

1. Create a directory
2. Switch to this directory
3. Create a normal text file
4. Create a hidden text file
5. Modify the access of the hidden text file so that it can be edited only by root user.

6. Move the hidden file to a your desktop. e

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ mkdir dir1
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ ls -l
total 64
-rw-rw-r-- 1 lt-meenalr lt-meenalr 1 Feb 22 13:20 abc.txt
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 22:34 Desktop
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 21:53 dir
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 18:19 dir1
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 17:27 Documents
drwxr-xr-x 4 lt-meenalr lt-meenalr 4096 Feb 22 17:42 Downloads
-rw-rw-r-- 1 lt-meenalr lt-meenalr 1 Feb 22 13:21 lt-meenalr@172.28.2.234
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 17:27 Music
-rw-rw-r-- 1 lt-meenalr lt-meenalr 13 Feb 22 13:18 new_file
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 17:36 Pictures
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 17:27 Public
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 12:21 res
drwxrwxr-x 4 lt-meenalr lt-meenalr 4096 Feb 22 17:24 resp
drwx----- 4 lt-meenalr lt-meenalr 4096 Feb 21 17:57 snap
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 17:27 Templates
drwxr-xr-x 2 lt-meenalr lt-meenalr 4096 Feb 21 17:27 Videos
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ cd dir1
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ touch file1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ ll
total 8
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 18:20 ./
drwxr-x--- 22 lt-meenalr lt-meenalr 4096 Feb 22 18:19 ../
-rw-rw-r-- 1 lt-meenalr lt-meenalr 0 Feb 22 18:20 file1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ touch .hid1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ ll
total 8
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 18:20 ./
drwxr-x--- 22 lt-meenalr lt-meenalr 4096 Feb 22 18:19 ../
-rw-rw-r-- 1 lt-meenalr lt-meenalr 0 Feb 22 18:20 file1.txt
-rw-rw-r-- 1 lt-meenalr lt-meenalr 0 Feb 22 18:20 .hid1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ chmod 641 .hid1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ ll
total 8
drwxrwxr-x 2 lt-meenalr lt-meenalr 4096 Feb 22 18:20 ./
drwxr-x--- 22 lt-meenalr lt-meenalr 4096 Feb 22 18:19 ../
-rw-rw-r-- 1 lt-meenalr lt-meenalr 0 Feb 22 18:20 file1.txt
-rw-r----- 1 lt-meenalr lt-meenalr 0 Feb 22 18:20 .hid1.txt*
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ mv .hid1.txt /home/lt-meenalr/Desktop
```

7. Create a directory, add 3 files into it and then remove the whole directory.

8. Create a new user group.

10. Create a symbolic link in a different location for the file created in step 3.

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ mkdir mee1
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ cd mee1
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1/mee1$ touch a1.txt b1.txt c1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1/mee1$ ls
a1.txt b1.txt c1.txt
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1/mee1$ sudo groupadd grp1
[sudo] password for lt-meenalr:
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1/mee1$ cd ..
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ cd..
cd..: command not found
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~/dir1$ cd ..
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ pwd
/home/lt-meenalr
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ ln -s /home/lt-meenalr/dir1/file1.txt softlink
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ cd lt-meenalr
bash: cd: lt-meenalr: No such file or directory
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ ls
abc.txt Desktop dir dir1 Documents Downloads lt-meenalr@172.28.2.234 Music new_file Pictures Public res resp snap softlink
```

