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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ mkdir backup
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ touch file.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002      dir1   Documents  Music      snap
backup    dir11  Downloads  newww      Templates
dbda_25   dir2   file.txt   Pictures  Videos
Desktop   dir3   helllo     Public
```

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ cp file.txt backup

proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ ls
file.txt
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ rm newname.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ cd ../
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ rm -r backup/
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002      dir1   dir3       file.txt   newww     snap
dbda_25   dir11  Documents  helllo     Pictures  Templates
Desktop   dir2   Downloads  Music      Public    Videos
```

- The main difference between rm and rm -r is that rm just removes the single file or folder, but rm -r removes the contents recursively and also deletes the subfolder if present inside.

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ touch oldname.txt

proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ mv oldname.txt
newname.txt

proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ ls
file.txt  newname.txt
```

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

- pwd command shows the present working directory in linux

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ pwd
/home/proxim/backup
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ touch newfile.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~/backup$ ls
file.txt  newfile.txt   newname.txt
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ touch oldname.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ mv oldname.txt newname.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  file.txt  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ rm file.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
```

8. Use a command to show the current working directory.

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ pwd
/home/proxim
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls -l
total 68
drwxrwxr-x 2 proxim proxim 4096 Aug 29 02:50 2002
drwxrwxr-x 2 proxim proxim 4096 Aug 28 17:10 dbda_25
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Desktop
drwxrwxr-x 2 proxim proxim 4096 Aug 29 03:09 dir1
drwxrwxr-x 2 proxim proxim 4096 Aug 28 18:03 dir11
drwxrwxr-x 2 proxim proxim 4096 Aug 29 03:45 dir2
drwxrwxr-x 2 proxim proxim 4096 Aug 29 03:13 dir3
drwxr-xr-x 3 proxim proxim 4096 Aug 29 02:36 Documents
drwxr-xr-x 2 proxim proxim 4096 Aug 29 02:29 Downloads
drwxrwxr-x 2 proxim proxim 4096 Aug 28 17:10 helllo
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Music
-rw-rw-r-- 1 proxim proxim    0 Aug 29 16:14 newname.txt
drwxrwxr-x 2 proxim proxim 4096 Aug 29 01:50 newww
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Pictures
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Public
drwx------ 4 proxim proxim 4096 Aug 28 17:09 snap
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Templates
drwxr-xr-x 2 proxim proxim 4096 Aug 28 17:09 Videos
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls -la
total 124
drwxr-x--- 24 proxim proxim 4096 Aug 29 16:15 .
drwxr-xr-x  3 root   root   4096 Aug 28 17:09 ..
drwxrwxr-x  2 proxim proxim 4096 Aug 29 02:50 2002
-rw-------  1 proxim proxim 4455 Aug 29 15:58 .bash_history
-rw-r--r--  1 proxim proxim  220 Mar  5 08:05 .bash_logout
-rw-r--r--  1 proxim proxim 3771 Mar  5 08:05 .bashrc
drwx------ 11 proxim proxim 4096 Aug 28 17:10 .cache
drwx------ 14 proxim proxim 4096 Aug 29 04:49 .config
drwxrwxr-x  2 proxim proxim 4096 Aug 28 17:10 dbda_25
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Desktop
drwxrwxr-x  2 proxim proxim 4096 Aug 29 03:09 dir1
drwxrwxr-x  2 proxim proxim 4096 Aug 28 18:03 dir11
drwxrwxr-x  2 proxim proxim 4096 Aug 29 03:45 dir2
drwxrwxr-x  2 proxim proxim 4096 Aug 29 03:13 dir3
drwxr-xr-x  3 proxim proxim 4096 Aug 29 02:36 Documents
drwxr-xr-x  2 proxim proxim 4096 Aug 29 02:29 Downloads
drwx------  2 proxim proxim 4096 Aug 29 15:58 .gnupg
drwxrwxr-x  2 proxim proxim 4096 Aug 28 17:10 helllo
drwx------  4 proxim proxim 4096 Aug 28 17:09 .local
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Music
-rw-rw-r--  1 proxim proxim    0 Aug 29 16:14 newname.txt
drwxrwxr-x  2 proxim proxim 4096 Aug 29 01:50 newww
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Pictures
-rw-r--r--  1 proxim proxim  807 Mar  5 08:05 .profile
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Public
drwx------  4 proxim proxim 4096 Aug 28 17:09 snap
drwx------  2 proxim proxim 4096 Aug 28 17:10 .ssh
-rw-r--r--  1 proxim proxim    0 Aug 28 17:15 .sudo_as_admin_successful
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Templates
drwxr-xr-x  2 proxim proxim 4096 Aug 28 17:09 Videos
-rw-------  1 proxim proxim 4786 Aug 29 04:49 .viminfo
```

11. List all files along with hidden files in the current working directory.

