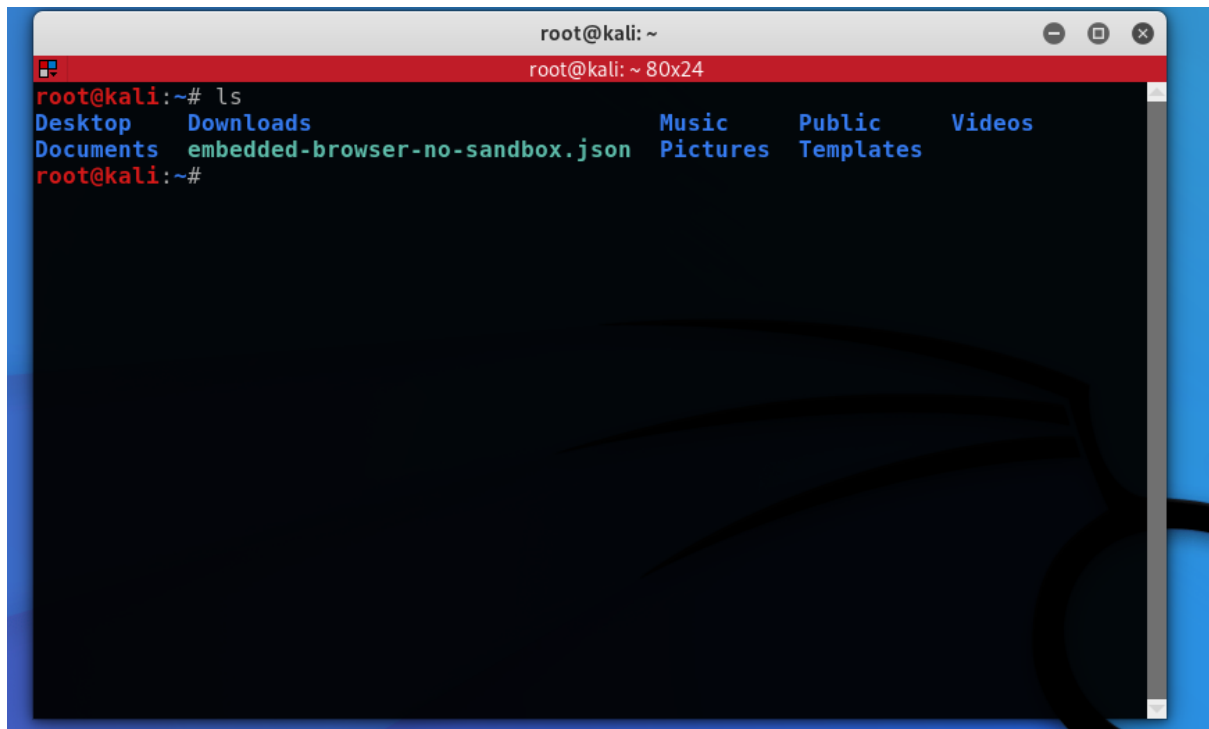


# ASSIGNMENT -1

Linux commands

## File and Directory Operations:

### ls: List files and directories



```
root@kali: ~  
root@kali: ~ 80x24  
root@kali:~# ls  
Desktop    Downloads  Music      Public     Videos  
Documents  embedded-browser-no-sandbox.json Pictures    Templates
```

The image shows a terminal window with a dark background and light blue text. The window title is 'root@kali: ~'. The prompt is 'root@kali:~#'. The command 'ls' has been executed, and the output is displayed in two lines. The first line shows 'Desktop', 'Downloads', 'Music', 'Public', and 'Videos'. The second line shows 'Documents', 'embedded-browser-no-sandbox.json', 'Pictures', and 'Templates'. The window has standard Linux window controls (minimize, maximize, close) in the top right corner.

cd: Change directory

pwd: Print working directory

```
root@kali:~# pwd
/root
root@kali:~#
```

## mkdir: Make directory

```
sssit@JavaTpoint:~/created$ mkdir file1 file2 file3
sssit@JavaTpoint:~/created$
sssit@JavaTpoint:~/created$ ls
file1 file2 file3
sssit@JavaTpoint:~/created$
```