12. Use ssh and scp commands to download and modify files on an external machine.

```
abc.txt Desktop dir Documents Downloads lt-meenalr@172.28.2.234 Music new_file Pictures Public res snap Templates
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ ssh rxoglx@172.28.1.167
ssh: connect to host 172.28.1.167 port 22: Connection refused
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ ssh rx-gunjans@172.28.1.223
The authenticity of host '172.28.1.223 (172.28.1.223)' can't be established.
ECDSA key fingerprint is SHA256:hZrGgx+lTEhZHEWrsHOTjFLdM8mMV9iaNu6dbLY4GLM.
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '172.28.1.223' (ECDSA) to the list of known hosts.
rx-gunjans@172.28.1.223's password:
Welcome to Ubuntu 21.10 (GNU/Linux 5.13.0-28-generic x86_64)

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

1 device has a firmware upgrade available.
Run 'fwupdmgd get-upgrades' for more information.

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

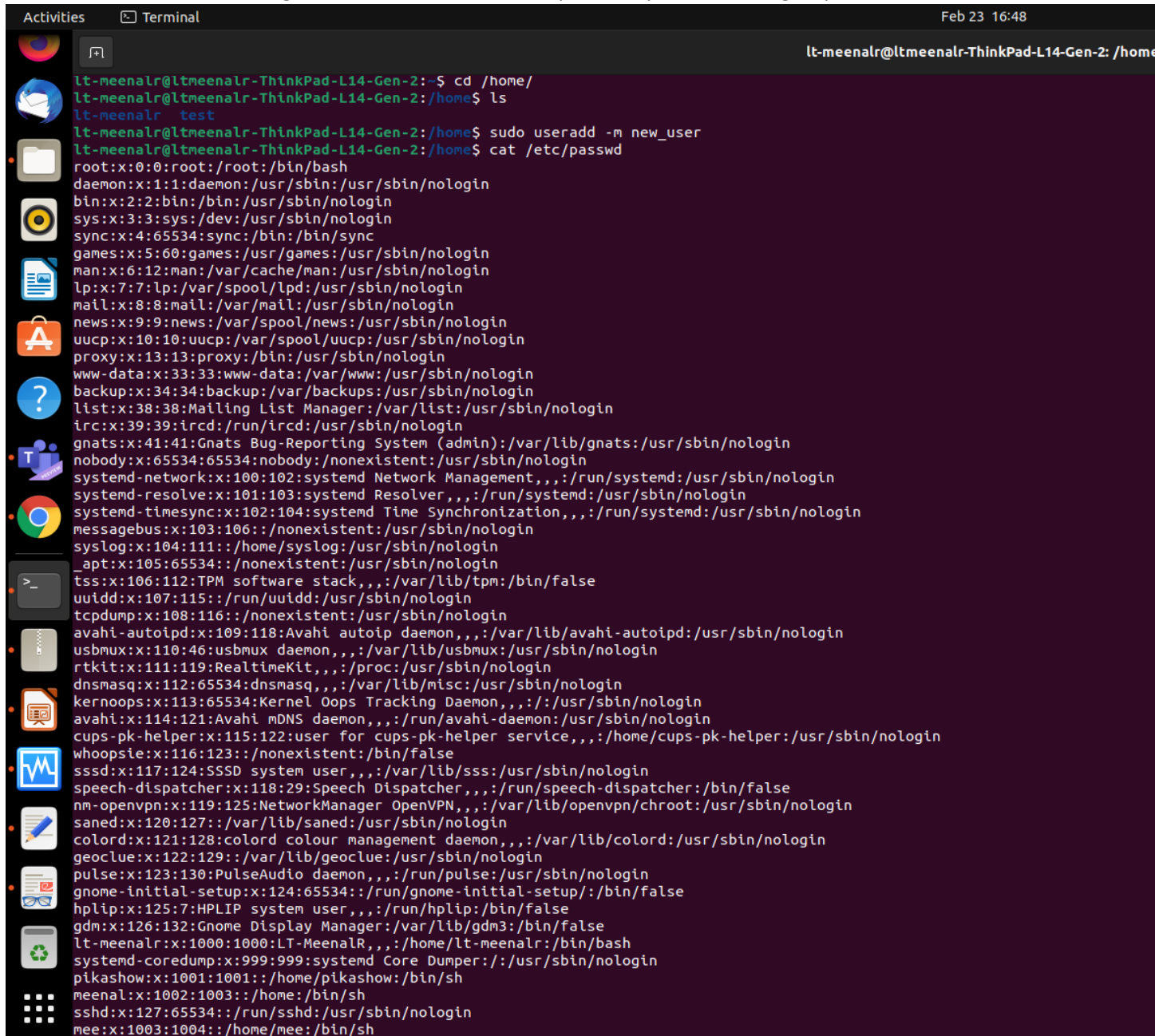
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

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

rx-gunjans@rxgunjans-ThinkPad-L14-Gen-2:~$ vi mee.txt
rx-gunjans@rxgunjans-ThinkPad-L14-Gen-2:~$ scp mee.txt /home/rx-gunjans
cp: 'mee.txt' and '/home/rx-gunjans/mee.txt' are the same file
rx-gunjans@rxgunjans-ThinkPad-L14-Gen-2:~$ scp mee.txt rx-gunjans@172.28.1.223
rx-gunjans@rxgunjans-ThinkPad-L14-Gen-2:~$ ls
abc.txt Desktop Documents Downloads IdeaProjects mee.txt Music newdir newdir2 newdir3 Pictures Public repository rx
rx-gunjans@rxgunjans-ThinkPad-L14-Gen-2:~$
```