```
proxim@proxim-Apple-Virtualization-Generic-Platform: $ ls -a
.    2002         .bash_logout  .cache   dbda_25  dir1   dir2  Documents  .gnupg  .local  newname.txt  Pictures  Public  .ssh                        Templates  .viminfo
..   .bash_history  .bashrc       .config  Desktop  dir11  dir3  Downloads  helllo  Music   newww        .profile  snap    .sudo_as_admin_successful  Videos
```

12. List only hidden files in the directory
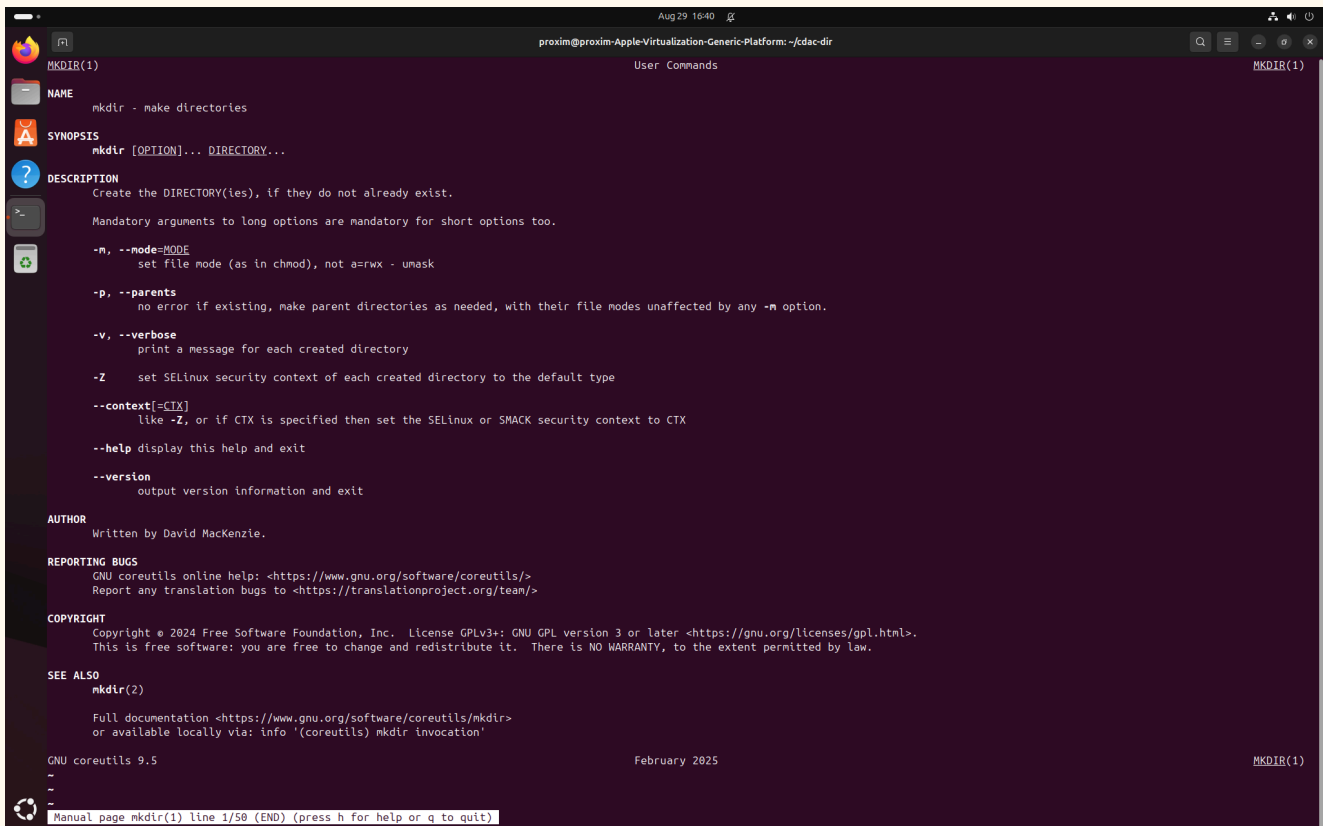
```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls -A
2002         .bash_logout  .cache   dbda_25  dir1   dir2  Documents  .gnupg  .local  newname.txt  Pictures  Public  .ssh                        Templates  .viminfo
.bash_history  .bashrc       .config  Desktop  dir11  dir3  Downloads  helllo  Music   newww        .profile  snap    .sudo_as_admin_successful  Videos
```

13. Make a directory and name it as cac-dir and change the current working directory to the new directory. Create following nested directories inside the current directory by invoking a single command for only one time.

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ mkdir cdac-dir && cd cdac-dir
proxim@proxim-Apple-Virtualization-Generic-Platform:~/cdac-dir$ mkdir -p root_dir/a1/{b1,b2}
proxim@proxim-Apple-Virtualization-Generic-Platform:~/cdac-dir$ mkdir -p root_dir/a2/{b2,c1}
proxim@proxim-Apple-Virtualization-Generic-Platform:~/cdac-dir$ tree
.
└── root_dir
    ├── a1
    │   ├── b1
    │   └── b2
    └── a2
        ├── b2
        └── c1
```

