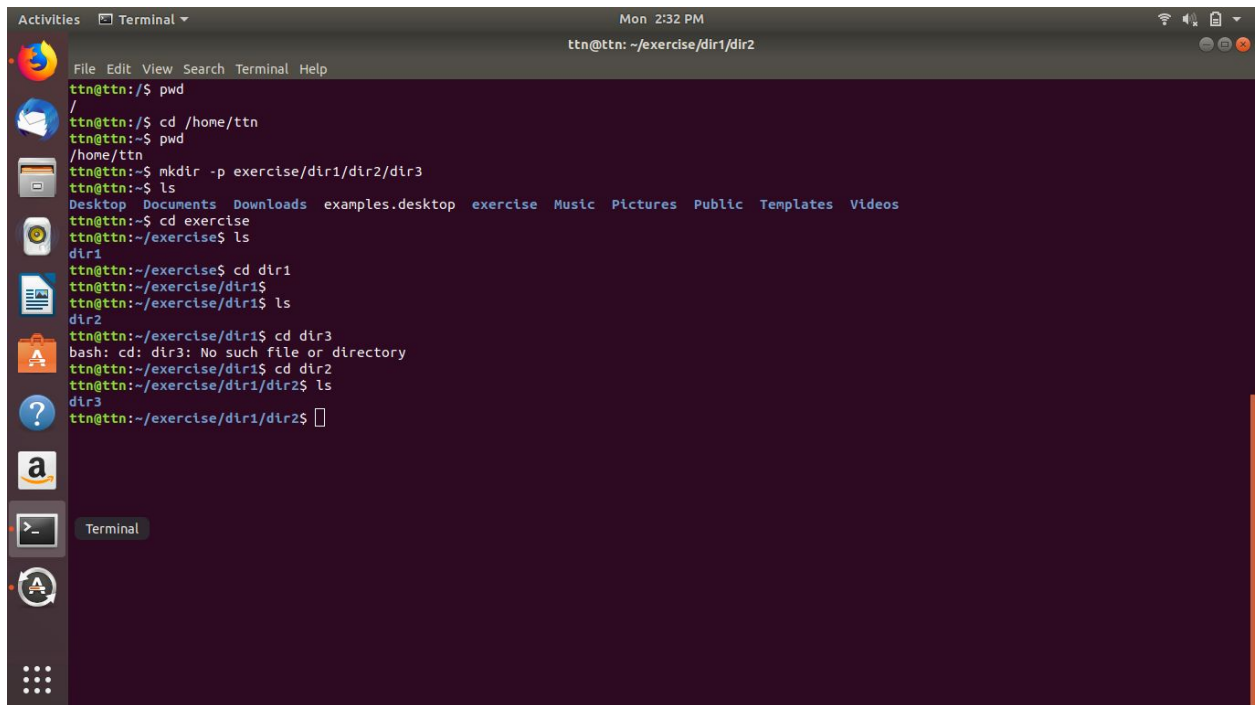


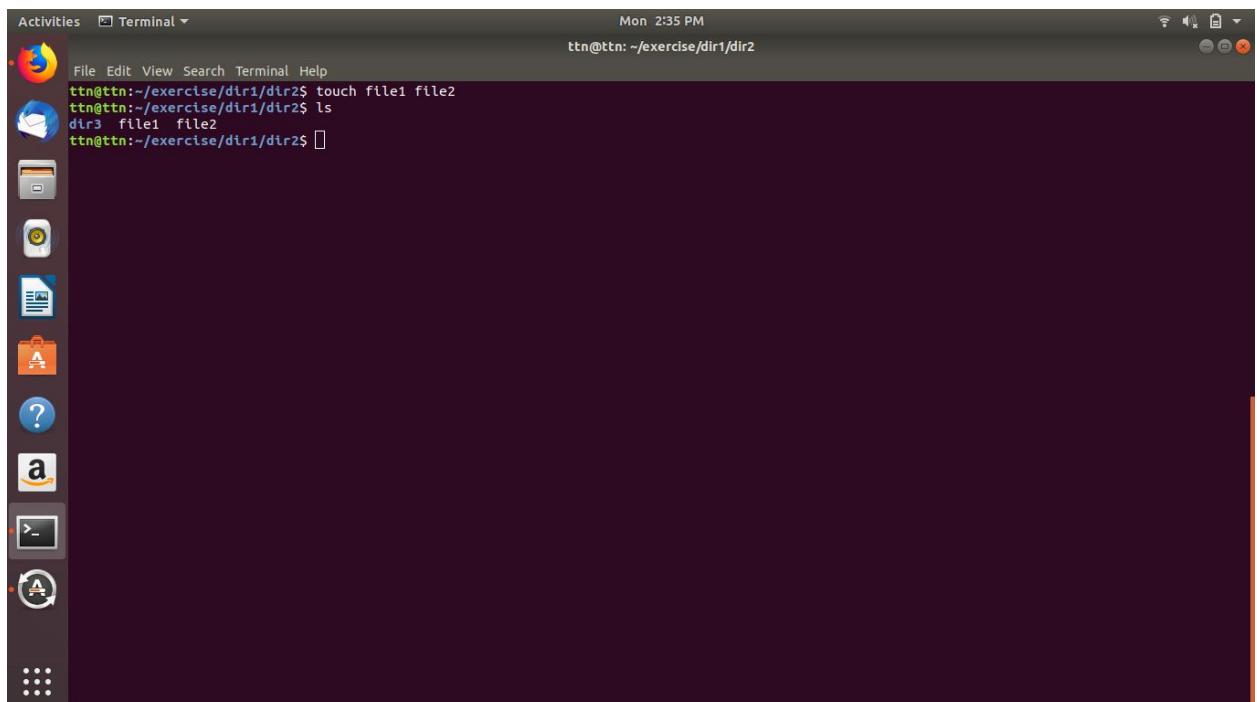
1. Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "exercise" with single command.



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:32 PM, ttn@ttn: ~/exercise/dir1/dir2). The terminal shows the following commands and output:

```
ttn@ttn:/$ pwd
/
ttn@ttn:/$ cd /home/ttn
ttn@ttn:~$ pwd
/home/ttn
ttn@ttn:~$ mkdir -p exercise/dir1/dir2/dir3
ttn@ttn:~$ ls
Desktop Documents Downloads examples.desktop exercise Music Pictures Public Templates Videos
ttn@ttn:~$ cd exercise
ttn@ttn:~/exercise$ ls
dir1
ttn@ttn:~/exercise$ cd dir1
ttn@ttn:~/exercise/dir1$ ls
dir2
ttn@ttn:~/exercise/dir1$ cd dir3
bash: cd: dir3: No such file or directory
ttn@ttn:~/exercise/dir1$ cd dir2
ttn@ttn:~/exercise/dir1/dir2$ ls
dir3
ttn@ttn:~/exercise/dir1/dir2$
```