## touch: Create an empty file

```
sssit@JavaTpoint:~/Downloads$ stat demo.txt
  File: `demo.txt'
  Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 807h/2055d Inode: 658414      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/   sssit)   Gid: ( 1000/   sssit)
Access: 2016-05-25 10:45:00.276624267 +0530
Modify: 2016-05-24 10:37:35.265025647 +0530
Change: 2016-05-25 10:44:59.264624225 +0530
 Birth: -
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ stat Demo.txt
  File: `Demo.txt'
  Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 807h/2055d Inode: 658511      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/   sssit)   Gid: ( 1000/   sssit)
Access: 2016-05-25 10:43:52.356621370 +0530
Modify: 2016-05-24 10:37:01.761027070 +0530
Change: 2016-05-24 10:37:22.945026171 +0530
 Birth: -
sssit@JavaTpoint:~/Downloads$
```

## cp: Copy files and directories

```

sssit@JavaTpoint:~/Downloads$ ls /home/sssit/Desktop
1.png  elena doc of 12th May @2200  linux.docx  usr
5555   jdk-8u91-linux-i586.rpm      linuxfun.pdf
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ cp text /home/sssit/Desktop
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ ls /home/sssit/Desktop
1.png  elena doc of 12th May @2200  linux.docx  text
5555   jdk-8u91-linux-i586.rpm      linuxfun.pdf  usr
sssit@JavaTpoint:~/Downloads$

```

## mv: Move or rename files and directories

```

sssit@JavaTpoint:~/Downloads$ ls -i -l
total 12
658851 drwxrwxr-x 2 sssit sssit 4096 May 26 15:28 dir
658816 -rw-rw-r-- 1 sssit sssit   0 May 26 10:15 file2.txt~
658812 drwxrwxr-x 2 sssit sssit 4096 May 26 15:28 fixed
657891 drwxrwxr-x 2 sssit sssit 4096 May 26 13:58 imp
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ mv dir tmp
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ ls -i -l
total 12
658816 -rw-rw-r-- 1 sssit sssit   0 May 26 10:15 file2.txt~
658812 drwxrwxr-x 2 sssit sssit 4096 May 26 15:28 fixed
657891 drwxrwxr-x 2 sssit sssit 4096 May 26 13:58 imp
658851 drwxrwxr-x 2 sssit sssit 4096 May 26 15:28 tmp
sssit@JavaTpoint:~/Downloads$

```

## rm: Remove files and directories

```

sssit@JavaTpoint:~/Downloads$ ls
file.txt  importnt  multi
sssit@JavaTpoint:~/Downloads$ rm -i file.txt
rm: remove regular empty file `file.txt'? y
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ ls
importnt  multi
sssit@JavaTpoint:~/Downloads$ rm -ri multi
rm: remove directory `multi'? y
sssit@JavaTpoint:~/Downloads$
sssit@JavaTpoint:~/Downloads$ ls
importnt
sssit@JavaTpoint:~/Downloads$

```

## find: Search for files and directories

```
root@kali: ~  
root@kali:~# find  
./Documents  
./cache  
./cache/ibus  
./cache/ibus/bus  
./cache/ibus/bus/registry  
./cache/evolution  
./cache/evolution/tasks  
./cache/evolution/tasks/trash  
./cache/evolution/addressbook  
./cache/evolution/addressbook/trash  
./cache/evolution/sources  
./cache/evolution/sources/trash  
./cache/evolution/memos  
./cache/evolution/memos/trash  
./cache/evolution/calendar  
./cache/evolution/calendar/trash  
./cache/evolution/mail  
./cache/evolution/mail/trash  
./cache/event-sound-cache.tdb.ec5e863635cce45951dd5f3d632bc9f9.x86_64-pc-linux-gnu  
./cache/gnome-desktop-thumbnailer  
./cache/gnome-desktop-thumbnailer/gstreamer-1.0  
./cache/gstreamer-1.0  
./cache/gstreamer-1.0/registry.x86_64.bin  
./cache/mesa_shader_cache  
./cache/mesa_shader_cache/c9/92e1e8bdb35301eccb71c018822cff75899f92  
./cache/mesa_shader_cache/70  
./cache/mesa_shader_cache/70/5dfeb9d18fa0307bd4834ba3aed09b5a8138a8  
./cache/mesa_shader_cache/f0  
./cache/mesa_shader_cache/f0/fa4206ef3d750362d88b7e533591817f26e339  
./cache/mesa_shader_cache/8b  
./cache/mesa_shader_cache/8b/2fcba4723e65ff1903082a6e3cfad61afd830b  
./cache/mesa_shader_cache/03  
./cache/mesa_shader_cache/03/04429c588263150f4e31eb0a6fe23e8e17ef6b  
./cache/mesa_shader_cache/ae  
./cache/mesa_shader_cache/ae/7f1b67779d4eedd4a86ec5eb02fc526c555fe6  
./cache/mesa_shader_cache/ae/c0e5fa65589ed7e9f0d333c0c2f82a28a8e3  
./cache/mesa_shader_cache/94
```

