

# Linux Commands Practice Questions -2

## File and Directory Operations

1. How do you copy a file named "report.pdf" from your home directory to a folder called "documents"?

```
ubuntu@ubuntu:~$ mkdir documents
ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  ln_soft.txt
2.sh      Music      dbda                niles.sh
3.sh      Pictures   dir1                snap
4.sh      Public     documents
Desktop   Templates  f6.txt
Documents Videos     file2.txt
ubuntu@ubuntu:~$ touch report.pdf
ubuntu@ubuntu:~$ cp report.pdf /home/ubuntu/documents
ubuntu@ubuntu:~$ cd documents
bash: cd: documents: No such file or directory
ubuntu@ubuntu:~$ cd documents
ubuntu@ubuntu:~/documents$ ls
report.pdf
```

2. What is the difference between `rmdir` and `rm -rf` commands?

```

ubuntu@ubuntu:~$ mkdir happy
ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  happy
2.sh      Music      dbda               ln_soft.txt
3.sh      Pictures   dir1              nilesh.sh
4.sh      Public     documents          report.pdf
Desktop    Templates  f6.txt            snap
Documents  Videos    file2.txt
ubuntu@ubuntu:~$ rmdir happy
ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  ln_soft.txt
2.sh      Music      dbda               nilesh.sh
3.sh      Pictures   dir1              report.pdf
4.sh      Public     documents          snap
Desktop    Templates  f6.txt
Documents  Videos    file2.txt
ubuntu@ubuntu:~$ rm -rf dir1
ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  nilesh.sh
2.sh      Music      dbda               report.pdf
3.sh      Pictures   documents          snap
4.sh      Public     f6.txt

```

3. How do you move a file named "data.csv" from the "downloads" folder to the "projects" folder?

```

ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  ln_soft.txt
2.sh      Music      dbda               nilesh.sh
3.sh      Pictures   documents          projects
4.sh      Public     downloads          report.pdf
Desktop    Templates  f6.txt            snap
Documents  Videos    file2.txt
ubuntu@ubuntu:~$ cd downloads
ubuntu@ubuntu:~/downloads$ touch data.csv
ubuntu@ubuntu:~/downloads$ ls
data.csv
ubuntu@ubuntu:~/downloads$ mv data.csv /home/ubuntu/projects
ubuntu@ubuntu:~/downloads$ cd ..
ubuntu@ubuntu:~$ ls
1.sh      Downloads  copy_hardlink.txt  ln_soft.txt
2.sh      Music      dbda               nilesh.sh
3.sh      Pictures   documents          projects
4.sh      Public     downloads          report.pdf
Desktop    Templates  f6.txt            snap
Documents  Videos    file2.txt
ubuntu@ubuntu:~$ cd projects

```

```
ubuntu@ubuntu:~$ cd projects
ubuntu@ubuntu:~/projects$ ls
data.csv
ubuntu@ubuntu:~/projects$
```

4. What command shows your current location in the file system?

```
ubuntu@ubuntu:~/projects$ pwd
/home/ubuntu/projects
ubuntu@ubuntu:~/projects$
```

5. How do you create three empty files named "log1.txt", "log2.txt", and "log3.txt" simultaneously?

```
ubuntu@ubuntu:~/projects$ cd ..
ubuntu@ubuntu:~$ touch log1.txt log2.txt log3.txt
ubuntu@ubuntu:~$ ls
1.sh      Music      documents  log3.txt
2.sh      Pictures   downloads  niles.sh
3.sh      Public     f6.txt     projects
4.sh      Templates file2.txt   report.pdf
Desktop   Videos    ln_soft.txt snap
Documents copy_hardlink.txt log1.txt
Downloads dbda       log2.txt
ubuntu@ubuntu:~$
```

6. How do you change a directory name from "old\_project" to "new\_project"?

```

ubuntu@ubuntu:~$ mkdir old_project
ubuntu@ubuntu:~$ ls
1.sh      Music      documents  log3.txt
2.sh      Pictures   downloads  nilesh.sh
3.sh      Public     f6.txt     old_project
4.sh      Templates  file2.txt  projects
Desktop   Videos    ln_soft.txt report.pdf
Documents copy_hardlink.txt log1.txt   snap
Downloads dbda        log2.txt

ubuntu@ubuntu:~$ mv old_project new_project
ubuntu@ubuntu:~$ ls
1.sh      Music      documents  log3.txt
2.sh      Pictures   downloads  new_project
3.sh      Public     f6.txt     nilesh.sh
4.sh      Templates  file2.txt  projects
Desktop   Videos    ln_soft.txt report.pdf
Documents copy_hardlink.txt log1.txt   snap
Downloads dbda        log2.txt

```

7. How do you delete a file named "temp.log" without any confirmation prompt?

```

ubuntu@ubuntu:~$ man ls
ubuntu@ubuntu:~$ man ls > temp.log
ubuntu@ubuntu:~$ cat temp.log
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 alphabeti-
    cally if none of -cftuvSUX nor --sort is speci-
    fied.

    Mandatory arguments to long options are manda-
    tory for short options too.

ubuntu@ubuntu:~$ rm temp.log
ubuntu@ubuntu:~$ ls
1.sh      Music          documents      log3.txt
2.sh      Pictures       downloads     new_project
3.sh      Public         f6.txt        nilesh.sh
4.sh      Templates      file2.txt     projects
Desktop   Videos         ln_soft.txt   report.pdf
Documents copy_hardlink.txt log1.txt      snap
Downloads dbda            log2.txt
ubuntu@ubuntu:~$

