

# LINUX COMMAND LIST ASSESSMENT

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## File and Directory Operations:

**1) ls:**

## List files and directories

```
kali linux [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

adhi@kali: ~
File Edit View Search Terminal Help

adhi@kali: ~ [-]
$ ls
a.out      backdoor.py  Cilecks      cmd.c      Documents    flag.txt     hash.txt     Music      phil.txt     RED_HAWK    script.py    server.py    Videos
abc.py     arp2.pcapng Cam-Hackers  cmshsh.txt gmail.txt    D0S.pcapng  ifelse.sh   new.pcapng  Pictures     Responder   send_email.php  sh1.php     zphisher
adch.txt   arp.pcapng  CamPhish     cli        Downloads    gobuster     inject.png   nexphisher  pst.txt     reverse.sh   ser          sub-fighter.txt
attack.py  attack.py   CFIcat1.pcap cli1.py     fake-mailer  hasher       kali-archi-  Public      round2.sh   ser.c       Templates
allowed.userlist  avg.c       CFIcat2.pcap client.py    disaster.py  fibo.py     monitor      original.pcapng  routersploit  server1.py

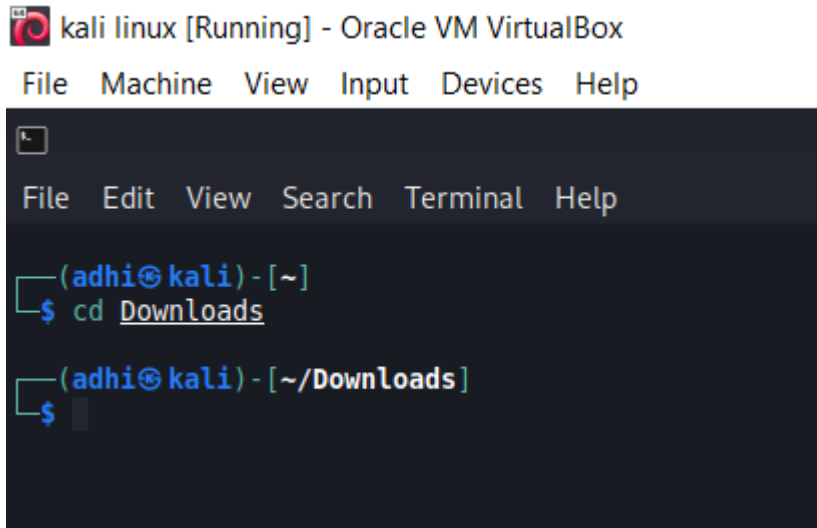
adhi@kali: ~ [-]
$
```

We can see the permissions of files and directories using command “ls -la”.

```
(adhi@kali) [~]
$ ls -la
total 43052
drwxr-xr-x 36 adhi adhi      4096 May 21 13:22 .
drwxr-xr-x  3 root root      4096 Feb  7  2021 ..
-rw-r--r--  1 adhi adhi         0 Sep  3  2021 0
-rw-r--r--  1 adhi adhi      425 Oct 23  2022 abc.py
-rw-r--r--  1 adhi adhi      161 Oct 23  2022 adh.txt
-rw-r--r--  1 root root         0 Jun 11  2022 adh.txt~
-rw-r--r--  1 adhi adhi      33 Apr 23 22:23 allowed.userlist
-rwxr-xr-x  1 adhi adhi    16792 Mar  9 22:35 a.out
-rw-r--r--  1 root root     7768 Mar  5 21:47 arp2.pcapng
-rw-r--r--  1 root root    36848 Mar  5 16:18 arp.pcapng
-rw-r--r--  1 adhi adhi      436 Oct 20  2022 attack.py
-rw-r--r--  1 adhi adhi      380 Mar  9 22:35 avg.c
-rw-r--r--  1 adhi adhi      475 Oct 20  2022 backdoor.py
-rw-r--r--  1 adhi adhi       39 May 12 13:29 .bash_history
-rw-r--r--  1 adhi adhi      220 Feb  7  2021 .bash_logout
-rw-r--r--  1 adhi adhi    388 4503 Oct 20  2022 .bashrc
-rw-r--r--  1 adhi adhi      3526 Feb  7  2021 .bashrc.original
drwx----- 4 adhi adhi      4096 May 27  2022 .BurpSuite
drwxr-xr-x 14 adhi adhi      4096 May 15 16:46 .cache
drwxr-xr-x  3 adhi adhi      4096 Feb 28  2021 Cam-Hackers
drwxr-xr-x  3 root root      4096 Oct 19  2022 CamPhish
-rw-r--r--  1 adhi adhi    3832464 Apr  4 16:26 CFicatd1.pcapng
-rw-r--r--  1 adhi adhi    420932 Apr  4 16:34 CFicatd2.pcapng
drwxr-xr-x 10 root root      4096 Jul  1  2021 CiLocks
-rwxr-xr-x  1 adhi adhi    17424 Apr 24  2022 cli
-rw-r--r--  1 adhi adhi     2246 May 24  2022 cli.c
-rw-r--r--  1 adhi adhi      482 Apr 24  2022 client1.py
-rw-r--r--  1 adhi adhi      438 Oct 19  2022 client.py
-rw-r--r--  1 adhi adhi    12288 Apr 24  2022 .client.py.swo
-rw-r--r--  1 adhi adhi      236 Mar  9 22:30 cmd.c
-rw-r--r--  1 adhi adhi        42 Jun 11  2022 cmnhsh.txt
-rw-r--r--  1 adhi adhi        8 Jun 11  2022 cmn.txt
drwx----- 18 adhi adhi      4096 May 16 13:12 .config
drwxr-xr-x  2 adhi adhi      4096 Mar 21 08:32 Desktop
drwxr-xr-x  4 adhi adhi      4096 May  3 21:20 .dirsearch
```

## 2) cd:

Change directory

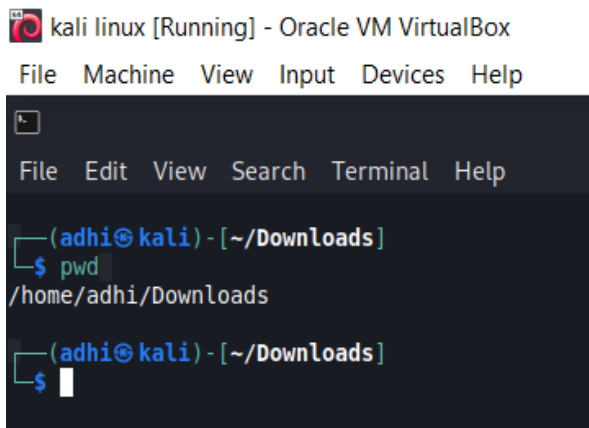


The screenshot shows a terminal window titled "kali linux [Running] - Oracle VM VirtualBox". The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The prompt is "(adhi@kali) - [~]". The user enters the command "cd Downloads". The prompt changes to "(adhi@kali) - [~/Downloads]", indicating the directory has been successfully changed.

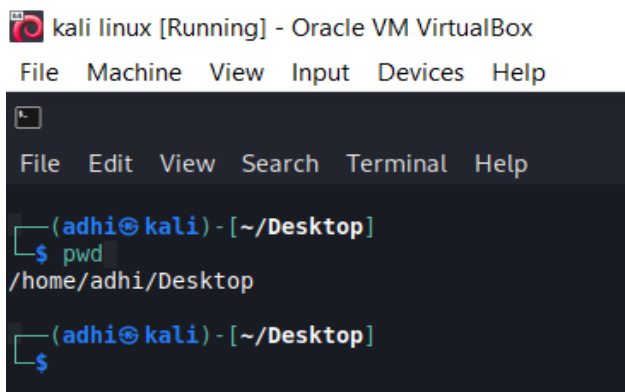
We can see that it changed to the “Downloads” directory.

## 3) pwd:

Print working directory



The screenshot shows a terminal window titled "kali linux [Running] - Oracle VM VirtualBox". The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The prompt is "(adhi@kali) - [~/Downloads]". The user enters the command "pwd". The output is "/home/adhi/Downloads". The prompt remains "(adhi@kali) - [~/Downloads]".

