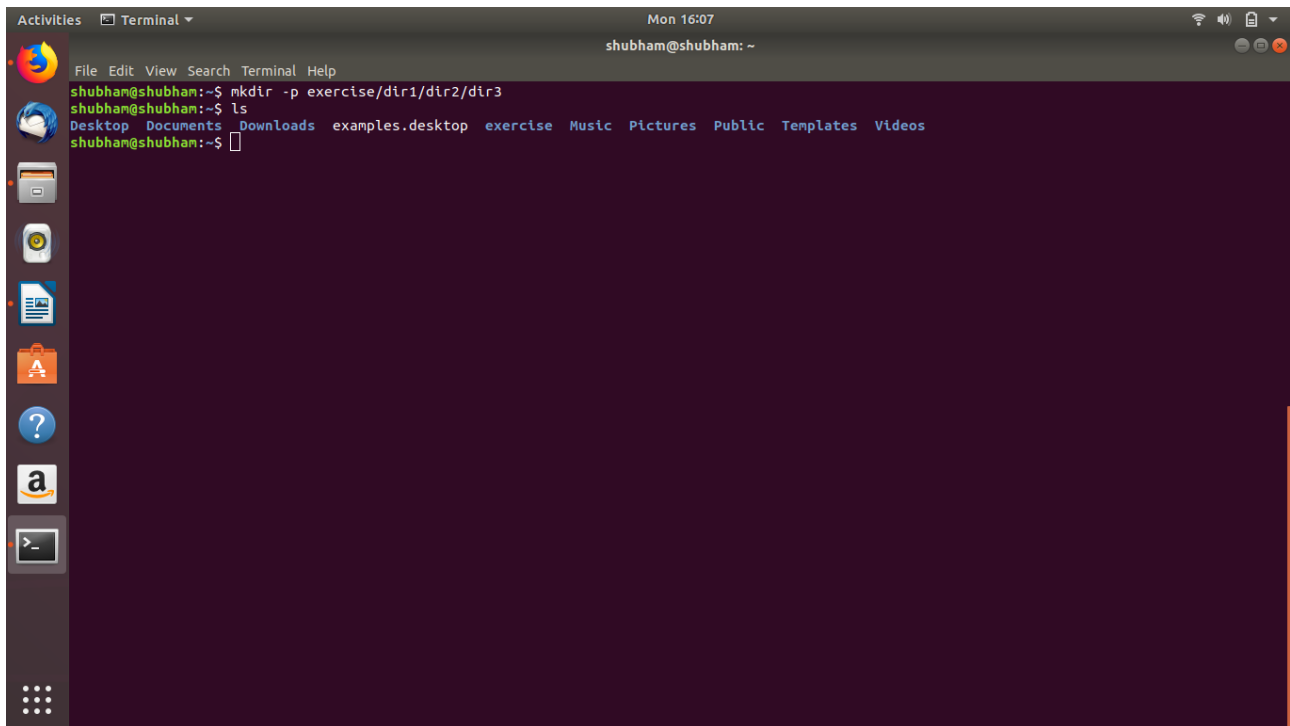
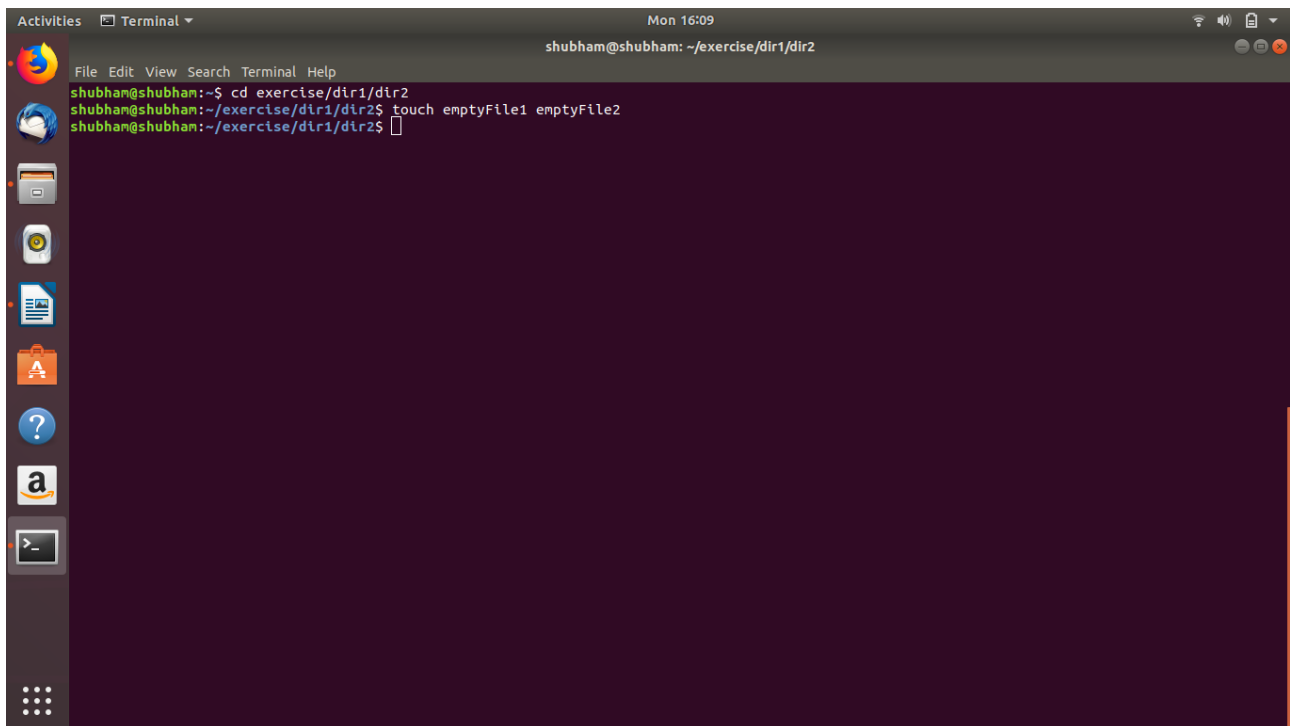


1. Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "exercise" with single command.

A screenshot of a Linux terminal window. The window title is "Terminal" and the user is "shubham@shubham". The terminal shows the execution of the command "mkdir -p exercise/dir1/dir2/dir3" followed by "ls". The "ls" command output shows the directory structure: "Desktop Documents Downloads examples.desktop exercise Music Pictures Public Templates Videos". The "exercise" directory is highlighted in blue. The terminal has a dark purple background and a light blue prompt. The window has a standard Linux desktop environment with a sidebar on the left containing icons for various applications.

```
shubham@shubham:~$ mkdir -p exercise/dir1/dir2/dir3
shubham@shubham:~$ ls
Desktop Documents Downloads examples.desktop exercise Music Pictures Public Templates Videos
shubham@shubham:~$
```

2. Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command

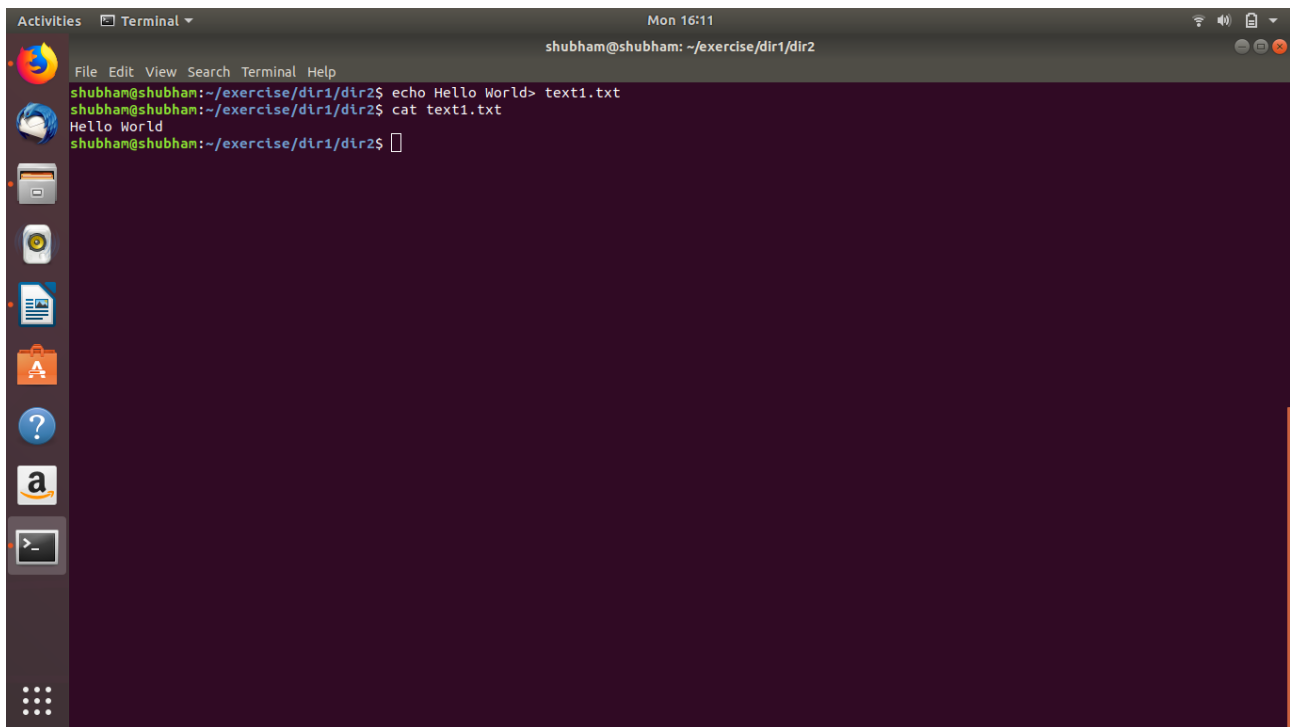


A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 16:09, shubham@shubham: ~/exercise/dir1/dir2). The terminal shows the following commands and output:

```
shubham@shubham:~$ cd exercise/dir1/dir2
shubham@shubham:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
shubham@shubham:~/exercise/dir1/dir2$
```

The terminal window has a dark purple background and a vertical sidebar on the left with various application icons.

3. Create one file file1.txt containing text "hello world" and save it.



The screenshot shows a terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 16:11, shubham@shubham: ~/exercise/dir1/dir2). The terminal output is as follows:

```
shubham@shubham:~/exercise/dir1/dir2$ echo Hello World> text1.txt
shubham@shubham:~/exercise/dir1/dir2$ cat text1.txt
Hello World
shubham@shubham:~/exercise/dir1/dir2$
```

The terminal window has a dark purple background and a vertical sidebar on the left with various application icons. The command prompt is green, and the output is white.

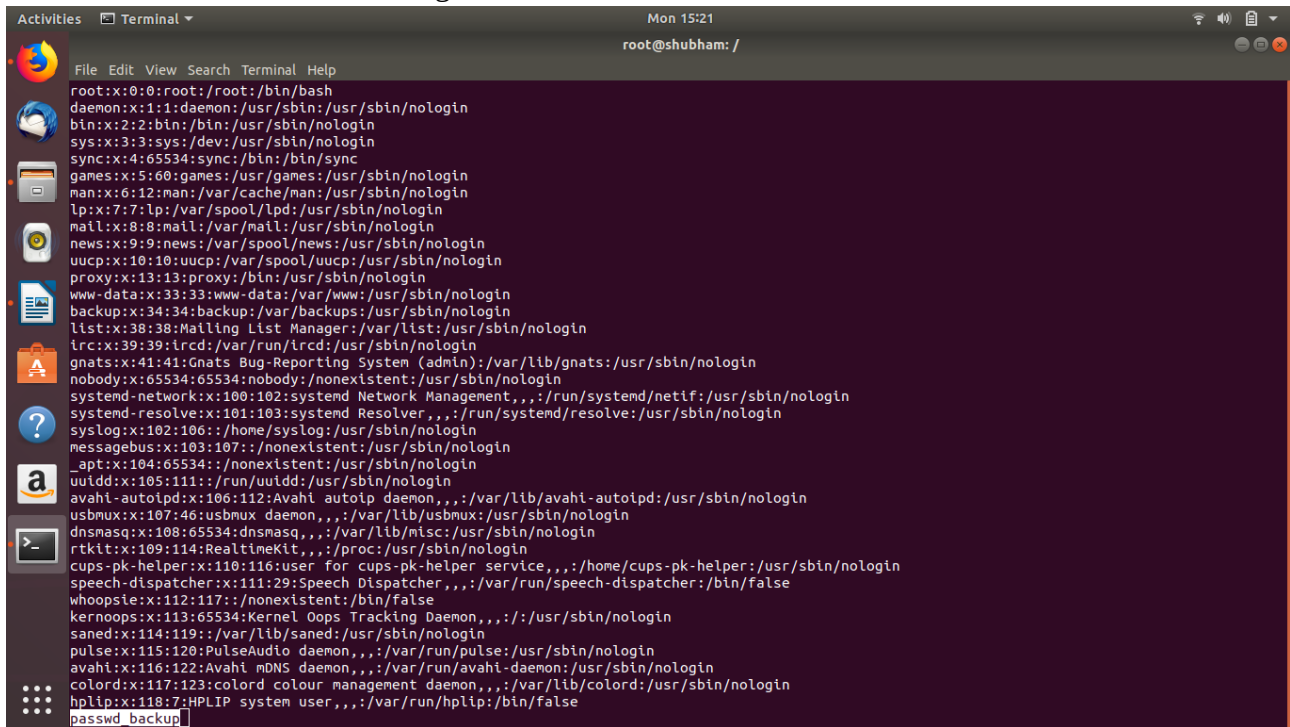
4. Find a "passwd" file using find command inside /etc. copy this files as passwd\_copy and then rename this file as passwd\_backup.

```
Activities Terminal Mon 15:15 root@shubham: /
shubham@shubham:~$ sudo su
[sudo] password for shubham:
root@shubham:/home/shubham# cd ..
root@shubham:/home# cd ..
root@shubham:/# find /etc -name passwd
/etc/pam.d/passwd
/etc/cron.daily/passwd
/etc/passwd
root@shubham:/# cp /etc/passwd passwd_copy
root@shubham:/# cat passwd_copy
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mail List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,:/run/systemd/netif:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,:/run/systemd/resolve:/usr/sbin/nologin
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
uidd:x:105:111::/run/uidd:/usr/sbin/nologin
avahi-autoipd:x:106:112:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:107:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:108:65534:dnsmasq,,:/var/lib/misc:/usr/sbin/nologin
rtkit:x:109:114:RealtimeKit,,:/proc:/usr/sbin/nologin
```

```
Activities Terminal Mon 15:16 root@shubham: /
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mail List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,:/run/systemd/netif:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,:/run/systemd/resolve:/usr/sbin/nologin
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
uidd:x:105:111::/run/uidd:/usr/sbin/nologin
avahi-autoipd:x:106:112:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:107:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:108:65534:dnsmasq,,:/var/lib/misc:/usr/sbin/nologin
rtkit:x:109:114:RealtimeKit,,:/proc:/usr/sbin/nologin
cups-pk-helper:x:110:116:user for cups-pk-helper service,,:/home/cups-pk-helper:/usr/sbin/nologin
speech-dispatcher:x:111:29:Speech Dispatcher,,:/var/run/speech-dispatcher:/bin/false
whoopsie:x:112:117::/nonexistent:/bin/false
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,:/usr/sbin/nologin
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin
pulse:x:115:120:PulseAudio daemon,,:/var/run/pulse:/usr/sbin/nologin
avahi:x:116:122:Avahi mDNS daemon,,:/var/run/avahi-daemon:/usr/sbin/nologin
colord:x:117:123:colord colour management daemon,,:/var/lib/colord:/usr/sbin/nologin
hplip:x:118:7:HPLIP system user,,:/var/run/hplip:/bin/false
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm:/bin/false
shubham:x:1000:1000:Shubham Jain,,:/home/shubham:/bin/bash
root@shubham:/# mv passwd_copy passwd_backup
root@shubham:/#
root@shubham:/#
root@shubham:/# ls
bin  cdrom  etc  initrd.img  lib  lost+found  mnt  passwd_backup  root  sbin  srv  tmp  var
boot  dev  home  initrd.img.old  lib64  media  opt  proc  run  snap  sys  usr  vmlinuz
root@shubham:/#
```