```

8. Display your current directory path using a command.

```

ubuntu@ubuntu:~$ cd projects
ubuntu@ubuntu:~/projects$ pwd
/home/ubuntu/projects
ubuntu@ubuntu:~/projects$

```

9. Show directory contents with file sizes in human-readable format (KB, MB, GB).

```

ubuntu@ubuntu:~$ ls
1.sh      Music      documents  log3.txt
2.sh      Pictures   downloads  new.txt
3.sh      Public     f6.txt     new_project
4.sh      Templates  file2.txt  nilesh.sh
Desktop   Videos    ln_soft.txt projects
Documents copy_hardlink.txt log1.txt   report.pdf
Downloads dbda        log2.txt   snap
Rhythmbox

ubuntu@ubuntu:~$ cd new_project
ubuntu@ubuntu:~/new_project$ ls
ubuntu@ubuntu:~/new_project$ nano new1.txt
ubuntu@ubuntu:~/new_project$ ls -hl
total 4.0K
-rw-rw-r-- 1 ubuntu ubuntu 33 Sep  1 09:27 new1.txt
ubuntu@ubuntu:~/new_project$

```

10. Explain the meaning of the first character in file permissions (d, -, l) when using `ls -l`.

```

neha@neha-VirtualBox:~$ ls -l
total 160
-rw-rw-r-- 1 neha neha 2745 Sep  3 17:09 anjali.txt
-rw-r--r-- 1 neha neha  34 Sep  3 19:34 application.log
-rw-rw-r-- 1 neha neha 113 Sep  3 17:30 arch.txt
-rw-rw-r-- 1 neha neha   0 Sep  3 18:23 arch.zip
drwxr-xr-x 2 neha neha 4096 Sep  3 19:20 backup
-rw-r--r-- 1 neha neha 10240 Sep  3 19:14 backup.tar.gz
-----r-- 1 neha neha 126 Sep 20 2023 data.txt
drwxr-xr-x 2 neha neha 4096 Sep  3 16:26 Desktop
drwxrwxr-x 2 neha neha 4096 Sep  3 17:02 dirneha
-rw-rw-r-- 1 neha neha 10240 Sep  3 17:57 dir_tar.tar
-rw-rw-r-- 1 neha neha 194 Sep  3 17:57 dir_tar.tar.gz
drwxr-xr-x 2 neha neha 4096 Sep  3 17:16 Documents
drwxr-xr-x 2 neha neha 4096 Sep  3 16:26 Downloads
-rw-rw-r-- 1 neha neha  51 Sep  3 18:05 f11.txt
-rw-rw-r-- 1 neha neha   0 Sep  3 16:30 f1.txt
-rw-rw-r-- 1 neha neha   0 Sep  3 16:30 f3.txt
-rw-rw-r-- 2 neha neha   0 Sep  3 18:08 file1.txt
-rw-rw-r-- 1 neha neha   0 Sep  3 18:10 file2.txt

```

11. List all files including those starting with a dot (.) in the "/etc" directory.

```
ubuntu@ubuntu:~/new_project$ cd ..
ubuntu@ubuntu:~$ ls -a /etc
.
..
.pwd.lock
.resolv.conf.systemd-resolved.bak
.updated
ModemManager
NetworkManager
PackageKit
UPower
X11
adduser.conf
alsa
alternatives
anacrontab
apg.conf
apm
apparmor
apparmor.d
appport
apt
```

```
ubuntu@ubuntu:~$ find .  
.  
./new.txt  
./lessht  
./new_project  
./new_project/new1.txt  
./log3.txt  
./log2.txt  
./log1.txt  
./projects  
./projects/data.csv  
./downloads  
./report.pdf  
./documents  
./documents/report.pdf  
./nilesh.sh  
./4.sh  
./3.sh  
./2.sh  
./1.sh  
./file2.txt  
./ln_soft.txt
```

12. Show only files that start with a dot in your home directory.

```
ubuntu@ubuntu:~$ ls -d .*  
.bash_logout  .config  .local  
.bashrc       .gvfs    .profile  
.cache        .lessht  .sudo_as_admin_successful  
ubuntu@ubuntu:~$
```

13. Create a directory structure "workspace/projects/web/frontend" in a single command.



```

└─ web
  └─ frontend}

4 directories, 0 files
ubuntu@ubuntu:~$ mv {workspace workspace
ubuntu@ubuntu:~$ ls
1.sh      Pictures      f6.txt      niles.sh
2.sh      Public       file2.txt   projects
3.sh      Templates    ln_soft.txt report.pdf
4.sh      Videos      log1.txt    snap
Desktop   copy_hardlink.txt log2.txt    workspace
Documents dbda          log3.txt
Downloads documents    new.txt
Music     downloads    new_project
ubuntu@ubuntu:~$ tree workspace
workspace
├─ project
└─ web
  └─ frontend}

4 directories, 0 files
ubuntu@ubuntu:~$

```

14. Create the following nested structure in one command:

```

company/
├─ departments/
│   ├── hr/
│   ├── finance/
│   └─ tech/
└─ employees/
    ├── active/
    └─ former/