14. Man page for mkdir

```
MKDIR(1)                          User Commands                         MKDIR(1)

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
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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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       This is free software: you are free to change and redistribute it.  There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
       mkdir(2)

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

GNU coreutils 9.5                  February 2025                        MKDIR(1)
~
~
~
Manual page mkdir(1) line 1/50 (END) (press h for help or q to quit)
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/cdac-dir$ ls
root_dir
proxim@proxim-Apple-Virtualization-Generic-Platform:~/cdac-dir$ cd ..
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  cdac-dir  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ rm -r cdac-dir/
```

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.

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ man ls | col -b > temp.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ cat temp.txt
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
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ head -n 10 temp.txt
LS(1)                                                    User Commands

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.
```

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ ls
cy.txt  fa.txt  fb.txt  original.txt  shubham.txt  temp.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ tail -n 10 temp.txt
       Copyright © 2024 Free Software Foundation, Inc.  License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
       This is free software: you are free to change and redistribute it.  There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
       dircolors(1)

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

GNU coreutils 9.5                                                         February 2025
```

19. Copy temp.txt to another directory and rename it there. (Hint: use ep to copy and mv command to rename).

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ touch temp.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ mv temp.txt ~/dir1/changed_temp.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ cd dir1
proxim@proxim-Apple-Virtualization-Generic-Platform:~/dir1$ ls
all_docs  changed_temp.txt  f1.txt  haha  hi.txt
```

20. Display the number of lines, words and characters in file using Linux command

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ wc temp.txt
 215  967 7552 temp.txt
```

21. History command

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ history
    1  vim shub.txt
    2  bash shubh.txt
    3  bash shub.txt
    4  ls
    5  cat shub.txt
    6  sudo dmidecode -t
    7  dmidecode
    8  dmidecode -t processor
    9  sude dmidecode -t processor
   10  sudo dmidecode -t processor
   11  free
   12  free -h
   13  cat /proc/meminfo
   14  /vmstat -a
   15  df
   16  fdisk -I
   17  moount | column -t
   18  mount | column -t
   19  blkid
   20  ifconfig
   21  ipconfig
   22  sudo apt install ipconfig
   23  ss -tulnp
```

22. Create a archive using tar command

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ cd .
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ cd ../
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ zip -r newzip.zip 2002
  adding: 2002/ (stored 0%)
  adding: 2002/fb.txt (stored 0%)
  adding: 2002/archive.tar (deflated 98%)
  adding: 2002/fa.txt (stored 0%)
  adding: 2002/original.txt (stored 0%)
  adding: 2002/temp.txt (deflated 59%)
  adding: 2002/shubham.txt (deflated 10%)
  adding: 2002/cy.txt (stored 0%)
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  newzip.zip  Pictures  Public  snap  Templates  Videos
```

