

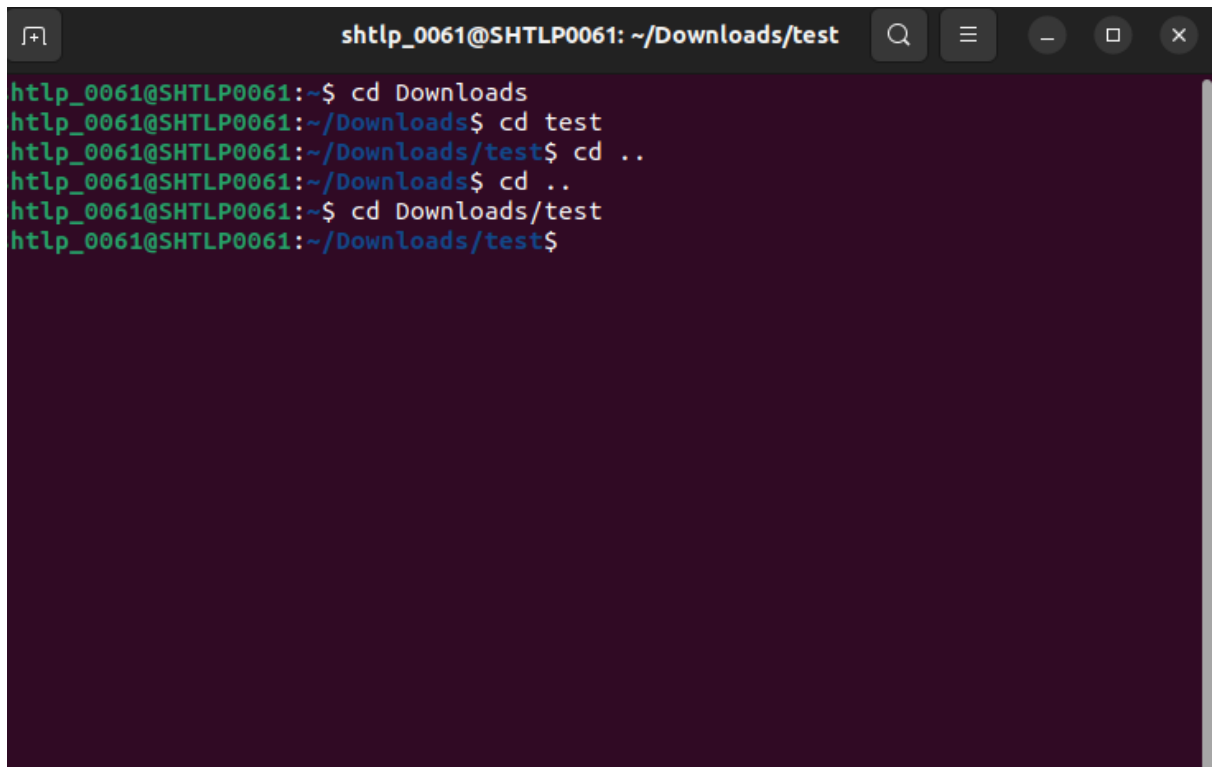
Basics of Linux Commands

1) pwd: display present working directory

A terminal window with a dark purple background. The title bar at the top reads "shtlp_0061@SHTLP0061: ~". The terminal shows the command "pwd" being entered, followed by the output "home/shtlp_0061". The prompt "shtlp_0061@SHTLP0061:~\$" is visible at the bottom.

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ pwd  
home/shtlp_0061  
shtlp_0061@SHTLP0061:~$
```

2) cd: Change Directory

A terminal window with a dark purple background. The title bar at the top reads "shtlp_0061@SHTLP0061: ~/Downloads/test". The terminal shows a sequence of "cd" commands: "cd Downloads", "cd test", "cd ..", "cd ..", and "cd Downloads/test". The prompt "shtlp_0061@SHTLP0061:~/Downloads/test\$" is visible at the bottom.

```
shtlp_0061@SHTLP0061: ~/Downloads/test  
shtlp_0061@SHTLP0061:~$ cd Downloads  
shtlp_0061@SHTLP0061:~/Downloads$ cd test  
shtlp_0061@SHTLP0061:~/Downloads/test$ cd ..  
shtlp_0061@SHTLP0061:~/Downloads$ cd ..  
shtlp_0061@SHTLP0061:~$ cd Downloads/test  
shtlp_0061@SHTLP0061:~/Downloads/test$
```

3) ls: Display List of directories and files of present directory

Syntax: ls options filename

```
shrlp_0061@SHTLP0061: ~  
shrlp_0061@SHTLP0061:~$ ls  
esktop          Downloads      Music          snap  
ocuments        google-chrome-stable_current_amd64.deb  output.txt    Templates  
ocuments        list1.txt      Pictures       test.txt  
ocuments.zip    list2.txt      Public         Videos  
shrlp_0061@SHTLP0061:~$ ls Documents  
10th marksheet.pdf'  pancard.pdf      semesterPDF.pdf  
12th certificate.pdf'  'Riya_Offer Letter-1.pdf'  'voter id.pdf'  
12th marksheet.pdf'  Riya_Rana_Resume.pdf  
aadhar card.pdf'    'school leaving certificate.pdf'  
shrlp_0061@SHTLP0061:~$ ls ..  
shrlp_0061
```

ls -l: list files and directories in long format

ls -a: shows all hidden files

ls -al : hidden file with long format

```
shrlp_0061@SHTLP0061:~$ ls -l  
total 96968  
drwxr-xr-x 3 shrlp_0061 shrlp_0061      4096 Jun 13 17:29 Desktop  
drwxrwxr-x 2 shrlp_0061 shrlp_0061      4096 Jun  5 11:40 documents  
drwxr-xr-x 2 shrlp_0061 shrlp_0061      4096 Jun  5 12:42 Documents  
-rw-rw-r-- 1 shrlp_0061 shrlp_0061 5388671 Jun  5 15:25 Documents.zip  
drwxr-xr-x 3 shrlp_0061 shrlp_0061      4096 Jun 13 16:26 Downloads  
-rw-rw-r-- 1 shrlp_0061 shrlp_0061 93841272 May 27 05:54 google-chrome-stable_cur  
rent_amd64.deb  
-rw-rw-r-- 1 shrlp_0061 shrlp_0061      12 Jun 13 13:13 list1.txt  
-rw-rw-r-- 1 shrlp_0061 shrlp_0061      24 Jun 13 13:19 list2.txt  
dr-xr-xr-x 2 shrlp_0061 shrlp_0061      4096 Jun  2 10:21 Music  
-rw-rw-r-- 1 shrlp_0061 shrlp_0061      24 Jun 13 13:15 output.txt  
drwxr-xr-x 3 shrlp_0061 shrlp_0061      4096 Jun 13 13:04 Pictures  
drwxr-xr-x 2 shrlp_0061 shrlp_0061      4096 Jun  2 10:21 Public  
drwx----- 9 shrlp_0061 shrlp_0061      4096 Jun 12 11:50 snap  
drwxr-xr-x 2 shrlp_0061 shrlp_0061      4096 Jun  2 10:21 Templates  
-rw-rw-r-x 1 shrlp_0061 shrlp_0061       36 Jun 13 13:10 test.txt  
drwxr-xr-x 2 shrlp_0061 shrlp_0061      4096 Jun  2 10:21 Videos
```

```
shrlp_0061@SHTLP0061:~$ ls -a  
.  
..  
.bash_history  
.bash_logout  
.bashrc  
.cache  
.config  
Desktop  
documents  
Documents  
Documents.zip  
dotnet  
Downloads  
.gnupg  
google-chrome-stable_current_amd64.deb  
list1.txt  
list2.txt  
.local  
.Music  
output.txt  
Pictures  
.pki  
.profile  
Public  
snap  
.ssh  
.sudo_as_admin_successful  
Templates  
test.txt  
Videos  
.vscode
```

```

shtlp_0061@SHTLP0061:~$ ls -al
total 97024
drwxr-x--- 20 shtlp_0061 shtlp_0061    4096 Jun 13 17:49 .
drwxr-xr-x  3 root      root          4096 Jun  2 10:18 ..
-rw-----  1 shtlp_0061 shtlp_0061     861 Jun 12 22:21 .bash_history
-rw-r--r--  1 shtlp_0061 shtlp_0061     220 Jun  2 10:18 .bash_logout
-rw-r--r--  1 shtlp_0061 shtlp_0061    3771 Jun  2 10:18 .bashrc
drwx----- 15 shtlp_0061 shtlp_0061    4096 Jun  8 15:21 .cache
drwx----- 19 shtlp_0061 shtlp_0061    4096 Jun 13 16:33 .config
drwxr-xr-x  3 shtlp_0061 shtlp_0061    4096 Jun 13 17:29 Desktop
drwxrwxr-x  2 shtlp_0061 shtlp_0061    4096 Jun  5 11:40 documents
drwxr-xr-x  2 shtlp_0061 shtlp_0061    4096 Jun  5 12:42 Documents
-rw-rw-r--  1 shtlp_0061 shtlp_0061 5388671 Jun  5 15:25 Documents.zip
drwxrwxr-x  3 shtlp_0061 shtlp_0061    4096 Jun 12 23:05 .dotnet
drwxr-xr-x  3 shtlp_0061 shtlp_0061    4096 Jun 13 16:26 Downloads
drwx-----  2 shtlp_0061 shtlp_0061    4096 Jun 13 15:52 .gnupg
-rw-rw-r--  1 shtlp_0061 shtlp_0061 93841272 May 27 05:54 google-chrome-stable_cu
rrent_amd64.deb
-rw-rw-r--  1 shtlp_0061 shtlp_0061     12 Jun 13 13:13 list1.txt
-rw-rw-r--  1 shtlp_0061 shtlp_0061     24 Jun 13 13:19 list2.txt
drwx-----  3 shtlp_0061 shtlp_0061    4096 Jun  2 10:21 .local
dr-xr-xr-x  2 shtlp_0061 shtlp_0061    4096 Jun  2 10:21 Music
-rw-rw-r--  1 shtlp_0061 shtlp_0061     24 Jun 13 13:15 output.txt

```

Ls documents/ *.html : only list files in documents which ends with .html

Ls documents/ *.* : all files in documents

ls -ls > out.txt : all list will be stored in the out.txt file. If the out.txt is not present it will create out.txt file.

- 4) cat: Display text file, combine text file and create new file with content.

Syntax: cat options filenames

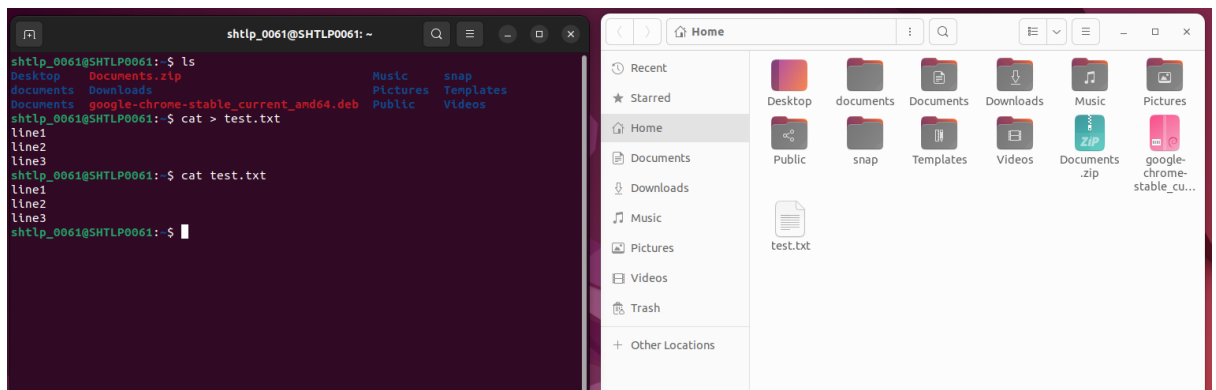
```

shtlp_0061@SHTLP0061:~$ cat >> test.txt
line7
line8
line9
shtlp_0061@SHTLP0061:~$ cat test.txt
line4
line5
line6
line7
line8
line9
shtlp_0061@SHTLP0061:~$

```

cat >> test.txt : this command is used for appending more text.
cat test.txt : this command displays the text of the test file.
cat -b file.txt : this command shows line number to non blank lines
cat -n file.txt : add line no. to all lines including blank lines.
cat -s file.txt : squeeze blank lines to only one line.
cat -E file.txt : adds \$ symbol to end of line to identify end of line.

5) Redirection: capturing output and sending it to another file



To overwrite the content, run the same command and change the content.