```

```
9 directories, 1 file
ubuntu@ubuntu:~/projects$ re data.csv
Command 're' not found, but can be installed with:
sudo apt install re
ubuntu@ubuntu:~/projects$ rm data.csv
ubuntu@ubuntu:~/projects$ tree
```

```
├── company
│   ├── department
│   │   ├── finance
│   │   ├── hr
│   │   └── tech
│   └── employees
│       ├── active
│       └── former
```

```
9 directories, 0 files
```

```
ubuntu@ubuntu:~/projects$
```

```
ubuntu@ubuntu:~/projects$ mkdir -p company/{department/{hr,finance,tech},employees/{active,former}}
ubuntu@ubuntu:~/projects$ tree
```

```
├── company
│   ├── department
│   │   ├── finance
│   │   ├── hr
│   │   └── tech
│   └── employees
│       ├── active
│       └── former
└── data.csv
```

```
9 directories, 1 file
```

```
ubuntu@ubuntu:~/projects$ re data.csv
Command 're' not found, but can be installed with:
sudo apt install re
ubuntu@ubuntu:~/projects$ rm data.csv
ubuntu@ubuntu:~/projects$ tree
```

```
├── company
│   ├── department
```

14. Create a directory named "test\_dir", then remove it and verify it's gone.

```
ubuntu@ubuntu:~/projects$ cd ..
ubuntu@ubuntu:~$ mkdir test_dir
ubuntu@ubuntu:~$ ls
1.sh      Music      dbda       log2.txt   snap
2.sh      Pictures   documents  log3.txt   test_dir
3.sh      Public     downloads  new.txt    workspace
4.sh      Templates  f6.txt     new_project
Desktop    Videos    file2.txt  nilesh.sh
Documents  company    ln_soft.txt projects
Downloads  copy_hardlink.txt log1.txt  report.pdf
ubuntu@ubuntu:~$ rm -r test_dir
ubuntu@ubuntu:~$ ls
1.sh      Documents  Templates  documents  log1.txt  nilesh.sh
2.sh      Downloads  Videos     downloads  log2.txt  projects
3.sh      Music      company     f6.txt     log3.txt  report.pdf
4.sh      Pictures   copy_hardlink.txt file2.txt  new.txt   snap
Desktop   Public     dbda        ln_soft.txt new_project workspace
ubuntu@ubuntu:~$
```

## File Content and Text Processing

16. Save the manual page of the `find` command to a file named "find\_manual.txt".

```
ubuntu@ubuntu:~$ man find > find_manual.txt
ubuntu@ubuntu:~$ cat find_manual.txt
FIND(1)                                General Commands Manual                                FIND(1)

NAME
    find - search for files in a directory hierarchy

SYNOPSIS
    find [-H] [-L] [-P] [-D debugopts] [-Olevel] [starting-point...]
    [expression]

DESCRIPTION
    This manual page documents the GNU version of find.  GNU find
    searches the directory tree rooted at each given starting-point by
    evaluating the given expression from left to right, according to
    the rules of precedence (see section OPERATORS), until the outcome
    is known (the left hand side is false for and operations, true for
    or), at which point find moves on to the next file name.  If no
    starting-point is specified, '.' is assumed.

    If you are using find in an environment where security is important
    (for example if you are using it to search directories that are
    writable by other users), you should read the 'Security Considerations'
    chapter of the findutils documentation, which is called
```

17. Display the first 15 lines and last 8 lines of "find\_manual.txt".

```
ubuntu@ubuntu:~$ head -n 15 find_manual.txt && tail -n 8 find_manual.txt

FIND(1)                                General Commands Manual                                FIND(
1)

NAME
    find - search for files in a directory hierarchy

SYNOPSIS
    find [-H] [-L] [-P] [-D debugopts] [-Olevel] [starting-point..
.]
    [expression]

DESCRIPTION
    This manual page documents the GNU version of find. GNU fi
nd
    searches the directory tree rooted at each given starting-point
by
    evaluating the given expression from left to right, according
to
    the rules of precedence (see section OPERATORS) until the outco
```

18. Copy "find\_manual.txt" to a folder named "manuals" and rename the copy to "find\_help.txt".

```
ubuntu@ubuntu:~$ ls
1.sh      Music      dbda        log1.txt    report.pdf
2.sh      Pictures   documents   log2.txt    snap
3.sh      Public     downloads   log3.txt    workspace
4.sh      Templates f6.txt      new.txt
Desktop   Videos    file2.txt   new_project
Documents company    find_manual.txt nilesh.sh
Downloads copy_hardlink.txt ln_soft.txt  projects
ubuntu@ubuntu:~$ mkdir manuals
ubuntu@ubuntu:~$ ls
1.sh      Music      dbda        log1.txt    projects
2.sh      Pictures   documents   log2.txt    report.pdf
3.sh      Public     downloads   log3.txt    snap
4.sh      Templates f6.txt      manuals     workspace
Desktop   Videos    file2.txt   new.txt
Documents company    find_manual.txt new_project
Downloads copy_hardlink.txt ln_soft.txt  nilesh.sh
ubuntu@ubuntu:~$ cd manuals
ubuntu@ubuntu:~/manuals$ cp /home/ubuntu/find_manual.txt /home/ubuntu/ma
nuals/find_help.txt
ubuntu@ubuntu:~/manuals$ ls
find_help.txt
ubuntu@ubuntu:~/manuals$
```