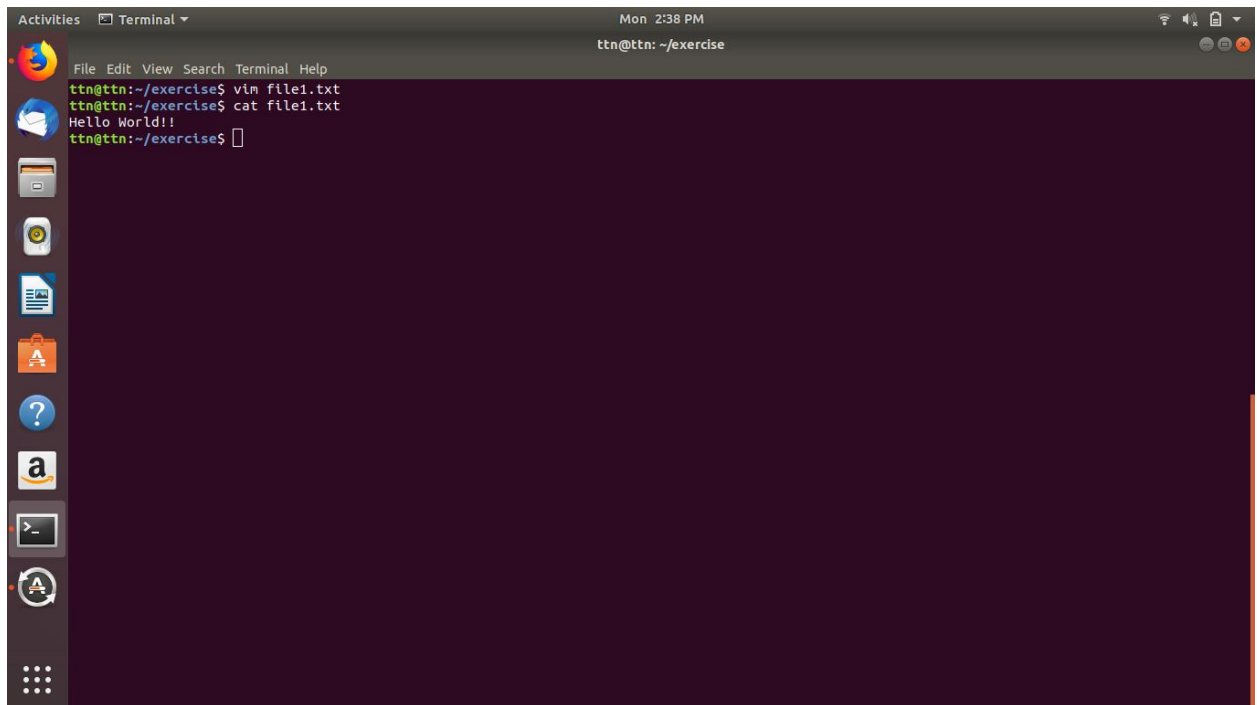
2. Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:35 PM, ttn@ttn: ~/exercise/dir1/dir2). The terminal shows the following commands and output:

```
ttn@ttn:~/exercise/dir1/dir2$ touch file1 file2
ttn@ttn:~/exercise/dir1/dir2$ ls
dir3 file1 file2
ttn@ttn:~/exercise/dir1/dir2$
```

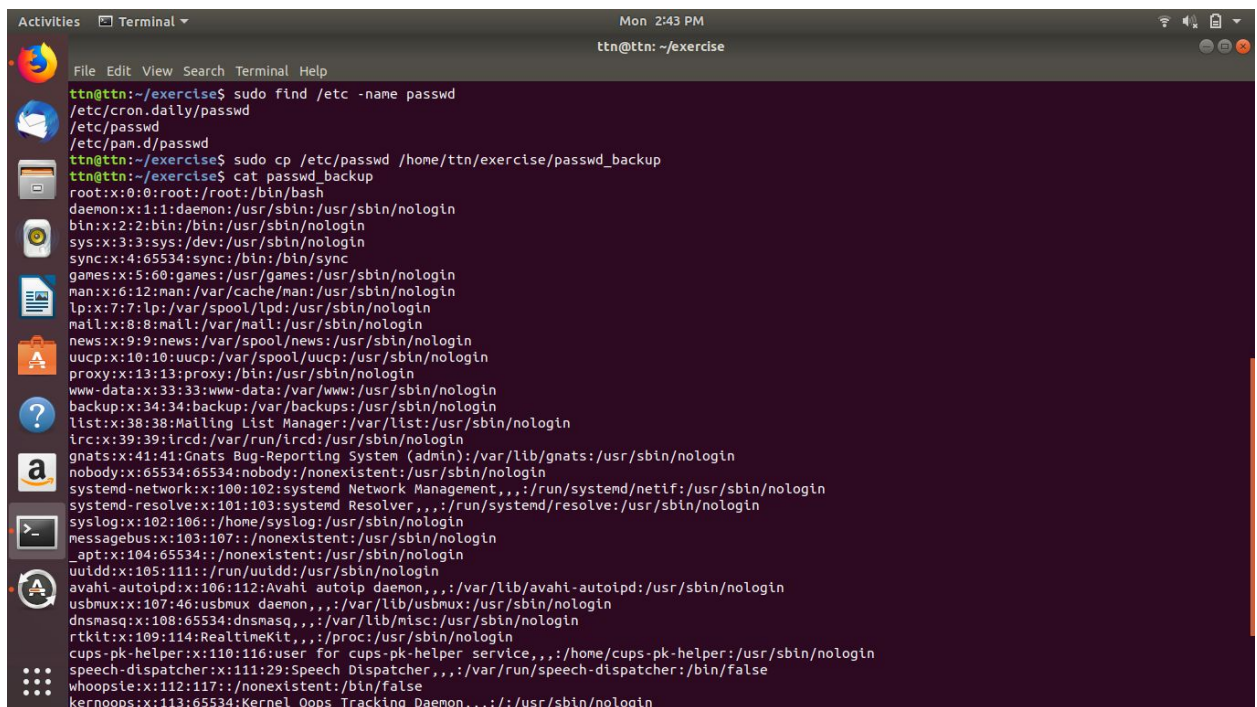
3. Create one file file1.txt containing text "hello world" and save it.



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:38 PM, ttn@ttn: ~/exercise). The terminal shows the following commands and output:

```
ttn@ttn:~/exercise$ vim file1.txt
ttn@ttn:~/exercise$ cat file1.txt
Hello World!!
ttn@ttn:~/exercise$
```

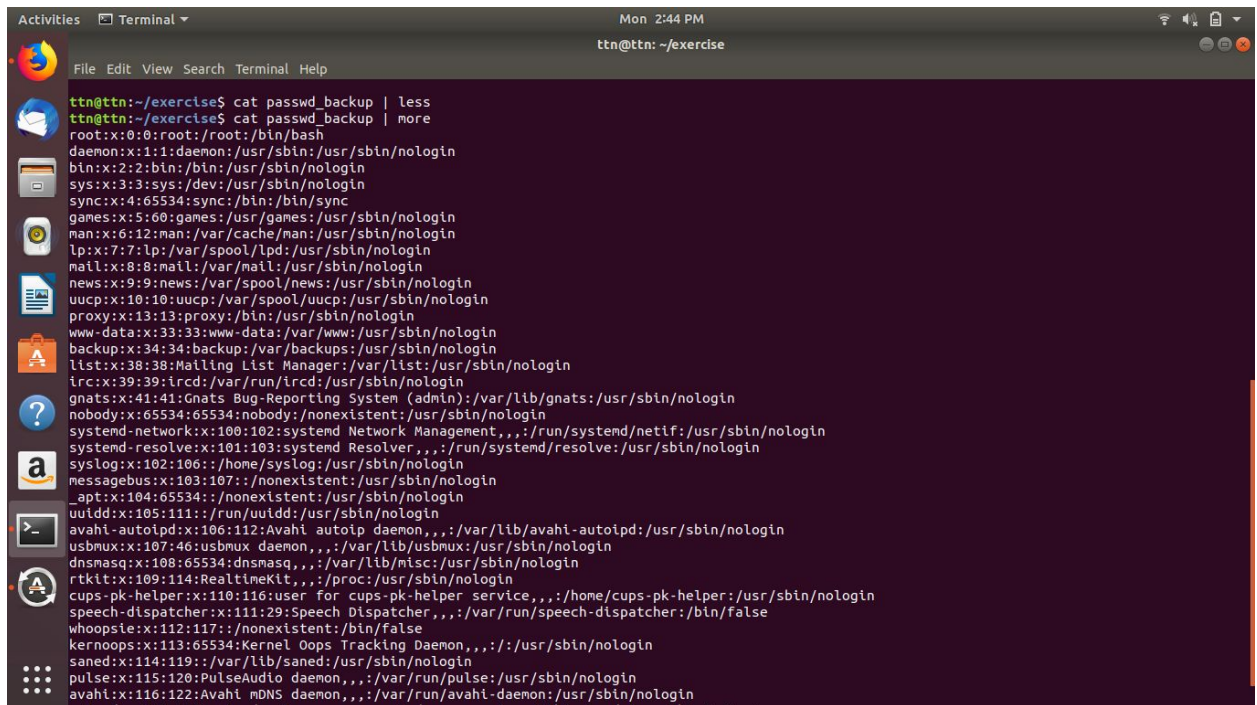
4. Find a "passwd" file using find command inside /etc. copy this files as passwd\_copy and then rename this file as passwd\_backup.