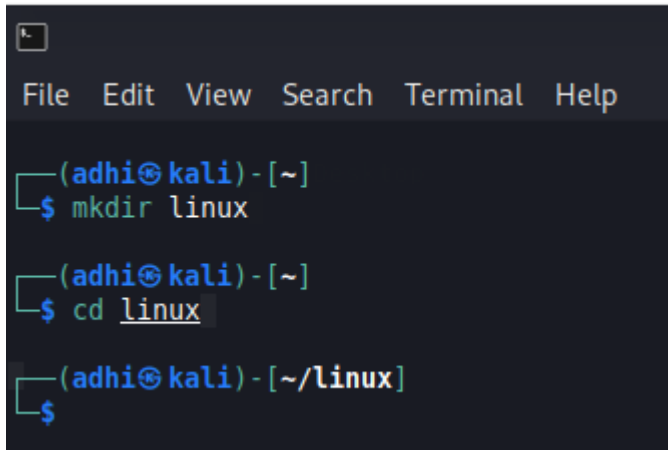


The screenshot shows a terminal window titled "kali linux [Running] - Oracle VM VirtualBox". The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The prompt is "(adhi@kali) - [~/Desktop]". The user enters the command "pwd". The output is "/home/adhi/Desktop". The prompt remains "(adhi@kali) - [~/Desktop]".

It prints the current working Directory.

#### 4) Mkdir:

Make directory

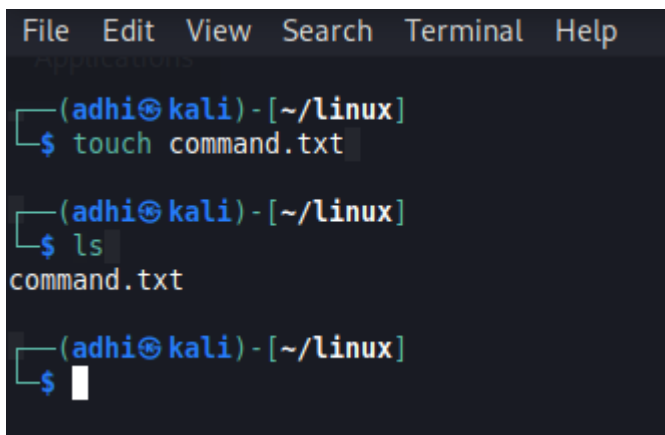
A terminal window with a dark background and a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is (adhi@kali) - [~]. The user enters 'mkdir linux' and the prompt changes to (adhi@kali) - [~/linux].

```
(adhi@kali) - [~]  
$ mkdir linux  
  
(adhi@kali) - [~]  
$ cd linux  
  
(adhi@kali) - [~/linux]  
$
```

We have created a new Directory called linux using the command “mkdir”.

#### 5) touch:

Create an empty file

A terminal window with a dark background and a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is (adhi@kali) - [~/linux]. The user enters 'touch command.txt' and then 'ls', which outputs 'command.txt'.

```
(adhi@kali) - [~/linux]  
$ touch command.txt  
  
(adhi@kali) - [~/linux]  
$ ls  
command.txt  
  
(adhi@kali) - [~/linux]  
$
```

We have created an empty command.txt file using the command “touch”, and when we do “ls” we can see the command.txt file in the current directory.

#### 6) cp:

Copy files and directories

```
File Edit View Search Terminal Help

(adhi@kali) - [~/linux]
$ cp command.txt /home/adhi/Desktop

(adhi@kali) - [~/linux]
$ ls
command.txt

(adhi@kali) - [~/linux]
$ cd

(adhi@kali) - [~]
$ cd Desktop

(adhi@kali) - [~/Desktop]
$ ls
a.out  command.txt  hello.py

(adhi@kali) - [~/Desktop]
$
```

We have copied the command.txt file from “linux” directory and we put it in “Desktop” directory. We can see that command.txt is now available in both the directories. Similarly we can copy directories as well.

## 7) mv:

Move or rename files and directories

```
File Edit View Search Terminal Help

(adhi@kali) - [~/linux]
$ ls
command.txt

(adhi@kali) - [~/linux]
$ mv command.txt /home/adhi/Templates

(adhi@kali) - [~/linux]
$ ls

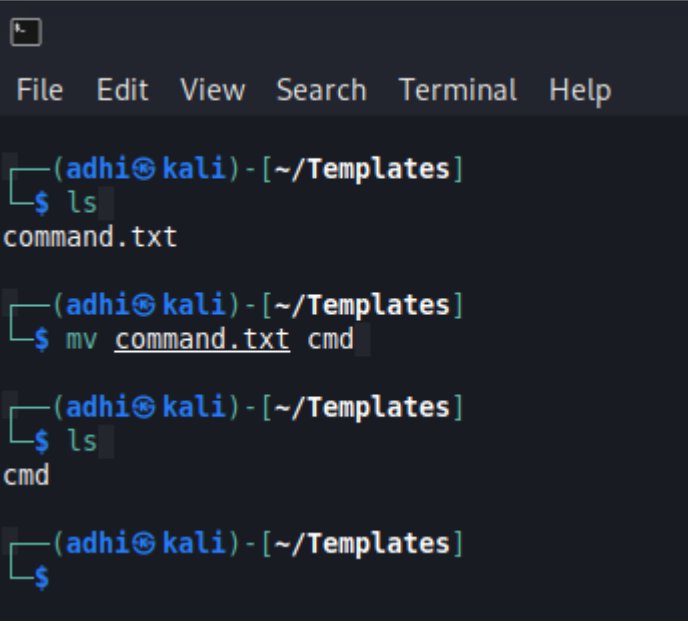
(adhi@kali) - [~/linux]
$ cd

(adhi@kali) - [~]
$ cd Templates

(adhi@kali) - [~/Templates]
$ ls
command.txt

(adhi@kali) - [~/Templates]
$
```

We have moved the command.txt file from “linux” directory to “Templates” directory.

A terminal window with a dark background and light-colored text. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is '(adhi@kali) - [~/Templates]'. The user enters '\$ ls' and the output is 'command.txt'. Then the user enters '\$ mv command.txt cmd' and the prompt returns. Finally, the user enters '\$ ls' and the output is 'cmd'.

```
(adhi@kali) - [~/Templates]
$ ls
command.txt

(adhi@kali) - [~/Templates]
$ mv command.txt cmd

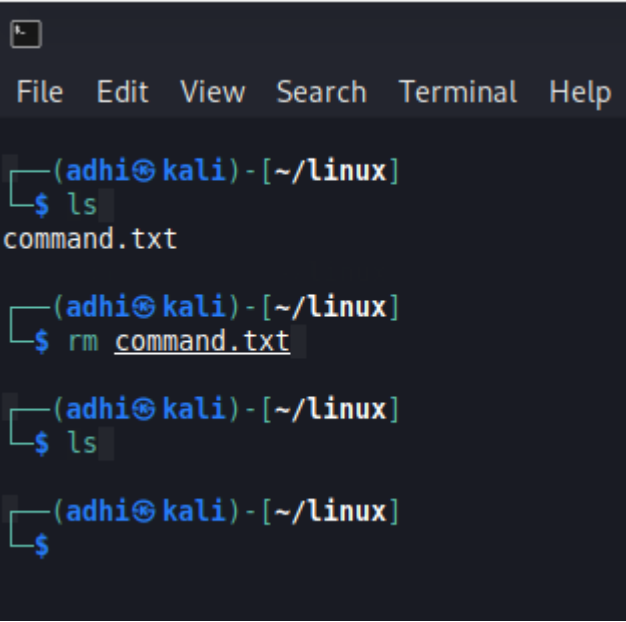
(adhi@kali) - [~/Templates]
$ ls
cmd

(adhi@kali) - [~/Templates]
$
```

We can also rename a file using the “mv” command. Here we have renamed “command.txt” to “cmd”.

## 8) rm:

Remove files and directories

A terminal window with a dark background and light-colored text. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is '(adhi@kali) - [~/linux]'. The user enters '\$ ls' and the output is 'command.txt'. Then the user enters '\$ rm command.txt' and the prompt returns. Finally, the user enters '\$ ls' and the output is empty. The prompt returns again.