19. Count the total lines, words, and characters in "find\_manual.txt".

```
ubuntu@ubuntu:~/manuals$ wc find_help.txt
1836 11954 92973 find_help.txt
ubuntu@ubuntu:~/manuals$ wc -l find_help.txt
1836 find_help.txt
ubuntu@ubuntu:~/manuals$ wc -w find_help.txt
11954 find_help.txt
ubuntu@ubuntu:~/manuals$ wc -m find_help.txt
92532 find_help.txt
ubuntu@ubuntu:~/manuals$
```

20. Show your last 15 executed commands.

```
ubuntu@ubuntu:~/manuals$ history 15
155 cd manuals
156 rm manuals
157 clear
158 ls
159 mkdir manuals
160 ls
161 cd manuals
162 cp /home/ubuntu/find_manual.txt /home/ubuntu/manuals/find_help.tx
t
163 ls
164 wc find_help.txt
165 wc -l find_help.txt
166 wc -w find_help.txt
167 wc -m find_help.txt
168 history -15
169 history 15
ubuntu@ubuntu:~/manuals$
```

21. Create a tar.gz archive of your home directory's Documents folder.

```
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:~$
```

22. Create a zip archive of your Desktop folder and list its contents 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:~$
```

23. Set permissions for "script.sh" to be readable, writable, and executable by owner only.

```
ubuntu@ubuntu:~/manuals$ touch script.sh
ubuntu@ubuntu:~/manuals$ ls
database.txt find_help.txt script.sh
ubuntu@ubuntu:~/manuals$ ls -l script.sh
-rw-rw-r-- 1 ubuntu ubuntu 0 Sep  1 13:21 script.sh
ubuntu@ubuntu:~/manuals$ chmod 700 script.sh
ubuntu@ubuntu:~/manuals$ ls -l script.sh
-rwx----- 1 ubuntu ubuntu 0 Sep  1 13:21 script.sh
ubuntu@ubuntu:~/manuals$
```

24. Change the owner of "database.txt" to user "admin".

```
ubuntu@ubuntu:~/manuals$ touch database.txt
ubuntu@ubuntu:~/manuals$ ls -l database.txt
-rw-rw-r-- 1 ubuntu ubuntu 0 Sep  1 10:56 database.txt
ubuntu@ubuntu:~/manuals$ sudo adduser
fatal: Only one or two names allowed.
ubuntu@ubuntu:~/manuals$ sudo adduser admin
info: Adding user `admin' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `admin' (1003) ...
info: Adding new user `admin' (1003) with group `admin (1003)' ...
info: Creating home directory `/home/admin' ...
info: Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
    Full Name []: admin
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y

Is the information correct? [Y/n] y
info: Adding new user `admin' to supplemental / extra groups `users' ...
info: Adding user `admin' to group `users' ...
ubuntu@ubuntu:~/manuals$ sudo chown admin database.txt
ubuntu@ubuntu:~/manuals$ ls -l database.txt
-rw-rw-r-- 1 admin ubuntu 0 Sep  1 10:56 database.txt
ubuntu@ubuntu:~/manuals$
```

25. Display currently running processes in your terminal, all system processes, and sort processes by CPU usage.

```
ubuntu@ubuntu:~$ htop
```

```

CPU[||| 4.7%] Tasks: 115, 353 thr, 86 kthr; 1 r
Mem[|||||||||1.38G/1.92G] Load average: 0.13 0.06 0.02
Swp[0K/0K] Uptime: 09:28:47

Main I/O
  PID USER      PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Comm
12416 ubuntu    20   0 20412   4972   3436  R   2.7  0.2   0:03.48 hto
2226  ubuntu    20   0  328M  54288  18948  S   0.7  2.7   2:51.70 /us
2438  ubuntu    20   0 3372M  273M   63056  S   0.7 13.9   3:17.78 /us
1    root      20   0  23372   9840   4848  S   0.0  0.5   0:05.24 /sb
758   root      19  -1  50864   9636   8100  S   0.0  0.5   0:00.90 /us
820   root      20   0  30760   7172   3332  S   0.0  0.4   0:01.37 /us
1254  systemd-oo 20   0  17560   3912   3016  S   0.0  0.2   0:05.91 /us
1255  systemd-re 20   0  21944   6548   3732  S   0.0  0.3   0:00.94 /us
1257  systemd-ti 20   0  91048   3984   3088  S   0.0  0.2   0:00.22 /us
1267  systemd-ti 20   0  91048   3984   3088  S   0.0  0.2   0:00.01 /us
1559  avahi      20   0   8668   2684   2300  S   0.0  0.1   0:00.19 ava
1560  messagebus 20   0  12040   4992   2688  S   0.0  0.2   0:01.87 @db
1563  gnome-remo 20   0  356M   5644   3212  S   0.0  0.3   0:00.05 /us
1565  polkitd    20   0  375M   7152   4280  S   0.0  0.4   0:00.30 /us
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice -F8Nice +F9Kill

```

26. Show the current date/time and display the calendar for the current month.

```

ubuntu@ubuntu:~/manuals$ cal
September 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

ubuntu@ubuntu:~/manuals$ date
Mon Sep  1 13:25:02 UTC 2025
ubuntu@ubuntu:~/manuals$

```

27. Set the system date to January 15th, 2025, 2:30 PM.