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:43 PM, ttn@ttn: ~/exercise). The terminal shows the following commands and output:

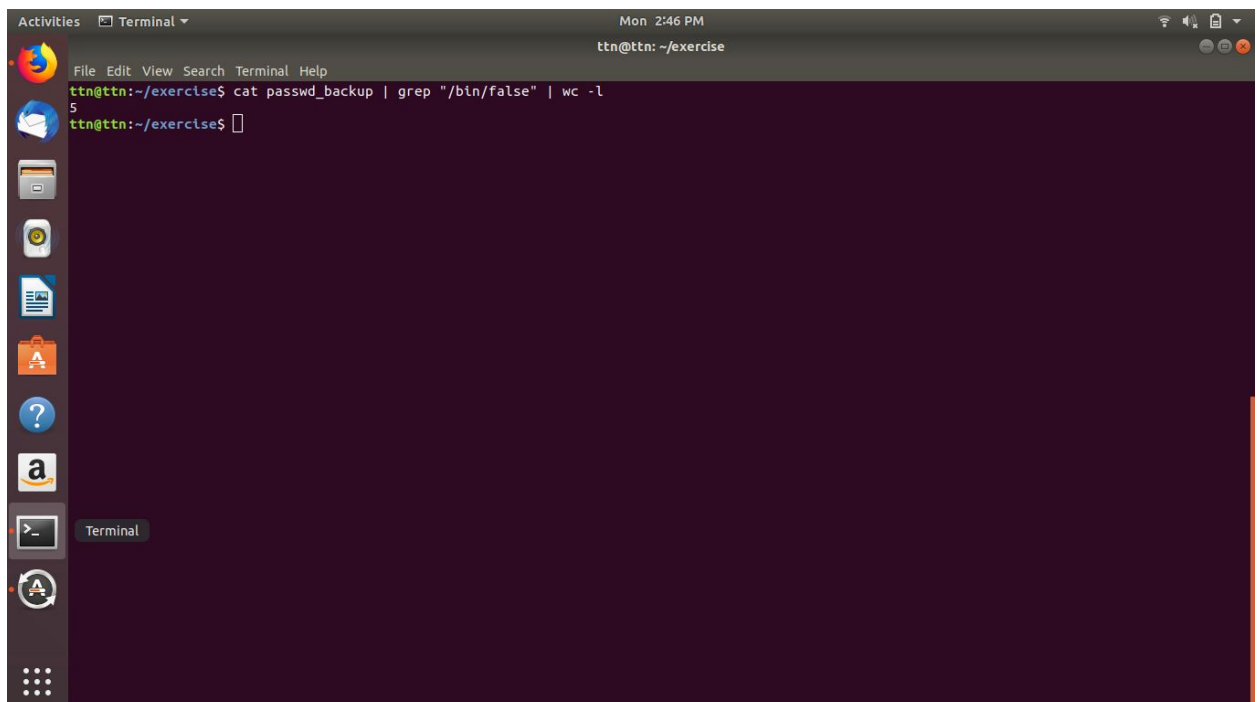
```
ttn@ttn:~/exercise$ sudo find /etc -name passwd
/etc/cron.daily/passwd
/etc/passwd
/etc/pam.d/passwd
ttn@ttn:~/exercise$ sudo cp /etc/passwd /home/ttn/exercise/passwd_backup
ttn@ttn:~/exercise$ cat passwd_backup
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
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
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
```

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



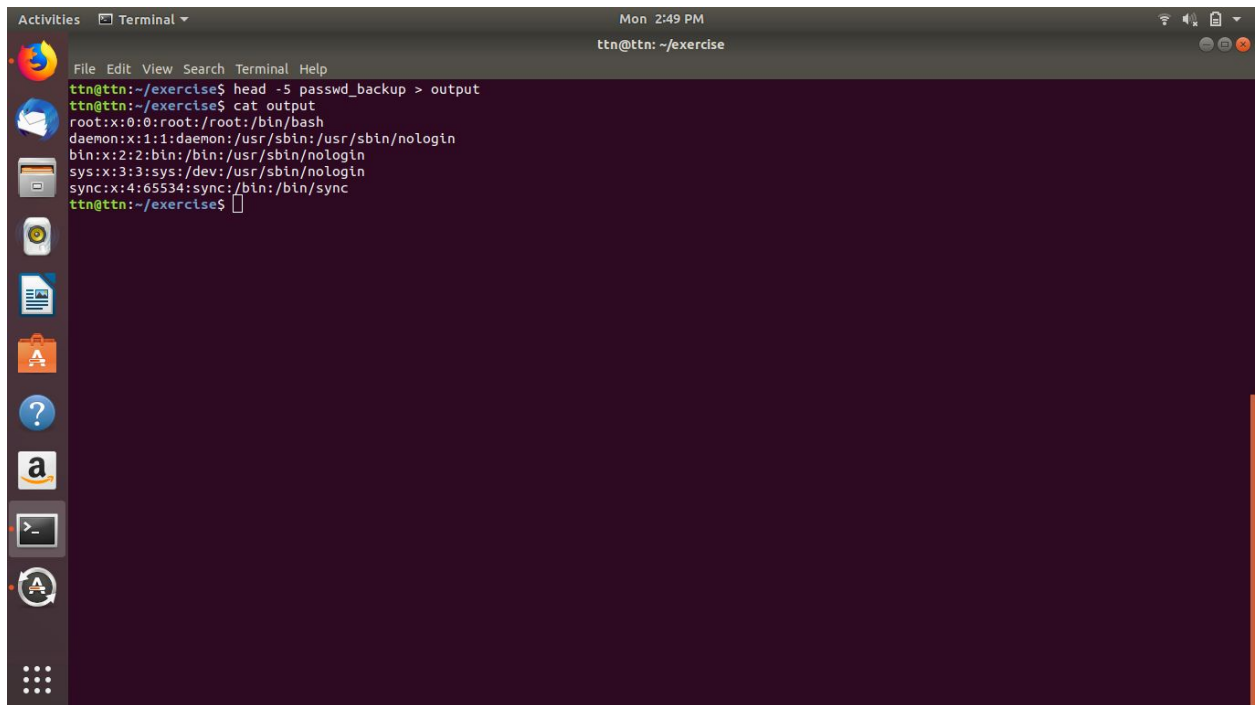
```
ttt@ttt:~/exercise$ cat passwd_backup | less
ttt@ttt:~/exercise$ cat passwd_backup | more
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
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:Mailling List Manager:/var/llist:/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
uuidd:x:105:111::/run/uuidd:/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
```

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



```
ttt@ttt:~/exercise$ cat passwd_backup | grep "/bin/false" | wc -l
5
ttt@ttt:~/exercise$
```

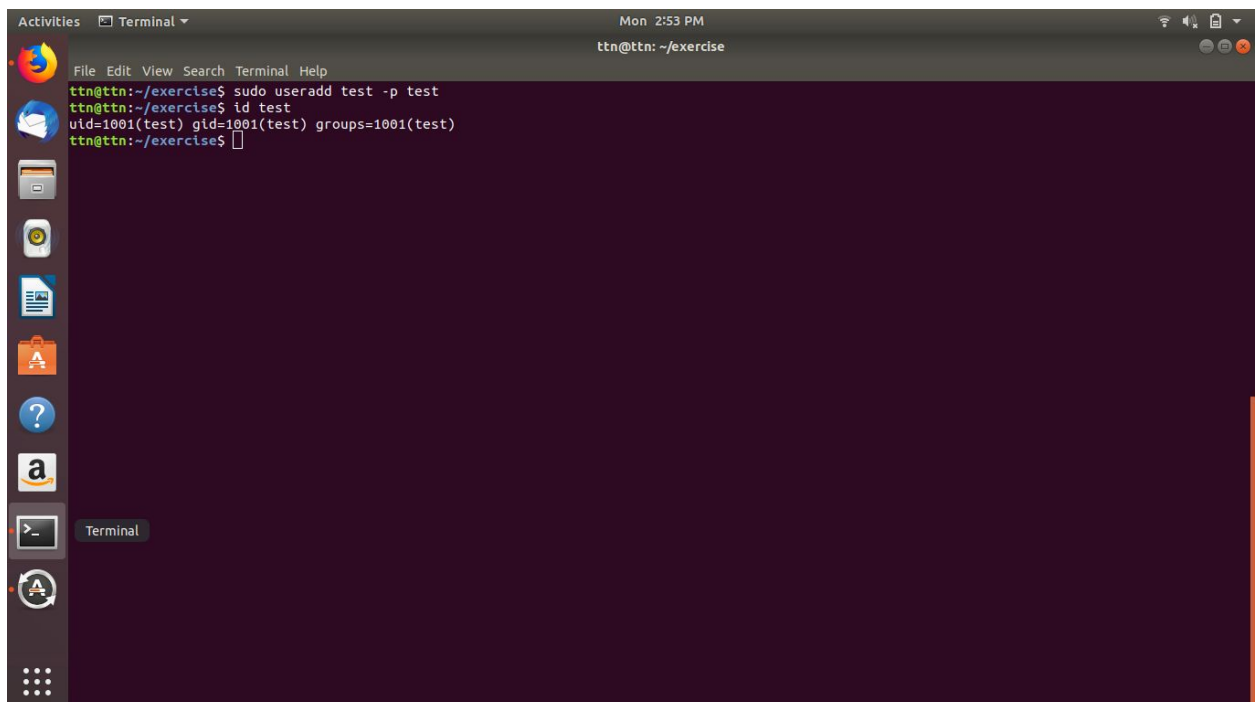
7. Get the first 5 lines of a file "password\_backup" and Redirect the output of the above commands into file "output".



