096 Sep  3 17:21 ..
neha@neha-VirtualBox:~$ ls
anjali.txt  Downloads  Music      shell
Desktop     f1.txt     mydir      snap
dirneha     f2.txt     Pictures   Templates
Documents   f3.txt     Public     Videos
neha@neha-VirtualBox:~$
```

43. How do you use the "tar" command to create a compressed archive of all files in the current directory and its subdirectories?

```
neha@neha-VirtualBox:~$ touch tar.gz
neha@neha-VirtualBox:~$ tar -czvf arch.txt tar.gz
tar.gz
neha@neha-VirtualBox:~$ ls
anjali.txt  Documents  f3.txt     Pictures  tar.gz
arch.txt    Downloads  file.txt   Public    Templates
Desktop     f1.txt     Music      shell     Videos
dirneha     f2.txt     mydir      snap
neha@neha-VirtualBox:~$
```

44. How do you use the "chmod" command to give read and write permissions to the owner and group for a file named "file.txt"?

```
neha@neha-VirtualBox:~$ touch file.txt
neha@neha-VirtualBox:~$ chmod ug+rw file.txt
neha@neha-VirtualBox:~$ ls -al file.txt
-rw-rw-r-- 1 neha neha 28 Sep  3 18:16 file.txt
neha@neha-VirtualBox:~$
```

45. How do you find the size of a file named "file.txt" in bytes, kilobytes, and megabytes using the command line?

```
neha@neha-VirtualBox:~$ ls
anjali.txt  Documents  file.txt   Public   Templates
arch.txt    Downloads  Music      shell    Videos
Desktop     f1.txt     mydir      snap
dirneha     f3.txt     Pictures   tar.gz
neha@neha-VirtualBox:~$ ls -l file.txt
-rw-rw-r-- 1 neha neha 28 Sep  3 17:19 file.txt
neha@neha-VirtualBox:~$
```

46. How do you use the "awk" command to extract a specific column from a commaseparated value (CSV) file and sort it in reverse order?

```
neha@neha-VirtualBox:~$ nano f11.txt
neha@neha-VirtualBox:~$ awk '{print $2}' f11.txt | sort -r
can
bye
anyone
```

47. How do you use the "sed" command to replace all occurrences of a word or phrase in a file with a different word or phrase?

```
neha@neha-VirtualBox:~$ man ls > manunalls.txt
neha@neha-VirtualBox:~$ ls
anjali.txt  Downloads      Music      snap
arch.txt    f1.txt         mydir      tar.gz
Desktop     f3.txt         Pictures   Templates
dirneha     file.txt       Public     Videos
neha@neha-VirtualBox:~$ sed -i 's/the/NEHA/g' manunalls.txt
neha@neha-VirtualBox:~$ cat manunalls.txt
LS(1)                   User Commands                    LS(1)

NAME
       ls - list directory contents

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

DESCRIPTION
       List  information  about  NEHA FILEs (NEHA current
       directory by default).  Sort entries  alphabeti-
```

48. How do you use the "find" command to search for all files in a directory and its subdirectories that were modified within the last 24 hours?

```
neha@neha-VirtualBox:~$ find /home/neha/shell -type f -mtime -1
/home/neha/shell/11.sh
/home/neha/shell/7.sh
/home/neha/shell/14.sh
/home/neha/shell/12.sh
/home/neha/shell/13.sh
/home/neha/shell/1.sh
/home/neha/shell/copy_hardlink.txt
/home/neha/shell/4.sh
/home/neha/shell/2.sh
/home/neha/shell/8.sh
/home/neha/shell/3.sh
/home/neha/shell/5.sh
/home/neha/shell/10.sh
/home/neha/shell/6.sh
/home/neha/shell/9.sh
/home/neha/shell/15.sh
neha@neha-VirtualBox:~$
```

49. How do you use the "diff" command to compare two files and show only the lines that are different between them?

```
neha@neha-VirtualBox:~$ diff file.txt manunalls.txt
1,7c1
< hii
< rgg
< gf
< the
< if
< iad
< hdh
---
> LS(1)                    User Commands                    LS(1)
8a3,300
> NAME
>        ls - list directory contents
>
> SYNOPSIS
>        ls [OPTION]... [FILE]...
>
> DESCRIPTION
>        List  information  about  NEHA FILEs (NEHA current
```

50. How do you use the "rsync" command to synchronize the contents of two directories, including all subdirectories and files, while preserving file permissions and ownerships?

```
neha@neha-VirtualBox:~$ rsync -av file.txt /home/neha/mydir
sending incremental file list
file.txt

sent 134 bytes  received 35 bytes  338.00 bytes/sec
total size is 28  speedup is 0.17
neha@neha-VirtualBox:~$
```

51. How do you use the "cut" command to extract a specific range of characters or bytes from a file?

```
neha@neha-VirtualBox:~$ cut -c 1,5-10 manunalls.txt
L)

N
    ls

SPSIS
    ls

DRIPTIO
    Lis
    dir
```

52. How do you use the "tar" command to extract a specific file or directory from a compressed archive without extracting the entire archive?

```
neha@neha-VirtualBox:~$ touch dir_tar.tar
neha@neha-VirtualBox:~$ ls
anjali.txt    Documents    manunalls.txt    shell        Videos
arch.txt      Downloads    Music            snap
Desktop       f1.txt       mydir            tar1.gz
dirneha       f3.txt       Pictures         tar.gz
dir_tar.tar   file.txt     Public           Templates
neha@neha-VirtualBox:~$ tar -cvf dir_tar.tar mydir
mydir/
mydir/file.txt
neha@neha-VirtualBox:~$ ls
anjali.txt    Documents    manunalls.txt    shell        Videos
arch.txt      Downloads    Music            snap
Desktop       f1.txt       mydir            tar1.gz
dirneha       f3.txt       Pictures         tar.gz
dir_tar.tar   file.txt     Public           Templates
neha@neha-VirtualBox:~$
```

53. How do you use the "awk" command to count the number of occurrences of a specific word or phrase in a file?

```
neha@neha-VirtualBox:~$ awk '/ls/ {count++} END {print count}' manunalls.txt
12
neha@neha-VirtualBox:~$
```