SHOT ON POCO X3

9. Create a new user and assign a new user home and the previously created usergroup to the user.



The image shows a terminal window with a dark background and light text. The window title is "Activities" and "Terminal". The date and time "Feb 23 16:48" are in the top right corner. The terminal shows the following commands and output:

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2: /home$ cd /home/
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2: /home$ ls
lt-meenalr test
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2: /home$ sudo useradd -m new_user
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2: /home$ cat /etc/passwd
```

The output of the `cat /etc/passwd` command is a list of system and regular users, including `root`, `daemon`, `bin`, `sys`, `sync`, `games`, `man`, `lp`, `mail`, `news`, `uucp`, `proxy`, `www-data`, `backup`, `list`, `irc`, `gnats`, `nobody`, `systemd-network`, `systemd-resolve`, `systemd-timesync`, `messagebus`, `syslog`, `_apt`, `tss`, `uuidd`, `tcpdump`, `avahi-autoipd`, `usbmux`, `rtkit`, `dnsmasq`, `kernoops`, `avahi`, `cups-pk-helper`, `whoopsie`, `sssd`, `speech-dispatcher`, `nm-openvpn`, `saned`, `colord`, `geoclue`, `pulse`, `gnome-initial-setup`, `hplip`, `gdm`, `lt-meenalr`, `systemd-coredump`, `pikashow`, `meenal`, `sshd`, and `mee`.

```
Activities Terminal Feb 23 16:49
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2: /home

systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/:nonexistent:/usr/sbin/nologin
syslog:x:104:111:/:home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:nonexistent:/usr/sbin/nologin
tss:x:106:112:TPM software stack,,,:/var/lib/tpm:/bin/false
uidd:x:107:115:/:run/uidd:/usr/sbin/nologin
tcpdump:x:108:116:/:nonexistent:/usr/sbin/nologin
avahi-autoipd:x:109:118:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
whoopsie:x:116:123:/:nonexistent:/bin/false
sssd:x:117:124:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:118:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:119:125:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:120:127:/:var/lib/saned:/usr/sbin/nologin
colord:x:121:128:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:129:/:var/lib/geoclue:/usr/sbin/nologin
pulse:x:123:130:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/:run/gnome-initial-setup:/bin/false
hplip:x:125:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:126:132:Gnome Display Manager:/var/lib/gdm3:/bin/false
lt-meenalr:x:1000:1000:LT-MeenalR,,,:/home/lt-meenalr:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper:/usr/sbin/nologin
pikashow:x:1001:1001:/:home/pikashow:/bin/sh
meenal:x:1002:1003:/:home:/bin/sh
sshd:x:127:65534:/:run/sshd:/usr/sbin/nologin
mee:x:1003:1004:/:home/mee:/bin/sh
mash:x:1004:1005:/:home/mash:/bin/sh
meash:x:1005:1006:/:home/meash:/bin/sh
test:x:1006:1007:/:home/test:/bin/sh
u1:x:1007:1008:/:home/u1:/bin/sh
g1:x:1008:1009:/:home/g1:/bin/sh
U1:x:1009:1011:/:home/U1:/bin/sh
U2:x:1010:1012:/:home/U2:/bin/sh
user:x:1011:1013:/:home/user:/bin/sh
new_user:x:1012:1015:/:home/new_user:/bin/sh
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:/home$ ls -l
total 12
drwxr-x--- 23 lt-meenalr lt-meenalr 4096 Feb 23 12:02 lt-meenalr
drwxr-x--- 2 new_user new_user 4096 Feb 23 16:41 new_user
drwxr-x--- 2 test test 4096 Feb 22 15:05 test
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:/home$ chown :G1 /home/new_user
chown: changing group of '/home/new_user': Operation not permitted
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:/home$ sudo chown :G1 /home/new_user
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:/home$ ls -l
total 12
drwxr-x--- 23 lt-meenalr lt-meenalr 4096 Feb 23 12:02 lt-meenalr
drwxr-x--- 2 new_user G1 4096 Feb 23 16:41 new_user
drwxr-x--- 2 test test 4096 Feb 22 15:05 test
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:/home$
```

11. Open google chrome or any other web browser, see its memory usage using top command and end the process using the ps and grep commands.