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:49 PM, ttn@ttn: ~/exercise). The terminal shows the following commands and output:

```
ttn@ttn:~/exercise$ head -5 password_backup > output
ttn@ttn:~/exercise$ 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
ttn@ttn:~/exercise$
```

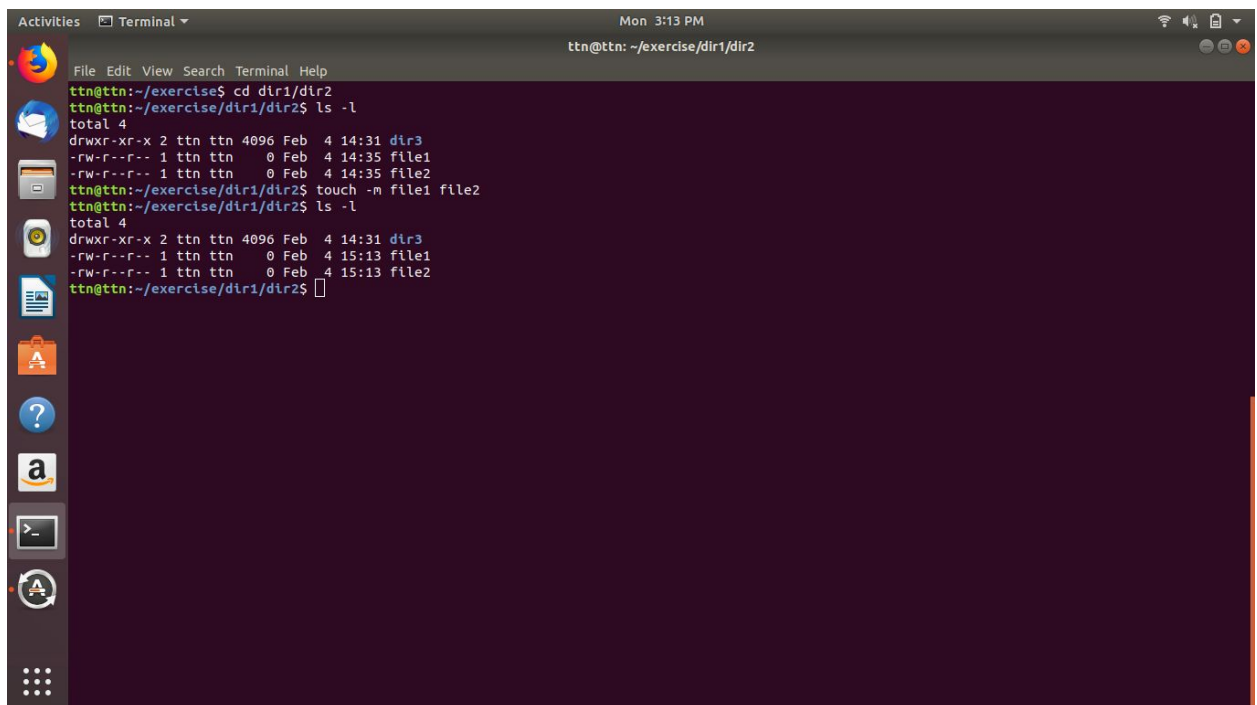
8. Create a "test" user, create its password and find out its uid and gid.



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 2:53 PM, ttn@ttn: ~/exercise). The terminal shows the following commands and output:

```
ttn@ttn:~/exercise$ sudo useradd test -p test
ttn@ttn:~/exercise$ id test
uid=1001(test) gid=1001(test) groups=1001(test)
ttn@ttn:~/exercise$
```

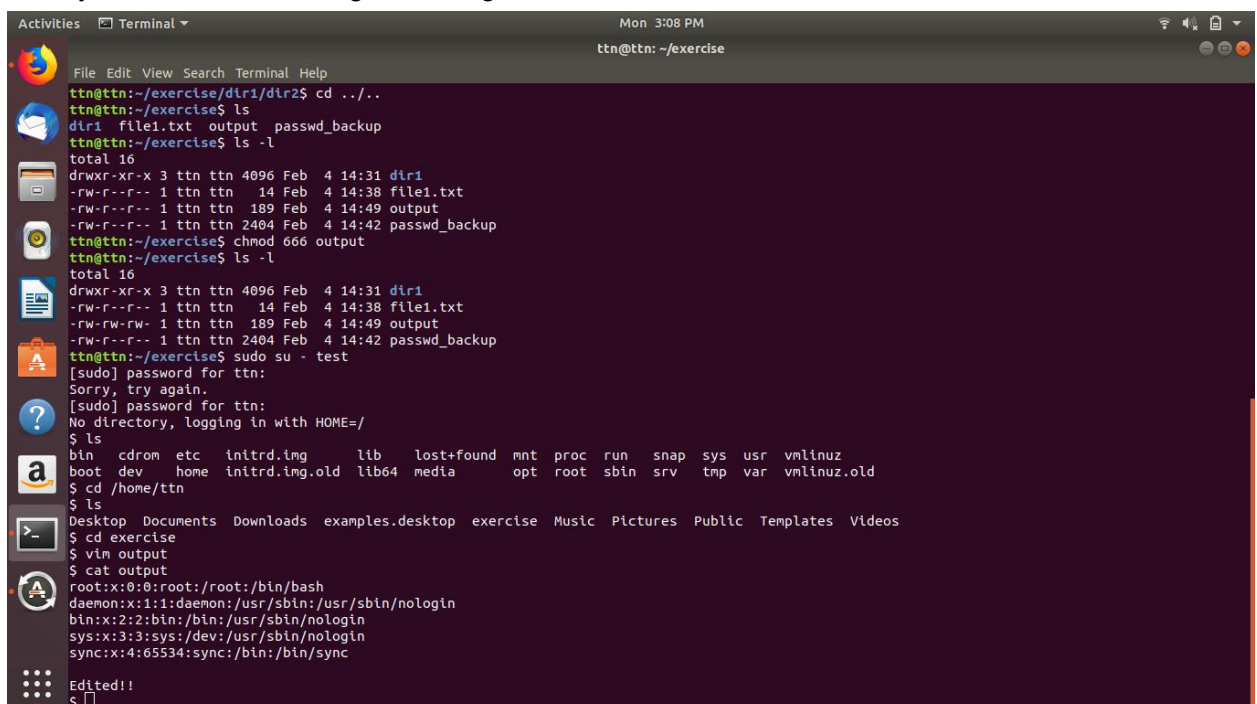
9. Change the timestamp of emptyFile1,emptyFile2 which are exist in dir2.