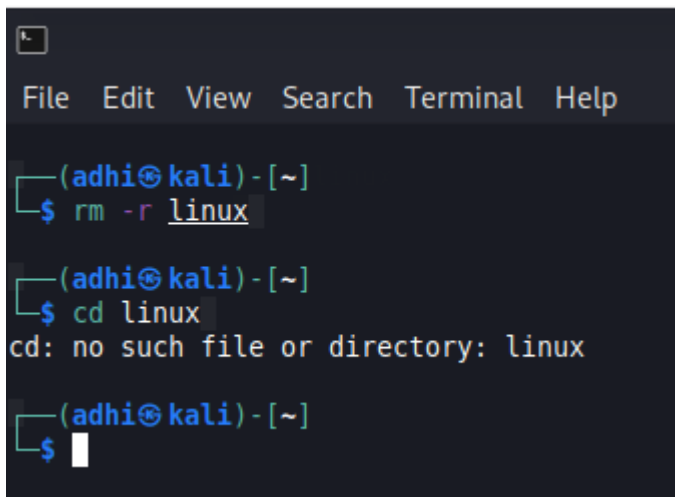
```
(adhi@kali) - [~/linux]
$ ls
command.txt

(adhi@kali) - [~/linux]
$ rm command.txt

(adhi@kali) - [~/linux]
$ ls

(adhi@kali) - [~/linux]
$
```

We have removed the command.txt file using the “rm” command.

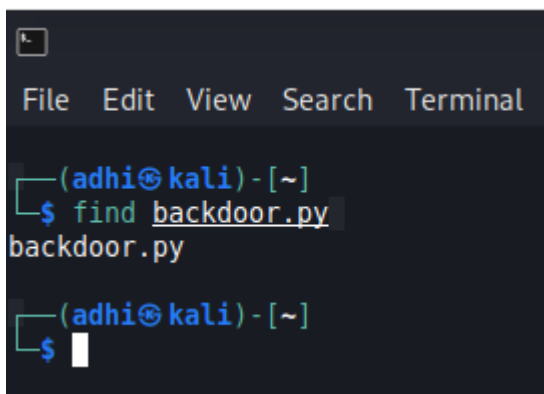
A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is '(adhi@kali) - [~]'. The user enters the command 'rm -r linux'. The prompt changes to '(adhi@kali) - [~]' and the user enters 'cd linux'. The terminal outputs 'cd: no such file or directory: linux'. The prompt returns to '(adhi@kali) - [~]' and the user enters a dollar sign '\$' followed by a cursor.

```
(adhi@kali) - [~]  
$ rm -r linux  
  
(adhi@kali) - [~]  
$ cd linux  
cd: no such file or directory: linux  
  
(adhi@kali) - [~]  
$
```

We have deleted the directory “linux” using the “rm -r” command.

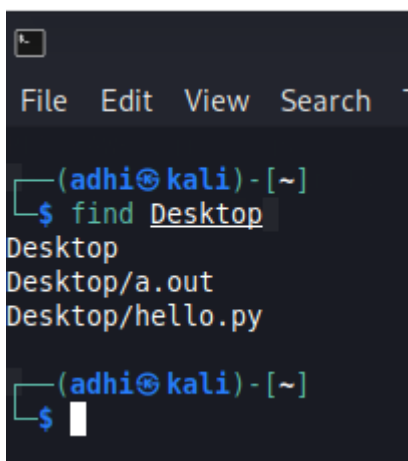
## 9) find:

Search for files and directories

A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~]'. The user enters the command 'find backdoor.py'. The terminal outputs 'backdoor.py'. The prompt returns to '(adhi@kali) - [~]' and the user enters a dollar sign '\$' followed by a cursor.

```
(adhi@kali) - [~]  
$ find backdoor.py  
backdoor.py  
  
(adhi@kali) - [~]  
$
```

We searched for a file called “backdoor.py” and we got it.

A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', and 'T'. The prompt is '(adhi@kali) - [~]'. The user enters the command 'find Desktop'. The terminal outputs 'Desktop', 'Desktop/a.out', and 'Desktop/hello.py'. The prompt returns to '(adhi@kali) - [~]' and the user enters a dollar sign '\$' followed by a cursor.

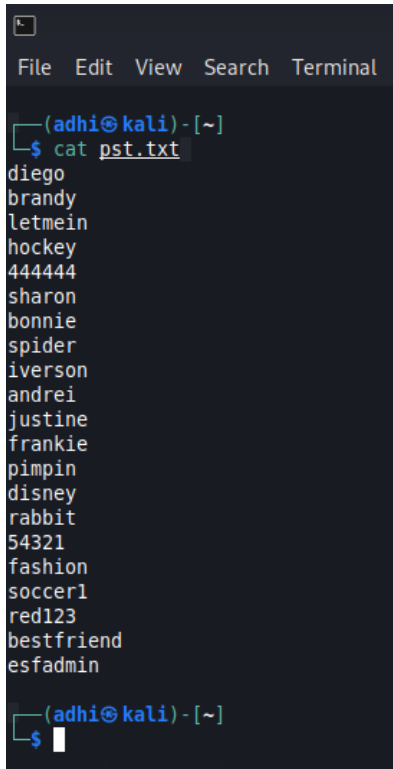
```
(adhi@kali) - [~]  
$ find Desktop  
Desktop  
Desktop/a.out  
Desktop/hello.py  
  
(adhi@kali) - [~]  
$
```

Similarly we have searched for Directory “Desktop”.

## File Viewing and Editing:

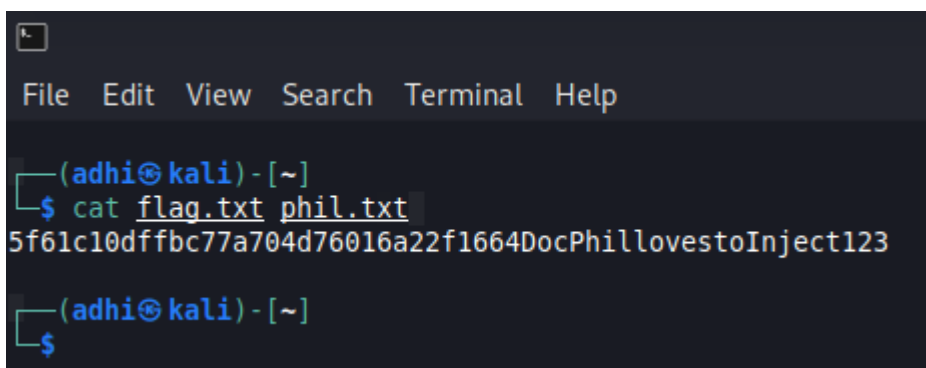
### 1) cat:

Concatenate and display file content



```
(adhi@kali) - [~]  
$ cat pst.txt  
diego  
brandy  
letmein  
hockey  
444444  
sharon  
bonnie  
spider  
iverson  
andrei  
justine  
frankie  
pimpin  
disney  
rabbit  
54321  
fashion  
soccer1  
red123  
bestfriend  
esfadmin  
  
(adhi@kali) - [~]  
$
```

We can view the content of the file “pst.txt”.



```
(adhi@kali) - [~]  
$ cat flag.txt phil.txt  
5f61c10dffbc77a704d76016a22f1664DocPhillovestoInject123  
  
(adhi@kali) - [~]  
$
```

We can also concatenate two files and view their content.