```

ubuntu@ubuntu:~/manuals$ sudo date -s "2025-01-15 14:30:00"
Wed Jan 15 14:30:00 UTC 2025
ubuntu@ubuntu:~/manuals$

```

## System Information Commands



28. Research and explain these commands: `uptime`, `df`, `du`, `free`.

```
neha@neha-VirtualBox:~/linux$ uptime
18:57:50 up 3:00, 1 user, load average: 0.11, 0.05, 0.01
neha@neha-VirtualBox:~/linux$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
tmpfs            813248      1696    811552   1% /run
/dev/sda2       25623780 9716848 14579984  40% /
tmpfs           4066240         0   4066240   0% /dev/shm
tmpfs            5120         8     5112   1% /run/lock
tmpfs           813248      176    813072   1% /run/user/1000
neha@neha-VirtualBox:~/linux$ whatis du
du (1)          - estimate file space usage
neha@neha-VirtualBox:~/linux$

neha@neha-VirtualBox:~/linux$ free
              total        used        free      shared  buff/cache   available
Mem:         8132480     1180284     5956880        33420     1277636     6952196
Swap:        4194300           0     4194300
neha@neha-VirtualBox:~/linux$
```

29. Create a directory "linux\_lab", navigate into it, create "permissions\_test.txt", check its default permissions, modify umask to 022, create "new\_permissions\_test.txt", and compare their permissions.

```
neha@neha-VirtualBox:~/linux$ touch permission_txt
neha@neha-VirtualBox:~/linux$ umask 022 permission_txt
neha@neha-VirtualBox:~/linux$ touch new_permission_test.txt
neha@neha-VirtualBox:~/linux$ umask 022 permission_txt
neha@neha-VirtualBox:~/linux$ ls -l permission_txt new_permission_test.txt
-rw-r--r-- 1 neha neha 0 Sep 3 19:01 new_permission_test.txt
-rw----- 1 neha neha 0 Sep 3 19:00 permission_txt
neha@neha-VirtualBox:~/linux$
```

30. Create "original.txt" and make a hard link named "hard\_copy.txt" pointing to it.

```
ubuntu@ubuntu:~/manuals$ touch original.txt
ubuntu@ubuntu:~/manuals$ ls
database.txt  find_help.txt  original.txt  script.sh
ubuntu@ubuntu:~/manuals$ ln original.txt hard_copy.txt
ubuntu@ubuntu:~/manuals$ ls -li original.txt hard_copy.txt
10622 hard_copy.txt 10622 original.txt
ubuntu@ubuntu:~/manuals$
```

31. Create "source.txt" and make a symbolic link named "sym\_link.txt" pointing to it.

```
ubuntu@ubuntu:~$ echo "Softlink...">source.txt
ubuntu@ubuntu:~$ cat source.txt
Softlink...
ubuntu@ubuntu:~$ ln -s source.txt sym_link.txt
ubuntu@ubuntu:~$ ls -li source.txt sym_link.txt
10638 source.txt 10643 sym_link.txt
ubuntu@ubuntu:~$ cat sym_link.txt
Softlink...
ubuntu@ubuntu:~$
```

32. Copy the entire "projects" directory from a remote server to your local "Downloads" folder using SCP.

33. Download files from a public FTP server like ftp.gnu.org using command line FTP client.

36. How do you remove a directory named "old\_data" containing files and subdirectories?

```
ubuntu@ubuntu:~$ mkdir old_data
ubuntu@ubuntu:~$ cd old_data
ubuntu@ubuntu:~/old_data$ touch f1.txt
ubuntu@ubuntu:~/old_data$ touch f2.txt
ubuntu@ubuntu:~/old_data$ mkdir subdir
ubuntu@ubuntu:~/old_data$ cd subdir
ubuntu@ubuntu:~/old_data/subdir$ touch f3.txt
ubuntu@ubuntu:~/old_data/subdir$ touch f4.txt
ubuntu@ubuntu:~/old_data/subdir$ tree
.
├── f3.txt
└── f4.txt

1 directory, 2 files
ubuntu@ubuntu:~/old_data/subdir$ cd ~
ubuntu@ubuntu:~$ cd old_data
ubuntu@ubuntu:~/old_data$ tree
.
├── f1.txt
├── f2.txt
└── subdir
    ├── f3.txt
    └── f4.txt

2 directories, 4 files
```

```
ubuntu@ubuntu:~$ rm -r old_data
ubuntu@ubuntu:~$ ls
1.sh  2.sh  Desktop  company  ln_soft.txt  projects
10.sh 3.sh  Documents copy_hardlink.txt log1.txt      report.pdf
11.sh 4.sh  Downloads dbda      log2.txt      snap
12.sh 5.sh  Music    documents log3.txt      workspace
13.sh 6.sh  Pictures downloads manuals
14.sh 7.sh  Public   f6.txt     new.txt
15.sh 8.sh  Templates file2.txt  new_project
16.sh 9.sh  Videos  find_manual.txt nilesh.sh
ubuntu@ubuntu:~$
```

37. List all files in "/var/log" showing detailed information including hidden files.