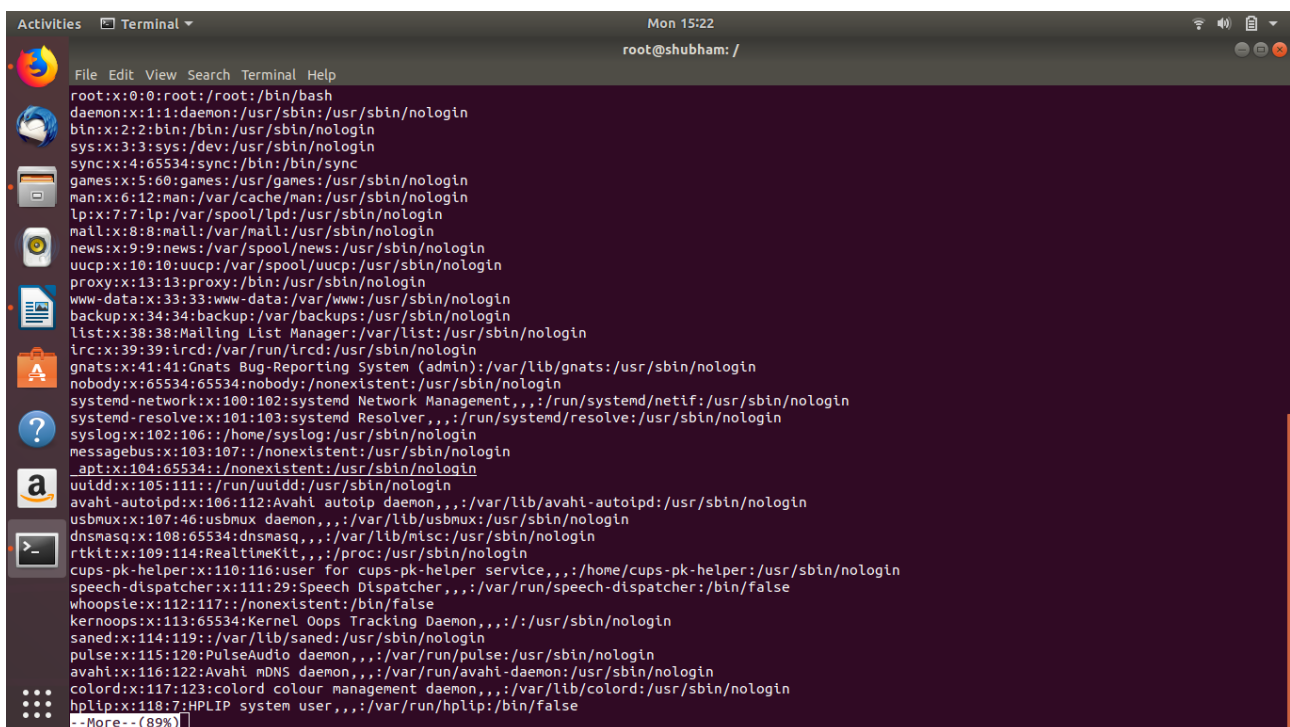
5. Try reading passwd\_backup file in multiple tools: less,more,cut,strings etc and find the difference in their usage.

LESS: Less is a command line utility that displays the contents of a file or a command output, one page at a time. It is similar to more, but has more advanced features and allows you to navigate both forward and backward through the file.



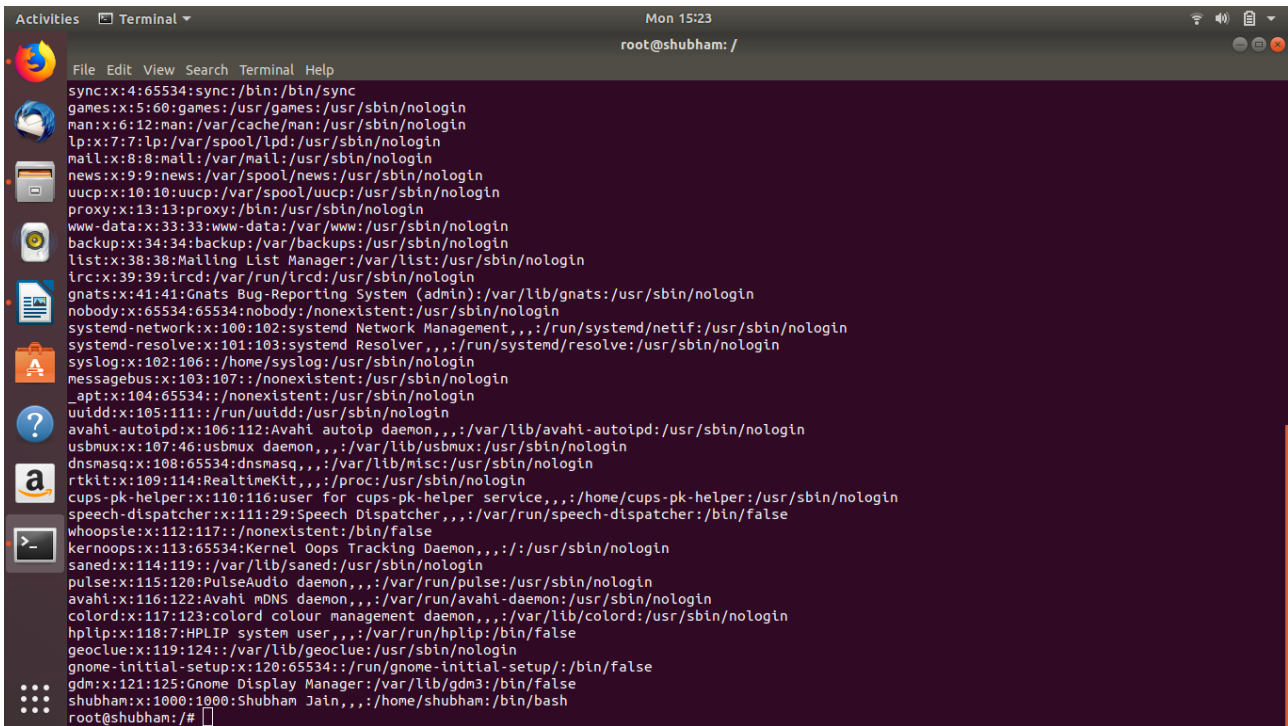
```
root@shubham: /  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mail List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin  
syslog:x:102:106:/home/syslog:/usr/sbin/nologin  
messagebus:x:103:107:/nonexistent:/usr/sbin/nologin  
_apt:x:104:65534:/nonexistent:/usr/sbin/nologin  
uiddd:x:105:111:/run/uiddd:/usr/sbin/nologin  
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopsie:x:112:117:/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119:/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
passwd_backup
```

MORE: More command is used to view the text files in the command prompt, displaying one screen at a time in case the file is large



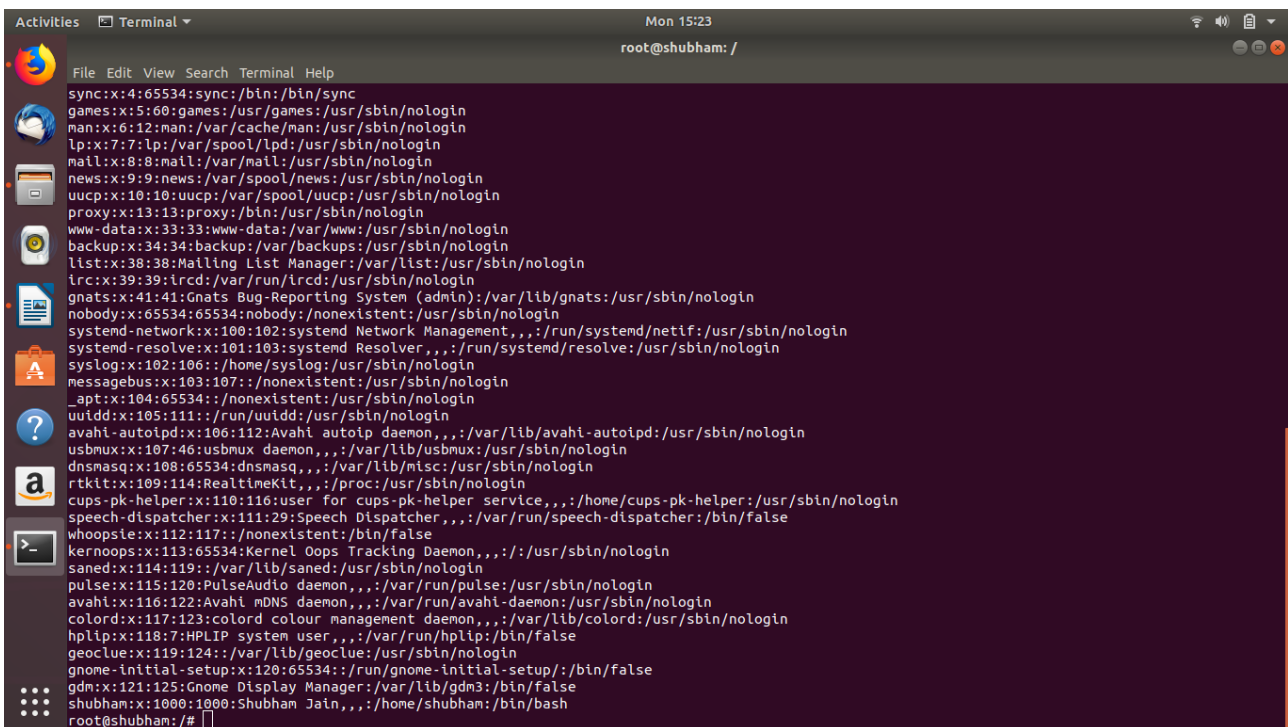
```
root@shubham: /  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mail List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin  
syslog:x:102:106:/home/syslog:/usr/sbin/nologin  
messagebus:x:103:107:/nonexistent:/usr/sbin/nologin  
_apt:x:104:65534:/nonexistent:/usr/sbin/nologin  
uiddd:x:105:111:/run/uiddd:/usr/sbin/nologin  
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopsie:x:112:117:/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119:/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
--More-- (89%)
```