### 2) less:

View file content with pagination

```
adhi@kali: ~  
File Edit View Search Terminal Help  
diego  
brandy  
letmein  
hockey  
444444  
sharon  
bonnie  
spider  
iverson  
andrei  
justine  
frankie  
pimpin  
disney  
rabbit  
54321  
fashion  
soccer1  
red123  
bestfriend  
esfadmin  
~  
~  
(END)
```

### 3) head:

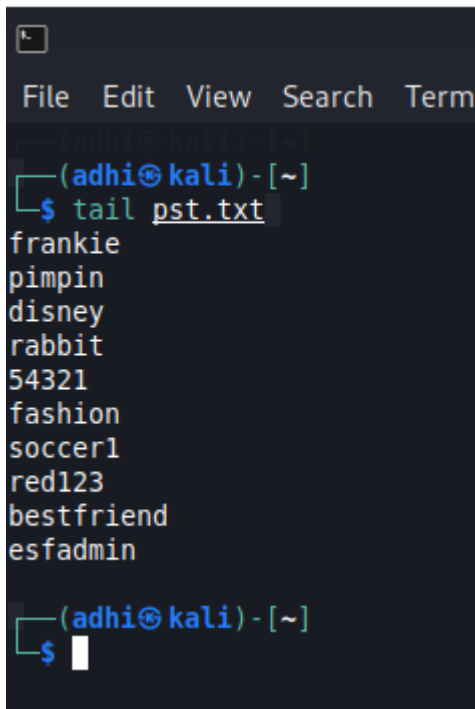
Display the beginning of a file

```
(adhi@kali) - [~]  
$ head pst.txt  
diego  
brandy  
letmein  
hockey  
444444  
sharon  
bonnie  
spider  
iverson  
andrei  
  
(adhi@kali) - [~]  
$
```



#### 4) tail:

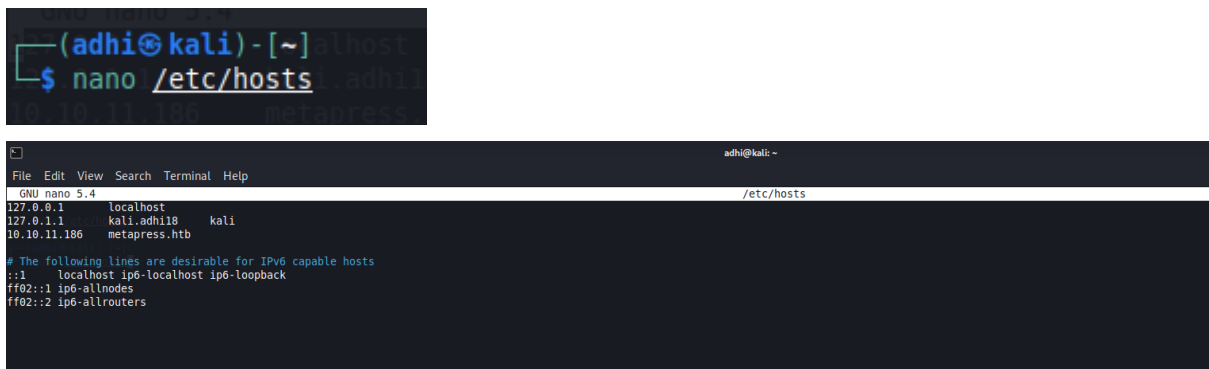
Display the end of a file



```
adhi@kali: ~  
└─(adhi@kali)-[~]  
└─$ tail pst.txt  
frankie  
pimpin  
disney  
rabbit  
54321  
fashion  
soccer1  
red123  
bestfriend  
esfadmin  
  
└─(adhi@kali)-[~]  
└─$
```

#### 5) nano:

Text editor for creating and editing files



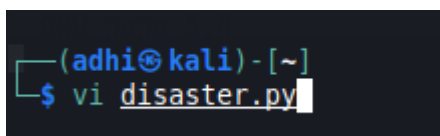
```
└─(adhi@kali)-[~]
└─$ nano /etc/hosts

127.0.0.1      localhost
127.0.1.1      kali.adhi18      kali
10.10.11.186   metapress.htb

# The following lines are desirable for IPv6 capable hosts
::1           localhost ip6-localhost ip6-loopback
ff02::1       ip6-allnodes
ff02::2       ip6-allrouters
```

#### 6) vi/vim:

Powerful text editor for experienced users



```
└─(adhi@kali)-[~]
└─$ vi disaster.py
```

```
File Edit View Search Terminal Help
import cv2

# define a video capture object
vid = cv2.VideoCapture(0)

while(True):

    # Capture the video frame
    # by frame
    ret, frame = vid.read()

    # Display the resulting frame
    cv2.imshow('frame', frame)

    # the 'q' button is set as the
    # quitting button you may use any
    # desired button of your choice
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

# After the loop release the cap object
vid.release()
# Destroy all the windows
cv2.destroyAllWindows()
```

## File Permissions:

### 1) chmod:

Change file permissions

```
File Edit View Search Terminal
(adhi@kali) - [~/sample]
$ ls
demo.py

(adhi@kali) - [~/sample]
$ chmod +x demo.py

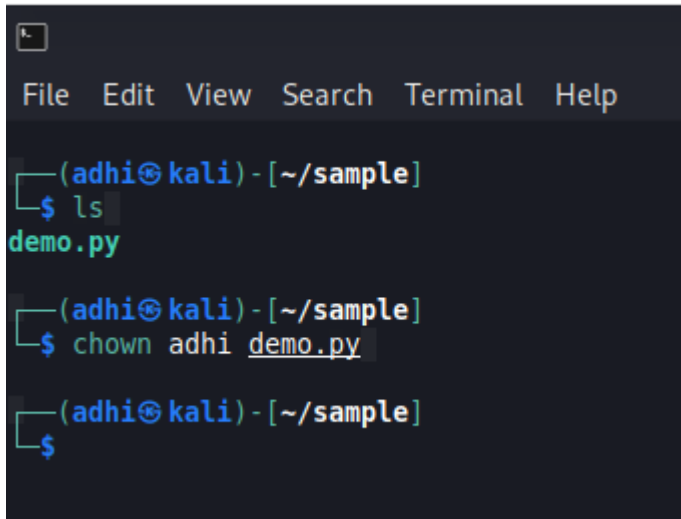
(adhi@kali) - [~/sample]
$ ls
demo.py

(adhi@kali) - [~/sample]
$
```

Here we have a file called “demo.py” and we have used the “chmod” command to change it to executable mode.

## 2) chown:

Change file owner

A terminal window with a dark background and light-colored text. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is '(adhi@kali) - [~/sample]'. The user enters '\$ ls' and the output is 'demo.py'. Then the user enters '\$ chown adhi demo.py' and the prompt returns to '(adhi@kali) - [~/sample]'.

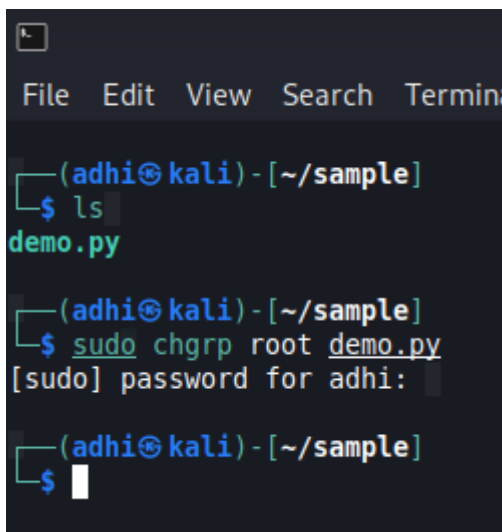
```
(adhi@kali) - [~/sample]
$ ls
demo.py

(adhi@kali) - [~/sample]
$ chown adhi demo.py

(adhi@kali) - [~/sample]
$
```

## 3) chgrp:

Change file group

A terminal window with a dark background and light-colored text. The window has a menu bar with 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~/sample]'. The user enters '\$ ls' and the output is 'demo.py'. Then the user enters '\$ sudo chgrp root demo.py'. The prompt changes to '[sudo] password for adhi:' and the user enters a password. The prompt returns to '(adhi@kali) - [~/sample]'.