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is 'ttn@ttn: ~/exercise/dir1/dir2'. The user runs 'cd dir1/dir2' and 'ls -l', showing a directory listing with files 'dir3', 'file1', and 'file2'. Then, the user runs 'touch -m file1 file2' and 'ls -l' again, showing that the modification times for 'file1' and 'file2' have been updated to '4 15:13'.

```
ttn@ttn:~/exercise$ cd dir1/dir2
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb  4 14:31 dir3
-rw-r--r-- 1 ttn ttn  0 Feb  4 14:35 file1
-rw-r--r-- 1 ttn ttn  0 Feb  4 14:35 file2
ttn@ttn:~/exercise/dir1/dir2$ touch -m file1 file2
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb  4 14:31 dir3
-rw-r--r-- 1 ttn ttn  0 Feb  4 15:13 file1
-rw-r--r-- 1 ttn ttn  0 Feb  4 15:13 file2
ttn@ttn:~/exercise/dir1/dir2$
```

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.



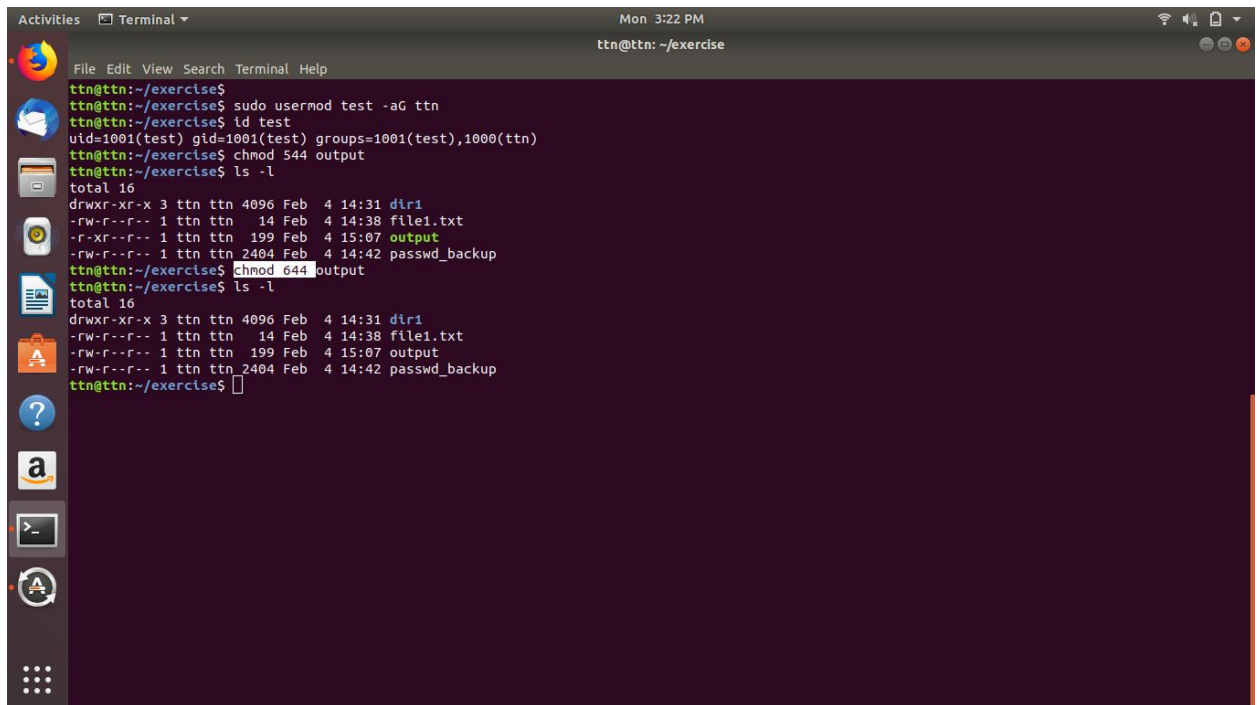
A terminal window titled 'Terminal' with a menu bar. The prompt is 'ttn@ttn: ~/exercise'. The user runs 'cd ../..' and 'ls', showing a directory listing with 'dir1', 'file1.txt', 'output', and 'passwd\_backup'. Then, the user runs 'chmod 666 output' and 'ls -l' again, showing that the permissions for 'output' have been changed to 'rw-rw-rw-'. Finally, the user runs 'sudo su - test', logs in as the 'test' user, and runs 'ls', 'cd exercise', 'vim output', and 'cat output'.

```
ttn@ttn:~/exercise/dir1/dir2$ cd ../..
ttn@ttn:~/exercise$ ls
dir1 file1.txt output passwd_backup
ttn@ttn:~/exercise$ ls -l
total 16
drwxr-xr-x 3 ttn ttn 4096 Feb  4 14:31 dir1
-rw-r--r-- 1 ttn ttn  14 Feb  4 14:38 file1.txt
-rw-r--r-- 1 ttn ttn 189 Feb  4 14:49 output
-rw-r--r-- 1 ttn ttn 2404 Feb  4 14:42 passwd_backup
ttn@ttn:~/exercise$ chmod 666 output
ttn@ttn:~/exercise$ ls -l
total 16
drwxr-xr-x 3 ttn ttn 4096 Feb  4 14:31 dir1
-rw-r--r-- 1 ttn ttn  14 Feb  4 14:38 file1.txt
-rw-rw-rw- 1 ttn ttn 189 Feb  4 14:49 output
-rw-r--r-- 1 ttn ttn 2404 Feb  4 14:42 passwd_backup
ttn@ttn:~/exercise$ sudo su - test
[sudo] password for ttn:
Sorry, try again.
[sudo] password for ttn:
No directory, logging in with HOME=/
$ ls
bin  cdrom  etc  initrd.img  lib  lost+found  mnt  proc  run  snap  sys  usr  vmlinuz
boot  dev  home  initrd.img.old  lib64  media  opt  root  sbin  srv  tmp  var  vmlinuz.old
$ cd /home/ttn
$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  Music  Pictures  Public  Templates  Videos
$ cd exercise
$ vim 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
Edited!!
$
```

- (1.) Add group owner of the "output" file as the secondary group of testuser and check/change the "output" file permission if it is editable by group. Once done revert the



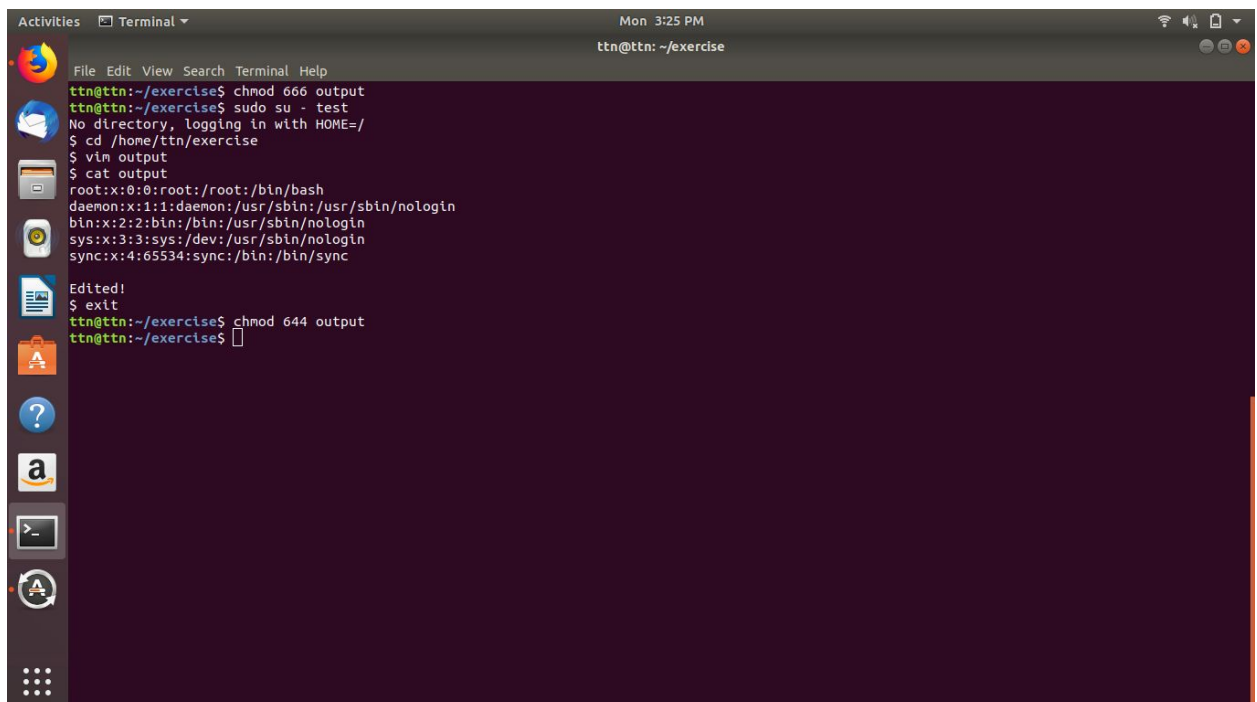
changes.