23. Zip a folder using zip command.

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ tar -cvf archive.tar cy.txt fa.txt original.txt
cy.txt
fa.txt
original.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~/2002$ ls
archive.tar  cy.txt  fa.txt  fb.txt  original.txt  shubham.txt  temp.txt
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ chmod u+rw newname.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls
2002  dbda_25  Desktop  dir1  dir11  dir2  dir3  Documents  Downloads  helllo  Music  newname.txt  newww  newzip.zip  Pictures  Public  snap  Templates  Videos
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls -l newname.txt
-rw-rw-r-- 1 proxim proxim 0 Aug 29 16:14 newname.txt
```

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

```
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ sudo chown proxim newfile.txt
[sudo] password for proxim:
proxim@proxim-Apple-Virtualization-Generic-Platform:~$ ls -l newfile.txt
-rw-rw-r-- 1 proxim proxim 3094 Aug 29 17:34 newfile.txt
proxim@proxim-Apple-Virtualization-Generic-Platform:~$
```

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).

```
proxim@proxim:~$ top -b -n 1 | head -n 11
top - 18:32:22 up  2:34,  2 users,  load average: 0.00, 0.01, 0.04
Tasks: 186 total,   1 running, 184 sleeping,   0 stopped,   1 zombie
%Cpu(s):  3.3 us, 10.0 sy,  0.0 ni, 83.3 id,  3.3 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   1635.8 total,    259.5 free,    743.7 used,    795.6 buff/cache
MiB Swap:   2048.0 total,   1565.3 free,    482.7 used.    892.1 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   8728 proxim    20   0   12860   4792   2872 R   7.7   0.3   0:00.05 top
      1 root      20   0   24872  11972   8772 S   0.0   0.7   0:04.16 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.01 kthreadd
      3 root      20   0       0      0      0 S   0.0   0.0   0:00.00 pool_wo+
```

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

```
proxim@proxim:~$ date
Fri Aug 29 06:33:34 PM IST 2025
proxim@proxim:~$ 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
proxim@proxim:~$ ncal
    August 2025
Su     3 10 17 24 31
Mo     4 11 18 25
Tu     5 12 19 26
We     6 13 20 27
Th     7 14 21 28
Fr  1  8 15 22 29
Sa  2  9 16 23 30
proxim@proxim:~$ sude date 031410102024
Command 'sude' not found, did you mean:
  command 'sudo' from deb sudo (1.9.16p2-1ubuntu1.1)
  command 'sudo' from deb sudo-ldap (1.9.16p2-1ubuntu1.1)
  command 'sure' from deb python3-sure (2.0.1+git.2023.02.06.3aef950b7c-4)
Try: sudo apt install <deb name>
proxim@proxim:~$ sudo date 031410102024
[sudo] password for proxim:
Thu Mar 14 10:10:00 AM IST 2024
```

29. Explore the commands - who, whoami, whatis, whereis

```
proxim@proxim:~$ who
proxim@proxim:~$ whoami
proxim
proxim@proxim:~$ whatis ls
ls (1)                - list directory contents
proxim@proxim:~$ whereis ls
ls: /usr/bin/ls /usr/share/man/man1/ls.1.gz
```

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.tt and check its permissions. Note down the difference.(Hint: use umask, Is command)

```
proxim@proxim:~/linux$ umask 077
proxim@proxim:~/linux$ umask
0077
proxim@proxim:~/linux$ touch newtestperms.txt
proxim@proxim:~/linux$ ls -l newtestperms.txt
-rw------- 1 proxim proxim 0 Mar 14 10:17 newtestperms.txt
```

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