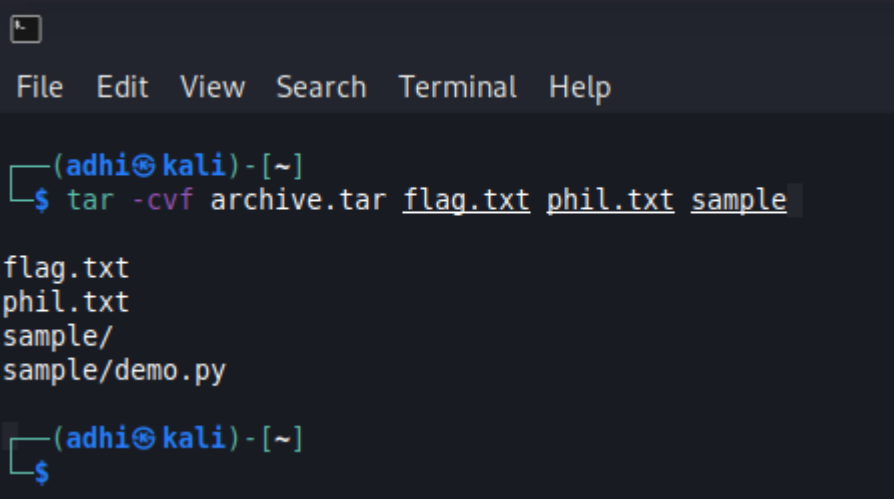
```
(adhi@kali) - [~/sample]
$ ls
demo.py

(adhi@kali) - [~/sample]
$ sudo chgrp root demo.py
[sudo] password for adhi:
(adhi@kali) - [~/sample]
$
```

## File compression and archiving:

### 1) tar:

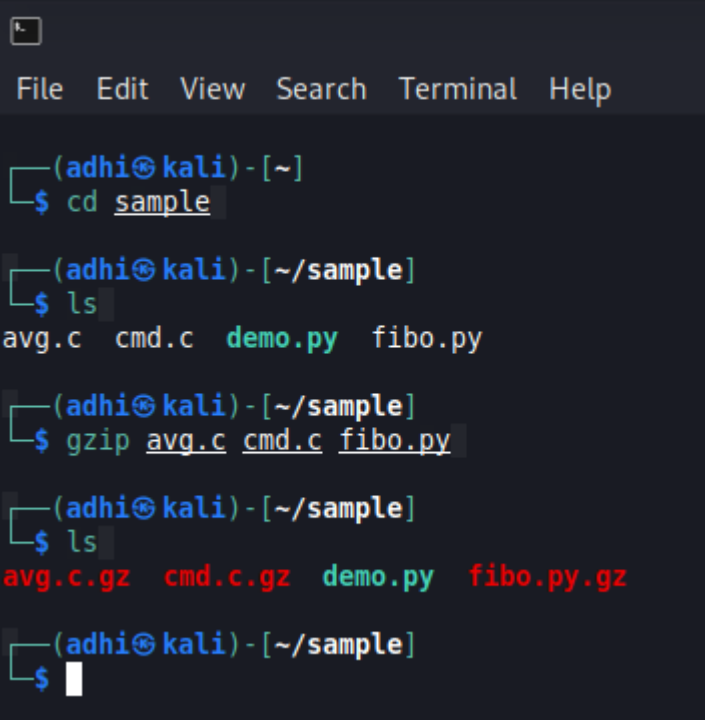
Archive files

A terminal window with a dark background and a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is (adhi@kali) - [~]. The command tar -cvf archive.tar flag.txt phil.txt sample is entered. The output lists the files being archived: flag.txt, phil.txt, sample/, and sample/demo.py. The prompt returns to (adhi@kali) - [~].

```
(adhi@kali) - [~]  
$ tar -cvf archive.tar flag.txt phil.txt sample  
flag.txt  
phil.txt  
sample/  
sample/demo.py  
  
(adhi@kali) - [~]  
$
```

### 2) gzip:

Compress files

A terminal window with a dark background and a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is (adhi@kali) - [~]. The command cd sample is entered. The prompt changes to (adhi@kali) - [~/sample]. The command ls is entered, showing the files avg.c, cmd.c, demo.py, and fibo.py. The command gzip avg.c cmd.c fibo.py is entered. The prompt returns to (adhi@kali) - [~/sample]. The command ls is entered, showing the files avg.c.gz, cmd.c.gz, demo.py, and fibo.py.gz. The prompt returns to (adhi@kali) - [~/sample].

```
(adhi@kali) - [~]  
$ cd sample  
  
(adhi@kali) - [~/sample]  
$ ls  
avg.c  cmd.c  demo.py  fibo.py  
  
(adhi@kali) - [~/sample]  
$ gzip avg.c cmd.c fibo.py  
  
(adhi@kali) - [~/sample]  
$ ls  
avg.c.gz  cmd.c.gz  demo.py  fibo.py.gz  
  
(adhi@kali) - [~/sample]  
$
```

### 3) unzip:

Extract files from a ZIP archive

```
(adhi@kali) - [~]
$ cd Downloads

(adhi@kali) - [~/Downloads]
$ ls
baby_time_capsule      fortresses_Adhi1807sd.ovpn  impossible_password.bin  lab_Adhi1807sd.ovpn
'Baby Time Capsule.zip'  gol.20.3.linux-amd64.tar.gz  'Impossible Password.zip'  Nessus-10.5.0-debian10_amd64.deb

(adhi@kali) - [~/Downloads]
$ unzip 'Baby Time Capsule.zip'
Archive:  Baby Time Capsule.zip
[Baby Time Capsule.zip] baby_time_capsule/server.py password:
replace baby_time_capsule/server.py? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: baby_time_capsule/server.py

(adhi@kali) - [~/Downloads]
$
```

## Process Management:

### 1) ps:

List running processes

```
(adhi@kali) - [~]
$ ps
  PID TTY          TIME CMD
 1423 pts/0        00:00:07 zsh
 1836 pts/0        00:00:00 ps

(adhi@kali) - [~]
$
```

### 2) top:

Display real-time system information and processes

```
adhi@kali: ~  
File Edit View Search Terminal Help  
top - 12:55:18 up 26 min, 1 user, load average: 0.06, 0.03, 0.03  
Tasks: 133 total, 1 running, 132 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 1.7 us, 1.0 sy, 0.0 ni, 97.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 1959.0 total, 1105.0 free, 577.7 used, 420.6 buff/cache  
MiB Swap: 976.0 total, 976.0 free, 0.0 used, 1381.3 avail Mem  
  
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND  
548 root 20 0 383124 122516 54584 S 1.3 6.1 0:07.39 Xorg  
1390 adhi 20 0 750884 57632 42364 S 1.0 2.9 0:04.40 mate-terminal  
892 adhi 20 0 217956 2376 2044 S 0.3 0.1 0:04.61 VBoxClient  
1158 adhi 20 0 740200 43032 34364 S 0.3 2.1 0:01.35 panel-17-pulsea  
1849 adhi 20 0 11644 5308 3160 R 0.3 0.3 0:00.04 top  
1 root 20 0 102696 12736 9148 S 0.0 0.6 0:01.86 systemd  
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd  
3 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_gp  
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_par_gp  
5 root 20 0 0 0 0 I 0.0 0.0 0:01.28 kworker/0:0-events_freezable_power_  
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri  
8 root 20 0 0 0 0 I 0.0 0.0 0:00.06 kworker/u2:0-flush-8:0  
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq  
10 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_rude  
11 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_trace  
12 root 20 0 0 0 0 S 0.0 0.0 0:00.06 ksoftirqd/0  
13 root 20 0 0 0 0 I 0.0 0.0 0:00.28 rcu_sched  
14 root rt 0 0 0 0 S 0.0 0.0 0:00.02 migration/0  
15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0  
17 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs  
18 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 netns  
19 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kauditd  
20 root 20 0 0 0 0 S 0.0 0.0 0:00.00 khungtaskd  
21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 oom_reaper  
22 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 writeback  
23 root 20 0 0 0 0 S 0.0 0.0 0:00.15 kcompactd0  
24 root 25 5 0 0 0 S 0.0 0.0 0:00.00 ksm  
25 root 39 19 0 0 0 S 0.0 0.0 0:00.41 khugepaged  
43 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kintegrityd  
44 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kblockd  
45 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 blkcg_punt_bio  
46 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 edac-poller  
47 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 devfreq_wq  
48 root 0 -20 0 0 0 I 0.0 0.0 0:00.08 kworker/0:1H-kblockd  
51 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kswapd0  
52 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kthrotld  
53 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 acpi_thermal_pm  
54 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 ipv6_addrconf  
64 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kstrp  
67 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 zswap-shrink  
68 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/u3:0  
111 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 cryptd  
115 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 ata_sff
```