```
shftp_0061@SHTLP0061:~$ cat list1.txt
line1
line2
shftp_0061@SHTLP0061:~$ cat list2.txt
line4
line5
shftp_0061@SHTLP0061:~$ cat list1.txt list2.txt > output.txt
shftp_0061@SHTLP0061:~$ cat output.txt
line1
line2
line4
line5
shftp_0061@SHTLP0061:~$
```

To add content of two files use command :
“cat list1.txt list2.txt > output.txt”

Output.txt will have content of both files.

```

shtlp_0061@SHTLP0061:~$ cat list1.txt
line1
line2
shtlp_0061@SHTLP0061:~$ cat list2.txt
line4
line5
shtlp_0061@SHTLP0061:~$ cat list1.txt >> list2.txt
shtlp_0061@SHTLP0061:~$ cat list2.txt
line4
line5
line1
line2
shtlp_0061@SHTLP0061:~$

```

To append more lines use command “cat >> test.txt”

```

shtlp_0061@SHTLP0061:~$ cat > test.txt
line4
line5
line6
shtlp_0061@SHTLP0061:~$ cat test.txt
line4
line5
line6
shtlp_0061@SHTLP0061:~$

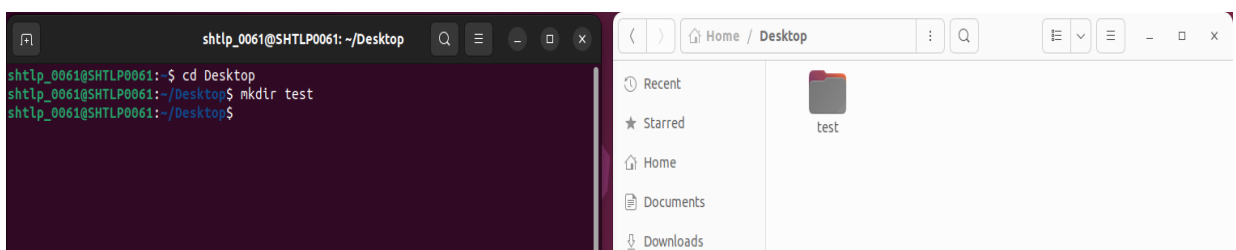
```

To display content of a file use command : “cat test.txt”

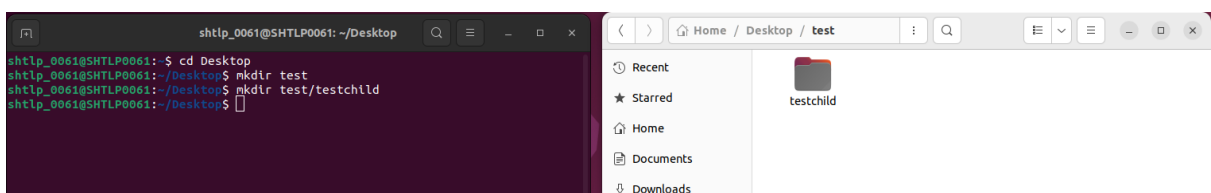
6) mkdir: for creating directory and subdirectories inside parent directory

Syntax: mkdir options nameOfDirectory

Creating new directory:



Creating “testchild” subdirectory inside a “test” directory



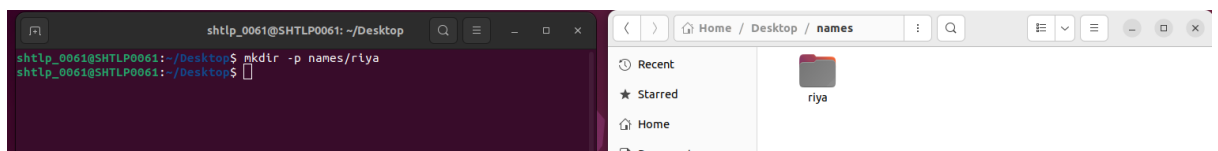
Note: if test directory doesn't exist then the command “mkdir test/testchild” will throw an error.

So to make directory with subdirectory use command:

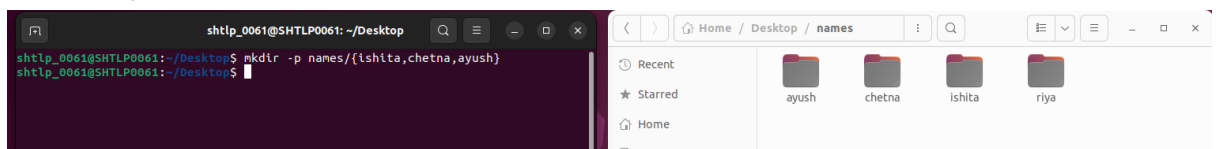
“mkdir -p test/testchild”

p : parents

```
shtlp_0061@SHTLP0061: ~/Desktop$ mkdir names/riya
mkdir: cannot create directory 'names/riya': No such file or directory
shtlp_0061@SHTLP0061: ~/Desktop$
shtlp_0061@SHTLP0061: ~/Desktop$
```



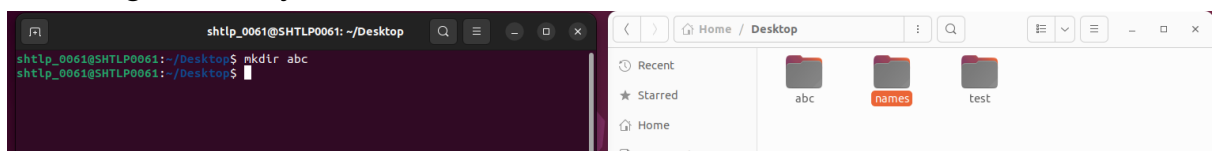
Creating multiple subdirectories at a time:



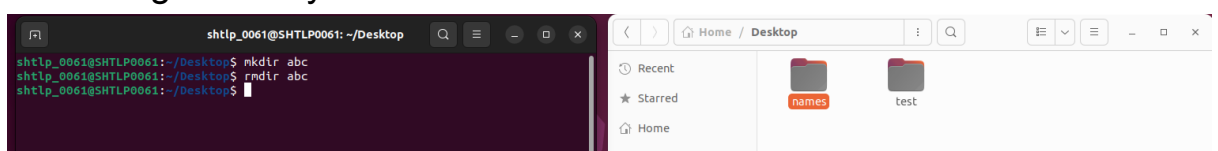
7) rmdir & rm: removes directory and directory structure

Syntax: rmdir -options dir

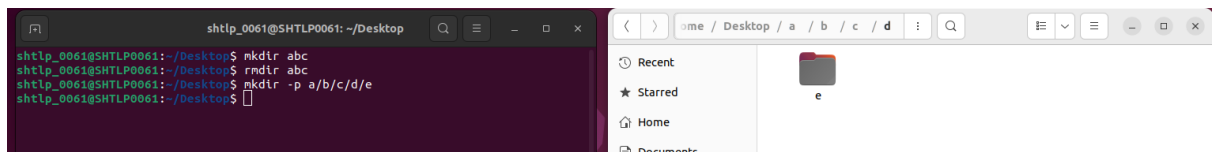
Creating directory:



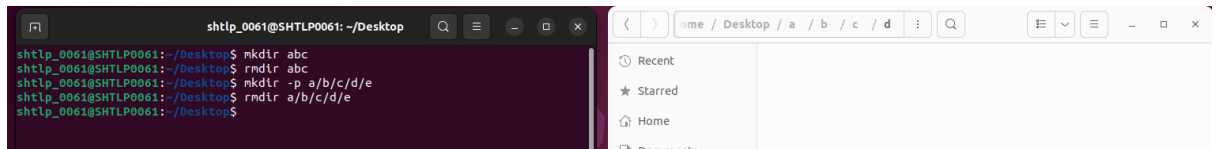
Removing directory:



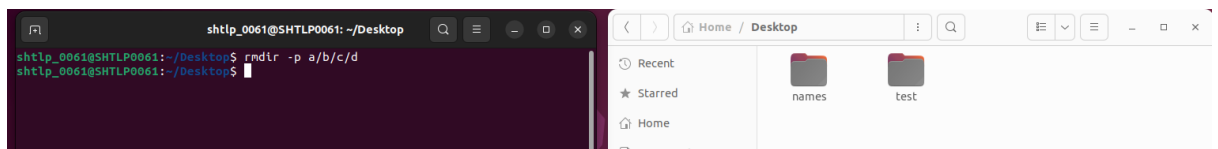
Creating directory with subdirectories:



Deleting directories: “`rmdir a/b/c/d/e`” will only delete directory of top level i.e. “e” directory.

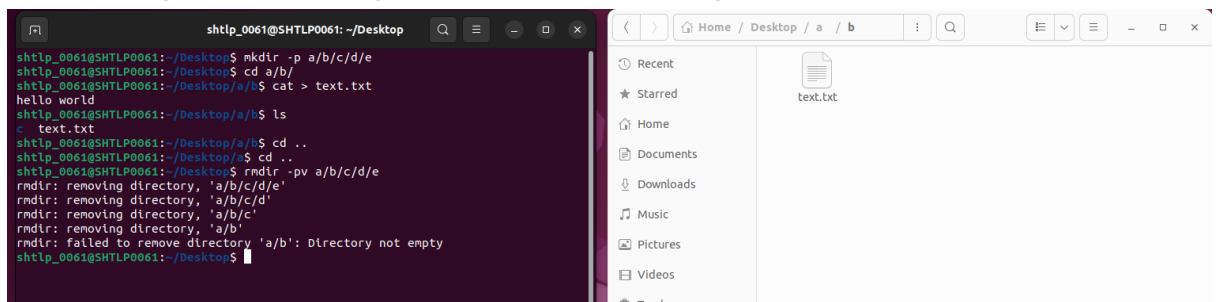


“`rmdir -p a/b/c/d/e`” This command will delete all the directories in a structured manner.

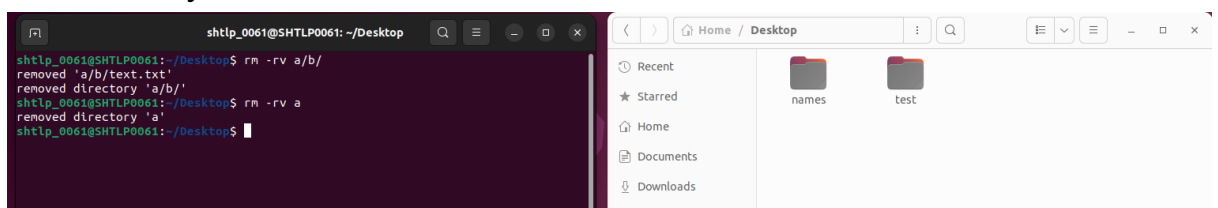


If any directory contains any file removal of that directory and its parent directory is not possible.

“`rmdir -pv a/b/c/d/e`” here `v` is verbose which shows what's happening in the background of the deleting process.

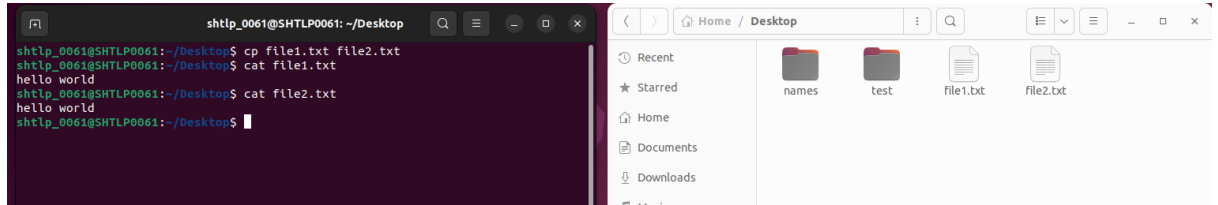


Use the below command to delete the directories with file successfully. Use command “`rm`”

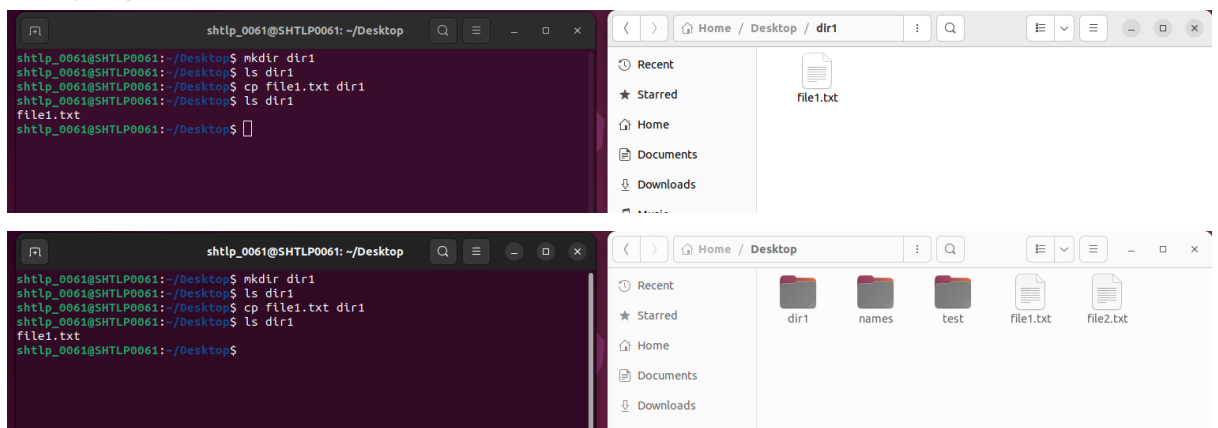


- 8) cp: copy files and directory
Syntax: cp options source destination

Cp file1.txt file2.txt



Copying file3.txt to dir1



For multiple files at a time use command:

“Cp file1.txt file2.txt dir2”

Overwriting will be there if any file already exists in dir2.

To prevent overwriting of files we can use command:

“cp -i file1 file2 dir1” this command will ask you Y/N to overwrite the file or not.

To copy one directory content to another directory which has file in it use command:

“cp -R dir1 dir3” R: recursive copying

Note: if the destination directory does not exist it will create the destination directory and only content will be copied.

If the directory exists in prior then source directory will also be copied to destination directory.