```
proxim@proxim:~/linux$ touch file1.txt
proxim@proxim:~/linux$ ln file1.txt hardlink.txt
proxim@proxim:~/linux$ ls -li
total 0
536189 -rw------- 2 proxim proxim 0 Mar 14 10:19 file1.txt
536189 -rw------- 2 proxim proxim 0 Mar 14 10:19 hardlink.txt
```

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

```
proxim@proxim:~/linux$ touch file2.txt
proxim@proxim:~/linux$ ln -s file2.txt softlinkfile2.txt
proxim@proxim:~/linux$ ln -l
ln: invalid option -- 'l'
Try 'ln --help' for more information.
proxim@proxim:~/linux$ ls -l
total 0
-rw------- 2 proxim proxim 0 Mar 14 10:19 file1.txt
-rw------- 1 proxim proxim 0 Mar 14 10:23 file2.txt
-rw------- 2 proxim proxim 0 Mar 14 10:19 hardlink.txt
-rw------- 1 proxim proxim 0 Mar 14 10:17 newtestperms.txt
lrwxrwxrwx 1 proxim proxim 9 Mar 14 10:23 softlinkfile2.txt -> file2.txt
-rw-rw-r-- 1 proxim proxim 0 Mar 14 10:14 testperms.txt
```

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.

```
proxim@proxim:~$ hostname -I
192.168.64.3 fd7d:cd6d:1928:f154:3b11:db72:e30e:6df9 fd7d:cd6d:1928:f154:c413:daff:fed3:66b6
proxim@proxim:~$ hostname -I
192.168.64.3 fd7d:cd6d:1928:f154:3b11:db72:e30e:6df9 fd7d:cd6d:1928:f154:c413:daff:fed3:66b6
proxim@proxim:~$ ssh vboxuser@192.168.4.248
The authenticity of host '192.168.4.248 (192.168.4.248)' can't be established.
ED25519 key fingerprint is SHA256:kTj4mJPmGnjSUdiD3YqjPyNO26TvqTmM4mHsWJLI5Eo.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.4.248' (ED25519) to the list of known hosts.
vboxuser@192.168.4.248'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.

40 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

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

```
vboxuser@cdacdbda:~/manuals$ ls
find_help.txt
vboxuser@cdacdbda:~/manuals$ cd ..
vboxuser@cdacdbda:~$ ls
Desktop      documents_archive.tar.gz  find_manual.txt  manuals  new_hardlink.txt  Pictures  Public  shell      Templates  workspace
Documents    Downloads                 hardlink.txt     Music    new_project       Project   s       snap       Videos     worl
vboxuser@cdacdbda:~$ pwd
/home/vboxuser
vboxuser@cdacdbda:~$ exit
logout
Connection to 192.168.4.248 closed.
proxim@proxim:~$ ls
1.sh            child2}          dir1            file1.txt       hard_copy.txt  log.txt       newfile.txt    photos          script.js       sym_link.txt
2002            company          dir11           file2.txt       heillo         manuals       newname.txt    Pictures        script.sh       Templates
7.sh            config.txt       dir2            file.log        home           merged_file.txt newproject    practice_files  shared.tt       temp.txt
9.sh            database.txt     dir3            filename.txt    linux          missile.txt    new.sh         projects        shared.txt      Videos
application.log data.txt         Documents       file.txt        linux_lab      mnt            newww          Public          snap           withoutSlines.txt
archive.tar.gz  dbda_25          documents_archive.tar.gz find_manual.txt log3.txt  Music        newzip.zip     README          sort_example.txt workspace
backup          Desktop          Documents.tar.gz fire.sh        logfile.log    myprivatefile.txt num_sort.txt readme.txt     sort_ex.html
backup.tar.gz   desktop_archive.zip Downloads    haha.sh        logs           myproject      original.txt   report.txt      source.txt
proxim@proxim:~$ scp /home/proxim/config.txt vboxuser@192.168.4.248:/home/vboxuser/Desktop
vboxuser@192.168.4.248's password:
config.txt                                                                                         100%  0    0.0KB/s  00:00
proxim@proxim:~$ pwd
/home/proxim
```