CAT: It will show content of given filename



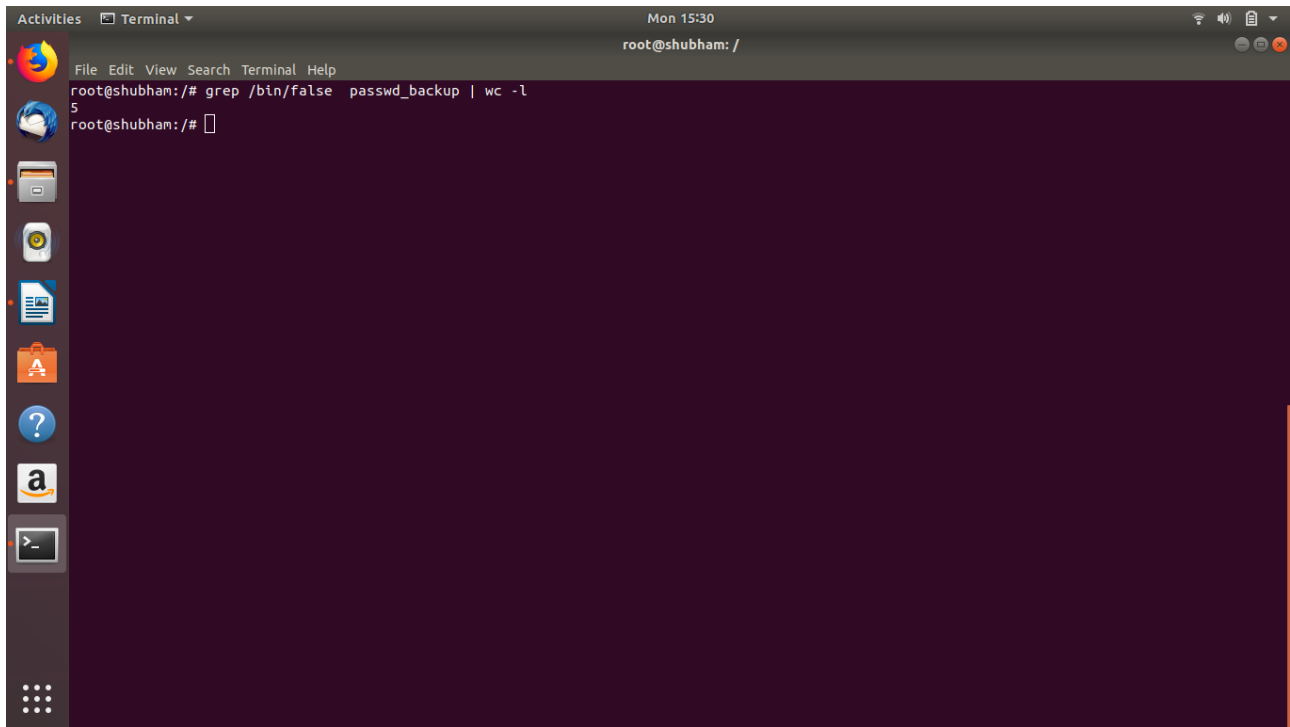
```
root@shubham: /  
cat /etc/passwd  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailng List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin  
syslog:x:102:106::/home/syslog:/usr/sbin/nologin  
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin  
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin  
uidd:x:105:111::/run/uidd:/usr/sbin/nologin  
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopste:x:112:117::/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin  
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false  
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
shubham:x:1000:1000:Shubham Jain,,,:/home/shubham:/bin/bash  
root@shubham: /#
```

STRINGS: The **strings** command returns each **string** of printable characters in files



```
root@shubham: /  
strings /etc/passwd  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailng List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin  
syslog:x:102:106::/home/syslog:/usr/sbin/nologin  
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin  
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin  
uidd:x:105:111::/run/uidd:/usr/sbin/nologin  
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopste:x:112:117::/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin  
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false  
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
shubham:x:1000:1000:Shubham Jain,,,:/home/shubham:/bin/bash  
root@shubham: /#
```

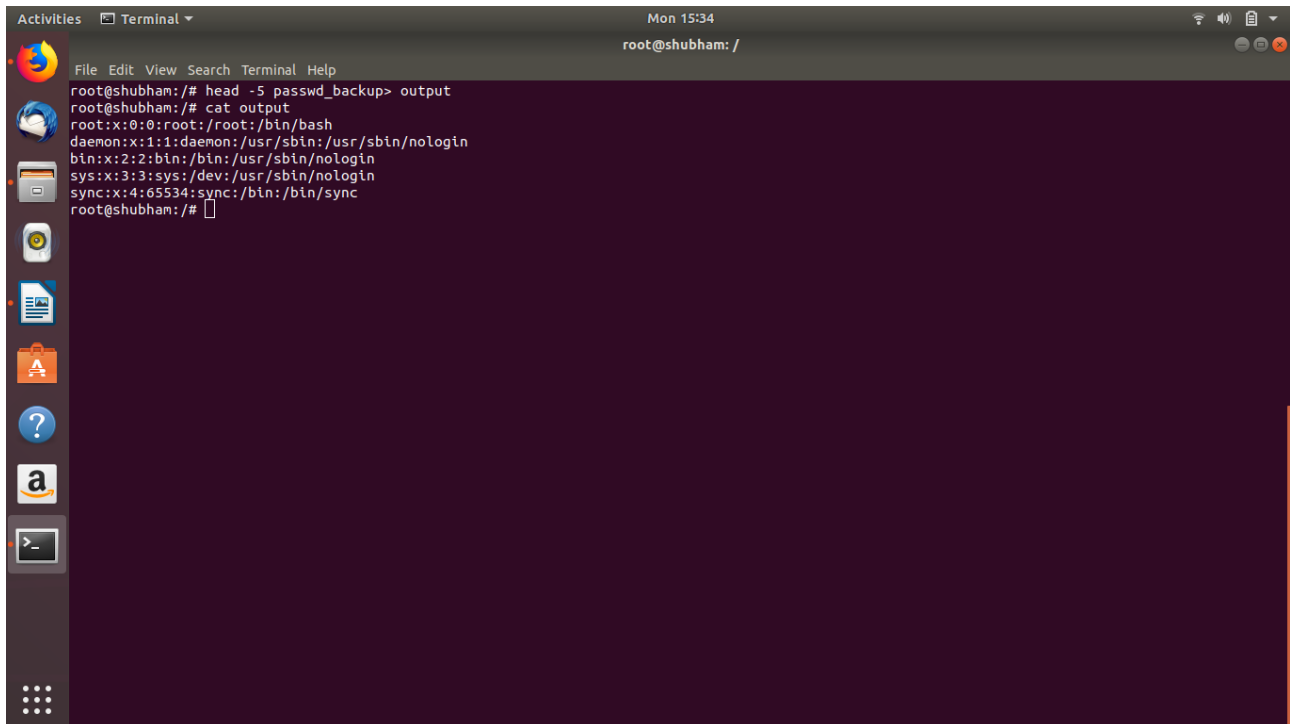
6. Find out the number of line in password\_backup containing "/bin/false".



A terminal window titled "Terminal" is shown. The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The status bar at the top right shows "Mon 15:30" and "root@shubham: /". The terminal content shows the command `grep /bin/false passwd_backup | wc -l` being executed, followed by the output `5`. The prompt `root@shubham: /#` is visible on the next line. The terminal has a dark purple background and a light gray border. On the left side of the terminal, there is a vertical dock with several application icons: a web browser, a file manager, a terminal, a mail client, a calendar, a document viewer, a shopping cart, a question mark, an Amazon logo, and a terminal icon. At the bottom of the dock is a grid of dots.

```
root@shubham: /# grep /bin/false passwd_backup | wc -l
5
root@shubham: /#
```

7. Get the first 5 lines of a file “password\_backup” and Redirect the output of the above commands into file "output".

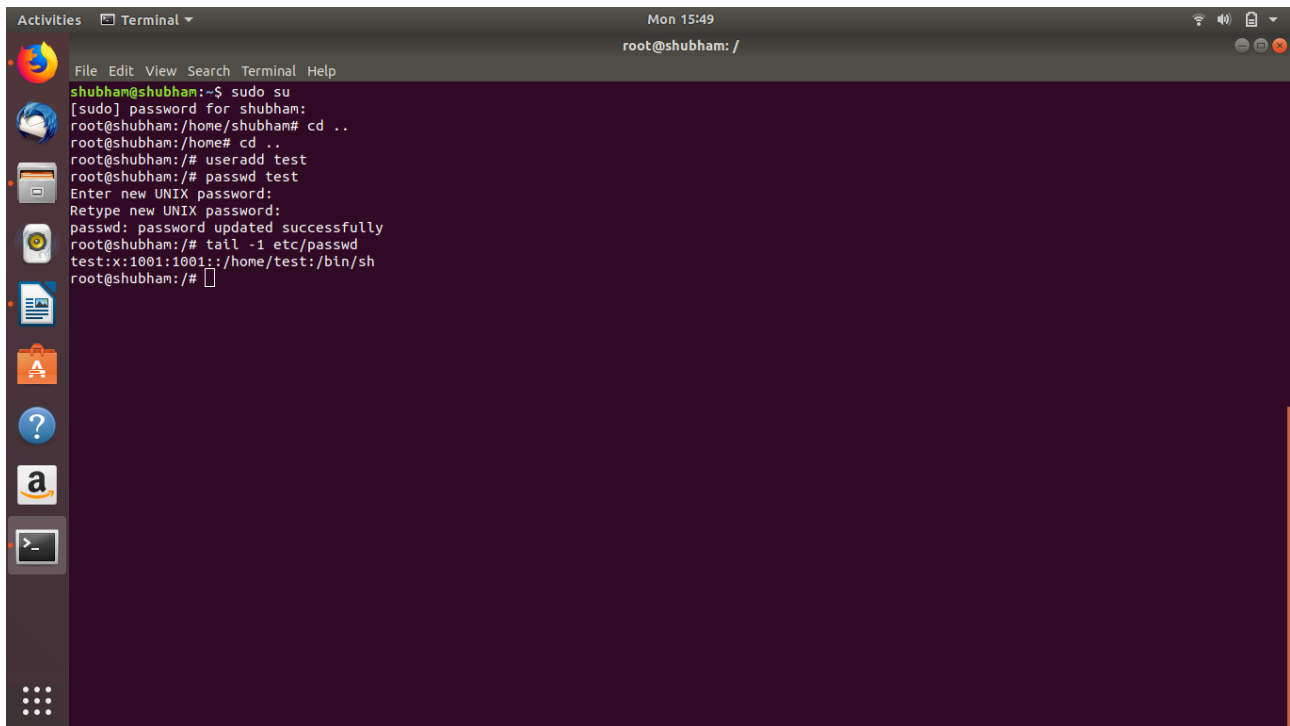


A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 15:34, root@shubham: /). The terminal shows the following commands and output:

```
root@shubham:/# head -5 passwd_backup> output
root@shubham:/# cat output
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
root@shubham:/#
```



8. Create a "test" user, create its password and find out its uid and gid.

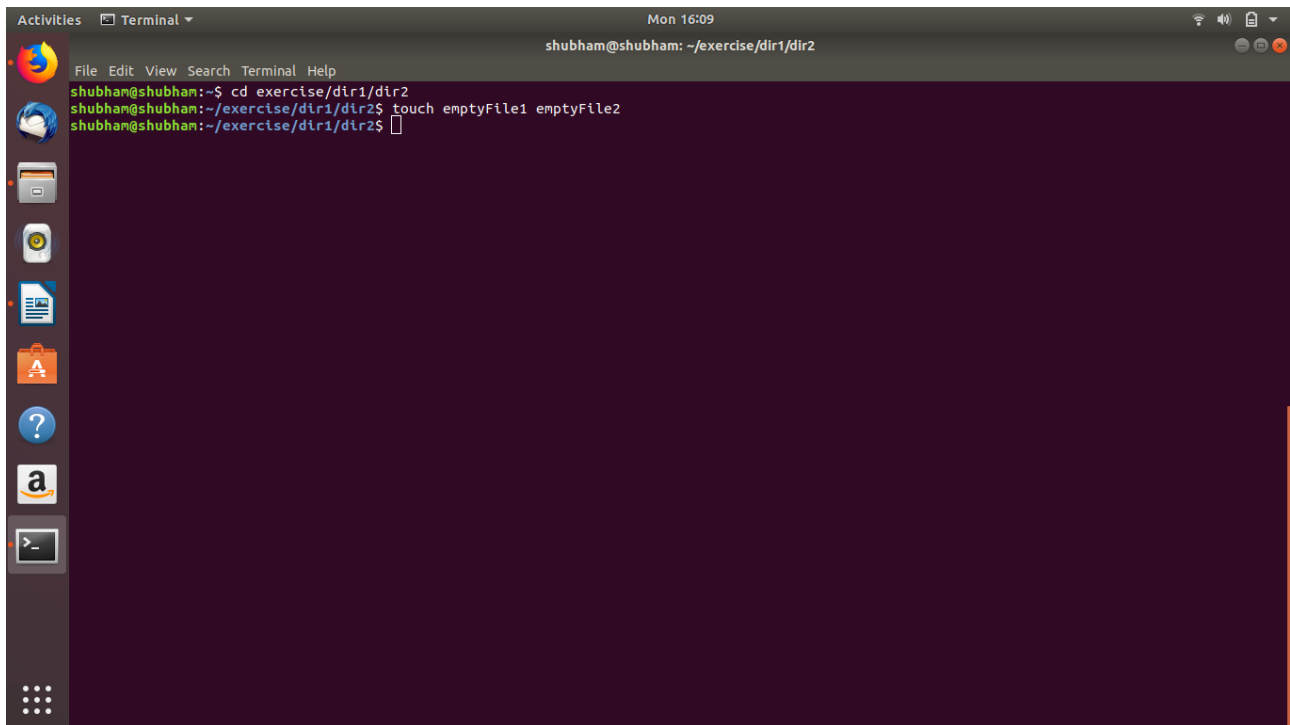
A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 15:49, root@shubham: /). The terminal shows a user 'shubham' at 'shubham@shubham' using 'sudo su' to become root. The root user then navigates to the home directory and runs 'useradd test', 'passwd test', and 'tail -1 etc/passwd' to create and verify the 'test' user. The output shows the user 'test' with UID 1001 and GID 1001.

```
shubham@shubham:~$ sudo su
[sudo] password for shubham:
root@shubham:/home/shubham# cd ..
root@shubham:/home# cd ..
root@shubham:/# useradd test
root@shubham:/# passwd test
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@shubham:/# tail -1 etc/passwd
test:x:1001:1001::/home/test:/bin/sh
root@shubham:/#
```