```
shtlp_0061@SHTLP0061: ~/Desktop

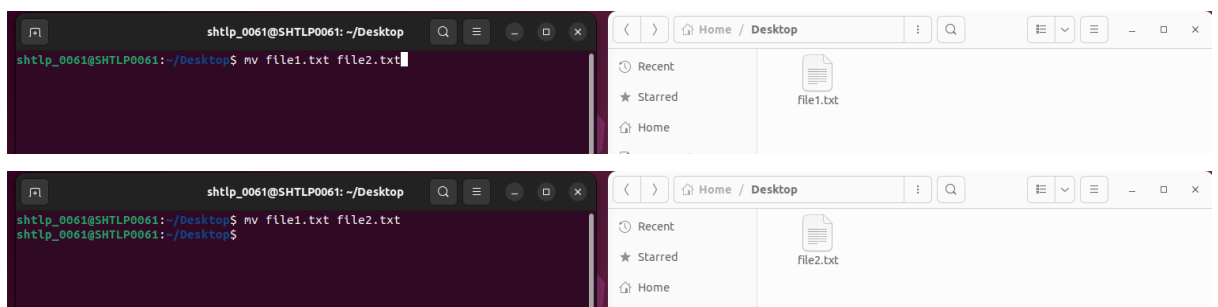
shtlp_0061@SHTLP0061:~/Desktop$ cp dir1 dir3
cp: -r not specified; omitting directory 'dir1'
shtlp_0061@SHTLP0061:~/Desktop$