```
neha@neha-VirtualBox:~/linux$ ls -lh /var/log
total 1.8M
-rw-r--r-- 1 root      root      24K Aug  5 22:23 alternatives.log
-rw-r----- 1 root      adm       0 Sep  3 15:57 apport.log
drwxr-xr-x 2 root      root      4.0K Sep  3 16:32 apt
-rw-r----- 1 syslog    adm     21K Sep  3 19:05 auth.log
-rw-r----- 1 root      root     22K Sep  3 15:57 boot.log
-rw-r--r-- 1 root      root    116K Aug  5 22:18 bootstrap.log
-rw-rw---- 1 root      utmp       0 Aug  5 22:18 btmp
-rw-r----- 1 syslog    adm     71K Sep  3 15:58 cloud-init.log
-rw-r----- 1 root      adm     4.1K Sep  3 15:58 cloud-init-output.log
drwxr-xr-x 2 root      root      4.0K Sep  3 15:57 cups
drwxr-xr-x 2 cups-browsed lpadmin 4.0K Aug  5 22:23 cups-browsed
drwxr-xr-x 2 root      root      4.0K Jul 25 21:38 dist-upgrade
-rw-r----- 1 root      adm     51K Sep  3 15:57 dmesg
-rw-r--r-- 1 root      root    942K Sep  3 16:32 dpkg.log
```

38. Create a file named "config.txt" in the path "/opt/myapp/config/" using command line.

```
neha@neha-VirtualBox:~$ mkdir opt
neha@neha-VirtualBox:~$ cd opt
neha@neha-VirtualBox:~/opt$ mkdir myapp
neha@neha-VirtualBox:~/opt$ cd myapp
neha@neha-VirtualBox:~/opt/myapp$ cd ~
neha@neha-VirtualBox:~$ touch /home/neha/opt/myapp/config.txt
neha@neha-VirtualBox:~$ cd opt
neha@neha-VirtualBox:~/opt$ cd myapp
neha@neha-VirtualBox:~/opt/myapp$ ls
config.txt
neha@neha-VirtualBox:~/opt/myapp$
```

39. Search for the word "error" in all ".log" files within the current directory and subdirectories.

```
neha@neha-VirtualBox:~$ grep -c 'error' *.txt
anjali.txt:0
arch.txt:0
f11.txt:0
f1.txt:0
f3.txt:0
file1.txt:0
file2.txt:0
file.txt:0
hardlink.txt:0
manunalls.txt:0
new.txt:0
softlink.txt:0
neha@neha-VirtualBox:~$
```

40. Create a directory "myproject" with permissions 755 (rwxr-xr-x).

```
ubuntu@ubuntu:~$ mkdir -m 755 myproject
ubuntu@ubuntu:~$ ls -ld myproject
drwxr-xr-x 2 ubuntu ubuntu 40 Jan 15 14:47 myproject
ubuntu@ubuntu:~$
```

41. Create a compressed tar archive named "backup.tar.gz" containing all files and subdirectories in "/home/user/documents".

```
neha@neha-VirtualBox:~$ tar -cvf backup.tar.gz Documents
Documents/
Documents/myfile.txt
neha@neha-VirtualBox:~$
```

42. Give read and write permissions to owner and group, but only read permission to others for "shared.txt".

```
ubuntu@ubuntu:~$ touch shares.txt
ubuntu@ubuntu:~$ ls -l shares.txt
-rw-rw-r-- 1 ubuntu ubuntu 0 Jan 15 15:02 shares.txt
ubuntu@ubuntu:~$ chmod 664 shares.txt
ubuntu@ubuntu:~$ ls -l shares.txt
-rw-rw-r-- 1 ubuntu ubuntu 0 Jan 15 15:02 shares.txt
ubuntu@ubuntu:~$
```

43. Find the size of "video.mp4" and display it in human-readable format (MB/GB).

```
ubuntu@ubuntu:~$ touch video.mp4
ubuntu@ubuntu:~$ ls
1.sh  4.sh  Pictures  file2.txt  nilesh.sh
10.sh 5.sh  Public   find_manual.txt  projects
11.sh 6.sh  Templates ln_soft.txt  report.pdf
12.sh 7.sh  Videos  log1.txt    shares.txt
13.sh 8.sh  company  log2.txt    snap
14.sh 9.sh  copy_hardlink.txt log3.txt    source.txt
15.sh Desktop dbda      manuals     sym_link.txt
16.sh Documents documents myproject   texxt.txt
2.sh  Downloads downloads new.txt      video.mp4
3.sh  Music    f6.txt     new_project  workspace
ubuntu@ubuntu:~$ ls -lh video.mp4
-rw-rw-r-- 1 ubuntu ubuntu 0 Jan 15 15:04 video.mp4
ubuntu@ubuntu:~$
```

44. Find all files in "/home" and subdirectories that were modified in the last 7 days.

```
ubuntu@ubuntu:~$ find /home -type f -mtime -7
find: '/home/admin': Permission denied
find: '/home/user6': Permission denied
find: '/home/user4': Permission denied
find: '/home/user3': Permission denied
find: '/home/user1': Permission denied
find: '/home/aug_25_1': Permission denied
find: '/home/installer': Permission denied
/home/ubuntu/video.mp4
/home/ubuntu/shares.txt
/home/ubuntu/texxt.txt
/home/ubuntu/source.txt
/home/ubuntu/16.sh
/home/ubuntu/15.sh
/home/ubuntu/14.sh
/home/ubuntu/13.sh
/home/ubuntu/12.sh
/home/ubuntu/11.sh
/home/ubuntu/10.sh
/home/ubuntu/9.sh
/home/ubuntu/8.sh
```

45. Compare "version1.txt" and "version2.txt" and show only the differences.