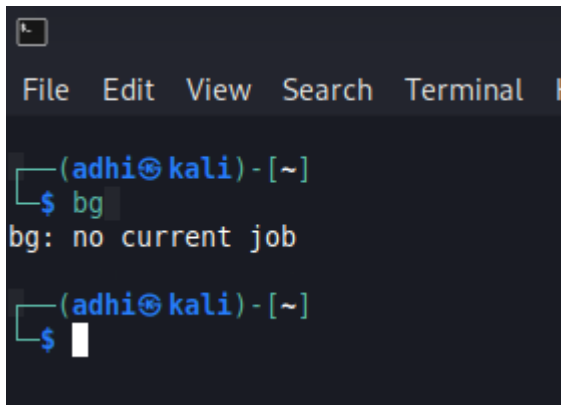
### 3) kill:

Terminate processes

```
(adhi@kali)-[~]  
$ kill -9 1234
```

### 4) bg:

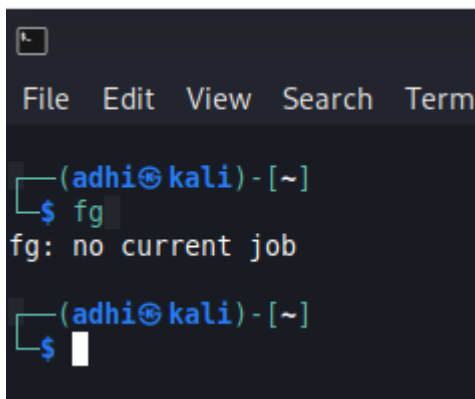
Run processes in the background

A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is '(adhi@kali) - [~]'. The user enters 'bg', and the output is 'bg: no current job'. The prompt is shown again below.

```
(adhi@kali) - [~]  
$ bg  
bg: no current job  
  
(adhi@kali) - [~]  
$
```

## 5) fg:

Bring background processes to the foreground

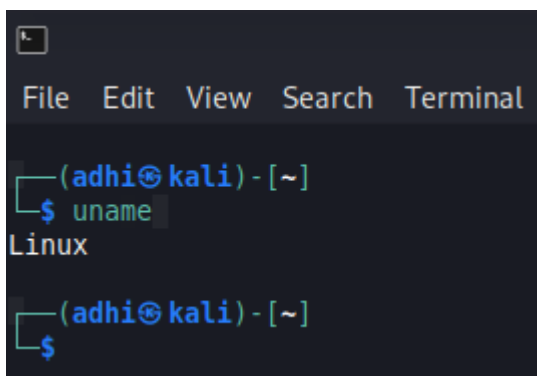
A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~]'. The user enters 'fg', and the output is 'fg: no current job'. The prompt is shown again below.

```
(adhi@kali) - [~]  
$ fg  
fg: no current job  
  
(adhi@kali) - [~]  
$
```

## System Information:

### 1) uname:

Print system information

A terminal window with a dark background and a menu bar containing 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~]'. The user enters 'uname', and the output is 'Linux'. The prompt is shown again below.

```
(adhi@kali) - [~]  
$ uname  
Linux  
  
(adhi@kali) - [~]  
$
```

## 2) df:

Display disk space usage

```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
udev             968132         0    968132   0% /dev
tmpfs            200604         956    199648   1% /run
/dev/sda1       31159180 25520684  4032608  87% /
tmpfs           1003004         0   1003004   0% /dev/shm
tmpfs             5120         0      5120   0% /run/lock
tmpfs           200600         60    200540   1% /run/user/1000

(adhi@kali) - [~]
$
```

## 3) free:

Display memory usage

```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ free
              total        used        free      shared  buff/cache   available
Mem:         2006012       590388       1132248         2804        431192       1415624
Swap:          999420           0         999420

(adhi@kali) - [~]
$
```

## 4) uptime:

Show system uptime

```
File Edit View Search Terminal Help

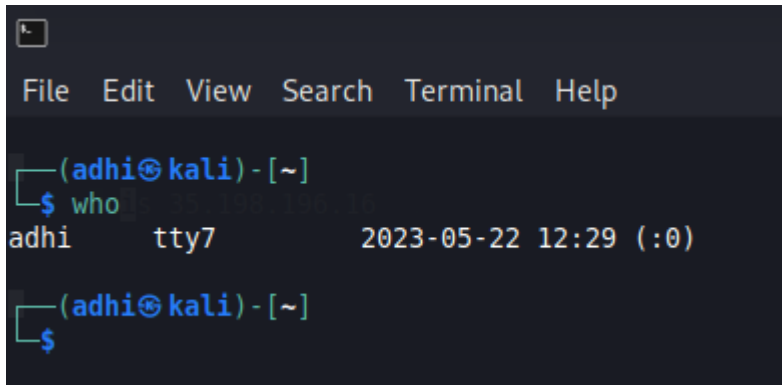
(adhi@kali) - [~]
$ uptime
13:07:49 up 38 min,  1 user,  load average: 0.09, 0.07, 0.04

(adhi@kali) - [~]
$
```



## 5) who:

Display logged-in users



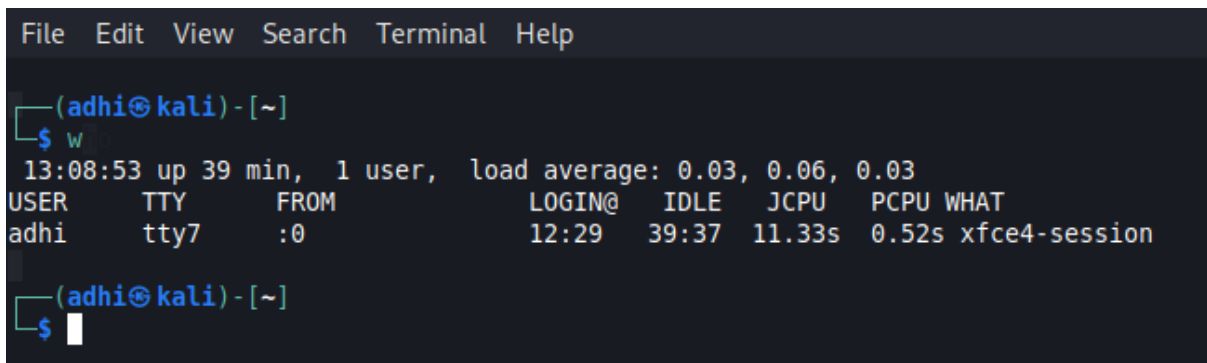
```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ who
adhi      tty7          2023-05-22 12:29 (:0)

(adhi@kali) - [~]
$
```

## 6) w:

Display logged-in users and their activities



```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ w
13:08:53 up 39 min,  1 user,  load average: 0.03, 0.06, 0.03
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
adhi      tty7      :0            12:29    39:37  11.33s  0.52s xfce4-session

(adhi@kali) - [~]
$
```

## Networking:

### 1) ifconfig:

Configure network interfaces

```
(adhi@kali) - [~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.43.106 netmask 255.255.255.0 broadcast 192.168.43.255
    inet6 fe80::7bae:27c6:3a08:7d3e prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:31:07:9e txqueuelen 1000 (Ethernet)
    RX packets 253 bytes 15774 (15.4 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 14 bytes 1586 (1.5 KiB)
    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 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

(adhi@kali) - [~]
$
```

We can see our IP address using this command.