shtlp_0061@SHTLP0061:~/Desktop$ cp -r dir1 dir3
shtlp_0061@SHTLP0061:~/Desktop$ cd dir3
shtlp_0061@SHTLP0061:~/Desktop/dir3$ ls
dir1  file1.txt  file2.txt
shtlp_0061@SHTLP0061:~/Desktop/dir3$ cd ..
shtlp_0061@SHTLP0061:~/Desktop$ cp -vr dir1 dir3
'dir1/file1.txt' -> 'dir3/dir1/file1.txt'
'dir1/file2.txt' -> 'dir3/dir1/file2.txt'
shtlp_0061@SHTLP0061:~/Desktop$
```

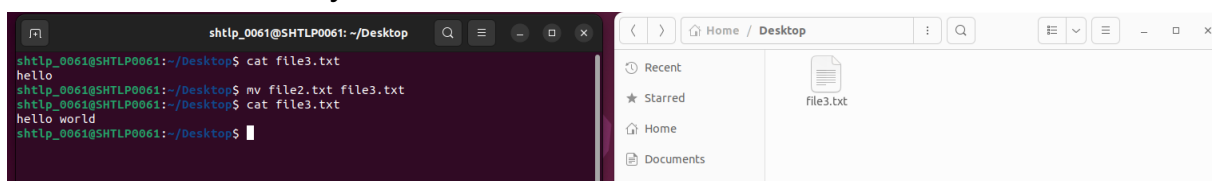
9) mv: move or rename files and directories. It allows you to change the name of a file or directory or move it to a different location.

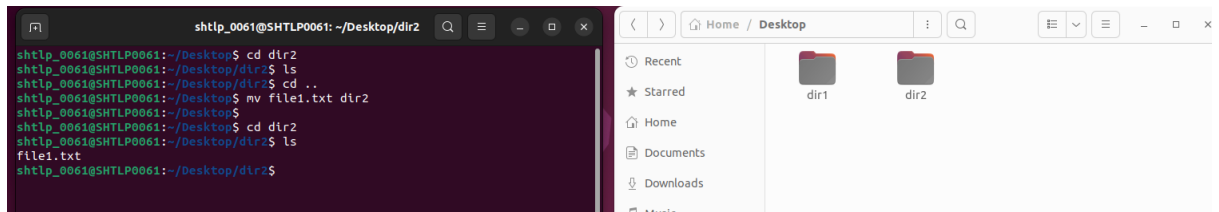
Syntax: mv [options] source destination.

To rename a file or move the content of file1 to file2: mv file1.txt file2.txt

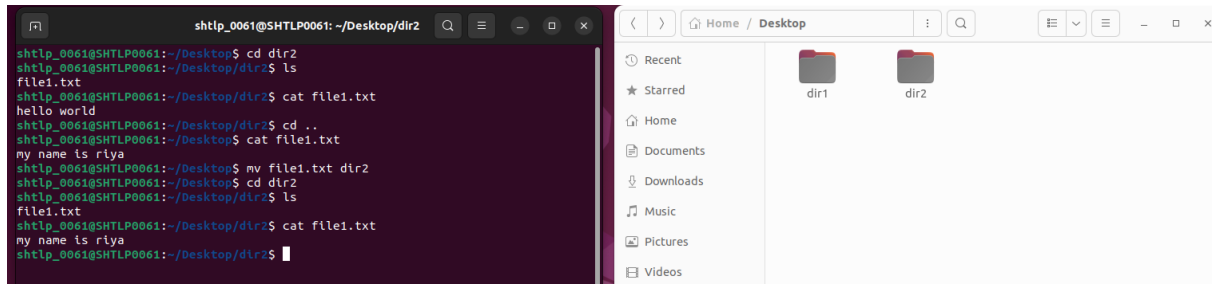


Move file to directory:





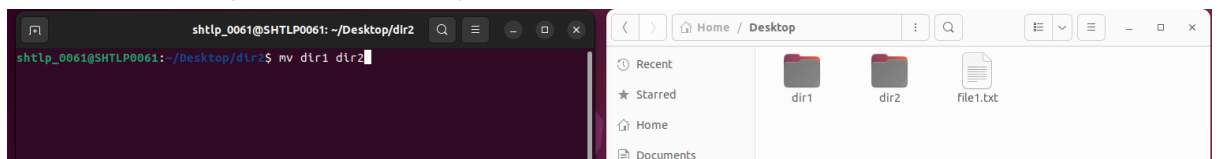
If the existing filename is moved to the directory then the content of the file will get overwritten.



To prevent overwriting use command:

“mv -i file1.txt dir1” it will ask user Y/N to overwrite the file or not.

Move directory 1 to directory2:



Note: if the destination directory does not exist then only content or files of the source directory will be moved to the destination directory.

- 10) `less`: this command is used to view the contents of a file one page at a time. It allows you to scroll through the file in a forward or backward direction.

Syntax: `less [options] file`

Any big file contains large data and to read large data `less` command is very useful.

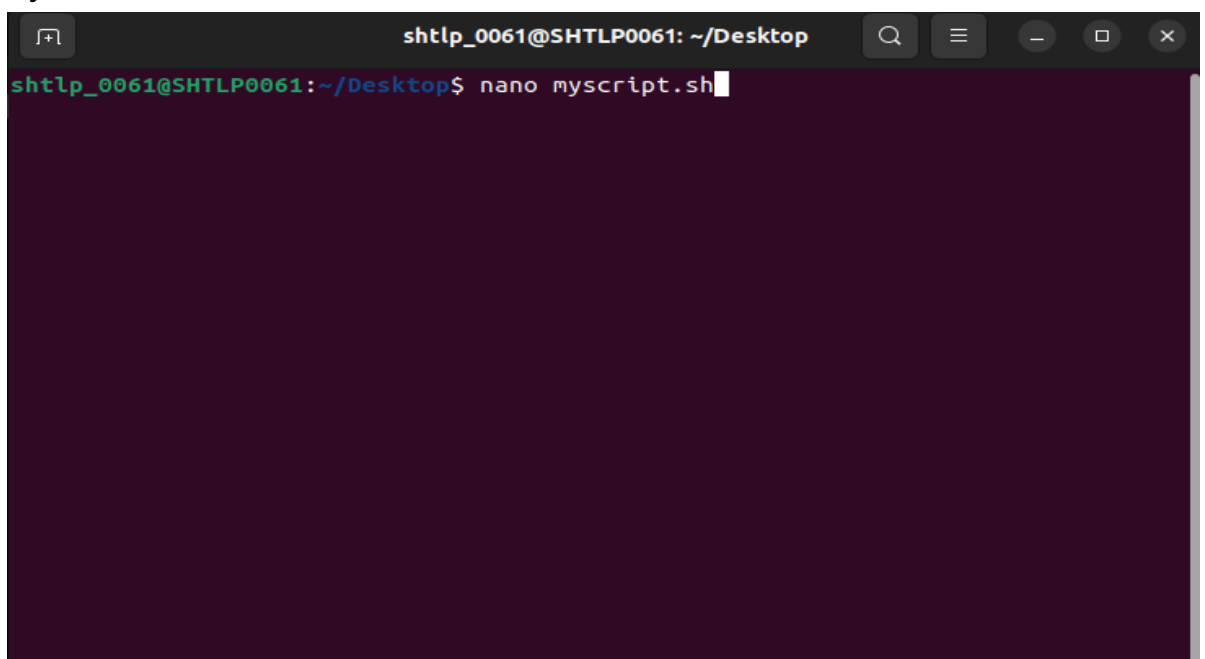
- 11) `touch`: used to create new files and to change the time stamp

Syntax: `"touch filename"` (create the new file if does not exist)

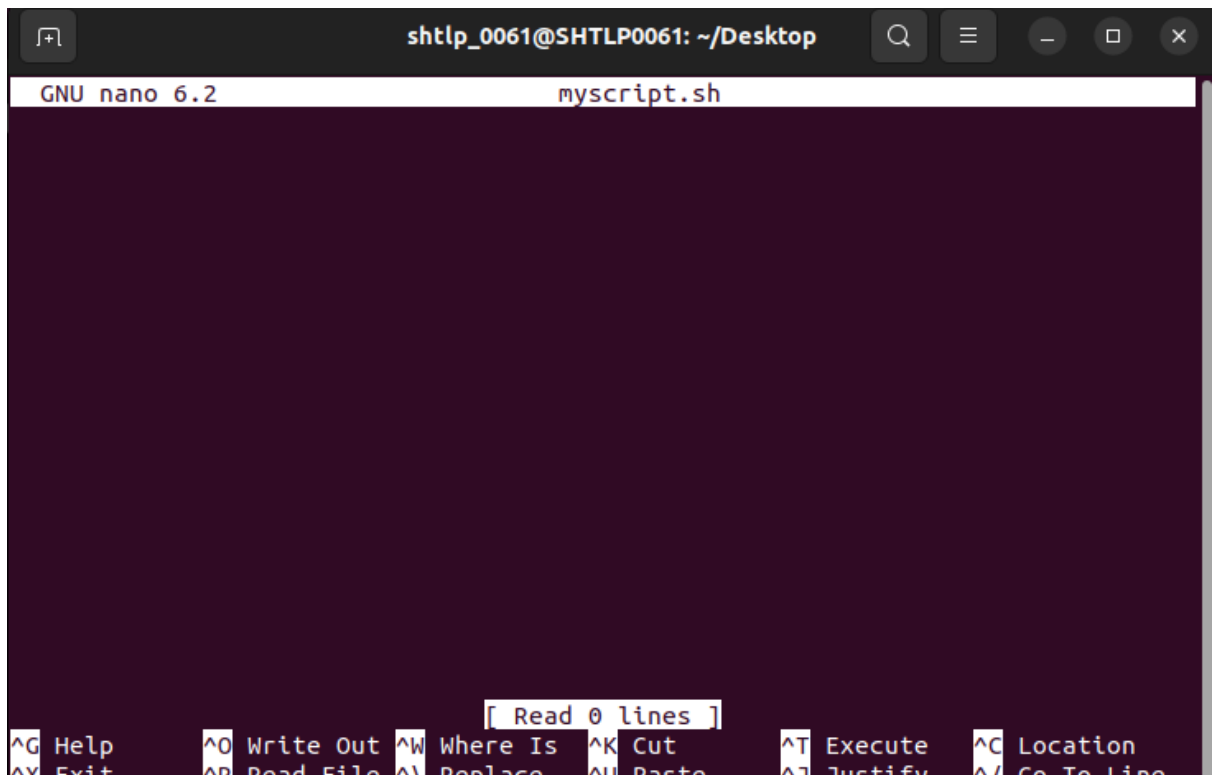
`"touch filename"` (update the timestamp of the file, if file exist in prior)

- 12) `nano`: it's a simple and easy-to-use command-line text editor that allows you to create and edit text files directly in the terminal.

Syntax: `nano filename`



The image shows a terminal window with a dark background. The title bar at the top reads "shtlp_0061@SHTLP0061: ~/Desktop". Below the title bar, the command prompt shows "shtlp_0061@SHTLP0061:~/Desktop\$ nano myscript.sh" with a cursor at the end of the line. The rest of the terminal area is empty.

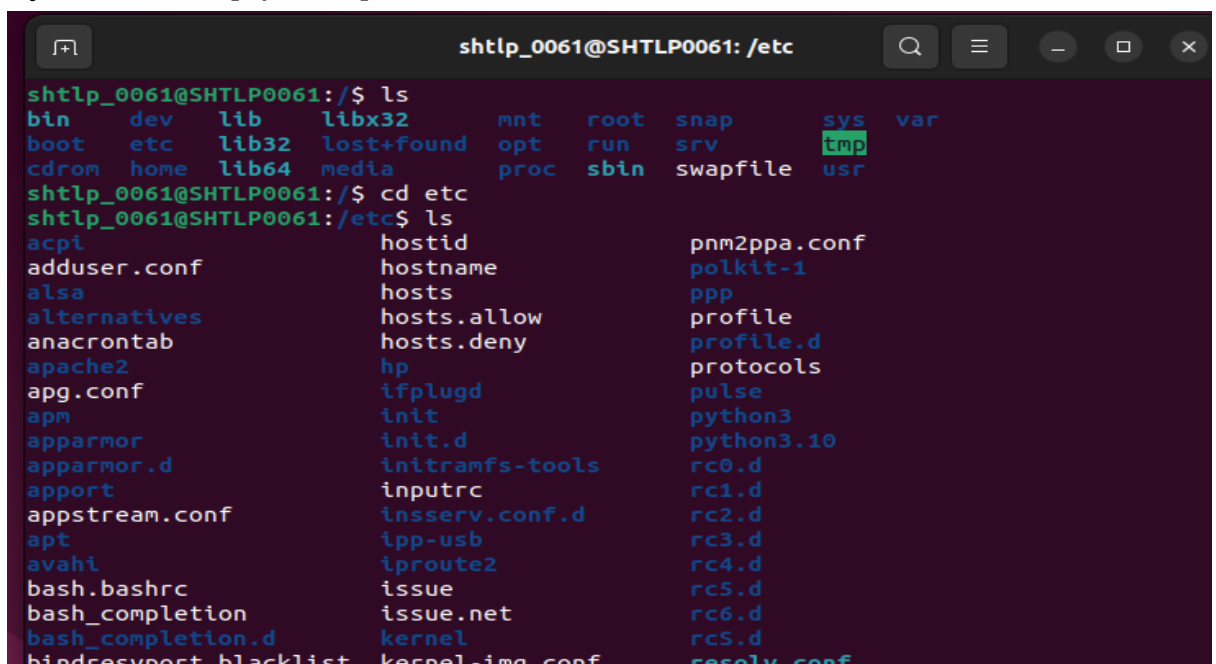


```
shtlp_0061@SHTLP0061: ~/Desktop
GNU nano 6.2 myscrip.sh

[ Read 0 lines ]
^G Help  ^O Write Out  ^W Where Is  ^K Cut       ^T Execute   ^C Location
^Y Exit  ^P Read File  ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

- 13) `sudo`: it allows users to execute commands with the privileges of another user, typically the root user (superuser/administrator). It stands for "superuser do."

Syntax: `sudo [options] command`



```
shtlp_0061@SHTLP0061: /etc
shtlp_0061@SHTLP0061:/$ ls
bin    dev    lib    libx32  mnt    root   snap   sys    var
boot   etc    lib32  lost+found  opt    run    srv    tmp
cdrom  home   lib64  media    proc   sbin   swapfile  usr
shtlp_0061@SHTLP0061:/$ cd /etc
shtlp_0061@SHTLP0061:/etc$ ls
acpi                               pnm2ppa.conf
adduser.conf                      hostname
alsa                              hosts
alternatives                     hosts.allow
anacrontab                       hosts.deny
apache2                          hp
apg.conf                        ifplugd
apm                              init
apparmor                        init.d
apparmor.d                      initramfs-tools
appport                         inputrc
appstream.conf                 insserv.conf.d
apt                             ipp-usb
avahi                          iproute2
bash.bashrc                    issue
bash_completion                issue.net
bash_completion.d              kernel
bindresvport.blacklist         kernel-img.conf
                                resolv.conf
```

```
shthp_0061@SHTLP0061: /etc

fstab          netplan        ubuntu-advantage
fuse.conf      network       ucf.conf
fwupd         networkd-dispatcher udev
gai.conf      NetworkManager udisks2
gdb           networks      ufw
gdm3          newt          update-manager
geoclue       nftables.conf update-motd.d
ghostscript   nsswitch.conf update-notifier
glvnd         openvpn       UPower
gnome         opt          usb_modeswitch.conf
groff         os-release   usb_modeswitch.d
group         PackageKit   vim
group-        pam.conf    vtrgb
grub.d        pam.d       vulkan
gshadow       papersize   wgetrc
gshadow-      passwd     wpa_supplicant
gss           passwd-    X11
gtk-2.0       pcmcia      xattr.conf
gtk-3.0       perl       xdg
hdparm.conf   pki        xml
host.conf     pm         zsh_command_not_found

shthp_0061@SHTLP0061:/etc$ mkdir test
mkdir: cannot create directory 'test': Permission denied
shthp_0061@SHTLP0061:/etc$
```

```
shthp_0061@SHTLP0061: /etc

shthp_0061@SHTLP0061:/etc$ sudo mkdir test
[sudo] password for shthp_0061:
shthp_0061@SHTLP0061:/etc$ ls
```

```
shthp_0061@SHTLP0061: /etc

debconf.conf  machine-ku     subuid
debian_version magic           subuid-
default       magic.mime     sudo.conf
deluser.conf  mailcap        sudoers
depmod.d      mailcap.order  sudoers.d
dhcp          manpath.config sudo_logsrvd.conf
dictionaries-common mime.types     sysctl.conf
dpkg          mke2fs.conf   sysctl.d
e2scrub.conf  ModemManager  systemd
emacs        modprobe.d    terminfo
environment   modules       test
environment.d modules-load.d thermald
ethertypes    mtab          thunderbird
firefox       nanorc        timezone
fonts        netconfig     tmpfiles.d
fprintd.conf netplan       ubuntu-advantage
fstab        network      ucf.conf
fuse.conf    networkd-dispatcher udev
fwupd       NetworkManager udisks2
gai.conf    networks     ufw
gdb         newt        update-manager
gdm3       nftables.conf update-motd.d
geoclue    nsswitch.conf update-notifier
ghostscript openvpn     UPower
glvnd      opt        usb_modeswitch.conf
```