UID:1001

GID:1001

9. Change the timestamp of emptyFile1,emptyFile2 which are exist in dir2

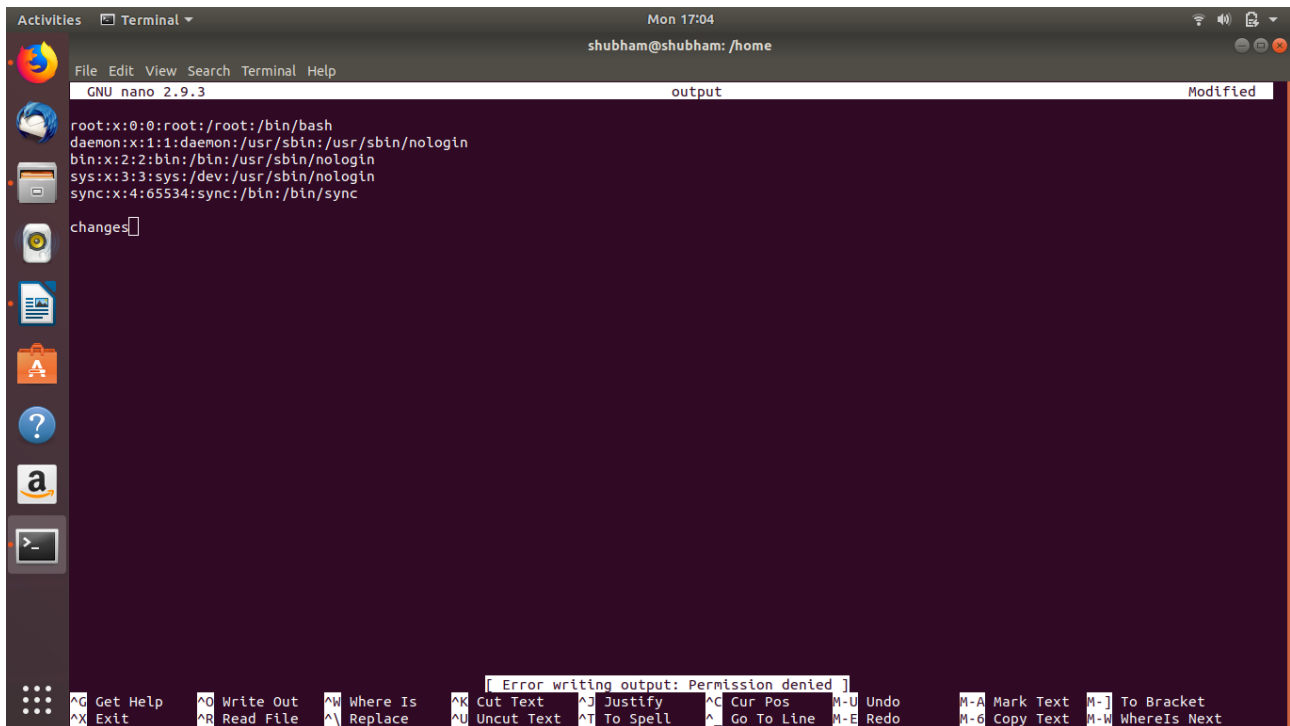


A terminal window titled "Terminal" is shown. The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The status bar at the top right shows "Mon 16:09" and "shubham@shubham: ~/exercise/dir1/dir2". The terminal content shows the following commands and output:

```
shubham@shubham:~$ cd exercise/dir1/dir2
shubham@shubham:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
shubham@shubham:~/exercise/dir1/dir2$
```

The terminal window has a dark purple background and a light gray border. On the left side, there is a vertical dock with several application icons: a blue circle with a white 'F', a blue circle with a white 'S', a blue circle with a white 'D', a blue circle with a white 'A', a blue circle with a white 'P', a blue circle with a white 'A', a blue circle with a white 'P', a blue circle with a white 'A', a blue circle with a white 'P', and a blue circle with a white 'A'. At the bottom left of the dock is a grid of dots.

10. Login as test user and edit the "output" file created above. Since the permission wont allow you to save the changes. Configure such that test user can edit it.



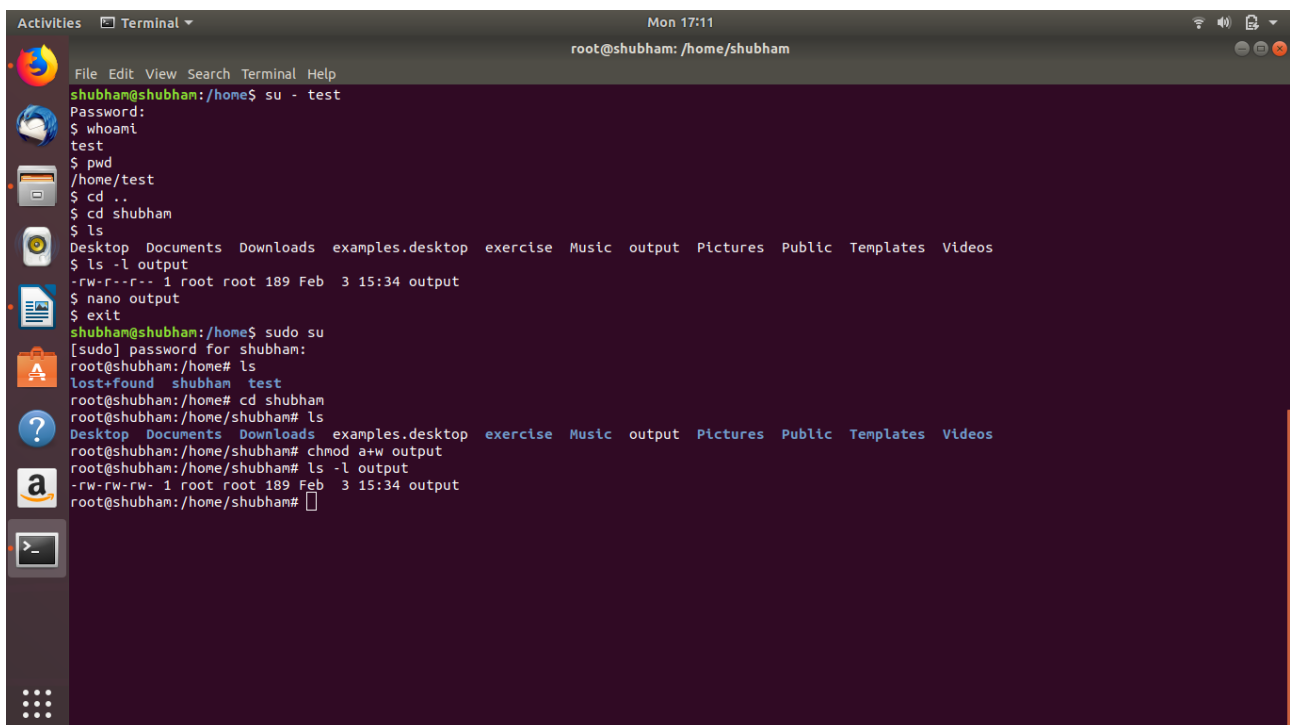
```
Mon 17:04
shubham@shubham: /home

File Edit View Search Terminal Help
GNU nano 2.9.3 output Modified

root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync

changes

[ Error writing output: Permission denied ]
AG Get Help  AQ Write Out  AW Where Is  AK Cut Text  AJ Justify  AC Cur Pos  X-U Undo  M-A Mark Text  M-J To Bracket
AX Exit      AR Read File  AL Replace  AU Uncut Text AT To Spell  AG Go To Line X-E Redo  M-G Copy Text M-W WhereIs Next
```

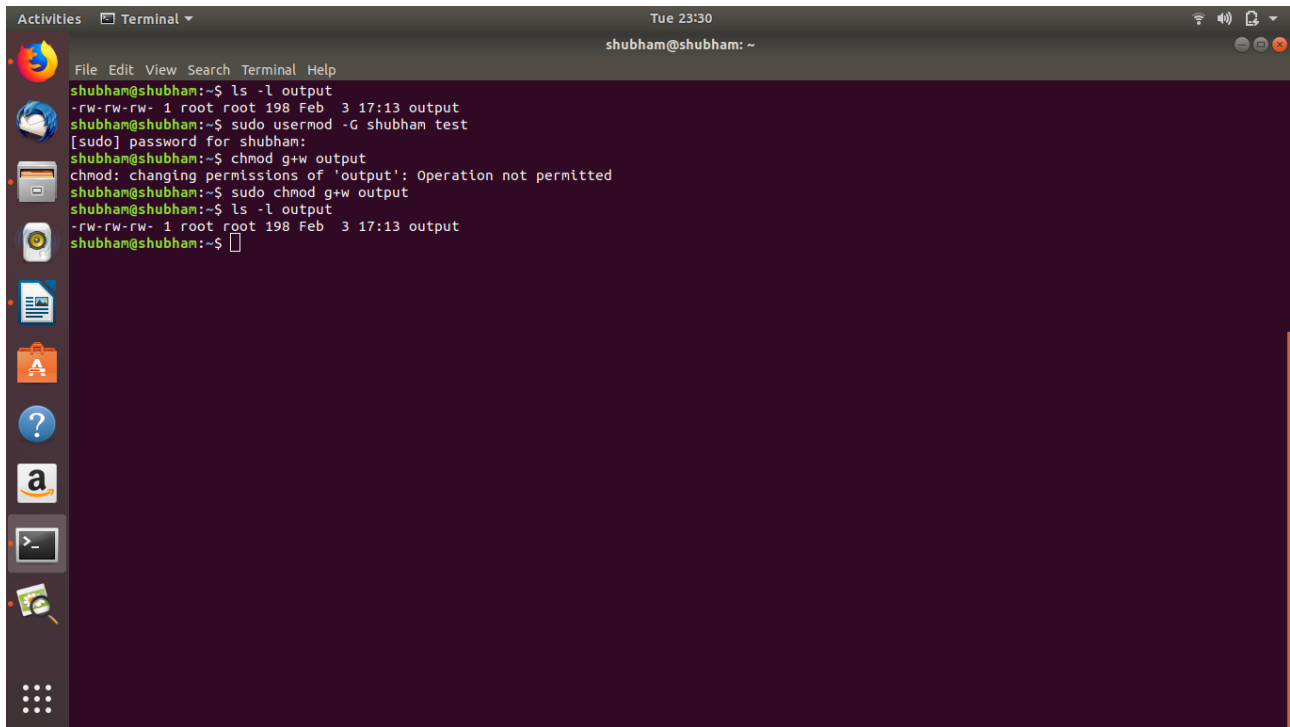


```
Mon 17:11
root@shubham: /home/shubham

File Edit View Search Terminal Help
shubham@shubham: /home$ su - test
Password:
$ whoami
test
$ pwd
/home/test
$ cd ..
$ cd shubham
$ ls
Desktop Documents Downloads examples.desktop exercise Music output Pictures Public Templates Videos
$ ls -l output
-rw-r--r-- 1 root root 189 Feb  3 15:34 output
$ nano output
$ exit
shubham@shubham: /home$ sudo su
[sudo] password for shubham:
root@shubham: /home# ls
lost+found shubham test
root@shubham: /home# cd shubham
root@shubham: /home/shubham# ls
Desktop Documents Downloads examples.desktop exercise Music output Pictures Public Templates Videos
root@shubham: /home/shubham# chmod a+w output
root@shubham: /home/shubham# ls -l output
-rw-rw-rw- 1 root root 189 Feb  3 15:34 output
root@shubham: /home/shubham#
```

```
Activities Terminal Mon 17:13 shubham@shubham: /home
File Edit View Search Terminal Help
$ nano output
$ exit
shubham@shubham:/home$ sudo su
[sudo] password for shubham:
root@shubham:/home# ls
lost+found shubham test
root@shubham:/home# cd shubham
root@shubham:/home/shubham# ls
Desktop Documents Downloads examples.desktop exercise Music output Pictures Public Templates Videos
root@shubham:/home/shubham# chmod a+w output
root@shubham:/home/shubham# ls -l output
-rw-rw-rw- 1 root root 189 Feb  3 15:34 output
root@shubham:/home/shubham# exit
exit
shubham@shubham:/home$ su - test
Password:
$ whoami
-su: 1: whoami: not found
$ whoami
test
$ pwd
/home/test
$ cd ..
$ cd shubham
$ pwd
/home/shubham
$ ls
Desktop Documents Downloads examples.desktop exercise Music output Pictures Public Templates Videos
$ nano output
$ cat output
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
changes
$
```

1. Add group owner of the "output" file as the secondary group of test user and check/change the "output" file permission if it is editable by group. Once done revert the changes



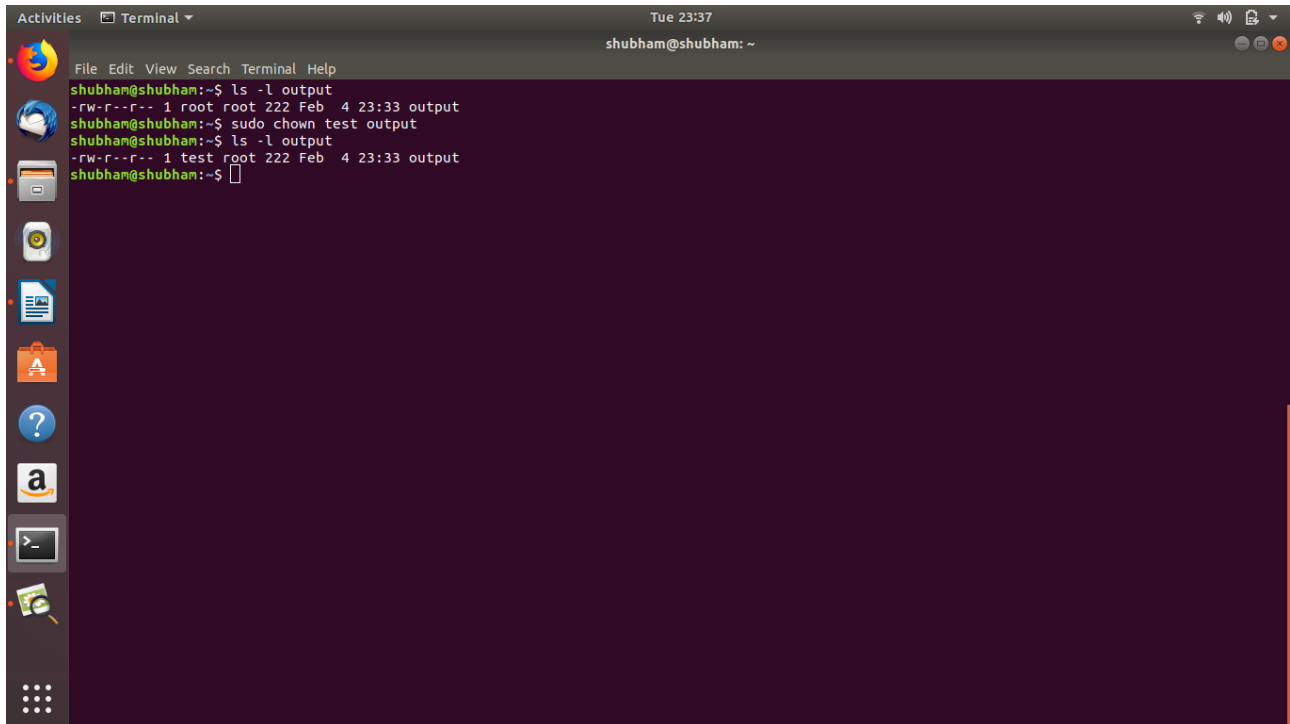
```
Activities Terminal Tue 23:30 shubham@shubham: ~
File Edit View Search Terminal Help
shubham@shubham:~$ ls -l output
-rw-rw-rw- 1 root root 198 Feb  3 17:13 output
shubham@shubham:~$ sudo usermod -G shubham test
[sudo] password for shubham:
shubham@shubham:~$ chmod g+w output
chmod: changing permissions of 'output': Operation not permitted
shubham@shubham:~$ sudo chmod g+w output
shubham@shubham:~$ ls -l output
-rw-rw-rw- 1 root root 198 Feb  3 17:13 output
shubham@shubham:~$
```