## 2) ping:

Send ICMP echo requests to a network host

```
(adhi@kali) - [~]
$ ping google.com
PING google.com (142.250.77.174) 56(84) bytes of data.
64 bytes from maa05s17-in-f14.1e100.net (142.250.77.174): icmp_seq=1 ttl=114 time=102 ms
64 bytes from maa05s17-in-f14.1e100.net (142.250.77.174): icmp_seq=2 ttl=114 time=97.4 ms
64 bytes from maa05s17-in-f14.1e100.net (142.250.77.174): icmp_seq=3 ttl=114 time=97.3 ms
^C
--- google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 97.340/98.957/102.104/2.225 ms

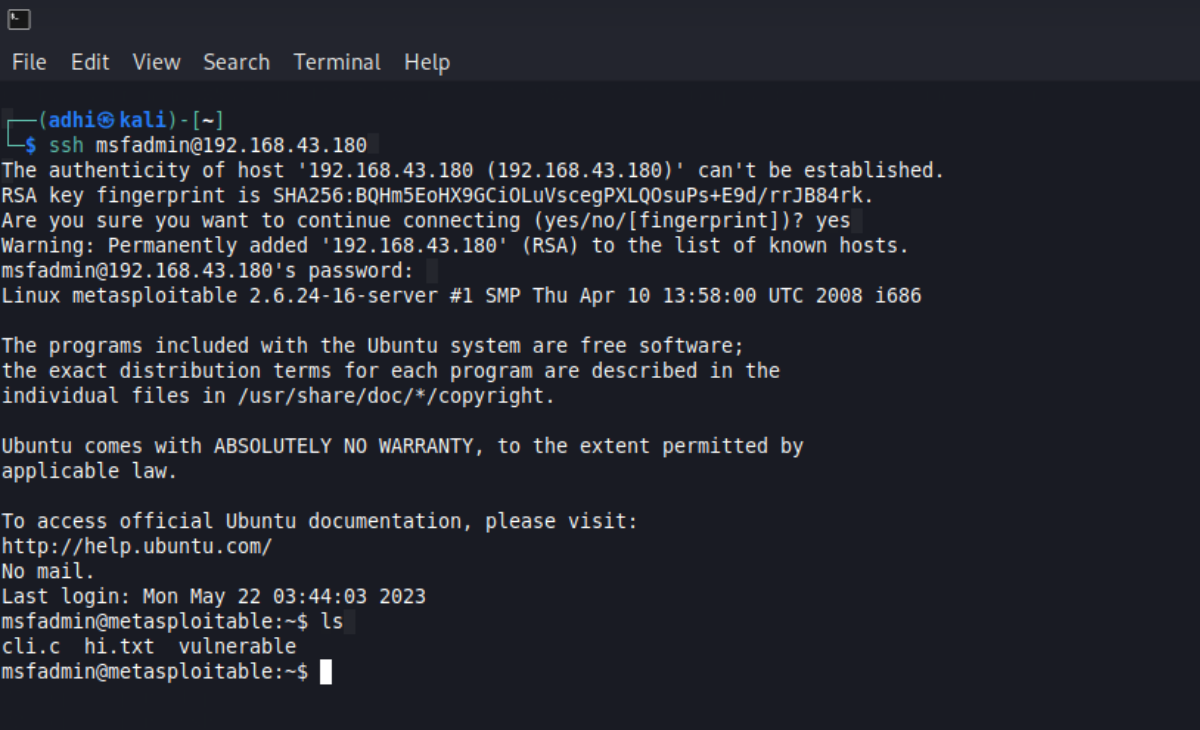
(adhi@kali) - [~]
$ ping 192.168.43.180
PING 192.168.43.180 (192.168.43.180) 56(84) bytes of data.
64 bytes from 192.168.43.180: icmp_seq=1 ttl=64 time=1.11 ms
64 bytes from 192.168.43.180: icmp_seq=2 ttl=64 time=0.689 ms
64 bytes from 192.168.43.180: icmp_seq=3 ttl=64 time=0.825 ms
^C
--- 192.168.43.180 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 0.689/0.873/1.105/0.173 ms

(adhi@kali) - [~]
$
```

Here, First we are pinging google.com, then we are pinging a remote host using an IP address.

### 3) ssh:

Securely connect to a remote system



```
(adhi@kali) - [~]
$ ssh msfadmin@192.168.43.180
The authenticity of host '192.168.43.180 (192.168.43.180)' can't be established.
RSA key fingerprint is SHA256:BQHm5EoHX9GCi0LuVscegPXLQ0suPs+E9d/rrJB84rk.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.43.180' (RSA) to the list of known hosts.
msfadmin@192.168.43.180's password:
Linux metasploitable 2.6.24-16-server #1 SMP Thu Apr 10 13:58:00 UTC 2008 i686

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.

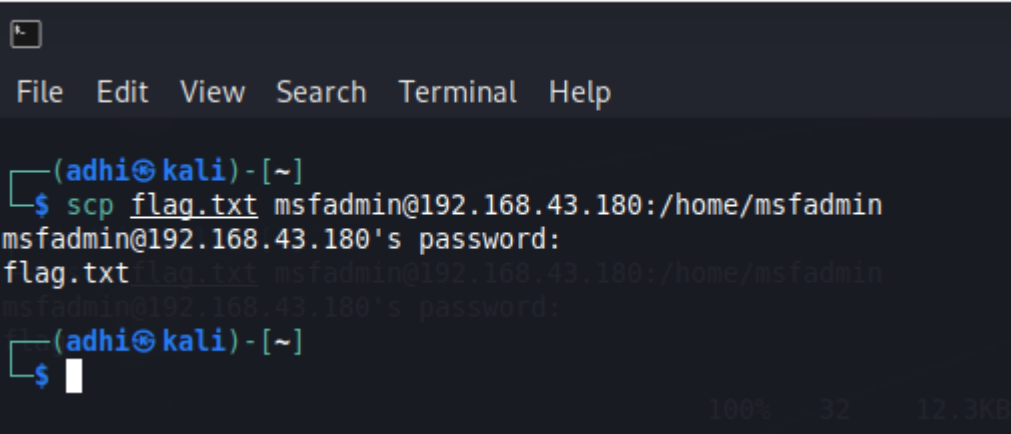
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To access official Ubuntu documentation, please visit:
http://help.ubuntu.com/
No mail.
Last login: Mon May 22 03:44:03 2023
msfadmin@metasploitable:~$ ls
cli.c  hi.txt  vulnerable
msfadmin@metasploitable:~$
```

Here we have logged in to a remote host using “ssh”.

### 4) scp:

Securely copy files between systems



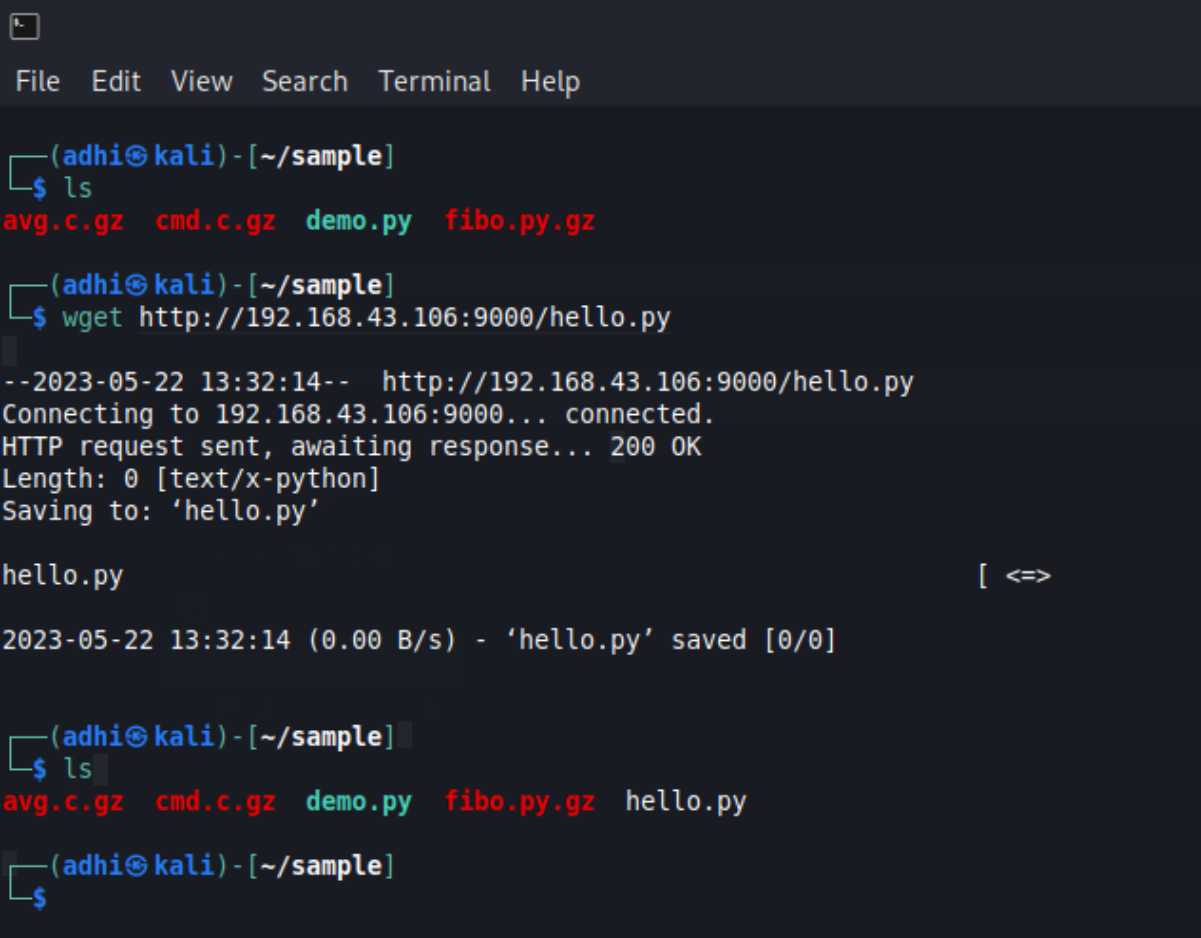
```
(adhi@kali) - [~]
$ scp flag.txt msfadmin@192.168.43.180:/home/msfadmin
msfadmin@192.168.43.180's password:
flag.txt
flag.txt msfadmin@192.168.43.180:/home/msfadmin
msfadmin@192.168.43.180's password:
(adhi@kali) - [~]
$
```