- 14) **top**: it provides an interactive, dynamic view of the system's CPU usage, memory utilisation, running processes, and other system statistics.

```
shtlp_0061@SHTLP0061: ~  
top - 16:33:26 up 6:40, 1 user, load average: 1.00, 0.89, 0.81  
Tasks: 353 total, 1 running, 352 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 3.6 us, 1.5 sy, 0.0 ni, 93.8 id, 0.0 wa, 0.0 hi, 1.0 si, 0.0 st  
MiB Mem : 14810.6 total, 6833.8 free, 4271.7 used, 3705.2 buff/cache  
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 10014.3 avail Mem  


| PID   | USER     | PR | NI  | VIRT    | RES    | SHR    | S | %CPU | %MEM | TIME+    | COMMAND  |
|-------|----------|----|-----|---------|--------|--------|---|------|------|----------|----------|
| 3769  | shtlp_0+ | 20 | 0   | 12.5g   | 639264 | 279864 | S | 28.7 | 4.2  | 37:06.08 | firefox  |
| 10684 | shtlp_0+ | 20 | 0   | 2951336 | 332280 | 114780 | S | 26.0 | 2.2  | 24:39.05 | Isolate+ |
| 5401  | shtlp_0+ | 20 | 0   | 506172  | 98496  | 84168  | S | 11.0 | 0.6  | 9:02.89  | RDD Pro+ |
| 1824  | shtlp_0+ | 20 | 0   | 6671064 | 418860 | 149348 | S | 10.7 | 2.8  | 23:18.36 | gnome-s+ |
| 2853  | shtlp_0+ | 20 | 0   | 1704380 | 122840 | 66644  | S | 5.0  | 0.8  | 4:35.93  | Xwayland |
| 22286 | shtlp_0+ | 9  | -11 | 2291348 | 28688  | 22680  | S | 4.0  | 0.2  | 2:42.11  | pulseau+ |
| 4531  | shtlp_0+ | 20 | 0   | 2990104 | 399216 | 102768 | S | 2.7  | 2.6  | 8:39.13  | Isolate+ |
| 5901  | shtlp_0+ | 20 | 0   | 217200  | 35440  | 27340  | S | 2.3  | 0.2  | 2:16.90  | Utility+ |
| 895   | root     | -2 | 0   | 0       | 0      | 0      | S | 1.0  | 0.0  | 1:14.64  | gfx      |
| 25567 | root     | 20 | 0   | 0       | 0      | 0      | D | 1.0  | 0.0  | 0:01.81  | kworker+ |
| 11378 | shtlp_0+ | 20 | 0   | 567472  | 58004  | 40116  | S | 0.7  | 0.4  | 0:20.78  | gnome-t+ |
| 23307 | root     | 0  | -20 | 0       | 0      | 0      | I | 0.7  | 0.0  | 0:05.59  | kworker+ |
| 23956 | root     | 0  | -20 | 0       | 0      | 0      | I | 0.7  | 0.0  | 0:04.62  | kworker+ |
| 14    | root     | 20 | 0   | 0       | 0      | 0      | I | 0.3  | 0.0  | 0:26.94  | rcu_sch+ |
| 5700  | shtlp_0+ | 30 | 10  | 780740  | 189712 | 100520 | S | 0.3  | 1.3  | 1:34.77  | update-+ |
| 21815 | shtlp_0+ | 20 | 0   | 3465808 | 637904 | 107576 | S | 0.3  | 4.2  | 0:43.34  | Isolate+ |


```

- 15) **kill**: used to terminate running processes
Syntax: **kill [options] PID**

How to get PID(Process id) →

- a) Using command : **pidof "name of the process"**
- b) Using command: **ps -ux** (gives list of processes with PID)
Or **ps - aux** (all processes with PID)

```
shtlp_0061@SHTLP0061: ~  
1 shtlp_0061@SHTLP0061:~$ ps -ux  
1 USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
1 shtlp_0+      1624  0.0  0.0  18064 10644 ?        Ss   09:52   0:01 /lib/systemd/  
1 shtlp_0+      1625  0.0  0.0 104596  4240 ?        S    09:52   0:00 (sd-pam)  
1 shtlp_0+      1631  0.0  0.0  48504  6624 ?        S<sl 09:52   0:00 /usr/bin/pipe  
1 shtlp_0+      1632  0.0  0.0  32260  6464 ?        Ssl  09:52   0:00 /usr/bin/pipe  
1 shtlp_0+      1634  0.0  0.0  76456 11940 ?        Ss   09:52   0:00 /snap/snapd-d  
1 shtlp_0+      1644  0.0  0.0 249548  7304 ?        Sl   09:52   0:00 /usr/bin/gnom  
1 shtlp_0+      1645  0.0  0.0  10244  6380 ?        Ss   09:52   0:07 /usr/bin/dbus  
1 shtlp_0+      1654  0.0  0.0 249288  8088 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1666  0.0  0.0 380884  6848 ?        Sl   09:52   0:00 /usr/libexec/  
1 shtlp_0+      1679  0.0  0.0 545556  7296 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1683  0.0  0.0 245276  6420 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1703  0.0  0.2 715840 36572 ?        SNsl 09:52   0:10 /usr/libexec/  
1 shtlp_0+      1717  0.0  0.0 324700  9592 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1722  0.0  0.0 323848  8028 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1727  0.0  0.0 245104  6516 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1731  0.0  0.0 246192  7108 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1735  0.0  0.0 245280  6460 ?        Ssl  09:52   0:00 /usr/libexec/  
1 shtlp_0+      1739  0.0  0.2 569896 39264 ?        Sl   09:52   0:00 /usr/libexec/  
1 shtlp_0+      1745  0.0  0.0 171036  6252 tty2     Ssl+ 09:52   0:00 /usr/libexec/  
1 shtlp_0+      1749  0.0  0.0 347044 14720 ?        Sl   09:52   0:00 /usr/libexec/  
1 shtlp_0+      1752  0.0  0.1 231688 15228 tty2     Sl+   09:52   0:00 /usr/libexec/  
1 shtlp_0+      1795  0.0  0.0 100556  5168 ?        Ssl  09:52   0:00 /usr/libexec/
```

```
shtlp_0061@SHTLP0061: ~  
1 shtlp_0+      5698  0.0  0.0  46956  7180 ?        Ss   10:38   0:00 /usr/lib/blue  
1 shtlp_0+      5700  0.4  1.2 780740 189712 ?        SNl  10:38   1:40 /usr/bin/pyth  
1 shtlp_0+      5901  0.6  0.2 217172 35432 ?        Sl   10:40   2:27 /snap/firefox  
1 shtlp_0+     10684  8.3  2.0 2950928 318328 ?        Sl   11:28  26:57 /snap/firefox  
1 shtlp_0+     10773  0.0  0.8 2470208 130064 ?        Sl   11:29   0:03 /snap/firefox  
1 shtlp_0+     11370  0.0  0.1  44484 19332 ?        S    11:37   0:00 /usr/bin/pyth  
1 shtlp_0+     11373  0.0  0.1 392012 27440 ?        Sl   11:37   0:00 /usr/bin/gnom  
1 shtlp_0+     11378  0.1  0.3 567472 58020 ?        Ssl  11:37   0:22 /usr/libexec/  
1 shtlp_0+     11396  0.0  0.0  19924  5404 pts/1    Ss   11:37   0:00 bash  
1 shtlp_0+     13053  0.6  1.9 2719932 297104 ?        Sl   12:32   1:34 /snap/firefox  
1 shtlp_0+     14582  0.0  1.8 2761500 287100 ?        Sl   12:41   0:12 /snap/firefox  
1 shtlp_0+     15764  0.3  0.8 858056 124584 ?        Sl   13:01   0:50 /usr/bin/naut  
1 shtlp_0+     21699  0.0  0.4 3079200 72616 ?        Sl   15:26   0:03 gjs /usr/shar  
1 shtlp_0+     21815  1.1  4.0 3463760 612556 ?        Sl   15:27   0:58 /snap/firefox  
1 shtlp_0+     22286  4.1  0.1 2291348 28688 ?        S<sl 15:31   3:20 /usr/bin/puls  
1 shtlp_0+     23567  0.0  0.3 884188 58928 ?        Sl   15:52   0:00 /usr/bin/gnom  
1 shtlp_0+     23776  0.0  0.2 402504 40352 ?        Sll  15:52   0:00 /usr/bin/seah  
1 shtlp_0+     27624  3.6  2.1 2859520 318960 ?        Sl   16:48   0:09 /snap/firefox  
1 shtlp_0+     28033  0.1  0.4 2413368 61016 ?        Sl   16:51   0:00 /snap/firefox  
1 shtlp_0+     28063  0.1  0.4 2413368 61364 ?        Sl   16:51   0:00 /snap/firefox  
1 shtlp_0+     28140  0.1  0.4 2413104 61048 ?        Sl   16:52   0:00 /snap/firefox  
1 shtlp_0+     28172  0.0  0.0  21584  3604 pts/1    R+   16:53   0:00 ps -ux  
1 shtlp_0061@SHTLP0061:~$  
1 shtlp_0061@SHTLP0061:~$
```



```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ ps -aux  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
root         1  0.0  0.0 166844 11716 ?        Ss   09:52   0:01 /sbin/init sp  
root         2  0.0  0.0      0      0 ?        S    09:52   0:00 [kthreadd]  
root         3  0.0  0.0      0      0 ?        I<   09:52   0:00 [rcu_gp]  
root         4  0.0  0.0      0      0 ?        I<   09:52   0:00 [rcu_par_gp]  
root         5  0.0  0.0      0      0 ?        I<   09:52   0:00 [netns]  
root         7  0.0  0.0      0      0 ?        I<   09:52   0:00 [kworker/0:0H  
root        10  0.0  0.0      0      0 ?        I<   09:52   0:00 [mm_percpu_wq  
root        11  0.0  0.0      0      0 ?        S    09:52   0:00 [rcu_tasks_ru  
root        12  0.0  0.0      0      0 ?        S    09:52   0:00 [rcu_tasks_tr  
root        13  0.0  0.0      0      0 ?        S    09:52   0:00 [ksoftirqd/0]  
root        14  0.1  0.0      0      0 ?        I    09:52   0:28 [rcu_sched]  
root        15  0.0  0.0      0      0 ?        S    09:52   0:00 [migration/0]  
root        16  0.0  0.0      0      0 ?        S    09:52   0:00 [idle_inject/  
root        17  0.0  0.0      0      0 ?        S    09:52   0:00 [cpuhp/0]  
root        18  0.0  0.0      0      0 ?        S    09:52   0:00 [cpuhp/1]  
root        19  0.0  0.0      0      0 ?        S    09:52   0:00 [idle_inject/  
root        20  0.0  0.0      0      0 ?        S    09:52   0:00 [migration/1]  
root        21  0.0  0.0      0      0 ?        S    09:52   0:00 [ksoftirqd/1]  
root        23  0.0  0.0      0      0 ?        I<   09:52   0:00 [kworker/1:0H  
root        24  0.0  0.0      0      0 ?        S    09:52   0:00 [cpuhp/2]  
root        25  0.0  0.0      0      0 ?        S    09:52   0:00 [idle_inject/  
root        26  0.0  0.0      0      0 ?        S    09:52   0:00 [migration/2]
```

```
shtlp_0061@SHTLP0061: ~  
root        748  0.0  0.0 17772 11300 ?        Ss   09:52   0:00 /sbin/wpa_sup  
avahi       767  0.0  0.0  7440   340 ?        S    09:52   0:00 avahi-daemon:  
root        798  0.0  0.0 317104 12220 ?       Ssl  09:52   0:00 /usr/sbin/Mod  
root        808  0.0  0.0  81660 13796 ?       Ss   09:52   0:00 /usr/sbin/cup  
root        849  0.0  0.1 126792 23140 ?       Ssl  09:52   0:00 /usr/bin/pyth  
root        883  0.0  0.0 249876  9276 ?       Ssl  09:52   0:00 /usr/sbin/gdm  
root        895  0.3  0.0      0      0 ?        S    09:52   1:21 [gfx]  
root        896  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.0.0]  
root        897  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.1.0]  
root        898  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.2.0]  
root        899  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.3.0]  
root        900  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.0.1]  
root        901  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.1.1]  
root        902  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.2.1]  
root        903  0.0  0.0      0      0 ?        S    09:52   0:00 [comp_1.3.1]  
root        904  0.0  0.0      0      0 ?        S    09:52   0:00 [sdma0]  
root        905  0.0  0.0      0      0 ?        S    09:52   0:00 [vcn_dec]  
root        906  0.0  0.0      0      0 ?        S    09:52   0:00 [vcn_enc0]  
root        907  0.0  0.0      0      0 ?        S    09:52   0:00 [vcn_enc1]  
root        908  0.0  0.0      0      0 ?        S    09:52   0:00 [jpeg_dec]  
root        917  0.0  0.0      0      0 ?        I<   09:52   0:00 [dm_vblank_co  
root        918  0.0  0.0      0      0 ?        S    09:52   0:00 [card0-crtc0]  
root        919  0.0  0.0      0      0 ?        S    09:52   0:00 [card0-crtc1]  
root        920  0.0  0.0      0      0 ?        S    09:52   0:00 [card0-crtc2]  
root        921  0.0  0.0      0      0 ?        S    09:52   0:00 [card0-crtc3]
```



```
shtlp_0061@SHTLP0061: ~  
root      27042  0.2  0.0      0      0 ?      I    16:44  0:01 [kworker/u32:  
root      27086  0.0  0.0      0      0 ?      I    16:46  0:00 [kworker/6:0-  
root      27087  0.0  0.0      0      0 ?      I    16:46  0:00 [kworker/7:0-  
root      27153  0.0  0.0      0      0 ?      I    16:47  0:00 [kworker/0:0-  
root      27221  0.0  0.0      0      0 ?      I    16:47  0:00 [kworker/5:1-  
root      27222  0.0  0.0      0      0 ?      I    16:47  0:00 [kworker/9:2-  
root      27341  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/2:2-  
root      27428  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/11:1  
root      27437  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/13:1  
root      27438  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/14:0  
root      27613  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/3:2-  
root      27623  0.0  0.0      0      0 ?      I    16:48  0:00 [kworker/12:1  
shtlp_0+  27624  2.8  2.1 2859504 320712 ?      Sl   16:48  0:09 /snap/firefox  
root      27778  0.0  0.0      0      0 ?      I    16:49  0:00 [kworker/8:0-  
root      27958  0.0  0.0      0      0 ?      I    16:51  0:00 [kworker/10:0  
root      27959  0.0  0.0      0      0 ?      I    16:51  0:00 [kworker/4:0-  
shtlp_0+  28033  0.0  0.4 2413368 61016 ?      Sl   16:51  0:00 /snap/firefox  
shtlp_0+  28063  0.0  0.4 2413368 61364 ?      Sl   16:51  0:00 /snap/firefox  
shtlp_0+  28140  0.0  0.4 2413364 61328 ?      Sl   16:52  0:00 /snap/firefox  
root      28167  0.0  0.0      0      0 ?      I    16:52  0:00 [kworker/7:1-  
root      28169  0.0  0.0      0      0 ?      I    16:52  0:00 [kworker/u32:  
shtlp_0+  28222  0.0  0.0  21584  3716 pts/1    R+   16:54  0:00 ps -aux  
shtlp_0061@SHTLP0061:~$  
shtlp_0061@SHTLP0061:~$
```