## File Viewing and Editing:

### cat: Concatenate and display file content

```
sssit@JavaTpoint:~$ cd Desktop/  
sssit@JavaTpoint:~/Desktop$  
sssit@JavaTpoint:~/Desktop$ cat jtp.txt  
this is javatpoint  
you are learning linux here  
thankyou  
thankyou  
thankyou  
a  
b  
c  
d  
e  
f  
g  
h  
i  
j  
k  
l  
mmmmmm  
nnnnnn  
sssit@JavaTpoint:~/Desktop$
```

### less: View file content with pagination

```
monitor will print the received events for:
UDEV - the event which udev sends out after rule processing
KERNEL - the kernel uevent

KERNEL[8.308288] add      /devices/LNXSYSTM:00 (acpi)
ACTION=add
DEVPATH=/devices/LNXSYSTM:00
MODALIAS=acpi:LNXSYSTM:
SEQNUM=1373
SUBSYSTEM=acpi
UDEV_LOG=3

KERNEL[8.308302] add      /devices/LNXSYSTM:00/LNXCPU:00 (acpi)
ACTION=add
DEVPATH=/devices/LNXSYSTM:00/LNXCPU:00
DRIVER=processor
MODALIAS=acpi:LNXCPU:
SEQNUM=1374
SUBSYSTEM=acpi
UDEV_LOG=3

/var/log/udev
```

head: Display the beginning of a file

```
sssit@JavaTpoint:~/Desktop$ head jtp.txt
this is javatpoint
you are learning linux here
thankyou
thankyou
thankyou
a
b
c
d
e
sssit@JavaTpoint:~/Desktop$
```

tail: Display the end of a file

```
javatpoint@javatpoint-Inspiron-3542:~$ tail -n 5 num.txt
11
12
13
14
15
javatpoint@javatpoint-Inspiron-3542:~$ tail -5 num.txt
11
12
13
14
15
```

nano: Text editor for creating and editing files

vi/vim: Powerful text editor for experienced users

**File Permissions:**

## chmod: Change file permissions

```
javatpoint@javatpoint-Inspiron-3542:~$ chmod o+w *.txt
javatpoint@javatpoint-Inspiron-3542:~$ ls -l *.txt
-rw-r--rw- 1 javatpoint javatpoint 21 Jun  3 01:47 Demo1.txt
-rw-rw-rw- 1 javatpoint javatpoint  0 Jul  8 23:43 Demo.txt
-rw-r--rw- 1 javatpoint javatpoint 37 Jun 23 01:01 lookups.txt
-rw-r--rw- 1 javatpoint javatpoint 37 Jul  2 20:50 pings.txt
-rw-r--rw- 1 javatpoint javatpoint  0 Jun 11 21:21 ref.txt
-rw-r--rw- 1 javatpoint javatpoint 131 Jun  8 22:46 time.txt
-rw-r--rw- 1 javatpoint javatpoint 132 Jun  8 22:32 timme.txt
```

## chown: Change file owner

```
javatpoint@javatpoint-Inspiron-3542:~$ ls -l Demo.txt
-rw-rw-rw- 1 javatpoint javatpoint 0 Jul  8 23:43 Demo.txt
javatpoint@javatpoint-Inspiron-3542:~$ sudo chown :adm Demo.txt
javatpoint@javatpoint-Inspiron-3542:~$ ls -l Demo.txt
-rw-rw-rw- 1 javatpoint adm 0 Jul  8 23:43 Demo.txt
javatpoint@javatpoint-Inspiron-3542:~$ sudo chown :1000 Demo.txt
javatpoint@javatpoint-Inspiron-3542:~$ ls -l Demo.txt
-rw-rw-rw- 1 javatpoint javatpoint 0 Jul  8 23:43 Demo.txt
```