2. Make the file editable to the world so that test user can access it. Revert the changes after verification

```
Activities Terminal Tue 23:34 shubham@shubham: ~
File Edit View Search Terminal Help
shubham@shubham:~$ ls -l output
-rw-rw-rw- 1 root root 198 Feb  3 17:13 output
shubham@shubham:~$ sudo chmod a+w output
shubham@shubham:~$ ls -l output
-rw-rw-rw- 1 root root 198 Feb  3 17:13 output
shubham@shubham:~$ su test
Password:
$ whoami
test
$ ls -l output
-rw-rw-rw- 1 root root 198 Feb  3 17:13 output
$ tail -5 output
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
changes
$ nano output
$ tail -5 output
c
d
e
f
g
$ tail -8 output
a
b
c
d
e
f
g
$
```

```
Activities Terminal Tue 23:35 shubham@shubham: ~
File Edit View Search Terminal Help
shubham@shubham:~$ sudo chmod go-w output
shubham@shubham:~$ ls -l output
-rw-r--r-- 1 root root 222 Feb  4 23:33 output
shubham@shubham:~$
```

### 3. Change the ownership to edit the file.

A screenshot of a Linux terminal window. The window title is "Terminal" and it shows the user "shubham@shubham". The terminal output shows the user running "ls -l output" which shows the file "output" owned by "root". Then the user runs "sudo chown test output" and runs "ls -l output" again, which now shows the file "output" owned by "test".

```
shubham@shubham:~$ ls -l output
-rw-r--r-- 1 root root 222 Feb  4 23:33 output
shubham@shubham:~$ sudo chown test output
shubham@shubham:~$ ls -l output
-rw-r--r-- 1 test root 222 Feb  4 23:33 output
shubham@shubham:~$
```

11. Create alias with your name so that it creates a file as "/tmp/aliastesting".

The screenshot shows a terminal window with the following content:

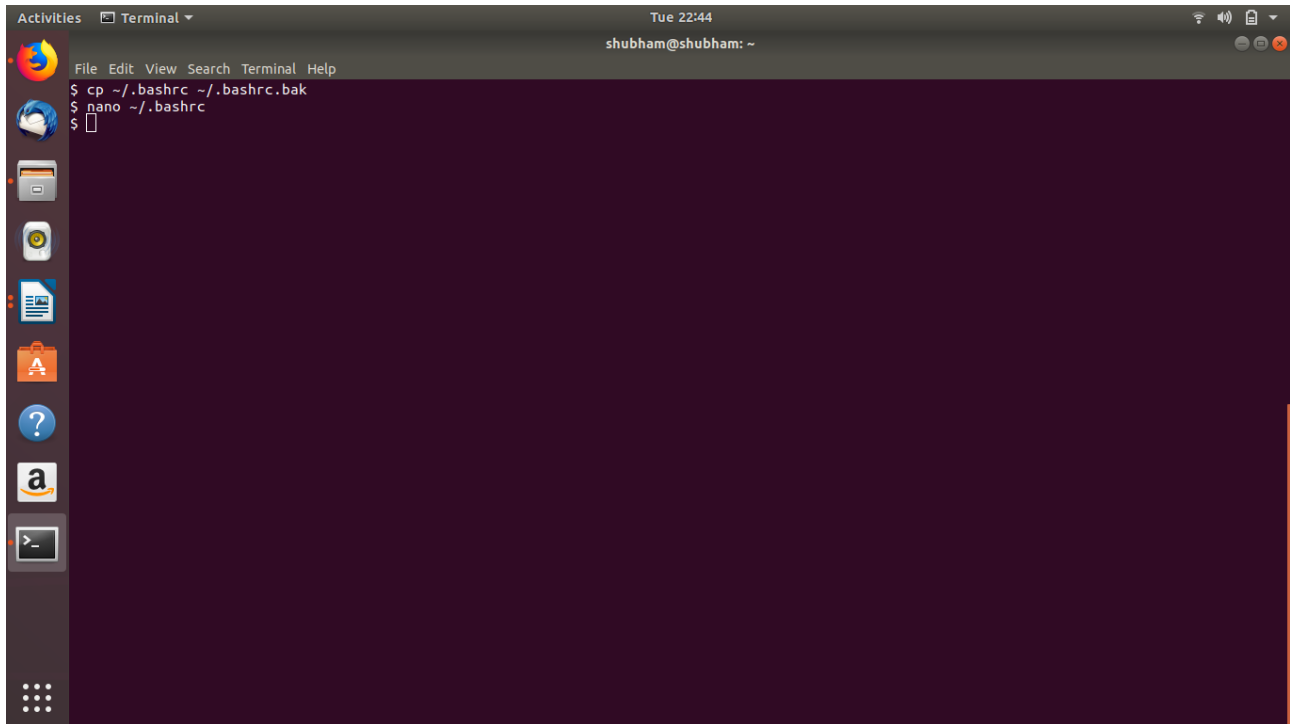
```

shubham@shubham: /tmp
File Edit View Search Terminal Help
shubham@shubham:/home$ alias shubham="mkdir -p /tmp/aliastesting"
shubham@shubham:/home$ shubham
shubham@shubham:/home$ cd /tmp/
shubham@shubham:/tmp$ ls
aliastesting
config-err-8ACHPV
lu743167lw0k.tmp
OSL_PIPE_1000_Slngle0fflceIPC_10555e9cb123229e3cfb233265aa7f1
ssh-KHqAeBCFxobn
systemd-private-23844eb0f29049f4864c20f3e26edb28-bolt.service-PJoUaw
systemd-private-23844eb0f29049f4864c20f3e26edb28-color.service-FP6sJY
systemd-private-23844eb0f29049f4864c20f3e26edb28-fwupd.service-WmXPJg
systemd-private-23844eb0f29049f4864c20f3e26edb28-rtkit-daemon.service-u6qtdM
systemd-private-23844eb0f29049f4864c20f3e26edb28-systemd-resolved.service-cUJkMt
systemd-private-23844eb0f29049f4864c20f3e26edb28-systemd-timesyncd.service-qlomMy
Temp-79e832e9-4a83-4ddb-9a0e-c2877e9aad5a
shubham@shubham:/tmp$

```

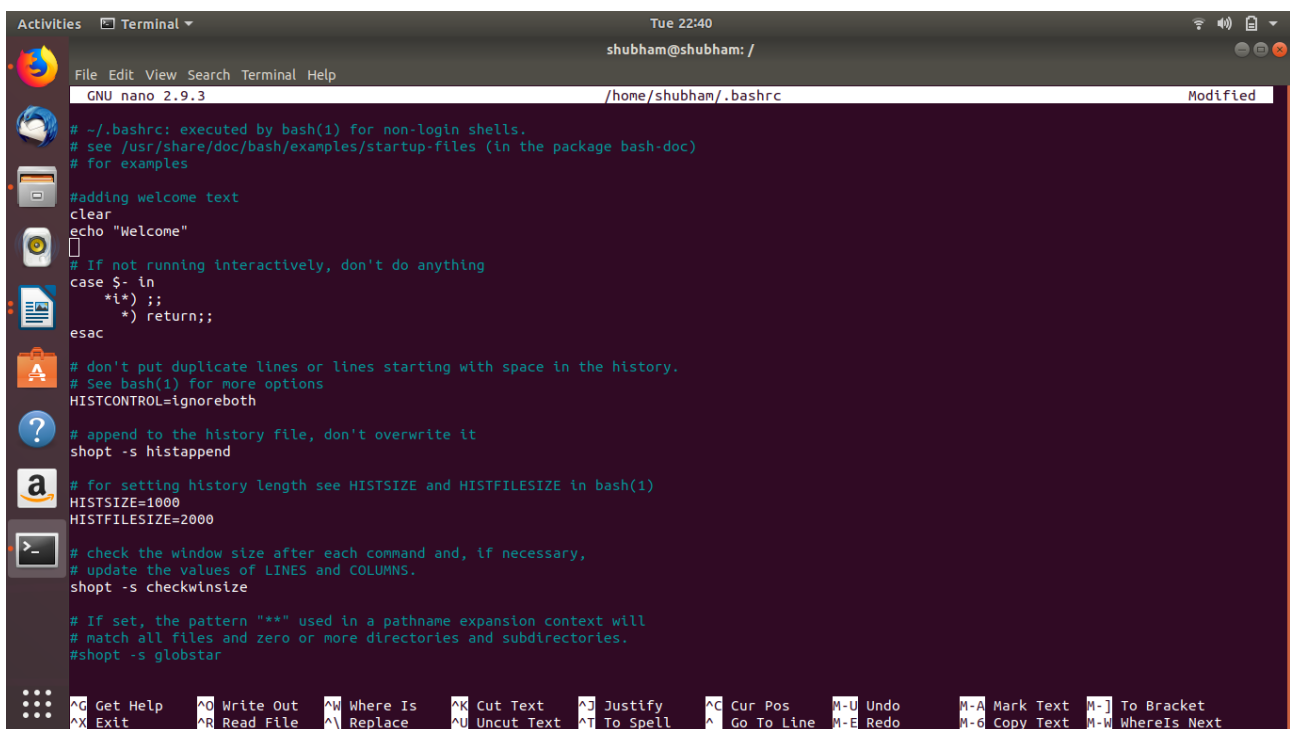


12. Edit `~/.bashrc` file such that when you change to "test" user it should clear the screen and print "Welcome".



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (shubham@shubham: ~). The terminal shows the following commands and output:

```
$ cp ~/.bashrc ~/.bashrc.bak
$ nano ~/.bashrc
$
```



The terminal window shows the nano editor editing the file `/home/shubham/.bashrc`. The status bar indicates "GNU nano 2.9.3" and "Modified". The content of the file is as follows:

```
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# adding welcome text
clear
echo "Welcome"

# If not running interactively, don't do anything
case $- in
  *i*) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

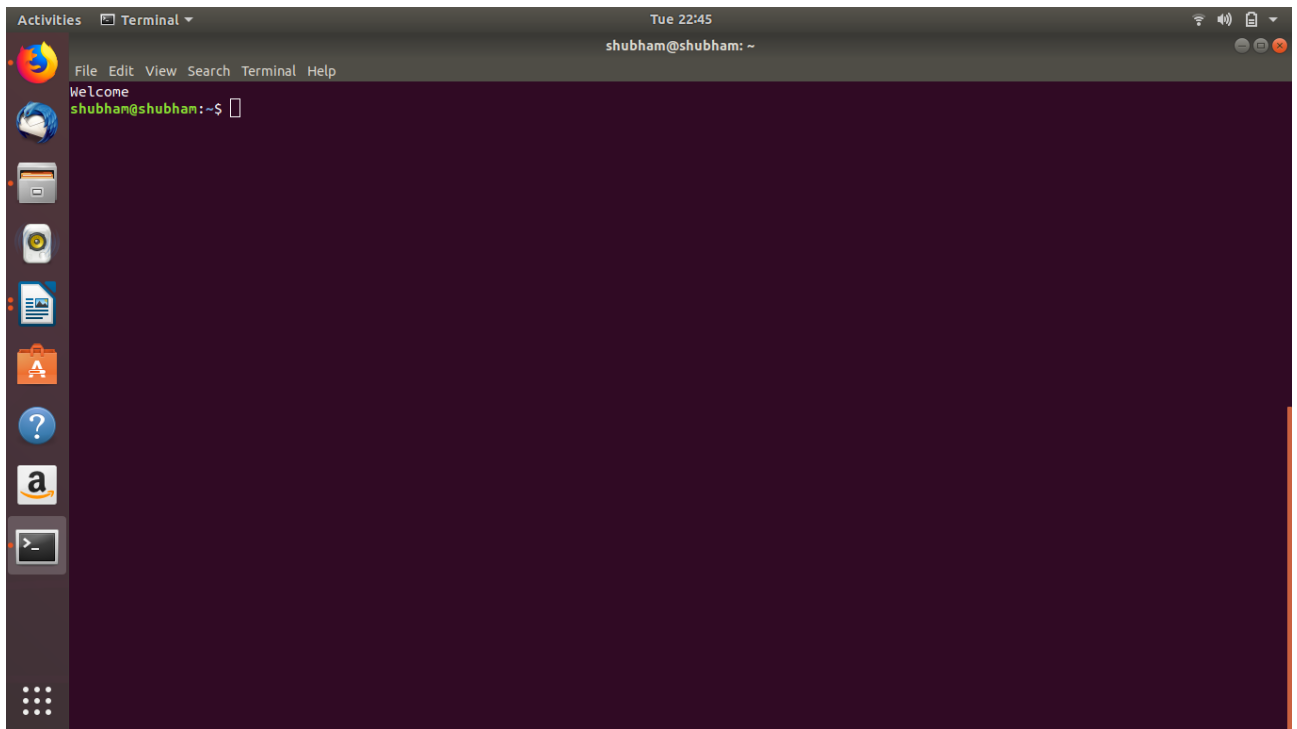
# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "*" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar
```