- 16) echo: used to display text or variables on the terminal
Syntax: echo [options] [text or variables]

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ echo hello world  
hello world  
shtlp_0061@SHTLP0061:~$ myvar="riya"  
shtlp_0061@SHTLP0061:~$ echo $myvar  
riya  
shtlp_0061@SHTLP0061:~$
```

- 17) File permission: it defines who can access a file and what actions they can perform on it.

There are three types of permissions: read (r), write (w), and execute (x).

These permissions are assigned to three categories of users: the owner of the file(u), the group associated with the file,(g) and others (everyone else)(o).

To change the access permission “chmod” command is used.

Syntax: chmod [options] permissions filename

```
drwxr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Templates
-rw-rw-r-- 1 shtlp_0061 shtlp_0061 36 Jun 13 13:10 test.txt
drwxr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Videos

shtlp_0061@SHTLP0061:~$ chmod o+x test.txt
shtlp_0061@SHTLP0061:~$ ls -l
total 96968
drwxr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Templates
-rw-rw-r-x 1 shtlp_0061 shtlp_0061 36 Jun 13 13:10 test.txt
drwxr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Videos
```

- 18) Directory permission: this command allows who can access and perform specific actions on a directory. The permissions for a directory are similar to file permissions.

Syntax: chmod [options] permissions directoryname

```
shtlp_0061@SHTLP0061: ~
shtlp_0061@SHTLP0061:~$ ls
Desktop      Downloads    Music        snap
documents    google-chrome-stable_current_amd64.deb  output.txt  Templates
Documents    list1.txt   Pictures     test.txt
Documents.zip list2.txt   Public       Videos

shtlp_0061@SHTLP0061:~$ ls -ld Music
drwxr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Music
shtlp_0061@SHTLP0061:~$ chmod u-w Music
shtlp_0061@SHTLP0061:~$ ls -ld Music
dr-xr-xr-x 2 shtlp_0061 shtlp_0061 4096 Jun  2 10:21 Music
shtlp_0061@SHTLP0061:~$
```

19) Octal & numerical permission:

In this, each permission is assigned a numeric value:

Read (r) is represented by the value 4.

Write (w) is represented by the value 2.

Execute (x) is represented by the value 1.

By adding these values together, you can represent different combinations of permissions. Here's a table that shows some common octal permissions:

Value	Permission	Binary
0	No permission	000
1	Execute	001
2	Write	010
3	Write and execute	011
4	Read	100
5	Read and execute	101
6	Read and write	110
7	Read, write, and execute	111

20) Introduction to bash scripting:

Bash scripting allows you to automate tasks, create complex workflows, and build powerful scripts to perform various operations on the command line.

Script is a text file of a sequence of commands.

Syntax: nano filename.sh

```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ nano myscript.sh
```

```
shtlp_0061@SHTLP0061: ~/Desktop
GNU nano 6.2 myscript.sh

[ Read 0 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^Y Exit      ^P Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

21) Which & whatis:

Which: It helps you determine the full path of the command that will be executed when you run a particular command in the terminal.

syntax : which command

Whatis: short description of command

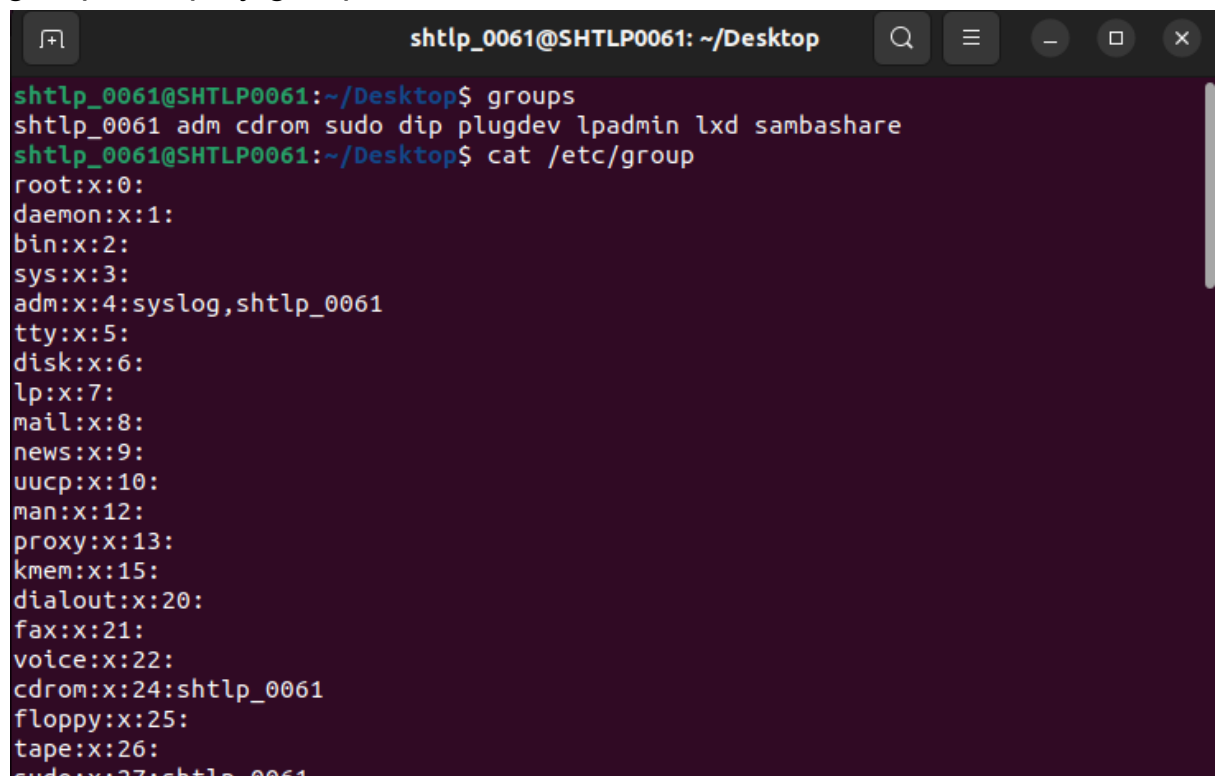
Syntax: whatis command

```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ which ls
/usr/bin/ls
shtlp_0061@SHTLP0061:~/Desktop$ which bash
/usr/bin/bash
shtlp_0061@SHTLP0061:~/Desktop$
```

```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ whatis ls
ls (1) - list directory contents
shtlp_0061@SHTLP0061:~/Desktop$ whatis mkdir
mkdir (1) - make directories
shtlp_0061@SHTLP0061:~/Desktop$ whatis cat
cat (1) - concatenate files and print on the standard output
shtlp_0061@SHTLP0061:~/Desktop$
```