100% 32 12.3KB

Here we have securely copied a file between the systems.

## 5) wget:

Download files from the web



```
(adhi@kali) - [~/sample]
$ ls
avg.c.gz  cmd.c.gz  demo.py  fibo.py.gz

(adhi@kali) - [~/sample]
$ wget http://192.168.43.106:9000/hello.py
--2023-05-22 13:32:14--  http://192.168.43.106:9000/hello.py
Connecting to 192.168.43.106:9000... connected.
HTTP request sent, awaiting response... 200 OK
Length: 0 [text/x-python]
Saving to: 'hello.py'

hello.py                                     [ <=> ]

2023-05-22 13:32:14 (0.00 B/s) - 'hello.py' saved [0/0]

(adhi@kali) - [~/sample]
$ ls
avg.c.gz  cmd.c.gz  demo.py  fibo.py.gz  hello.py

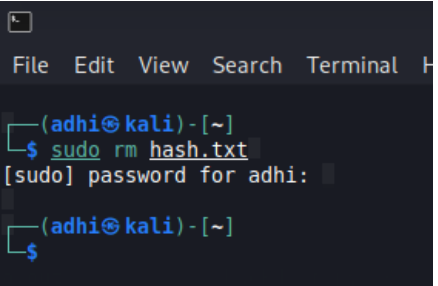
(adhi@kali) - [~/sample]
$
```

Here we have downloaded a file called “hello.py”.

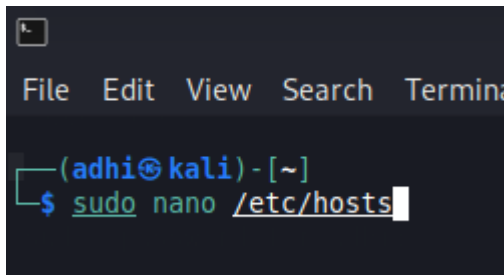
## System Administration:

### 1) sudo:

Execute commands with superuser privileges



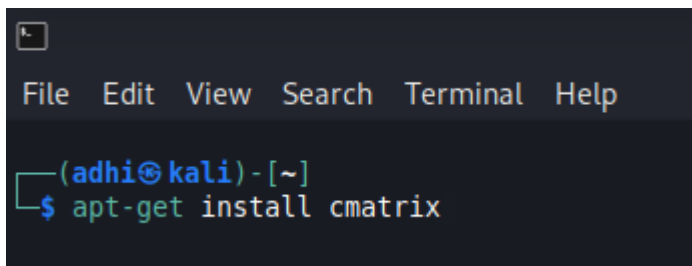
```
(adhi@kali) - [~]
$ sudo rm hash.txt
[sudo] password for adhi:
(adhi@kali) - [~]
$
```



```
File Edit View Search Terminal
(adhi@kali) - [~]
$ sudo nano /etc/hosts
```

## 2) apt-get:

Package management for Debian-based distributions



```
File Edit View Search Terminal Help
(adhi@kali) - [~]
$ apt-get install cmatrix
```

## 3) yum:

Package management for Red Hat-based distributions

The yum command is a package management utility used primarily in RPM-based Linux distributions, such as Red Hat Enterprise Linux (RHEL), CentOS, and Fedora. It allows users to install, update, remove, and manage software packages and their dependencies.

```
yum install <package_name>
yum update
```

## 4) systemctl:

Manage system services

```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ sudo systemctl start apache2

(adhi@kali) - [~]
$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; preset: disabled)
   Active: active (running) since Mon 2023-05-22 13:41:15 IST; 28s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 2858 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
  Main PID: 2875 (apache2)
    Tasks: 6 (limit: 2268)
   Memory: 17.8M
      CPU: 87ms
   CGroup: /system.slice/apache2.service
           └─2875 /usr/sbin/apache2 -k start
             └─2877 /usr/sbin/apache2 -k start
               └─2878 /usr/sbin/apache2 -k start
                 └─2879 /usr/sbin/apache2 -k start
                   └─2880 /usr/sbin/apache2 -k start
                     └─2881 /usr/sbin/apache2 -k start

May 22 13:41:15 kali systemd[1]: Starting apache2.service - The Apache HTTP Server...
May 22 13:41:15 kali systemd[1]: Started apache2.service - The Apache HTTP Server.

(adhi@kali) - [~]
$
```

## 5) crontab:

Schedule recurring tasks

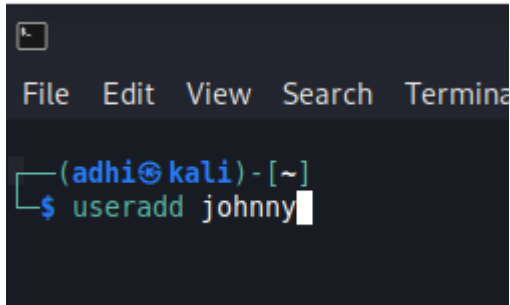
```
File Edit View Search Terminal Help

(adhi@kali) - [~]
$ crontab -e
no crontab for adhi - using an empty one
No modification made

(adhi@kali) - [~]
$
```

## 6) useradd:

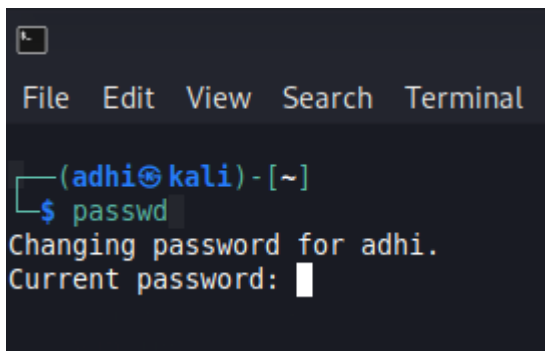
Add a new user

A terminal window with a dark background and a menu bar at the top containing 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~]'. The command 'useradd johnny' has been entered, and the cursor is at the end of the line.

```
(adhi@kali) - [~]  
$ useradd johnny
```

## 7) passwd:

Change user password

A terminal window with a dark background and a menu bar at the top containing 'File', 'Edit', 'View', 'Search', and 'Terminal'. The prompt is '(adhi@kali) - [~]'. The command 'passwd' has been entered. Below the command, the text 'Changing password for adhi.' is displayed, followed by 'Current password:' and a cursor.

```
(adhi@kali) - [~]  
$ passwd  
Changing password for adhi.  
Current password: 
```

We can change the password using the “passwd” command.