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

```
proxim@proximscp -P 2222 -r john@192.168.1.100:~/documents ~/downloads/ads/
```

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

```
proxim@proxim:~$ ftp ftp.netbsd.org
Trying 199.233.217.201:21 ...
Connected to ftp.netbsd.org.
220 ftp.NetBSD.org FTP server (NetBSD-ftpd 20230930) ready.
Name (ftp.netbsd.org:proxim): anonymous
331 Guest login ok, type your name as password.
Password:
230-
        The NetBSD Project FTP Server located in San Jose, CA, USA
        1 Gbps connectivity
                                            WELCOME!     /(         )`
                                                         \ \___   / |
        +--- Currently Supported Platforms ----+        /- _  `-/  '
        | acorn32, algor, alpha, amd64, amiga, |       (/\/ \ \   /\
        | amigappc, arc, atari, bebox, cats,   |       / /   | `   \
        |  cesfic, cobalt, dreamcast, emips,   |       0 0   ) /    |
        | epoc32, evbarm{,64}, evbmips, evbppc,|       `-^--'`<     '
        |     evbsh3, ews4800mips, hp300,      |       (_.)  _  )   /
        |hpc{arm,mips,sh}, hppa, i386, ibmnws, |        .___/`    /
        |iyonix, landisk, luna68k,mac{68k,ppc},|        `-----' /
        | mipsco, mmeye, mvme68k, mvmeppc,     | <----.  __ / __   \
        |netwinder, news68k, newsmips, next68k,| <----|====0)))==) \) /====
        |ofppc, pmax, prep, rs6000, sandpoint, | <----'    `--' `.__,' \
        |sgimips, shark, sparc{,64}, sun{2,3}, |        |         |
        |     vax, x68k, xen, zaurus           |        \        /
        +--------------------------------------+        _____( (_ / _____
        See our website at http://www.NetBSD.org/    ,'  ,-----'   |        \
         We log all FTP transfers and commands.      `--{_____)  (FL) \/
```

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

```
proxim@proxim:~$ tree /home/proxim/Documents/newfolder/
/home/proxim/Documents/newfolder/
├── {child1,
├── copy.txt
└── cy.txt

2 directories, 2 files
proxim@proxim:~$ rm -r /home/proxim/Documents/newfolder
rm: cannot remove '/home/proxim/Documents/newfolder': Permission denied
proxim@proxim:~$ sudo rm -r /home/proxim/Documents/newfolder
[sudo] password for proxim:
```

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

```
proxim@proxim:~$ ls -la
total 412
drwxrwx---+ 37 proxim      proxim      4096 Sep  2 01:43 .
drwxr-xr-x+  7 root        root        4096 Sep  2 00:49 ..
-rw-rw----   1 proxim      proxim        56 Mar 15  2024 1.sh
drwxrwxr-x+  2 proxim      proxim      4096 Aug 29 17:17 2002
-rwxrwxr-x   1 proxim      proxim        96 Sep  1 17:17 7.sh
-rw-rw-r--   1 proxim      proxim        63 Sep  1 17:23 9.sh
-rw-rw-r--   1 proxim      proxim      4201 Sep  2 00:43 application.log
-rw-rw-r--   1 proxim      proxim       274 Sep  2 00:35 archive.tar.gz
```

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

```
proxim@proxim:~$ sudo touch /home/proxim/Documents/myfile.txt
```