- 22) `useradd`: it allows to create a new user account on the system. It is primarily used by system administrators to add new users.
- 23) `userdel`: it allows to delete user accounts from the system. It is primarily used by system administrators to remove user accounts that are no longer needed.
- 24) Basics of group management: it allows creating, modifying, and managing groups of users.

groups: display groups that are connected to the user.



```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ groups
shtlp_0061 adm cdrom sudo dip plugdev lpadmin lxd sambashare
shtlp_0061@SHTLP0061:~/Desktop$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,shtlp_0061
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:shtlp_0061
floppy:x:25:
tape:x:26:
sudo:x:27:shtlp_0061
```

Note: groups are added date wise

`groupadd`: create a new group, you can use the command followed by the desired group name. (`groupadd groupName`)

```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ sudo groupadd java
[sudo] password for shtlp_0061:
shtlp_0061@SHTLP0061:~/Desktop$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,shtlp_0061
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:shtlp_0061
floppy:x:25:
tape:x:26:
sudo:x:27:shtlp_0061
```

```
shtlp_0061@SHTLP0061: ~/Desktop
uiddd:x:115:
systemd-oom:x:116:
tcpdump:x:117:
_ssh:x:118:
avahi-autoipd:x:119:
netdev:x:120:
avahi:x:121:
lpadmin:x:122:shtlp_0061
rtkit:x:123:
whoopsie:x:124:
sssd:x:125:
nm-openvpn:x:126:
scanner:x:127:saned
saned:x:128:
colord:x:129:
geoclue:x:130:
pulse:x:131:
pulse-access:x:132:
gdm:x:133:
lxd:x:134:shtlp_0061
shtlp_0061:x:1000:
sambashare:x:135:shtlp_0061
java:x:1001:
shtlp_0061@SHTLP0061:~/Desktop$
```

groupdel: To delete a group, you can use the groupdel command followed by the group name.

```
shtlp_0061@SHTLP0061: ~/Desktop
shtlp_0061@SHTLP0061:~/Desktop$ sudo groupdel java
shtlp_0061@SHTLP0061:~/Desktop$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,shtlp_0061
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:shtlp_0061
floppy:x:25:
tape:x:26:
sudo:x:27:shtlp_0061
audio:x:28:pulse
```

```
shtlp_0061@SHTLP0061: ~/Desktop
ssl-cert:x:114:
uidd:x:115:
systemd-oom:x:116:
tcpdump:x:117:
_ssh:x:118:
avahi-autoipd:x:119:
netdev:x:120:
avahi:x:121:
lpadmin:x:122:shtlp_0061
rtkit:x:123:
whoopsie:x:124:
sssd:x:125:
nm-openvpn:x:126:
scanner:x:127:saned
saned:x:128:
colord:x:129:
geoclue:x:130:
pulse:x:131:
pulse-access:x:132:
gdm:x:133:
lxd:x:134:shtlp_0061
shtlp_0061:x:1000:
sambashare:x:135:shtlp_0061
shtlp_0061@SHTLP0061:~/Desktop$
```


25) .bashrc file:

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~/Desktop$ cd ~  
shtlp_0061@SHTLP0061:~$ ls -a  
.  
..  
.bash_history  
.bash_logout  
.bashrc  
.cache  
.config  
Desktop  
documents  
Documents  
Documents.zip  
.dotnet  
Downloads  
.gnupg  
google-chrome-stable_current_amd64.deb  
list1.txt  
list2.txt  
.local  
Music  
output.txt  
Pictures  
.pki  
.profile  
Public  
snap  
.ssh  
.sudo_as_admin_successful  
Templates  
test.txt  
Videos  
.vscode  
shtlp_0061@SHTLP0061:~$
```

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ nano .bashrc
```

```
shtlp_0061@SHTLP0061: ~/Desktop
uuidd:x:115:
systemd-oom:x:116:
tcpdump:x:117:
_ssh:x:118:
avahi-autoipd:x:119:
netdev:x:120:
avahi:x:121:
lpadmin:x:122:shtlp_0061
rtkit:x:123:
whoopsie:x:124:
sssd:x:125:
nm-openvpn:x:126:
scanner:x:127:saned
saned:x:128:
colord:x:129:
geoclue:x:130:
pulse:x:131:
pulse-access:x:132:
gdm:x:133:
lxd:x:134:shtlp_0061
shtlp_0061:x:1000:
sambashare:x:135:shtlp_0061
java:x:1001:
shtlp_0061@SHTLP0061: ~/Desktop$
```

26) Viewing resources:

Here are some common commands in Linux for viewing system resources:

df: It provides information on total, used, and available space.
df -h (h: human readable)

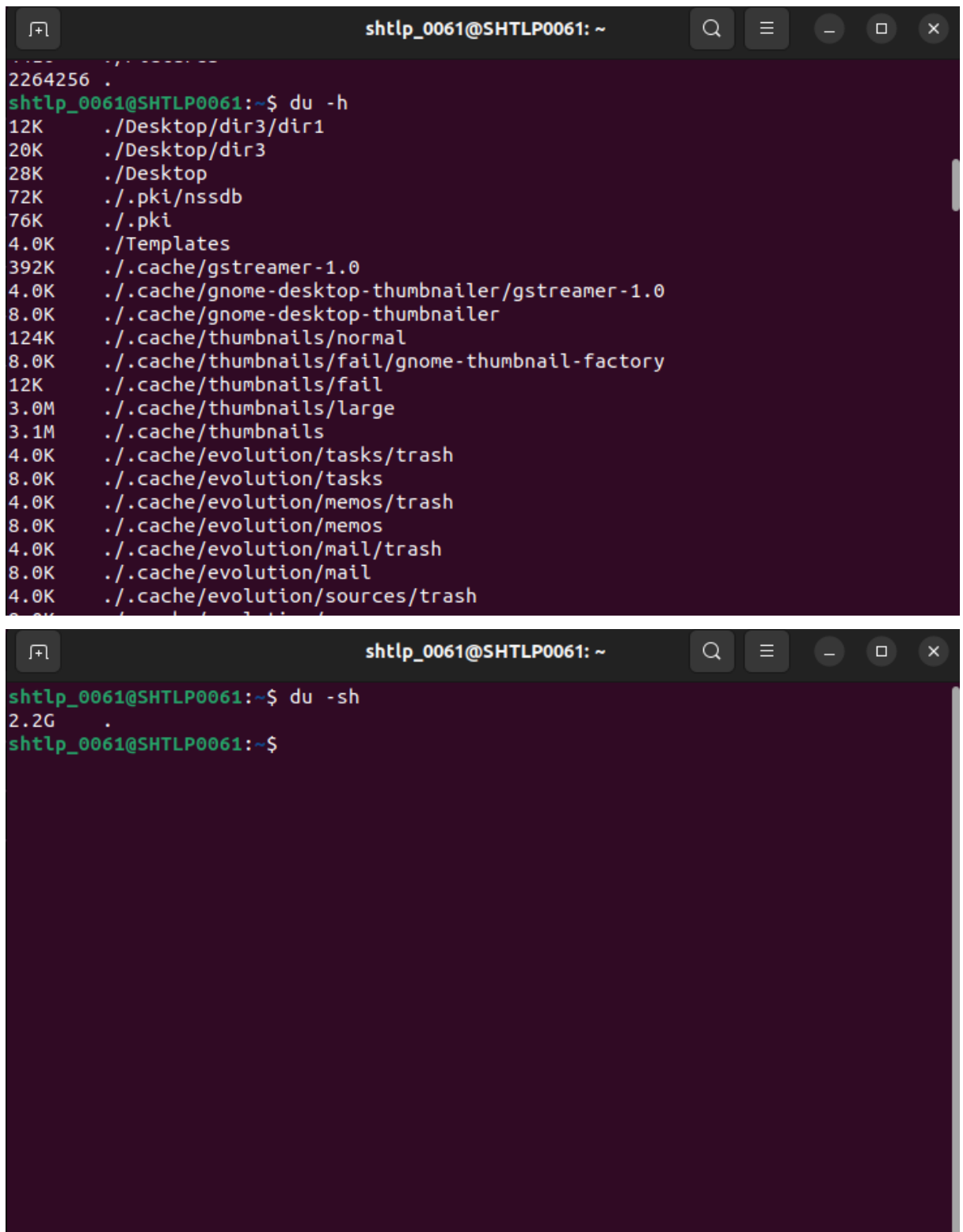
du: estimates disk usage for files and directories. It can be used to find the size of specific directories or files.

du -sh (s: summary h: human readable)

```
shtlp_0061@SHTLP0061: ~
shtlp_0061@SHTLP0061:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
tmpfs            1516612      2260   1514352    1% /run
/dev/nvme0n1p2 490617784 15292856 450329448    4% /
tmpfs            7583048      4072   7578976    1% /dev/shm
tmpfs             5120         4        5116    1% /run/lock
/dev/nvme0n1p1  523248      5364   517884    2% /boot/efi
tmpfs            1516608     18344  1498264    2% /run/user/1000
shtlp_0061@SHTLP0061:~$
```

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
tmpfs            1.5G  2.3M  1.5G   1% /run  
/dev/nvme0n1p2  468G   15G  430G   4% /  
tmpfs            7.3G  4.0M  7.3G   1% /dev/shm  
tmpfs            5.0M  4.0K  5.0M   1% /run/lock  
/dev/nvme0n1p1  511M   5.3M  506M   2% /boot/efi  
tmpfs            1.5G   18M  1.5G   2% /run/user/1000  
shtlp_0061@SHTLP0061:~$
```