```
neha@neha-VirtualBox:~$ nano version1.txt
neha@neha-VirtualBox:~$ nano version2.txt
neha@neha-VirtualBox:~$ diff version1.txt version2.txt
1,8c1,4
< yejsh
< urtkjdff
< yruyu
< xhdfwuy
< sgwbe
< utytuery
< rituoij
<
---
> ufb
> uefgh
> dfh
> dhf
neha@neha-VirtualBox:~$
```

46. Synchronize "/home/user/photos" with "/backup/photos" preserving all file attributes.

```
neha@neha-VirtualBox:~$ rsync /home/neha/photos /home/neha/backup/photos
skipping directory photos
neha@neha-VirtualBox:~$
```

47. Extract characters 10-25 from each line in "data.txt".

```
neha@neha-VirtualBox:~$ nano data.txt
neha@neha-VirtualBox:~$ cut -c 10-25 data.txt

udh

t
ithi iyj
djhuru
hudg
r
durtieu
neha@neha-VirtualBox:~$
```

48. Extract only the file "readme.txt" from "archive.tar.gz" without extracting the entire archive.

49. Count how many times the word "function" appears in "script.js".

```
neha@neha-VirtualBox:~$ nano script.js
neha@neha-VirtualBox:~$ grep -o 'function' script.js | wc -l
4
neha@neha-VirtualBox:~$
```

## Advanced Questions

52. How do you monitor real-time changes to a log file named "application.log"?

```
neha@neha-VirtualBox:~$ echo "hii everyone bye see you soon...">application.log
neha@neha-VirtualBox:~$ tail -f application.log
hii everyone bye see you soon...
```

53. How do you find all files larger than 100MB in your entire file system?

```
neha@neha-VirtualBox:~$ sudo find -type f -size -100M
[sudo] password for neha:
./script.js
./arch.zip
./hardlink.txt
./.ssh/authorized_keys
./.ssh/known_hosts
./.ssh/known_hosts.old
./version1.txt
./file2.txt
./mydir/file.txt
./Documents/myfile.txt
./.bash_logout
./file1.txt
./.bashrc
./.config/GNOME-xdg-terminals.list
./.config/dconf/user
./.config/ubuntu-xdg-terminals.list
./.config/user-dirs.dirs
./.config/evolution/sources/system-proxy.source
./.config/pulse/cookie
./.config/.gsd-keyboard.settings-ported
./.config/gnome-initial-setup-done
./.config/gtk-3.0/bookmarks
```

54. How do you create a file with specific content using command line without opening an editor?

```
neha@neha-VirtualBox:~$ echo "My name is Neha">test.txt
neha@neha-VirtualBox:~$ cat test.txt
My name is Neha
neha@neha-VirtualBox:~$
```

55. How do you compress a directory using gzip and preserve the original?

```
neha@neha-VirtualBox:~$ gzip -k dir
dirneha/  dir_tar.tar
neha@neha-VirtualBox:~$ gzip -k dir_tar.tar
neha@neha-VirtualBox:~$ gzip -k project.zip
neha@neha-VirtualBox:~$ gzip -k tar1.gz
gzip: tar1.gz already has .gz suffix -- unchanged
neha@neha-VirtualBox:~$
```

56. How do you find all files owned by user "john" in the "/home" directory?

```
neha@neha-VirtualBox:~$ sudo find /home -user john
/home/john
/home/john/.bash_logout
/home/john/.bashrc
/home/john/.profile
neha@neha-VirtualBox:~$
```

57. How do you schedule a command to run every day at 9 AM using cron?

58. How do you check disk usage of the current directory and sort by size?

```
ubuntu@ubuntu:~$ du -h --max-depth=1 | sort -rh
125M  .
101M  ./snap
24M   ./cache
536K  ./local
92K   ./manuals
52K   ./config
4.0K  ./new_project
4.0K  ./Desktop
0     ./workspace
0     ./projects
0     ./myproject
0     ./downloads
0     ./documents
0     ./dbda
0     ./company
0     ./Videos
0     ./Templates
0     ./Public
0     ./Pictures
0     ./Music
0     ./Downloads
0     ./Documents
0     ./gvfs
ubuntu@ubuntu:~$
```

59. How do you find and kill a process by name?

```
neha@neha-VirtualBox:~$ ps
  PID TTY          TIME CMD
  6623 pts/0        00:00:00 bash
  6634 pts/0        00:00:00 ps
neha@neha-VirtualBox:~$ kill -9 6634
bash: kill: (6634) - No such process
neha@neha-VirtualBox:~$
```

60. How do you create a symbolic link that points to a directory instead of a file?



```
ubuntu@ubuntu:~$ echo "Softlink...">source.txt
ubuntu@ubuntu:~$ cat source.txt
Softlink...
ubuntu@ubuntu:~$ ln -s source.txt sym_link.txt
ubuntu@ubuntu:~$ ls -i source.txt sym_link.txt
10638 source.txt 10643 sym_link.txt
ubuntu@ubuntu:~$ cat sym_link.txt
Softlink...
ubuntu@ubuntu:~$
```

32.

61. How do you find all executable files in your PATH?