```
62645 lt-meen+ 20 0 1974292 176856 106568 S 0.3 1.1 0:36.28 VirtualBox
62664 lt-meen+ 20 0 79724 11652 9144 S 0.3 0.1 0:07.49 VBoxXPCOMIPCD
1 root 20 0 165892 12068 7440 S 0.0 0.1 0:04.68 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.13 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
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 0:00.61 ksoftirqd/0
13 root 20 0 0 0 0 I 0.0 0.0 1:27.51 rcu_sched
14 root rt 0 0 0 0 S 0.0 0.0 0:00.39 migration/0
15 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
16 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 cpuhp/1
18 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
19 root rt 0 0 0 0 S 0.0 0.0 0:00.50 migration/1
20 root 20 0 0 0 0 S 0.0 0.0 0:00.22 ksoftirqd/1
22 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri
23 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2
24 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/2
25 root rt 0 0 0 0 S 0.0 0.0 0:00.45 migration/2
26 root 20 0 0 0 0 S 0.0 0.0 0:00.16 ksoftirqd/2
28 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
29 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
30 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
31 root rt 0 0 0 0 S 0.0 0.0 0:00.46 migration/3
32 root 20 0 0 0 0 S 0.0 0.0 0:00.11 ksoftirqd/3
34 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri
35 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/4
36 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/4
37 root rt 0 0 0 0 S 0.0 0.0 0:00.51 migration/4
38 root 20 0 0 0 0 S 0.0 0.0 0:00.08 ksoftirqd/4
40 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/4:0H-events_highpri
41 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/5
42 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/5
43 root rt 0 0 0 0 S 0.0 0.0 0:00.51 migration/5
44 root 20 0 0 0 0 S 0.0 0.0 0:00.26 ksoftirqd/5
46 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/5:0H-events_highpri
47 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/6
48 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/6
```

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ top | grep "chrome"
```

```
63114 lt-meen+ 20 0 24.4g 281176 102844 S 6.7 1.8 6:38.75 chrome
63114 lt-meen+ 20 0 24.4g 280580 102844 S 3.6 1.7 6:38.86 chrome
4617 lt-meen+ 20 0 16.5g 255016 149636 S 0.3 1.6 23:27.83 chrome
4668 lt-meen+ 20 0 16.3g 122512 84580 S 0.3 0.8 10:36.78 chrome
41522 lt-meen+ 20 0 28.4g 218180 100016 S 0.3 1.4 5:58.17 chrome
63114 lt-meen+ 20 0 24.4g 280580 102844 S 3.0 1.7 6:38.95 chrome
4617 lt-meen+ 20 0 16.5g 255016 149636 S 0.7 1.6 23:27.85 chrome
```

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ top | grep "chrome"
```

```
63114 lt-meen+ 20 0 24.4g 280580 102844 S 3.0 1.7 6:40.29 chrome
4617 lt-meen+ 20 0 16.5g 255016 149636 S 0.3 1.6 23:27.94 chrome
41522 lt-meen+ 20 0 28.4g 217676 100016 S 0.3 1.4 5:58.26 chrome
```


ActivitiesTerminalFeb 23 16:37lt-meenalr@lt-meenalr-ThinkPad-L

| | | | | | | | | | | | |
|-------|------------|----|---|-------|--------|--------|---|-----|-----|----------|--------|
| 63114 | lt-meenalr | 20 | 0 | 24.4g | 280580 | 102844 | S | 3.0 | 1.7 | 0:40.29 | chrome |
| 4617 | lt-meenalr | 20 | 0 | 16.5g | 255016 | 149636 | S | 0.3 | 1.6 | 23:27.94 | chrome |
| 41522 | lt-meenalr | 20 | 0 | 28.4g | 217676 | 100016 | S | 0.3 | 1.4 | 5:58.26 | chrome |
| 63114 | lt-meenalr | 20 | 0 | 24.4g | 280580 | 102844 | S | 3.0 | 1.7 | 6:40.38 | chrome |
| 4617 | lt-meenalr | 20 | 0 | 16.5g | 255016 | 149636 | S | 0.3 | 1.6 | 23:27.95 | chrome |
| 4668 | lt-meenalr | 20 | 0 | 16.3g | 122492 | 84580 | S | 0.3 | 0.8 | 10:36.85 | chrome |

```
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ pkill "chrome"
lt-meenalr@lt-meenalr-ThinkPad-L14-Gen-2:~$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,lt-meenalr
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:lt-meenalr
floppy:x:25:
tape:x:26:
sudo:x:27:lt-meenalr
audio:x:29:pulse
dip:x:30:lt-meenalr
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
gnats:x:41:
shadow:x:42:
utmp:x:43:
video:x:44:
sasl:x:45:
plugdev:x:46:lt-meenalr
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:101:
systemd-network:x:102:
systemd-resolve:x:103:
systemd-timesync:x:104:
crontab:x:105:
messagebus:x:106:
input:x:107:
sgx:x:108:
```