```
shtlp_0061@SHTLP0061: ~  
shtlp_0061@SHTLP0061:~$ du  
12    ./Desktop/dir3/dir1  
20    ./Desktop/dir3  
28    ./Desktop  
72    ./pki/nssdb  
76    ./pki  
4     ./Templates  
392   ./cache/gstreamer-1.0  
4     ./cache/gnome-desktop-thumbnailer/gstreamer-1.0  
8     ./cache/gnome-desktop-thumbnailer  
124   ./cache/thumbnails/normal  
8     ./cache/thumbnails/fail/gnome-thumbnail-factory  
12    ./cache/thumbnails/fail  
2968  ./cache/thumbnails/large  
3108  ./cache/thumbnails  
4     ./cache/evolution/tasks/trash  
8     ./cache/evolution/tasks  
4     ./cache/evolution/memos/trash  
8     ./cache/evolution/memos  
4     ./cache/evolution/mail/trash  
8     ./cache/evolution/mail  
4     ./cache/evolution/sources/trash  
8     ./cache/evolution/sources  
4     ./cache/evolution/addressbook/trash
```



```
shtlp_0061@SHTLP0061: ~  
2264256 .  
shtlp_0061@SHTLP0061:~$ du -h  
12K    ./Desktop/dir3/dir1  
20K    ./Desktop/dir3  
28K    ./Desktop  
72K    ./pki/nssdb  
76K    ./pki  
4.0K   ./Templates  
392K   ./cache/gstreamer-1.0  
4.0K   ./cache/gnome-desktop-thumbnailer/gstreamer-1.0  
8.0K   ./cache/gnome-desktop-thumbnailer  
124K   ./cache/thumbnails/normal  
8.0K   ./cache/thumbnails/fail/gnome-thumbnail-factory  
12K    ./cache/thumbnails/fail  
3.0M   ./cache/thumbnails/large  
3.1M   ./cache/thumbnails  
4.0K   ./cache/evolution/tasks/trash  
8.0K   ./cache/evolution/tasks  
4.0K   ./cache/evolution/memos/trash  
8.0K   ./cache/evolution/memos  
4.0K   ./cache/evolution/mail/trash  
8.0K   ./cache/evolution/mail  
4.0K   ./cache/evolution/sources/trash  
shtlp_0061@SHTLP0061:~$ du -sh  
2.2G   .  
shtlp_0061@SHTLP0061:~$
```

27) watch: It allows you to monitor the continuous output of a command without having to rerun it manually.

Syntax: watch [options] command

```
Every 2.0s: ls                               SHTLP0061: Wed Jun 14 01:44:58 2023
Desktop
documents
Documents
Documents.zip
Downloads
google-chrome-stable_current_amd64.deb
list1.txt
list2.txt
Music
output.txt
Pictures
Public
snap
Templates
test.txt
Videos
```

28) Head and tail: used to display the beginning or end of a file or a stream of text.

Head: it displays the first few lines of a file or input stream. By default, it shows the first 10 lines, but you can specify a different number.

Syntax: head options filename

head -n 3 file.txt (shows first 3 lines)

Tail: it displays the last few lines of a file or input stream. By default, it shows the last 10 lines, but you can change that.

Syntax: tail option filename

tail -n 5 file.txt (shows last 5 lines)

29) find : used to search for files and directories in a directory hierarchy.

Example: find /path/to/search -name "filename"

30) wc: used to count the number of lines, words, and characters in a file or input stream.

Syntax: wc options filename

```
shtlp_0061@SHTLP0061:~$ ls
Desktop      Downloads      Music          snap
documents    google-chrome-stable_current_amd64.deb  output.txt    Templates
Documents     list1.txt      Pictures       test.txt
Documents.zip list2.txt      Public         Videos
shtlp_0061@SHTLP0061:~$ wc list1.txt
 2  2 12 list1.txt
shtlp_0061@SHTLP0061:~$ cat list1.txt
line1
line2
shtlp_0061@SHTLP0061:~$
```

31) cal: used to display a calendar in the terminal.

Syntax: cal options month year

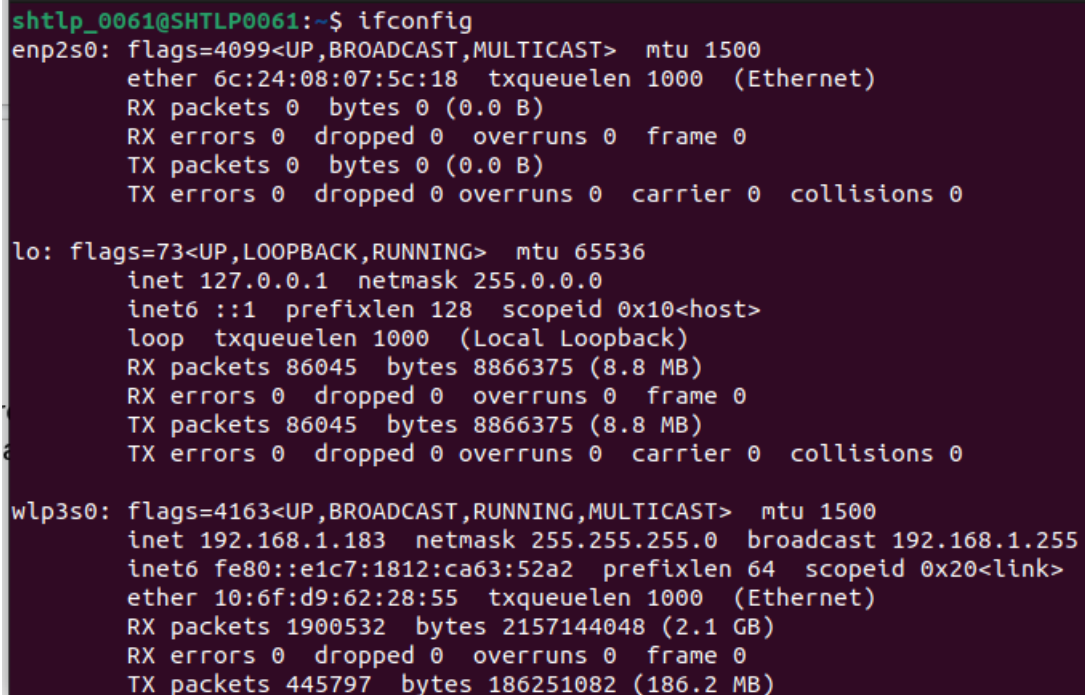
```
shtlp_0061@SHTLP0061:~$ cal december 2023
    December 2023
Su Mo Tu We Th Fr Sa
                1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
shtlp_0061@SHTLP0061:~$
```

32) date: it displays or sets the system date and time.

Syntax : date options

33) ifconfig: It allows you to view and modify the IP addresses, netmasks, broadcast addresses, and other network-related parameters of your network interfaces.

Syntax: ifconfig interfaces options



```
shtlp_0061@SHTLP0061:~$ ifconfig
enp2s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
        ether 6c:24:08:07:5c:18 txqueuelen 1000 (Ethernet)
        RX packets 0 bytes 0 (0.0 B)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 0 bytes 0 (0.0 B)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
        inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
        RX packets 86045 bytes 8866375 (8.8 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 86045 bytes 8866375 (8.8 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp3s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.1.183 netmask 255.255.255.0 broadcast 192.168.1.255
        inet6 fe80::e1c7:1812:ca63:52a2 prefixlen 64 scopeid 0x20<link>
        ether 10:6f:d9:62:28:55 txqueuelen 1000 (Ethernet)
        RX packets 1900532 bytes 2157144048 (2.1 GB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 445797 bytes 186251082 (186.2 MB)
```

34) tar: for archiving multiple files and directories into a single archive file.

35) grep: It allows you to search for specific strings or patterns within files or output streams and display the matching lines.

grep "example" file.txt: Searches for the word "example" in the file.txt

36) netstat: display various network-related information, such as active network connections, listening ports, routing tables, and network interface statistics.

Syntax: netstat options

```
shtlp_0061@SHTLP0061:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 SHTLP0061:52836        del11s22-in-f14.1:https ESTABLISHED
tcp        0      0 SHTLP0061:41208        del12s01-in-f13.1:https TIME_WAIT
tcp        0      0 SHTLP0061:60752        55.65.117.34.bc.g:https ESTABLISHED
tcp        0      0 SHTLP0061:56214        52.114.40.54:https      ESTABLISHED
tcp        0      0 SHTLP0061:50726        239.237.117.34.bc:https ESTABLISHED
tcp        0      0 SHTLP0061:35588        ec2-35-174-127-31:https ESTABLISHED
tcp        0      0 SHTLP0061:47740        52.123.178.18:https     ESTABLISHED
tcp        0      0 SHTLP0061:47440        del11s08-in-f10.1:https ESTABLISHED
tcp        0      0 SHTLP0061:49390        del11s16-in-f14.1:https ESTABLISHED
tcp        0      0 SHTLP0061:39472        52.114.36.188:https     ESTABLISHED
tcp        0      0 SHTLP0061:35592        ec2-35-174-127-31:https ESTABLISHED
tcp        0      0 SHTLP0061:53662        52.114.15.120:https     ESTABLISHED
tcp        0      0 SHTLP0061:54956        52.113.194.132:https    ESTABLISHED
tcp        0      0 SHTLP0061:57546        del11s06-in-f14.1:https ESTABLISHED
tcp        0      0 SHTLP0061:41210        del12s01-in-f13.1:https TIME_WAIT
tcp        0      0 SHTLP0061:44718        52.123.170.27:https     ESTABLISHED
udp        0      0 localhost:47711        localhost:domain        ESTABLISHED
udp        0      0 SHTLP0061:bootpc      _gateway:bootps        ESTABLISHED
udp        0      0 SHTLP0061:34303        _gateway:domain        ESTABLISHED
udp        0      0 localhost:34882        localhost:domain        ESTABLISHED
udp        0      0 SHTLP0061:35749        _gateway:domain        ESTABLISHED
```

```
unix 2      [ ]          DGRAM                39286      /run/user/1000/systemd
/notify
unix 4      [ ]          DGRAM                25282      /run/systemd/notify
unix 2      [ ]          DGRAM                25298      /run/systemd/journal/s
yslog
unix 20     [ ]          DGRAM                25307      /run/systemd/journal/d
ev-log
unix 9      [ ]          DGRAM                25309      /run/systemd/journal/s
ocket
unix 2      [ ]          DGRAM                515431     /run/wpa_supplicant/wl
p3s0
unix 3      [ ]          SEQPACKET            42372      @00008
unix 3      [ ]          SEQPACKET            42374      @00009
unix 3      [ ]          STREAM               CONNECTED    40403      /run/user/1000/bus
unix 2      [ ]          STREAM               CONNECTED    23004
unix 3      [ ]          STREAM               CONNECTED    27578
unix 3      [ ]          STREAM               CONNECTED    22933
unix 2      [ ]          DGRAM                22917
unix 3      [ ]          STREAM               CONNECTED    644200     /run/user/1000/bus
unix 3      [ ]          STREAM               CONNECTED    586983
unix 3      [ ]          STREAM               CONNECTED    36767
unix 3      [ ]          STREAM               CONNECTED    44114      /run/user/1000/at-spi/
bus
unix 3      [ ]          STREAM               CONNECTED    28228      /run/dbus/system_bus_s
```