## chgrp: Change file group

```
kcvirtual@kcvirtual-VirtualBox:~/GFG$ ls -l
total 0
-rw-r--r-- 1 kcvirtual kcvirtual 0 Apr 17 15:04 f1
kcvirtual@kcvirtual-VirtualBox:~/GFG$ ln -s f1 symbolic_link
kcvirtual@kcvirtual-VirtualBox:~/GFG$ ls -l
total 0
-rw-r--r-- 1 kcvirtual kcvirtual 0 Apr 17 15:04 f1
lrwxrwxrwx 1 kcvirtual kcvirtual 2 Apr 17 15:04 symbolic_link -> f1
kcvirtual@kcvirtual-VirtualBox:~/GFG$ sudo chgrp --dereference geeksforgeeks symbolic_link
kcvirtual@kcvirtual-VirtualBox:~/GFG$
kcvirtual@kcvirtual-VirtualBox:~/GFG$ ls -l
total 0
-rw-r--r-- 1 kcvirtual geeksforgeeks 0 Apr 17 15:04 f1
lrwxrwxrwx 1 kcvirtual kcvirtual 2 Apr 17 15:04 symbolic_link -> f1
```

## File Compression and Archiving:

### tar: Archive files

```
karishma@karishma-Vostro-3446:~/mydir$ tar -tvf file.tar
-rw-rw-r-- karishma/karishma 96 2021-04-22 17:33 hello1.txt
-rw-rw-r-- karishma/karishma 85 2021-04-22 17:34 hello2.txt
-rw-rw-r-- karishma/karishma 33 2021-04-22 17:34 hello3.txt
-rw-rw-r-- karishma/karishma 67 2021-04-22 17:34 hello4.txt
-rw-rw-r-- karishma/karishma 51 2021-04-22 17:35 Hello.txt
-rw-rw-r-- karishma/karishma 59 2021-04-22 17:35 HeLlO.txt
-rw-rw-r-- karishma/karishma  0 2021-04-15 00:25 hello1.txt
-rw-rw-r-- karishma/karishma  0 2021-04-15 00:23 hello2.txt
-rw-rw-r-- karishma/karishma  0 2021-04-15 00:27 hello3.txt
-rw-rw-r-- karishma/karishma  0 2021-04-14 23:57 hello4.txt
-rw-rw-r-- karishma/karishma  0 2021-04-17 13:08 Hello.txt
-rw-rw-r-- karishma/karishma  0 2021-04-17 13:09 HeLlO.txt
karishma@karishma-Vostro-3446:~/mydir$
```

## gzip: Compress files

```
sssit@JavaTpoint: ~/Downloads
sssit@JavaTpoint:~/Downloads$ gzip file1.txt file2.txt
sssit@JavaTpoint:~/Downloads$ ls
file1.txt.gz file2.txt.gz jtp.txt weeks.txt
sssit@JavaTpoint:~/Downloads$ gunzip file1.txt file2.txt
sssit@JavaTpoint:~/Downloads$ ls
file1.txt file2.txt jtp.txt weeks.txt
sssit@JavaTpoint:~/Downloads$
```

## unzip: Extract files from a ZIP archive

```
erik_akash@ErikVirtualBox:~$ sudo apt install unzip
[sudo] password for erik_akash:
Reading package lists... Done
Building dependency tree
Reading state information... Done
unzip is already the newest version (6.0-25ubuntu1).
unzip set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 330 not upgraded.
erik_akash@ErikVirtualBox:~$
```



## Process Management:

### ps: List running processes

```
ubuntu@ubuntu:~$ ps --help simple

Usage:
ps [options]

Basic options:
-A, -e          all processes
-a             all with tty, except session leaders
-a            all with tty, including other users
-d             all except session leaders
-N, --deselect negate selection
-r             only running processes
-T             all processes on this terminal
-x            processes without controlling ttys

For more details see ps(1).
```