At the bottom of the terminal, there is a row of keyboard shortcuts for nano:

<b>^G</b> Get Help	<b>^O</b> Write Out	<b>^W</b> Where Is	<b>^K</b> Cut Text	<b>^J</b> Justify	<b>^C</b> Cur Pos	<b>M-U</b> Undo	<b>M-A</b> Mark Text	<b>M-J</b> To Bracket
<b>^X</b> Exit	<b>^R</b> Read File	<b>^V</b> Replace	<b>^U</b> Uncut Text	<b>^T</b> To Spell	<b>^_</b> Go To Line	<b>M-E</b> Redo	<b>M-G</b> Copy Text	<b>M-W</b> WhereIs Next



### 13. Install “zip” package.

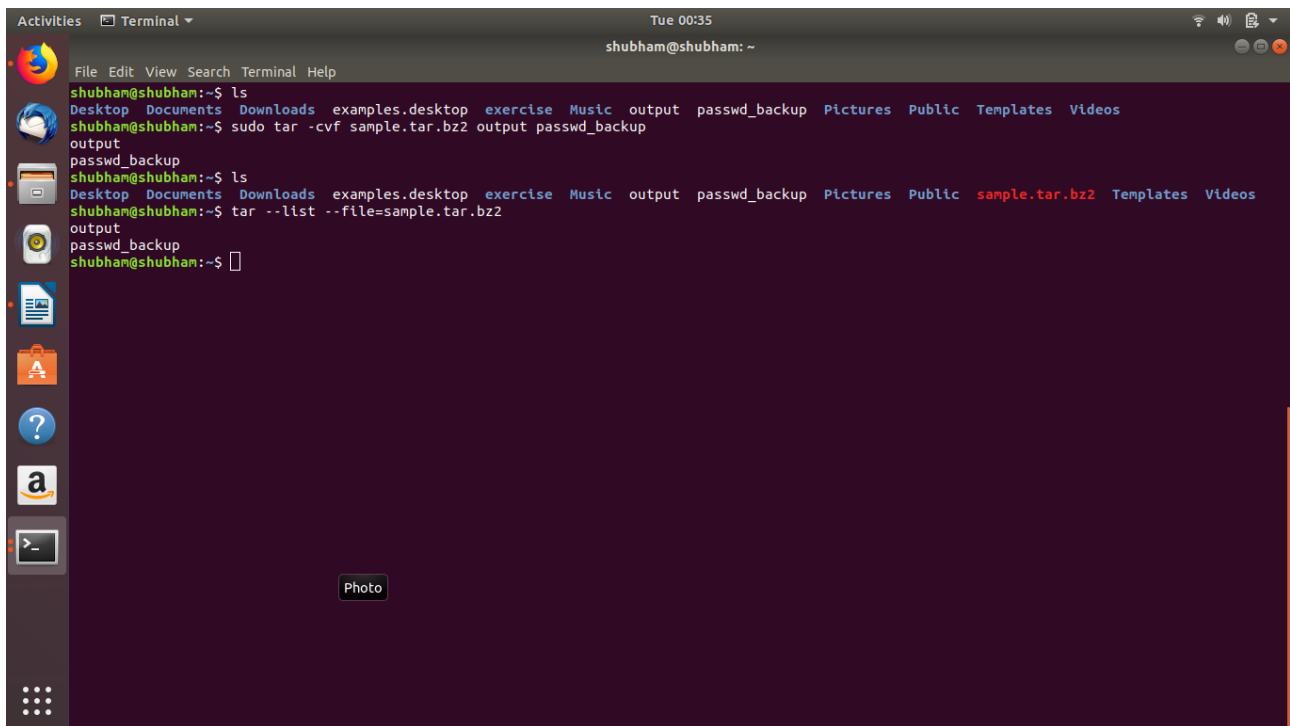
```
Activities Terminal Mon 22:51
root@shubham: /

shubham@shubham:/$ sudo su
[sudo] password for shubham:
root@shubham:/# apt-get update
Get:1 http://in.archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic/main i386 Packages [1,007 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1,019 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu bionic/main Translation-en [516 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 DEP-11 Metadata [477 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu bionic/main DEP-11 48x48 Icons [118 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu bionic/main DEP-11 64x64 Icons [245 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu bionic/restricted i386 Packages [9,156 B]
Get:12 http://in.archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [9,184 B]
Get:13 http://in.archive.ubuntu.com/ubuntu bionic/restricted Translation-en [3,584 B]
Get:14 http://in.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8,570 kB]
Get:15 http://security.ubuntu.com/ubuntu bionic-security/main i386 Packages [427 kB]
Get:16 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [622 kB]
Get:17 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [203 kB]
Get:18 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [38.5 kB]
Get:19 http://security.ubuntu.com/ubuntu bionic-security/main DEP-11 48x48 Icons [17.6 kB]
Get:20 http://security.ubuntu.com/ubuntu bionic-security/main DEP-11 64x64 Icons [41.5 kB]
Get:21 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [20.2 kB]
Get:22 http://security.ubuntu.com/ubuntu bionic-security/restricted i386 Packages [4,280 B]
Get:23 http://security.ubuntu.com/ubuntu bionic-security/restricted Translation-en [5,804 B]
Get:24 http://security.ubuntu.com/ubuntu bionic-security/universe i386 Packages [609 kB]
Get:25 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [636 kB]
Get:26 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [215 kB]
Get:27 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [42.1 kB]
Get:28 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 48x48 Icons [16.4 kB]
Get:29 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 64x64 Icons [111 kB]
Get:30 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [6,328 B]
Get:31 http://security.ubuntu.com/ubuntu bionic-security/multiverse i386 Packages [4,284 B]
Get:32 http://security.ubuntu.com/ubuntu bionic-security/multiverse Translation-en [2,640 B]
Get:33 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,460 B]
Get:34 http://security.ubuntu.com/ubuntu bionic-security/multiverse DEP-11 48x48 Icons [29 B]
Get:35 http://security.ubuntu.com/ubuntu bionic-security/multiverse DEP-11 64x64 Icons [2,638 B]
```

```
Activities Terminal Mon 22:51
root@shubham: /

Get:49 http://in.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [296 kB]
Get:50 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [294 kB]
Get:51 http://in.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [73.8 kB]
Get:52 http://in.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 64x64 Icons [140 kB]
Get:53 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [29.2 kB]
Get:54 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted i386 Packages [9,568 B]
Get:55 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [7,764 B]
Get:56 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1,047 kB]
Get:57 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages [1,006 kB]
Get:58 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [323 kB]
Get:59 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [264 kB]
Get:60 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 48x48 Icons [206 kB]
Get:61 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64 Icons [450 kB]
Get:62 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse i386 Packages [7,480 B]
Get:63 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [9,704 B]
Get:64 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [4,576 B]
Get:65 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:66 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 48x48 Icons [29 B]
Get:67 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 64x64 Icons [2,638 B]
Get:68 http://in.archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [2,512 B]
Get:69 http://in.archive.ubuntu.com/ubuntu bionic-backports/main i386 Packages [2,516 B]
Get:70 http://in.archive.ubuntu.com/ubuntu bionic-backports/main Translation-en [1,644 B]
Get:71 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4,032 B]
Get:72 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe i386 Packages [4,024 B]
Get:73 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [1,900 B]
Get:74 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-11 Metadata [7,956 B]
Get:75 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe DEP-11 48x48 Icons [29 B]
Get:76 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe DEP-11 64x64 Icons [29 B]
Fetched 49.2 MB in 12s (4,231 kB/s)
Reading package lists... Done
root@shubham:/# apt-get install zip unzip
Reading package lists... Done
Building dependency tree
Reading state information... Done
zip is already the newest version (6.0-2ubuntu1).
unzip is already the newest version (3.0-11build1).
0 upgraded, 0 newly installed, 0 to remove and 623 not upgraded.
root@shubham:/#
```

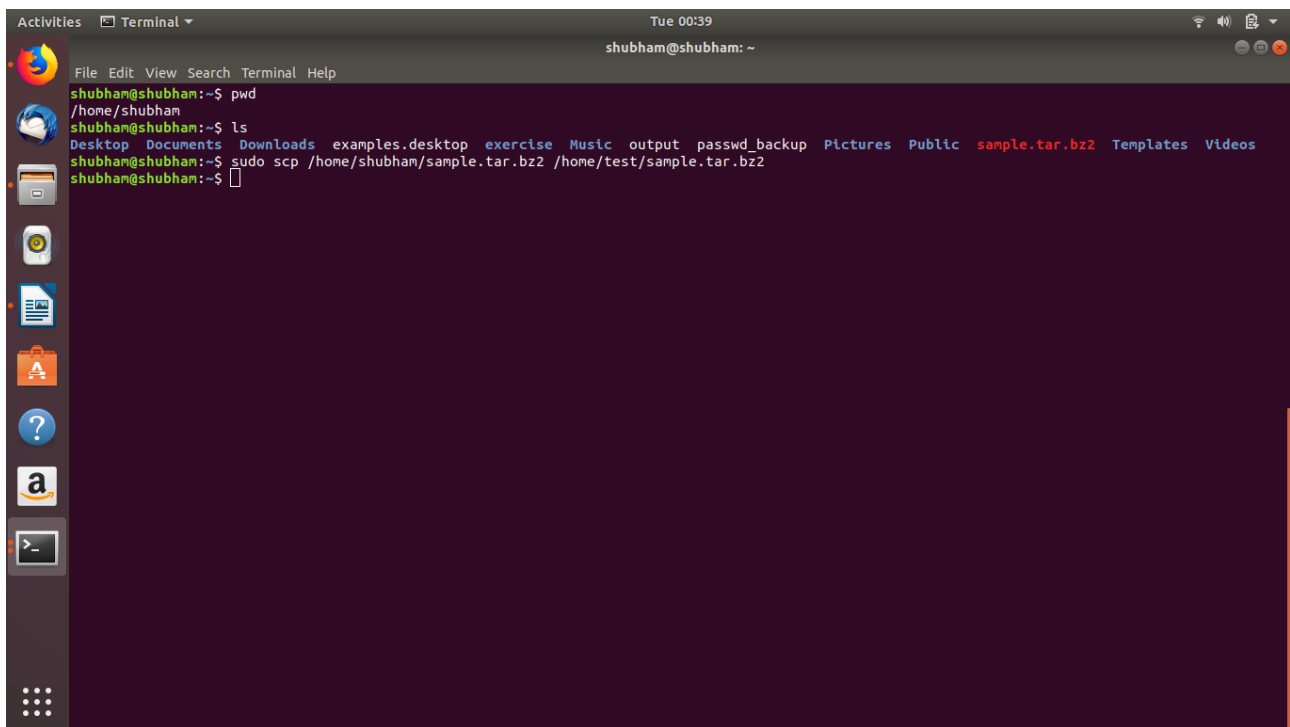
14. Compress "output" and "password\_backup" files into a tar ball. List the files present inside the tar created.

A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:35, shubham@shubham: ~). The terminal shows the following commands and output:

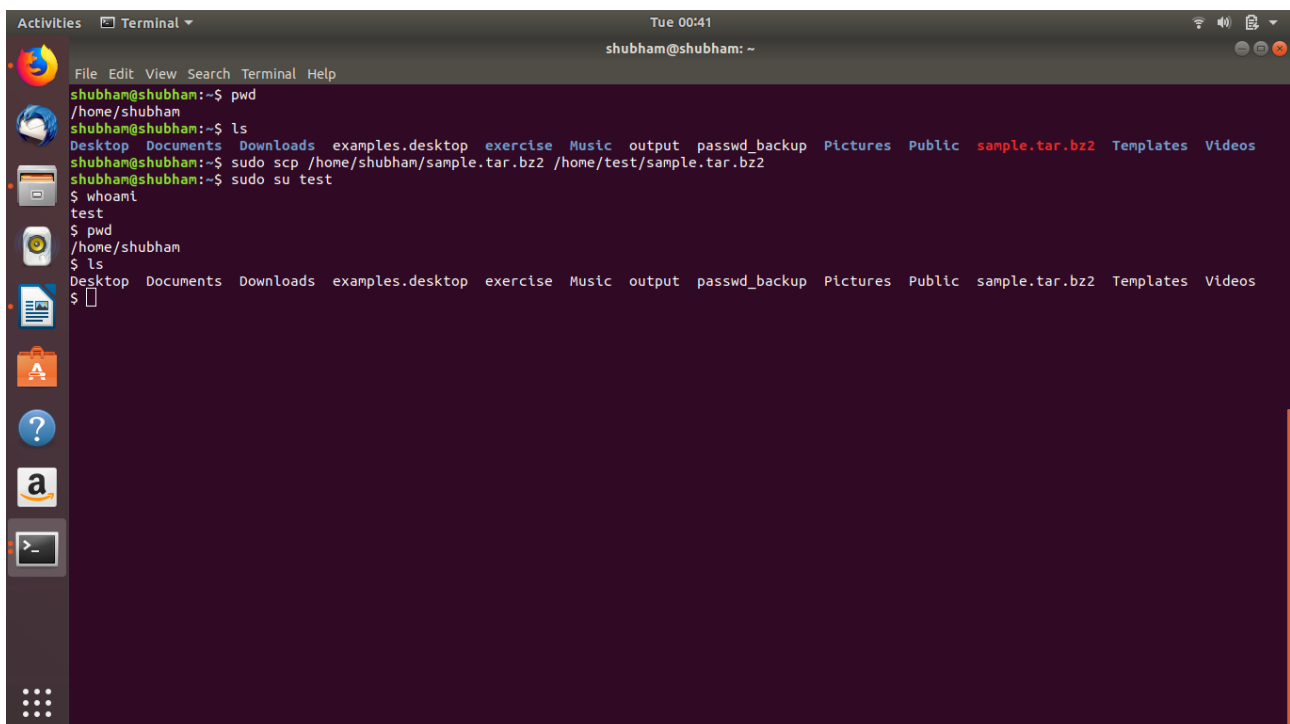
```
shubham@shubham:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  output  passwd_backup  Pictures  Public  Templates  Videos
shubham@shubham:~$ sudo tar -cvf sample.tar.bz2 output passwd_backup
output
passwd_backup
shubham@shubham:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  output  passwd_backup  Pictures  Public  sample.tar.bz2  Templates  Videos
shubham@shubham:~$ tar --list --file=sample.tar.bz2
output
passwd_backup
shubham@shubham:~$
```

The terminal window has a dark purple background. The left sidebar shows various application icons. A "Photo" button is visible at the bottom center of the terminal area.