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

```
proxim@proxim:~/logs$ grep "logs" log1.txt log2.txt
log1.txt:2025-09-02 10:15:32 [INFO] (system) - logs initialized: service started successfully
log1.txt:2025-09-02 10:15:34 [DEBUG] (auth) - user 'alex' clicked login, writing logs entry
log1.txt:2025-09-02 10:15:36 [WARNING] (auth) - password field empty, logs flagged for review
log1.txt:2025-09-02 10:15:39 [ERROR] (auth) - authentication failed for user 'alex', logs updated
log1.txt:2025-09-02 10:16:01 [INFO] (db) - retrying connection to database, connection logs refreshed
log1.txt:2025-09-02 10:16:02 [DEBUG] (db) - database connection established, debug logs captured
log1.txt:2025-09-02 10:16:05 [INFO] (upload) - file 'report.pdf' upload started, logs tracking progress
log1.txt:2025-09-02 10:16:09 [INFO] (upload) - file 'report.pdf' upload completed, success logs written
log1.txt:2025-09-02 10:16:15 [WARNING] (storage) - disk space low: 95% used, warning logs generated
log1.txt:2025-09-02 10:16:22 [ERROR] (profile) - failed to save user preferences, error logs created
log1.txt:2025-09-02 10:16:30 [DEBUG] (cache) - cache cleared by admin, debug logs updated
log1.txt:2025-09-02 10:16:45 [INFO] (system) - shutdown initiated, final logs archived
log2.txt:2025-09-02 10:15:32 [INFO] (system) - logs initialized: service started successfully
log2.txt:2025-09-02 10:15:34 [DEBUG] (auth) - user 'alex' clicked login, writing logs entry
log2.txt:2025-09-02 10:15:36 [WARNING] (auth) - password field empty, logs flagged for review
log2.txt:2025-09-02 10:15:39 [ERROR] (auth) - authentication failed for user 'alex', logs updated
log2.txt:2025-09-02 10:16:01 [INFO] (db) - retrying connection to database, connection logs refreshed
log2.txt:2025-09-02 10:16:02 [DEBUG] (db) - database connection established, debug logs captured
```

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?

```
proxim@proxim:~/logs$ ls -lh mydir
total 0
proxim@proxim:~/logs$ ls -la mydir/
total 8
drwxr-xr-x 2 proxim proxim 4096 Sep  2 06:04 .
drwxrwxr-x 3 proxim proxim 4096 Sep  2 06:04 ..
```

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

```
proxim@proxim: $ tar -czvf archive.tar.gz /home/proxim/linux
tar: Removing leading `/' from member names
/home/proxim/linux/
/home/proxim/linux/softlinkfile2.txt
/home/proxim/linux/file1.txt
tar: Removing leading `/' from hard link targets
/home/proxim/linux/testperms.txt
/home/proxim/linux/hardlink.txt
/home/proxim/linux/file2.txt
/home/proxim/linux/f23.txt
/home/proxim/linux/newtestperms.txt
proxim@proxim: $ ls
1.sh            backup.tar.gz   Desktop         documents_archive.tar.gz  find_manual.txt  log3.txt      Music         myprivatefile.txt  newww         projects       shared.tt      Templates
2002            child2}         desktop_archive.zip  Documents.tar.gz  fire.sh      logfile.log   myproject     newzip.zip         num_sort.txt  Public         shared.txt     temp.txt
7.sh            company         dir1            Downloads         haha.sh      logs          newfile.txt   original.txt       README        snap           Videos
9.sh            config.txt      dir11           file1.txt         hard_copy.txt  log.txt     newname.txt   photos             readme.txt    sort_example.txt  without5lines.txt
application.log database.txt    dir2            file2.txt         helllo       manuals       merged_file.txt  newproject      Pictures      report.txt     sort_ex.html   workspace
archive.tar.gz  data.txt        dir3            file.log          linux        missile.txt   new.sh        practice_files     script.js     source.txt
backup          dbda_25         Documents       filename.txt      linux_lab                  script.sh     sym_link.txt
```

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"?

```
proxim@proxim:~$ sudo chmod 660 data.txt
proxim@proxim:~$ ls -l data.txt
-rw-rw---- 1 proxim proxim 575 Sep  2 00:27 data.txt
```

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

```
proxim@proxim:~$ ls -lh file.txt
-rw-rw-r-- 1 proxim proxim 54 Sep  2 06:13 file.txt
```

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

```
proxim@proxim:~$ awk -F',' '{print $2}' data.txt | sort -r
 when an unknown printer took a galley
 remaining essentially unchanged. It was popularised in
 but also the leap into electronic
 and more recently with desktop publishing
```