### top: Display real-time system information and processes

```
sssit@JavaTpoint:~$ top

top - 09:56:13 up 9 min,  2 users,  load average: 0.68, 0.51, 0.28
Tasks: 154 total,  2 running, 152 sleeping,  0 stopped,  0 zombie
Cpu(s): 12.9%us,  5.2%sy,  0.0%ni, 81.0%id,  0.8%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   1928144k total, 1387544k used,  540600k free,  48388k buffers
Swap: 1986556k total,      0k used, 1986556k free,  726812k cached

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 2051 sssit     20   0   787m 376m 31m   R   25  20.0   2:33.79  firefox
 1021 root       20   0   70536 13m 5228   S   10   0.7   0:50.50  Xorg
 1592 sssit     20   0   247m  64m 27m   S    1   3.4   0:09.99  compiz
 2284 sssit     20   0   90016 14m 10m   S    1   0.8   0:00.23  gnome-terminal
   51 root       20   0      0    0    0   S    0   0.0   0:00.48  kworker/u:3
    1 root       20   0   3624 2012 1304   S    0   0.1   0:00.52  init
    2 root       20   0      0    0    0   S    0   0.0   0:00.00  kthreadd
    3 root       20   0      0    0    0   S    0   0.0   0:00.02  ksoftirqd/0
    5 root       20   0      0    0    0   S    0   0.0   0:00.97  kworker/u:0
    6 root       RT   0      0    0    0   S    0   0.0   0:00.00  migration/0
    7 root       RT   0      0    0    0   S    0   0.0   0:00.00  watchdog/0
    8 root       RT   0      0    0    0   S    0   0.0   0:00.00  migration/1
   10 root       20   0      0    0    0   S    0   0.0   0:00.07  ksoftirqd/1
   11 root       20   0      0    0    0   S    0   0.0   0:00.37  kworker/0:1
   12 root       RT   0      0    0    0   S    0   0.0   0:00.00  watchdog/1
   13 root        0 -20      0    0    0   S    0   0.0   0:00.00  cpuset
   14 root        0 -20      0    0    0   S    0   0.0   0:00.00  khelper
   15 root       20   0      0    0    0   S    0   0.0   0:00.00  kdevtmpfs
   16 root        0 -20      0    0    0   S    0   0.0   0:00.00  netns
```



## kill: Terminate processes

```
karishma@karishma-Vostro-3446:~$ kill -l
1) SIGHUP      2) SIGINT      3) SIGQUIT      4) SIGILL      5) SIGTRAP
6) SIGABRT     7) SIGBUS      8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV    12) SIGUSR2    13) SIGPIPE     14) SIGALRM    15) SIGTERM
16) SIGSTKFLT  17) SIGCHLD    18) SIGCONT     19) SIGSTOP    20) SIGTSTP
21) SIGTTIN    22) SIGTTOU    23) SIGURG      24) SIGXCPU    25) SIGXFSZ
26) SIGVTALRM  27) SIGPROF    28) SIGWINCH    29) SIGIO      30) SIGPWR
31) SIGSYS     34) SIGRTMIN   35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4 39) SIGRTMIN+5 40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9 44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6 59) SIGRTMAX-5 60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1 64) SIGRTMAX
karishma@karishma-Vostro-3446:~$ █
```

## bg: Run processes in the background

```
File Edit View Search Terminal Help
naman@root:~$ bg --help
bg: bg [job_spec ...]
    Move jobs to the background.

    Place the jobs identified by each JOB_SPEC in the background, as if they
    had been started with '&'.  If JOB_SPEC is not present, the shell's notion
    of the current job is used.

    Exit Status:
    Returns success unless job control is not enabled or an error occurs.
naman@root:~$ █
```

## fg: Bring background processes to the foreground

```
File Edit View Search Terminal Help
naman@root:~$ fg --help
fg: fg [job_spec]
    Move job to the foreground.

    Place the job identified by JOB_SPEC in the foreground, making it the
    current job.  If JOB_SPEC is not present, the shell's notion of the
    current job is used.

    Exit Status:
    Status of command placed in foreground, or failure if an error occurs.
naman@root:~$
```

## System Information:

## uname: Print system information

```
goelashwin36@Ash: ~
File Edit View Search Terminal Help
goelashwin36@Ash:~$ uname -v
#31-Ubuntu SMP Tue Jul 17 15:39:52 UTC 2018
goelashwin36@Ash:~$
```