A terminal window titled 'ttn@ttn: ~/exercise' showing a series of commands and their outputs. The user 'ttn' is in the directory '~/exercise'. The commands and outputs are as follows:

```
ttn@ttn:~/exercise$ sudo usermod test -aG ttn
ttn@ttn:~/exercise$ id test
uid=1001(test) gid=1001(test) groups=1001(test),1000(ttn)
ttn@ttn:~/exercise$ chmod 544 output
ttn@ttn:~/exercise$ ls -l
total 16
drwxr-xr-x 3 ttn ttn 4096 Feb  4 14:31 dir1
-rw-r--r-- 1 ttn ttn  14 Feb  4 14:38 file1.txt
-r-xr--r-- 1 ttn ttn  199 Feb  4 15:07 output
-rw-r--r-- 1 ttn ttn 2404 Feb  4 14:42 passwd_backup
ttn@ttn:~/exercise$ chmod 644 output
ttn@ttn:~/exercise$ ls -l
total 16
drwxr-xr-x 3 ttn ttn 4096 Feb  4 14:31 dir1
-rw-r--r-- 1 ttn ttn  14 Feb  4 14:38 file1.txt
-rw-r--r-- 1 ttn ttn  199 Feb  4 15:07 output
-rw-r--r-- 1 ttn ttn 2404 Feb  4 14:42 passwd_backup
ttn@ttn:~/exercise$
```

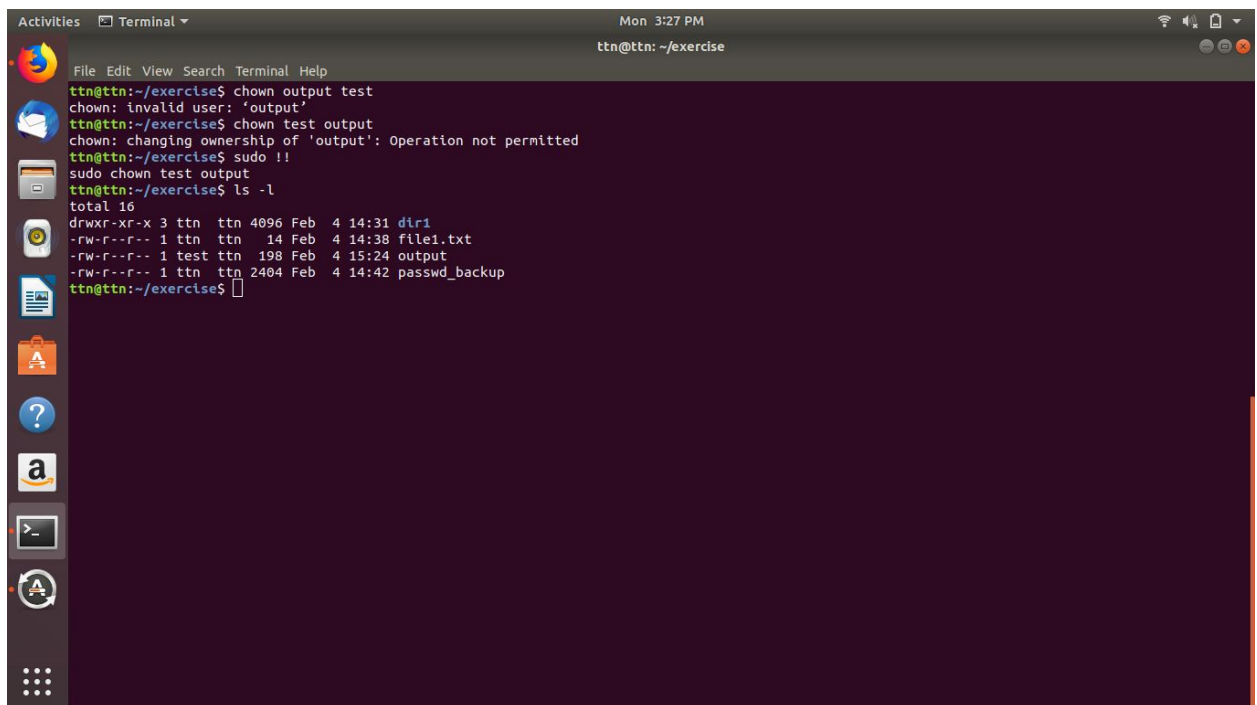
(2.) Make the file editable to the world so that test user can access it. Revert the changes after verification



A terminal window titled 'ttn@ttn: ~/exercise' showing a series of commands and their outputs. The user 'ttn' is in the directory '~/exercise'. The commands and outputs are as follows:

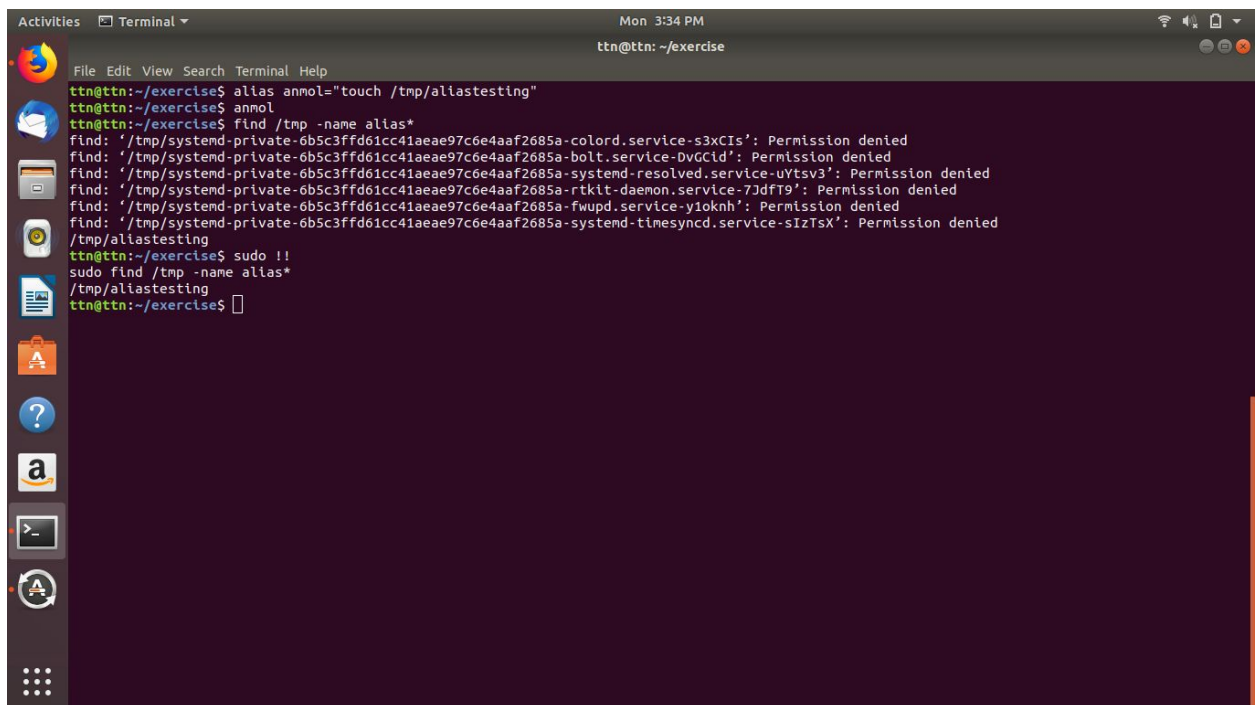
```
ttn@ttn:~/exercise$ chmod 666 output
ttn@ttn:~/exercise$ sudo su - test
No directory, logging in with HOME=/
$ cd /home/ttn/exercise
$ vim output
$ cat output
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
Edited!
$ exit
ttn@ttn:~/exercise$ chmod 644 output
ttn@ttn:~/exercise$
```

(3.)Change the ownership to edit the file.