```
neha@neha-VirtualBox:~$ compgen -c
alert
egrep
fgrep
grep
l
la
ll
ls
if
then
else
elif
fi
case
esac
for
select
```

62. How do you merge two sorted files into one sorted file?

```
neha@neha-VirtualBox:~$ cat f11.txt file.txt | sort > mergedfile.txt
neha@neha-VirtualBox:~$ ls -a mergedfile.txt
mergedfile.txt
neha@neha-VirtualBox:~$
```

63. How do you display only unique lines from a file that contains duplicates?

```
neha@neha-VirtualBox:~$ sort file.txt | uniq -u

gf
hdh
hii
iad
if
rgg
the
neha@neha-VirtualBox:~$
```

64. How do you monitor system resource usage in real-time?

```
neha@neha-VirtualBox:~$ top

top - 19:54:28 up 3:57, 1 user, load average: 0.00, 0.08, 0.08
Tasks: 225 total, 1 running, 224 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.2 us, 0.3 sy, 0.0 ni, 99.3 id, 0.0 wa, 0.0 hi, 0.2 st
MiB Mem : 7941.9 total, 5803.9 free, 1160.8 used, 1254.1 buff
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 6781.1 avail

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME
2999 neha      20   0 5125856 413716 144728 S   4.0   5.1   4:19.4
1320 root      20   0 345560  18972  16284 S   0.7   0.2   0:04.3
  18 root      20   0      0      0      0 I   0.3   0.0   0:07.0
  86 root       0 -20      0      0      0 I   0.3   0.0   0:01.9
6674 neha      20   0  23204  5924   3748 R   0.3   0.1   0:00.0
   1 root      20   0  23172  14044  9436 S   0.0   0.2   0:05.2
   2 root      20   0      0      0      0 S   0.0   0.0   0:00.0
   3 root      20   0      0      0      0 S   0.0   0.0   0:00.0
   4 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
   5 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
   6 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
   7 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
   8 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
  11 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
  12 root      20   0      0      0      0 I   0.0   0.0   0:00.0
  13 root       0 -20      0      0      0 I   0.0   0.0   0:00.0
  14 root      20   0      0      0      0 I   0.0   0.0   0:00.0
```

65. How do you find files that are exactly 0 bytes (empty files)?

```
neha@neha-VirtualBox:~$ find . -type f -size 0
./arch.zip
./hardlink.txt
./.ssh/authorized_keys
./file2.txt
./Documents/myfile.txt
./file1.txt
./.config/.gsd-keyboard.settings-ported
./.cache/motd.legal-displayed
./.cache/mesa_shader_cache_db/marker
./f1.txt
./sudo_as_admin_successful
./tar1.gz
./new.txt
./tar.gz
./linux/testperms.txt
./linux/new_permission_test.txt
./linux/newtestperms.txt
```

66. How do you change file timestamps without modifying content?

```
neha@neha-VirtualBox:~$ ls -lh data.txt
-rw-r--r-- 1 neha neha 126 Sep  3 19:22 data.txt
neha@neha-VirtualBox:~$ touch -t 202309201200 data.txt
neha@neha-VirtualBox:~$ ls -lh data.txt
-rw-r--r-- 1 neha neha 126 Sep 20 2023 data.txt
neha@neha-VirtualBox:~$
```

67. How do you create a file that can only be read by the owner and no one else?

```
neha@neha-VirtualBox:~$ chmod 004 data.txt
neha@neha-VirtualBox:~$ ls -lh data.txt
-----r-- 1 neha neha 126 Sep 20 2023 data.txt
neha@neha-VirtualBox:~$
```

68. How do you find broken symbolic links in a directory?

```
neha@neha-VirtualBox:~$ find /home/neha -xtype l
/home/neha/snap/snapd-desktop-integration/315/.config/gtk-3.0/setting
/home/neha/snap/snapd-desktop-integration/315/.config/gtk-3.0/gtk.css
/home/neha/snap/snapd-desktop-integration/315/.config/gtk-2.0/gtkfile
/home/neha/snap/snapd-desktop-integration/315/.themes
/home/neha/snap/snapd-desktop-integration/315/.local/share/themes
/home/neha/snap/snapd-desktop-integration/common/.cache/gio-modules/l
xy.so
/home/neha/snap/snapd-desktop-integration/common/.cache/gio-modules/l
roxy.so
/home/neha/snap/snapd-desktop-integration/common/.cache/gio-modules/l
ings.so
/home/neha/snap/snapd-desktop-integration/common/.cache/gio-modules/l
.so
```

69. How do you copy files while preserving their original timestamps?

```
neha@neha-VirtualBox:~$ cp -r file.txt /home/neha/mydir
neha@neha-VirtualBox:~$ ls ~/mydir
file.txt
neha@neha-VirtualBox:~$
```

70. How do you display the last 50 lines of a log file and continue monitoring new additions?

```
neha@neha-VirtualBox:~$ tail -n 50 -f manunalls.txt
TIME_STYLE environment variable sets NEHA default
style to use.

The WHEN argument defaults to 'always' and can
also be 'auto' or 'never'.

Using color to distinguish file types is dis-
abled both by default and with --color=never.
With --color=auto, ls emits color codes only
when standard output is connected to a terminal.
The LS_COLORS environment variable can change
NEHA settings. Use NEHA dircolors(1) command to
set it.

Exit status:
```