## df: Display disk space usage

```
javatpoint@javatpoint-Inspiron-3542:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           385M  1.8M  383M   1% /run
/dev/sda1       458G  28G  407G   7% /
tmpfs           1.9G  302M  1.6G  16% /dev/shm
tmpfs           5.0M   4.0K  5.0M   1% /run/lock
tmpfs           1.9G   0    1.9G   0% /sys/fs/cgroup
/dev/loop1      1.0M  1.0M    0 100% /snap/gnome-logs/93
/dev/loop3      2.5M  2.5M    0 100% /snap/gnome-calculator/748
/dev/loop4      2.5M  2.5M    0 100% /snap/gnome-calculator/730
/dev/loop0      2.3M  2.3M    0 100% /snap/gnome-system-monitor/148
/dev/loop5      384K  384K    0 100% /snap/gnome-characters/550
/dev/loop8      1.0M  1.0M    0 100% /snap/gnome-logs/100
/dev/loop7      174M  174M    0 100% /snap/gimp/252
/dev/loop2      256M  256M    0 100% /snap/gnome-3-34-1804/33
/dev/loop9       55M   55M    0 100% /snap/core18/1705
/dev/loop6       98M   98M    0 100% /snap/core/9289
/dev/loop15     215M  215M    0 100% /snap/wine-platform-5-stable/5
/dev/loop13      94M   94M    0 100% /snap/core/9066
/dev/loop11      55M   55M    0 100% /snap/gtk-common-themes/1502
/dev/loop10     256M  256M    0 100% /snap/gnome-3-34-1804/36
/dev/loop12     176M  176M    0 100% /snap/gimp/273
/dev/loop14     141M  141M    0 100% /snap/gnome-3-26-1604/100
```

## free: Display memory usage

```
dave@howtogeek:~$ free -s 3
```

	total	used	free	shared	buff/cache
Mem:	2038576	701228	931064	15600	406284
Swap:	1557568	745288	812280		

```
available
```

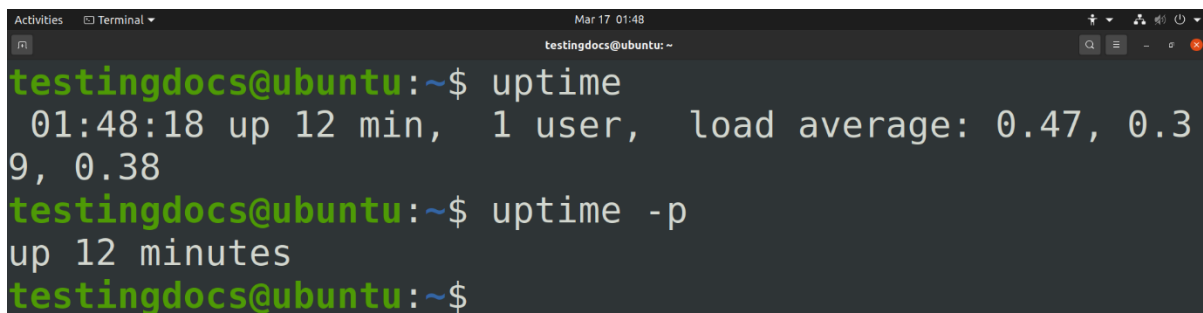
	total	used	free	shared	buff/cache
Mem:	2038576	701212	931064	15616	406300
Swap:	1557568	745288	812280		

```
available
```

	total	used	free	shared	buff/cache
Mem:	2038576	701460	930812	15616	406304
Swap:	1557568	745288	812280		

## uptime: Show system uptime



```
testingdocs@ubuntu:~$ uptime
01:48:18 up 12 min,  1 user,  load average: 0.47, 0.39, 0.38
testingdocs@ubuntu:~$ uptime -p
up 12 minutes
testingdocs@ubuntu:~$
```

## who: Display logged-in users

```
Activities Terminal Aug 29 12:19 testingdocs@ubuntu: ~
testingdocs@ubuntu:~$ who --help
Usage: who [OPTION]... [ FILE | ARG1 ARG2 ]
Print information about users who are currently logged in.

-a, --all             same as -b -d --login -p -r -t -T -u
-b, --boot            time of last system boot
-d, --dead            print dead processes
-H, --heading         print line of column headings
    --ips             print ips instead of hostnames. with --lookup,
                     canonicalizes based on stored IP, if available,
                     rather than stored hostname
-l, --login           print system login processes
    --lookup          attempt to canonicalize hostnames via DNS
-m                   only hostname and user associated with stdin
-p, --process         print active processes spawned by init
-q, --count           all login names and number of users logged on
-r, --runlevel        print current runlevel
-s, --short           print only name, line, and time (default)
-t, --time            print last system clock change
-T, -w, --mesg       add user's message status as +, - or ?
-u, --users           list users logged in
    --message         same as -T
    --writable        same as -T
    --help           display this help and exit
    --version        output version information and exit
```