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?

```
proxim@proxim:~$ sed 's/but/now/g' data.txt
Lorem Ipsum is simply dummy text of the printing and typesetting
industry. Lorem Ipsum has been the industry's standard dummy
text ever since the 1500s, when an unknown printer took a galley
of type and scrambled it to make a type specimen book. It has
survived not only five centuries, now also the leap into electronic
typesetting, remaining essentially unchanged. It was popularised in
the 1960s with the release of Letraset sheets containing Lorem
Ipsum passages, and more recently with desktop publishing
software like Aldus PageMaker including versions of Lorem Ipsum.
```

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?

```
proxim@proxim:~$ find . -mtime -1
.
./manuals
./manuals/find_help.txt
./practice_files
./practice_files/projects
./practice_files/projects/file.txt
./myprivatefile.txt
./backup
./backup/photos
./filename.txt
./photos
./report.txt
./Documents
./Documents/myfile.txt
./7.sh
./logfile.log
./config.txt
./myproject
./.config
./.config/htop
./.config/ibus/bus
./.config/ibus/bus/dcf611fb461e49b48e8caa583e77ccfe-unix-0
./.config/ibus/bus/dcf611fb461e49b48e8caa583e77ccfe-unix-wayland-0
./.config/yelp
```

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

```
proxim@proxim:~/logs$ vim log1.txt
proxim@proxim:~/logs$ diff log1.txt log2.txt
1d0
<
8,9d6
<
< this is a guy who is typing in between the file, for no reason
```

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?

```
proxim@proxim:~$ sudo rsync -avz /home/proxim/logs /mnt/backup/
[sudo] password for proxim:
sending incremental file list
created directory /mnt/backup
logs/
logs/archive.tar.gz
logs/log1.txt
logs/log2.txt
logs/readme.txt
logs/mydir/

sent 977 bytes  received 138 bytes  2,230.00 bytes/sec
total size is 2,222  speedup is 1.99
```

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

```
proxim@proxim:~$ cut -c 1-5 logs/log1.txt

2025-
2025-
2025-
2025-
2025-
2025-

this
2025-
2025-
2025-
2025-
2025-
2025-
```

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

```
proxim@proxim:~$ tar -tzvf archive.tar.gz
drwxrwxr-x proxim/proxim      0 2024-03-14 17:00 home/proxim/linux/
lrwxrwxrwx proxim/proxim      0 2024-03-14 10:23 home/proxim/linux/softlinkfile2.txt -> file2.txt
-rw-rwx--- proxim/proxim      0 2024-03-14 10:19 home/proxim/linux/file1.txt
-rw-rwxr-- proxim/proxim      0 2024-03-14 10:14 home/proxim/linux/testperms.txt
hrw-rwx--- proxim/proxim      0 2024-03-14 10:19 home/proxim/linux/hardlink.txt link to home/proxim/linux/file1.txt
-rw-rwx--- proxim/proxim      0 2024-03-14 10:23 home/proxim/linux/file2.txt
-rw-rwxr-- proxim/proxim     15 2025-08-29 03:13 home/proxim/linux/f23.txt
-rw-rwx--- proxim/proxim      0 2024-03-14 10:17 home/proxim/linux/newtestperms.txt
proxim@proxim:~$ tar -xzvf archive.tar.gz home/proxim/linux/file1.txt
home/proxim/linux/file1.txt
proxim@proxim:~$ ls /home/proxim/linux/file
file1.txt  file2.txt
proxim@proxim:~$ cat /home/proxim/linux/file1.txt
proxim@proxim:~$ ls /home/proxim/linux/file1.txt
/home/proxim/linux/file1.txt
```

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

```
proxim@proxim:~$ cat data.txt
Lorem Ipsum is simply dummy text of the printing and typesetting
industry. Lorem Ipsum has been the industry's standard dummy
text ever since the 1500s, when an unknown printer took a galley
of type and scrambled it to make a type specimen book. It has
survived not only five centuries, but also the leap into electronic
typesetting, remaining essentially unchanged. It was popularised in
the 1960s with the release of Letraset sheets containing Lorem
Ipsum passages, and more recently with desktop publishing
software like Aldus PageMaker including versions of Lorem Ipsum.
proxim@proxim:~$ awk '{for(i=1;i<=NF;i++) if($i=="Lorem") count++} END{print count}' /home/proxim/data.txt
4
```