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 3:27 PM, ttn@ttn: ~/exercise). The terminal shows a series of commands and their outputs. The user attempts to change ownership of 'test' to 'output' using 'chown output test', which fails with 'chown: invalid user: 'output''. They then try 'chown test output', which fails with 'chown: changing ownership of 'output': Operation not permitted'. Finally, they use 'sudo !!' to run 'sudo chown test output' successfully. A subsequent 'ls -l' command shows the file permissions and ownership of the directory and its contents.

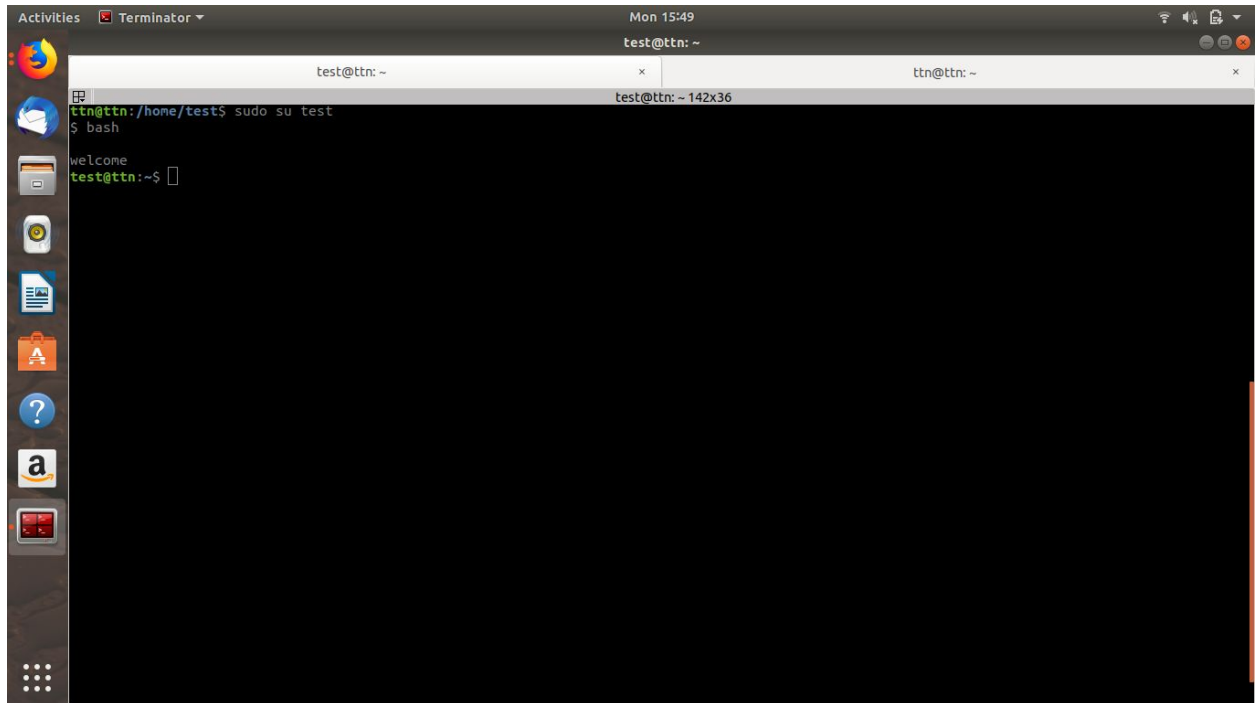
```
ttn@ttn:~/exercise$ chown output test
chown: invalid user: 'output'
ttn@ttn:~/exercise$ chown test output
chown: changing ownership of 'output': Operation not permitted
ttn@ttn:~/exercise$ sudo !!
sudo chown test output
ttn@ttn:~/exercise$ ls -l
total 16
drwxr-xr-x 3 ttn ttn 4096 Feb  4 14:31 dir1
-rw-r--r-- 1 ttn ttn  14 Feb  4 14:38 file1.txt
-rw-r--r-- 1 test ttn  198 Feb  4 15:24 output
-rw-r--r-- 1 ttn ttn 2404 Feb  4 14:42 passwd_backup
ttn@ttn:~/exercise$
```

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

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 3:34 PM, ttn@ttn: ~/exercise). The terminal shows the user creating an alias 'anmol' for the command 'touch /tmp/aliastesting'. They then run 'anmol', which fails with a 'Permission denied' error. They then run 'sudo !!' to run 'sudo touch /tmp/aliastesting' successfully. A final 'ls -l' command shows the file permissions and ownership of the directory and its contents.

```
ttn@ttn:~/exercise$ alias anmol="touch /tmp/aliastesting"
ttn@ttn:~/exercise$ anmol
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-color.service-s3xCiS': Permission denied
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-bolt.service-DvGCId': Permission denied
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-systemd-resolved.service-uYtsv3': Permission denied
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-rtkit-daemon.service-7JdfT9': Permission denied
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-fwupd.service-yioknh': Permission denied
find: '/tmp/systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-systemd-timesyncd.service-sIZTsX': Permission denied
/tmp/aliastesting
ttn@ttn:~/exercise$ sudo !!
sudo touch /tmp/aliastesting
/tmp/aliastesting
ttn@ttn:~/exercise$
```

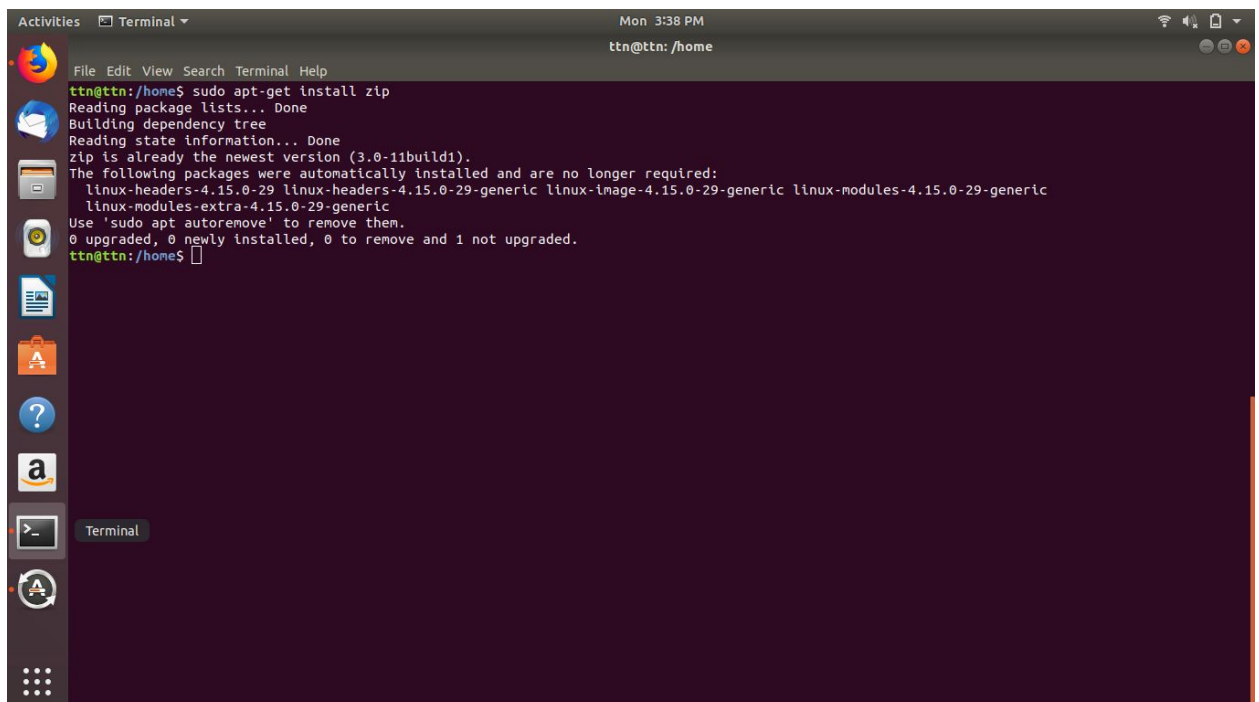
12. Edit `~/bashrc` file such that when you change to "test" user it should clear the screen and print "Welcome".