## w: Display logged-in users and their activities

```
algoscale@algoscale-Lenovo-ideapad-330-15IK8:~$ w --help
Usage:
w [options]

Options:
-h, --no-header      do not print header
-u, --no-current     ignore current process username
-s, --short          short format
-f, --from           show remote hostname field
-o, --old-style      old style output
-i, --ip-addr        display IP address instead of hostname (if possible)

    --help          display this help and exit
-V, --version       output version information and exit

For more details see w(1).
```

## Networking:

## ifconfig: Configure network interfaces

```
root@kali: ~ 78x27
root@kali:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.95.128  netmask 255.255.255.0  broadcast 192.168.95.255
    inet6 fe80::20c:29ff:fe3b:9f7b  prefixlen 64  scopeid 0x20<link>
    ether 00:0c:29:3b:9f:7b  txqueuelen 1000  (Ethernet)
    RX packets 977  bytes 65462 (63.9 KiB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 298  bytes 24328 (23.7 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 28  bytes 1680 (1.6 KiB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 28  bytes 1680 (1.6 KiB)
    TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

root@kali:~#
```

## ping: Send ICMP echo requests to a network host

```
File Edit View Search Terminal Help
$ ping www.geeksforgeeks.org
PING d13vvqr7dxay1j.cloudfront.net (52.222.128.155) 56(84) bytes of data:
64 bytes from server-52-222-128-155.bom51.r.cloudfront.net (52.222.128.155): icmp_seq=1 ttl=244 time=97.5 ms
64 bytes from server-52-222-128-155.bom51.r.cloudfront.net (52.222.128.155): icmp_seq=2 ttl=244 time=1080 ms
64 bytes from server-52-222-128-155.bom51.r.cloudfront.net (52.222.128.155): icmp_seq=3 ttl=244 time=115 ms
64 bytes from server-52-222-128-155.bom51.r.cloudfront.net (52.222.128.155): icmp_seq=4 ttl=244 time=1179 ms
64 bytes from server-52-222-128-155.bom51.r.cloudfront.net (52.222.128.155): icmp_seq=5 ttl=244 time=1069 ms
^C
--- d13vvqr7dxay1j.cloudfront.net ping statistics ---
6 packets transmitted, 5 received, 16% packet loss, time 5049ms
rtt min/avg/max/mdev = 97.502/708.343/1179.015/492.982 ms, pipe 2
$
```

## ssh: Securely connect to a remote system

```

PS C:\Users\GFG0229> ssh jayesh@10.143.90.2
jayesh@10.143.90.2's password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-38-generic x86_64)

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

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

   https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

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

7 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

*** System restart required ***
Last login: Wed Apr 19 18:55:55 2023 from 10.143.90.13
jayesh@jayesh-VirtualBox:~$ |

```

## scp: Securely copy files between systems

```

sofiya@sofiya-VirtualBox:~$ scp -v Desktop/sample_example.txt root@147.182.143.
27:/home/remote_dir/
Executing: program /usr/bin/ssh host 147.182.143.27, user root, command scp -v
-t /home/remote_dir/
OpenSSH_8.2p1 Ubuntu-4ubuntu0.3, OpenSSL 1.1.1f 31 Mar 2020
debug1: Reading configuration data /etc/ssh/ssh_config
debug1: /etc/ssh/ssh_config line 19: include /etc/ssh/ssh_config.d/*.conf matche
d no files
debug1: /etc/ssh/ssh_config line 21: Applying options for *
debug1: Connecting to 147.182.143.27 [147.182.143.27] port 22.
debug1: Connection established.
debug1: identity file /home/sofiya/.ssh/id_rsa type 0
debug1: identity file /home/sofiya/.ssh/id_rsa-cert type -1

```

## wget: Download files from the web

```

bash
[vivek@nixcraft-wks01 ~]$ wget https://cdn.kernel.org/pub/linux/kernel/v5.x/linux-5.15.5.tar.xz
--2021-11-26 23:36:19-- https://cdn.kernel.org/pub/linux/kernel/v5.x/linux-5.15.5.tar.xz
Resolving cdn.kernel.org (cdn.kernel.org)... 151.101.193.176, 151.101.1.176, 151.101.65.176, ...
Connecting to cdn.kernel.org (cdn.kernel.org)|151.101.193.176|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 121927760 (116M) [application/x-xz]
Saving to: 'linux-5.15.5.tar.xz'

linux-5.15.5.tar.xz      100%[=====>] 116.28M  10.7MB/s   in 13s

2021-11-26 23:36:33 (9.04 MB/s) - 'linux-5.15.5.tar.xz' saved [121927760/121927760]

[vivek@nixcraft-wks01 ~]$