15. scp this file to test user

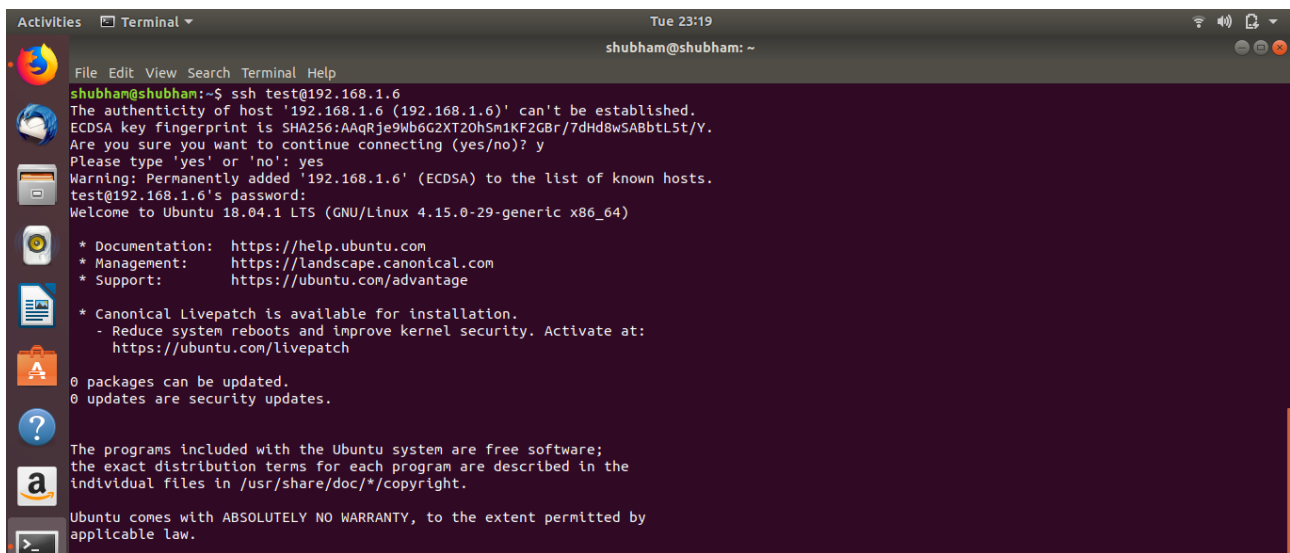
A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:39, shubham@shubham: ~). The terminal shows the user 'shubham' at the prompt '~\$'. They run 'pwd' and get '/home/shubham'. Then they run 'ls' and see a list of files including 'sample.tar.bz2'. Finally, they run 'sudo scp /home/shubham/sample.tar.bz2 /home/test/sample.tar.bz2' and the prompt returns to '~\$'.

```
shubham@shubham:~$ pwd
/home/shubham
shubham@shubham:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  output  passwd_backup  Pictures  Public  sample.tar.bz2  Templates  Videos
shubham@shubham:~$ sudo scp /home/shubham/sample.tar.bz2 /home/test/sample.tar.bz2
shubham@shubham:~$
```

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:41, shubham@shubham: ~). The terminal shows the user 'shubham' at the prompt '~\$'. They run 'pwd' and get '/home/shubham'. Then they run 'ls' and see a list of files including 'sample.tar.bz2'. Next, they run 'sudo scp /home/shubham/sample.tar.bz2 /home/test/sample.tar.bz2'. Then they run 'sudo su test' and the prompt changes to '\$'. They run 'whoami' and get 'test'. Then they run 'pwd' and get '/home/shubham'. Finally, they run 'ls' and see a list of files including 'sample.tar.bz2'.

```
shubham@shubham:~$ pwd
/home/shubham
shubham@shubham:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  output  passwd_backup  Pictures  Public  sample.tar.bz2  Templates  Videos
shubham@shubham:~$ sudo scp /home/shubham/sample.tar.bz2 /home/test/sample.tar.bz2
shubham@shubham:~$ sudo su test
$ whoami
test
$ pwd
/home/shubham
$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  output  passwd_backup  Pictures  Public  sample.tar.bz2  Templates  Videos
$
```

## 16. Unzip this tar bar by logging into the remote server



A terminal window titled 'Terminal' with a dark background and light text. The window shows the process of logging into a remote server via SSH. The user 'shubham' is at the host 'shubham'. The command executed is 'ssh test@192.168.1.6'. The terminal displays the SSH warning about host authenticity, the user's confirmation to proceed, the warning about adding the host to the known hosts list, and the password prompt. After successful login, the user is greeted by the Ubuntu 18.04.1 LTS system, which shows system updates and documentation links.

```
shubham@shubham:~$ ssh test@192.168.1.6
The authenticity of host '192.168.1.6 (192.168.1.6)' can't be established.
ECDSA key fingerprint is SHA256:AAqRje9Wb6G2XT20hSm1KF2CBr/7dHd8wSABbtL5t/Y.
Are you sure you want to continue connecting (yes/no)? y
Please type 'yes' or 'no': yes
Warning: Permanently added '192.168.1.6' (ECDSA) to the list of known hosts.
test@192.168.1.6's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-29-generic x86_64)

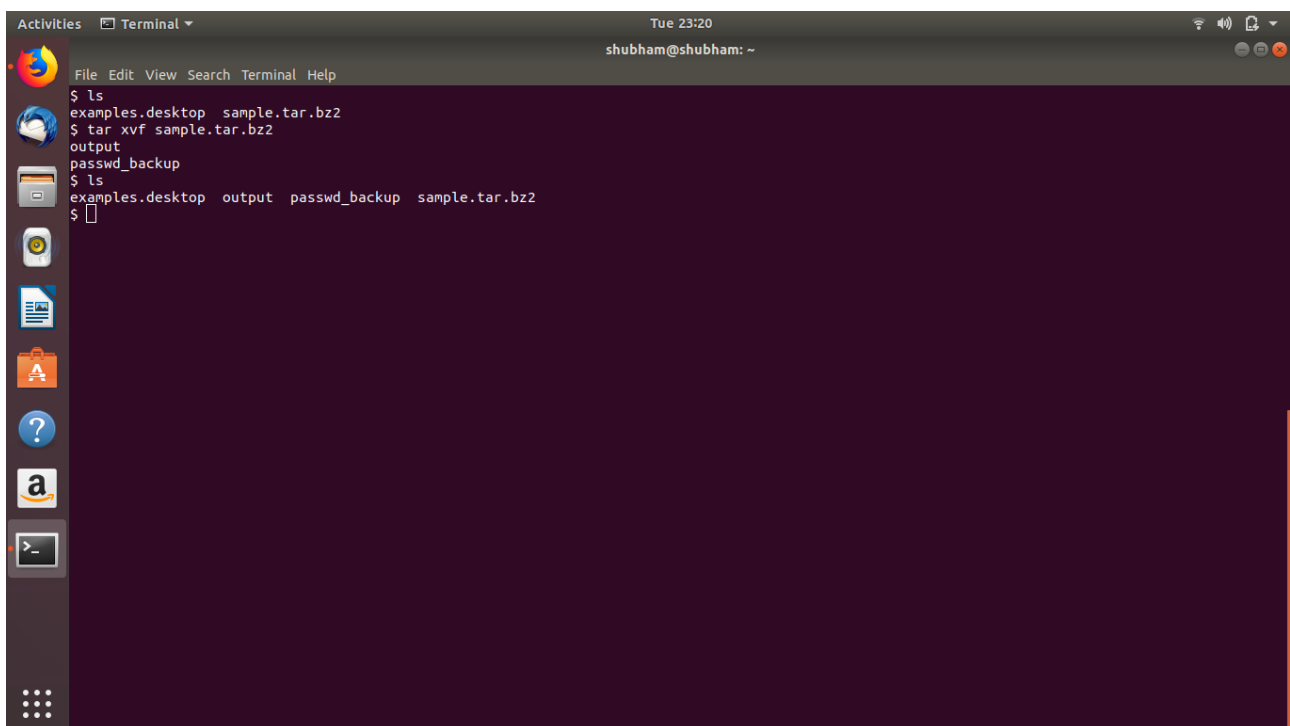
 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Canonical Livepatch is available for installation.
   - Reduce system reboots and improve kernel security. Activate at:
     https://ubuntu.com/livepatch

0 packages can be updated.
0 updates are security updates.

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.

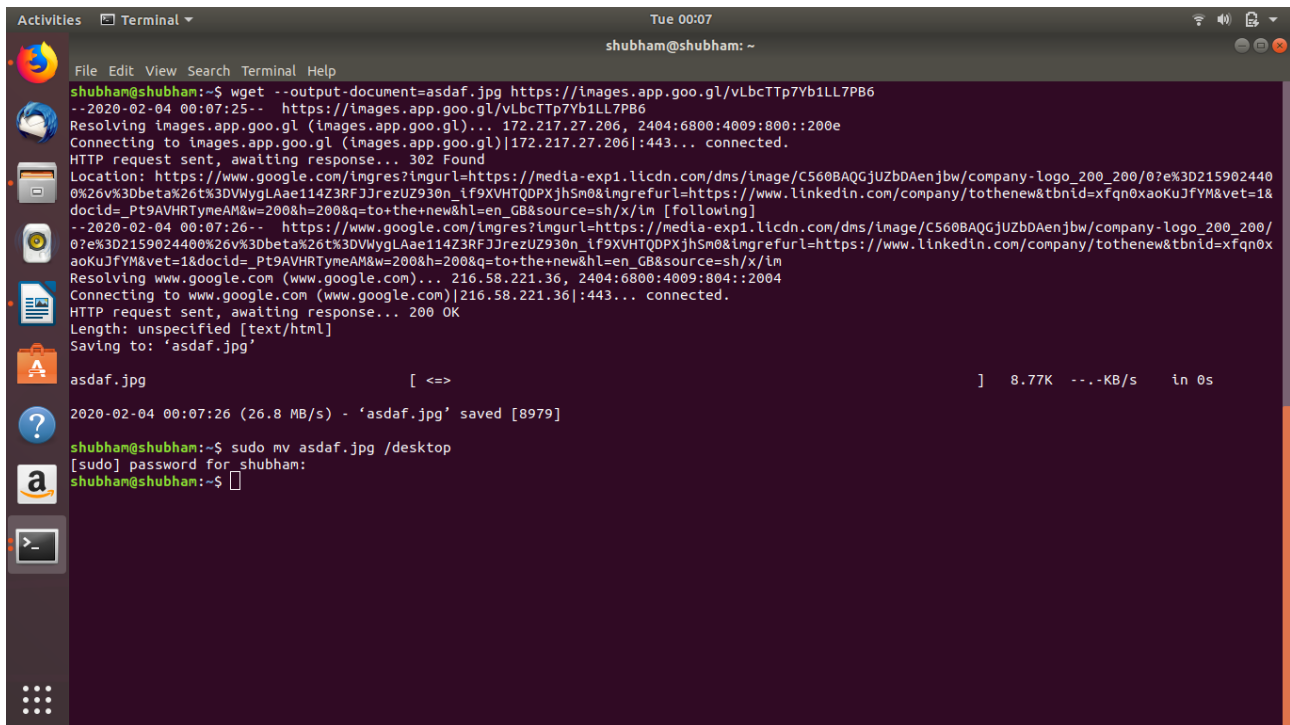
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```



A terminal window titled 'Terminal' with a dark background and light text. The user 'shubham' is at the host 'shubham'. The terminal shows the execution of 'ls' and 'tar xvf sample.tar.bz2' commands. The output of 'ls' shows 'examples.desktop', 'sample.tar.bz2', 'output', and 'passwd\_backup'. The output of 'tar xvf sample.tar.bz2' shows the extraction of 'examples.desktop', 'output', 'passwd\_backup', and 'sample.tar.bz2'.

```
shubham@shubham:~$ ls
examples.desktop  sample.tar.bz2
shubham@shubham:~$ tar xvf sample.tar.bz2
output
passwd_backup
shubham@shubham:~$ ls
examples.desktop  output  passwd_backup  sample.tar.bz2
shubham@shubham:~$
```

## 17.Download any image from web and move to desktop



```
shubham@shubham:~$ wget --output-document=asdaf.jpg https://images.app.goo.gl/vLbcTTP7Yb1LL7PB6
--2020-02-04 00:07:25-- https://images.app.goo.gl/vLbcTTP7Yb1LL7PB6
Resolving images.app.goo.gl (images.app.goo.gl)... 172.217.27.206, 2404:6800:4009:800::200e
Connecting to images.app.goo.gl (images.app.goo.gl)[172.217.27.206]:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://www.google.com/imgres?imgurl=https://media-exp1.licdn.com/dms/image/C560BAQGjUZbDAenjbw/company-logo_200_200/0?e%3D215902440%26v%3Dbeta%26t%3DVWygLAae114Z3RFJJrezUZ930n_if9XVHTQDPXjhsM0&imgrefurl=https://www.linkedin.com/company/tothenew&tbnid=xfqn0xaoKuJfYM&vet=1&docid=_Pt9AVHRTymeAM&w=200&h=200&q=to+the+new&hl=en_GB&source=sh/x/im [following]
--2020-02-04 00:07:26-- https://www.google.com/imgres?imgurl=https://media-exp1.licdn.com/dms/image/C560BAQGjUZbDAenjbw/company-logo_200_200/0?e%3D215902440%26v%3Dbeta%26t%3DVWygLAae114Z3RFJJrezUZ930n_if9XVHTQDPXjhsM0&imgrefurl=https://www.linkedin.com/company/tothenew&tbnid=xfqn0xaoKuJfYM&vet=1&docid=_Pt9AVHRTymeAM&w=200&h=200&q=to+the+new&hl=en_GB&source=sh/x/im
Resolving www.google.com (www.google.com)... 216.58.221.36, 2404:6800:4009:804::2004
Connecting to www.google.com (www.google.com)[216.58.221.36]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'asdaf.jpg'

asdaf.jpg                                     [ <=> ] 8.77K --.-KB/s in 0s

2020-02-04 00:07:26 (26.8 MB/s) - 'asdaf.jpg' saved [8979]

shubham@shubham:~$ sudo mv asdaf.jpg /desktop
[sudo] password for shubham:
shubham@shubham:~$
```

## 18. How to get help of commands usages.

```
Activities Terminal Tue 00:21 shubham@shubham: ~
File Edit View Search Terminal Help
shubham@shubham:~$ mv -help
mv: invalid option -- 'h'
Try 'mv --help' for more information.
shubham@shubham:~$ clear
shubham@shubham:~$ ca
cal calibrate_ppa canberra-gtk-play capsh case catchsegv cautious-launcher
calendar caller cancel captinfo cat catman
shubham@shubham:~$ mv --help
Usage: mv [OPTION]... [-T] SOURCE DEST
or: mv [OPTION]... SOURCE... DIRECTORY
or: mv [OPTION]... -t DIRECTORY SOURCE...
Rename SOURCE to DEST, or move SOURCE(s) to DIRECTORY.

Mandatory arguments to long options are mandatory for short options too.
  -b, --backup[=CONTROL]  make a backup of each existing destination file
  -f, --force              do not prompt before overwriting
  -i, --interactive        prompt before overwrite
  -n, --no-clobber         do not overwrite an existing file
If you specify more than one of -i, -f, -n, only the final one takes effect.
  --strip-trailing-slashes remove any trailing slashes from each SOURCE
                           argument
  -S, --suffix=SUFFIX      override the usual backup suffix
  -t, --target-directory=DIRECTORY move all SOURCE arguments into DIRECTORY
  -T, --no-target-directory treat DEST as a normal file
  -u, --update             move only when the SOURCE file is newer
                           than the destination file or when the
                           destination file is missing
  -v, --verbose            explain what is being done
  -Z, --context            set SELinux security context of destination
                           file to default type
      --help              display this help and exit
      --version            output version information and exit

The backup suffix is '~', unless set with --suffix or SIMPLE_BACKUP_SUFFIX.
The version control method may be selected via the --backup option or through
the VERSION_CONTROL environment variable. Here are the values:
```

```
Activities Terminal Tue 00:21 shubham@shubham: ~
File Edit View Search Terminal Help
Full documentation at: <http://www.gnu.org/software/coreutils/mv>
or available locally via: info '(coreutils) mv invocation'
shubham@shubham:~$ help
GNU bash, version 4.4.19(1)-release (x86_64-pc-linux-gnu)
These shell commands are defined internally. Type 'help' to see this list.
Type 'help name' to find out more about the function 'name'.
Use 'info bash' to find out more about the shell in general.
Use 'man -k' or 'info' to find out more about commands not in this list.

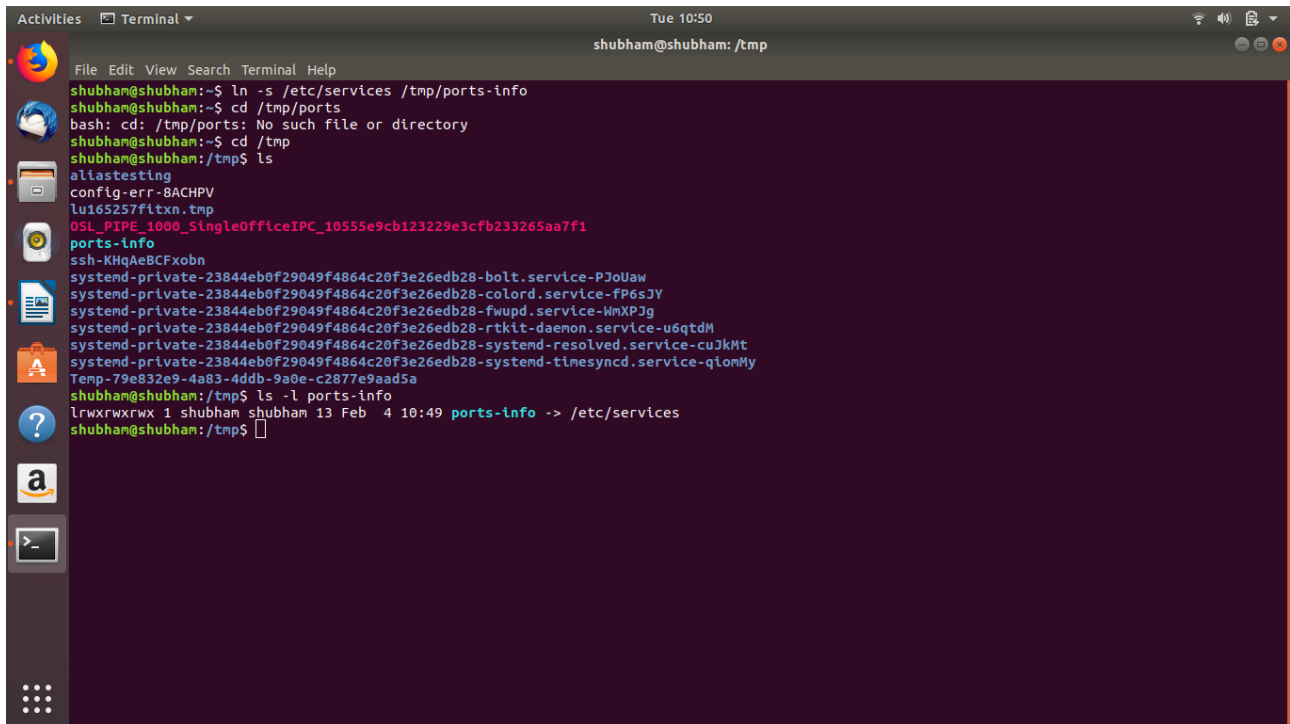
A star (*) next to a name means that the command is disabled.

job_spec [&]
(( expression ))
. filename [arguments]
:
[ arg... ]
[[ expression ]]
alias [-p] [name=value] ... ]
bg [job_spec ...]
bind [-lpsvPSVX] [-m keymap] [-f filename] [-q name] [-u name] [-r k>
break [n]
builtin [shell-builtin [arg ...]]
caller [expr]
case WORD in [PATTERN] [[: PATTERN]...] COMMANDS ;;... esac
cd [-L][-P [-e]] [-@]] [dir]
command [-pVv] command [arg ...]
compgen [-abcdefgksuv] [-o option] [-A action] [-G globpat] [-W wor>
complete [-abcdefgksuv] [-pr] [-DE] [-o option] [-A action] [-G glo>
compopt [-o]o option [-DE] [name ...]
continue [n]
coproc [NAME] command [redirections]
declare [-aAfFgIlNrux] [-p] [name=value] ...]
dirs [-clpv] [+N] [-N]
disown [-h] [-ar] [jobspec ... | pid ...]
echo [-neE] [arg ...]
enable [-a] [--dnps] [-f filename] [name ...]
eval [arg ...]
exec [-cl] [-a name] [command [arguments ...]] [redirection ...]

history [-c] [-d offset] [n] or history -anrw [filename] or history>
if COMMANDS; then COMMANDS; [ elif COMMANDS; then COMMANDS; ]... [ >
jobs [-lnprs] [jobspec ...] or jobs -x command [args]
kill [-s sigspec | -n signum | -sigspec] pid | jobspec ... or kill >
let arg [arg ...]
local [option] name[=value] ...
logout [n]
mapfile [-d delim] [-n count] [-O origin] [-s count] [-t] [-u fd] [>
popd [-n] [+N] [-N]
printf [-v var] format [arguments]
pushd [-n] [+N] [-N] | dir]
pwd [-LP]
read [-ers] [-a array] [-d delim] [-i text] [-n nchars] [-N nchars]>
readarray [-n count] [-O origin] [-s count] [-t] [-u fd] [-C callba>
readonly [-aAf] [name=value] ...] or readonly -p
return [n]
select NAME [in WORDS ... ;] do COMMANDS; done
set [-abefhkmnptuvxBCHP] [-o option-name] [--] [arg ...]
shift [n]
shopt [-pgsu] [-o] [optname ...]
source filename [arguments]
suspend [-f]
test [expr]
time [-p] pipeline
times
trap [-lp] [[arg] signal_spec ...]
true
```

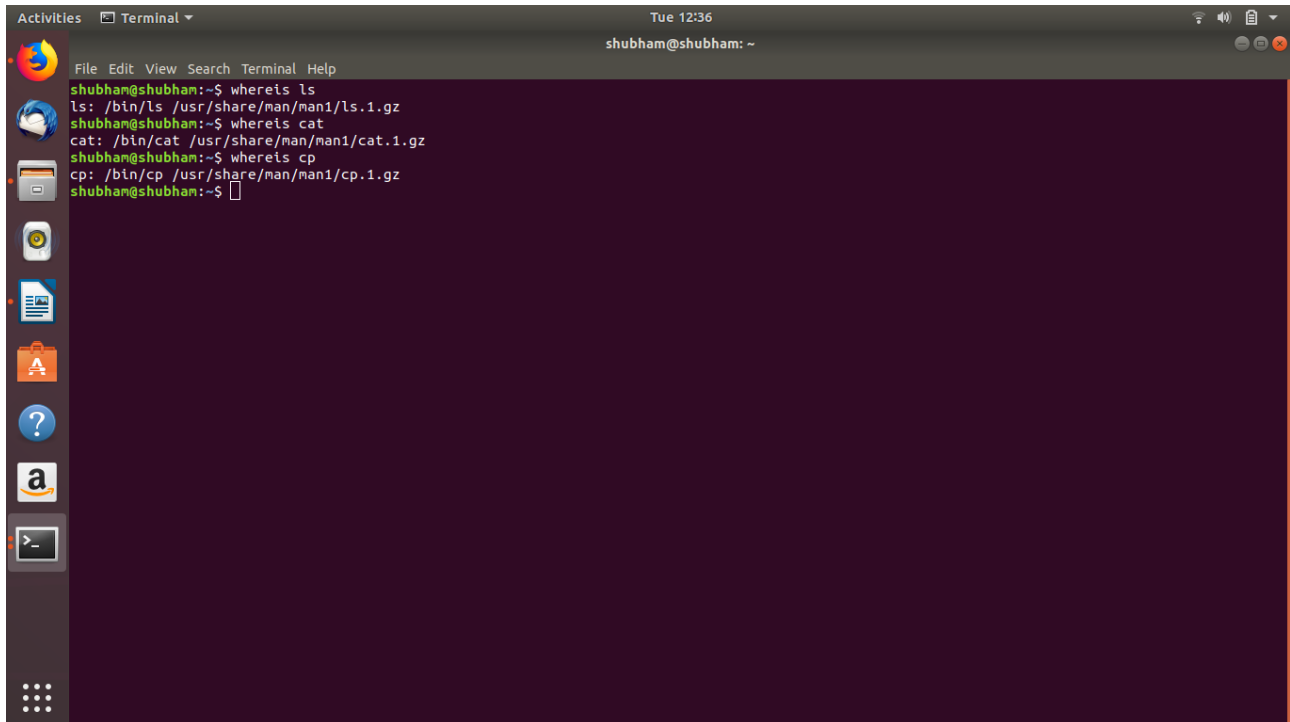


## 19. Create a symlink of /etc/services into /tmp/ports-info



```
Activities Terminal Tue 10:50 shubham@shubham: /tmp
File Edit View Search Terminal Help
shubham@shubham:~$ ln -s /etc/services /tmp/ports-info
shubham@shubham:~$ cd /tmp/ports
bash: cd: /tmp/ports: No such file or directory
shubham@shubham:~$ cd /tmp
shubham@shubham:/tmp$ ls
alltesting
config-err-8ACHPV
lu165257fitxn.tmp
OSL_PIPE_1000_SingleOfficeIPC_10555e9cb123229e3cfb233265aa7f1
ports-info
ssh-KHqAeBCFxobn
systemd-private-23844eb0f29049f4864c20f3e26edb28-bolt.service-PJoUaw
systemd-private-23844eb0f29049f4864c20f3e26edb28-colord.service-FP6sJY
systemd-private-23844eb0f29049f4864c20f3e26edb28-fwupd.service-WnXPJg
systemd-private-23844eb0f29049f4864c20f3e26edb28-rtkit-daemon.service-u6qtdM
systemd-private-23844eb0f29049f4864c20f3e26edb28-systemd-resolved.service-cuJkMt
systemd-private-23844eb0f29049f4864c20f3e26edb28-systemd-timesyncd.service-qionMy
Temp-79e832e9-4a83-4ddb-9a0e-c2877e9aad5a
shubham@shubham:/tmp$ ls -l ports-info
lrwxrwxrwx 1 shubham shubham 13 Feb  4 10:49 ports-info -> /etc/services
shubham@shubham:/tmp$
```

20. You are appointed as a Software/DevOps Engineer in ABC media services. On your first day you need to troubleshoot a problem. There is a command “xyz” somewhere installed in that linux system. But as a new joiner you do not have any idea about where it is installed. How can you check that?



```
Activities Terminal Tue 12:36 shubham@shubham: ~
File Edit View Search Terminal Help
shubham@shubham:~$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz
shubham@shubham:~$ whereis cat
cat: /bin/cat /usr/share/man/man1/cat.1.gz
shubham@shubham:~$ whereis cp
cp: /bin/cp /usr/share/man/man1/cp.1.gz
shubham@shubham:~$
```