```

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## System Administration:



## sudo: Execute commands with superuser privileges

```
karishma@karishma-Vostro-3446:~$ sudo -h
sudo - execute a command as another user

usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user]
      [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
prompt] [-T timeout] [-u user] file ...

Options:
-A, --askpass          use a helper program for password prompting
-b, --background      run command in the background
-B, --bell            ring bell when prompting
-C, --close-from=num  close all file descriptors >= num
-E, --preserve-env     preserve user environment when running command
    --preserve-env=list preserve specific environment variables
-e, --edit            edit files instead of running a command
-g, --group=group     run command as the specified group name or ID
-H, --set-home        set HOME variable to target user's home dir
-h, --help            display help message and exit
-h, --host=host       run command on host (if supported by plugin)
-i, --login           run login shell as the target user; a command
                    may also be specified
-K, --remove-timestamp remove timestamp file completely
-k, --reset-timestamp invalidate timestamp file
-l, --list            list user's privileges or check a specific
                    command; use twice for longer format
-n, --non-interactive non-interactive mode, no prompts are used
-P, --preserve-groups preserve group vector instead of setting to
                    target's
-p, --prompt=prompt  use the specified password prompt
-r, --role=role       create SELinux security context with specified
                    role
-S, --stdin          read password from standard input
-s, --shell          run shell as the target user; a command may
```

## apt-get: Package management for Debian-based distributions

```
rossoskull@jay: ~  
File Edit View Search Terminal Help  
rossoskull ~ apt show youtube-dl  
Package: youtube-dl  
Version: 2018.03.14-1  
Priority: extra  
Section: universe/web  
Origin: Ubuntu  
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>  
Original-Maintainer: Rogério Brito <rbrito@ime.usp.br>  
Bugs: https://bugs.launchpad.net/ubuntu/+filebug  
Installed-Size: 5,271 kB  
Depends: python3-pkg-resources, python3:any (>= 3.3.2-2~)  
Recommends: aria2 | wget | curl, ca-certificates, ffmpeg | libav-tools, mpv | mplayer, phantomjs, python3-pyxdm, rtmpdump  
Homepage: https://rg3.github.com/youtube-dl/  
Task: ubuntu-kylin-desktop, ubuntu-budgie-desktop  
Supported: 3y  
Download-Size: 931 kB  
APT-Manual-Installed: yes  
APT-Sources: http://in.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages  
Description: downloader of videos from YouTube and other sites
```

## **yum: Package management for Red Hat-based distributions**

```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# yum history  
ID      | Command line          | Date and time    | Action(s)    | Altered  
-----|-----  
5 | remove httpd          | 2020-01-30 14:47 | Removed      | 9  
4 | install httpd         | 2020-01-30 14:33 | Install      | 9  
3 | group install workstatio | 2020-01-24 15:50 | Install      | 1003  
2 | update -y            | 2020-01-24 15:29 | I, U         | 233 EE  
1 |                       | 2019-12-06 11:42 | Install      | 391 EE  
[root@localhost ~]#
```

systemctl: Manage system services

**crontab: Schedule recurring tasks**

```
GNU nano 2.9.3 /tmp/crontab.k0AAoB/crontab
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
```

## **useradd: Add a new user**

```
manav@ubuntulinux: ~/gfg
manav@ubuntulinux:~/gfg$ sudo useradd test_user
manav@ubuntulinux:~/gfg$ cat /etc/passwd | grep test_user
test_user:x:1002:1002::/home/test_user:/bin/sh
manav@ubuntulinux:~/gfg$
```

## **passwd: Change user password**

```
jtp@JavaTpoint:~$ passwd
Changing password for jtp.
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
You must choose a longer password
Enter new UNIX password:
Retype new UNIX password:
Password unchanged
Enter new UNIX password:
Retype new UNIX password:
You must choose a longer password
passwd: Authentication token manipulation error
passwd: password unchanged
jtp@JavaTpoint:~$
```