A terminal window titled "Terminator" with a dark background. The window shows the process of switching to the "test" user. The prompt is `ttn@ttn: ~/home/test$`. The command `sudo su test` is entered, followed by `$ bash`. The output shows `welcome` and the prompt `test@ttn: ~$`. The terminal window has a title bar with "Mon 15:49" and standard window controls. The left sidebar shows various application icons.

```
ttn@ttn: ~/home/test$ sudo su test
$ bash
welcome
test@ttn: ~$
```

13. Install "zip" package.

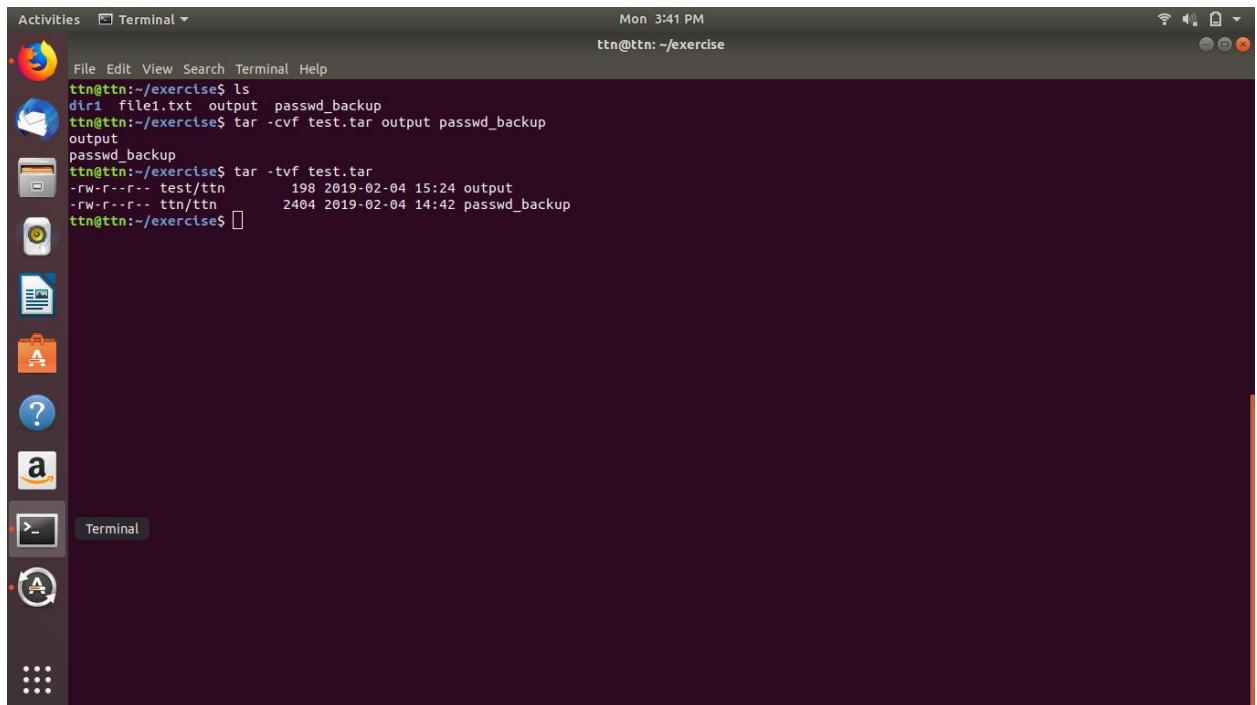


A terminal window titled "Terminal" with a dark background. The window shows the command `sudo apt-get install zip` being executed. The output displays the progress of the installation, including reading package lists, building the dependency tree, and reading state information. It indicates that `zip` is already the newest version (3.0-11build1). It also lists packages that were automatically installed and are no longer required: `linux-headers-4.15.0-29`, `linux-headers-4.15.0-29-generic`, `linux-image-4.15.0-29-generic`, and `linux-modules-extra-4.15.0-29-generic`. The prompt is `ttn@ttn: /home$`. The terminal window has a title bar with "Mon 3:38 PM" and standard window controls. The left sidebar shows various application icons.

```
ttn@ttn: /home$ sudo apt-get install zip
Reading package lists... Done
Building dependency tree
Reading state information... Done
zip is already the newest version (3.0-11build1).
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-29 linux-headers-4.15.0-29-generic linux-image-4.15.0-29-generic
  linux-modules-extra-4.15.0-29-generic
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
ttn@ttn: /home$
```



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

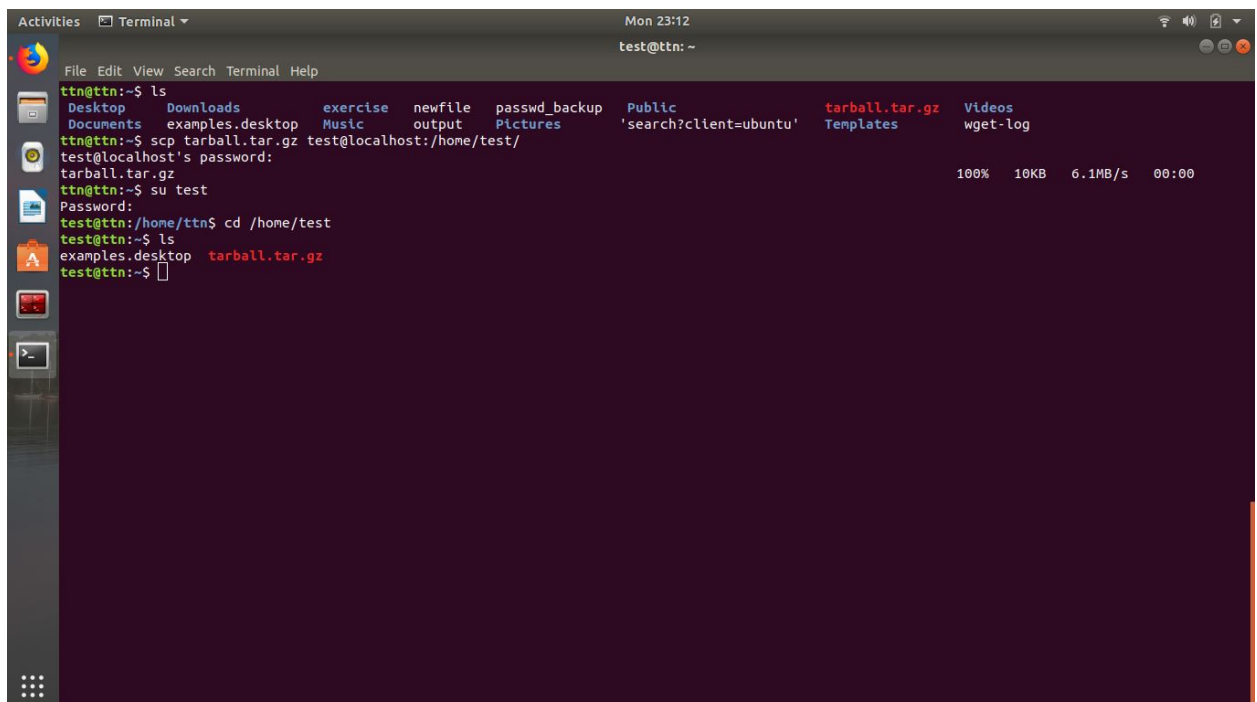


```
Mon 3:41 PM
ttn@ttn: ~/exercise

File Edit View Search Terminal Help

ttn@ttn:~/exercise$ ls
dir1 file1.txt output passwd_backup
ttn@ttn:~/exercise$ tar -cvf test.tar output passwd_backup
output
passwd_backup
ttn@ttn:~/exercise$ tar -tvf test.tar
-rw-r--r-- test/ttn      198 2019-02-04 15:24 output
-rw-r--r-- ttn/ttn      2404 2019-02-04 14:42 passwd_backup
ttn@ttn:~/exercise$
```

15. scp this file to test user



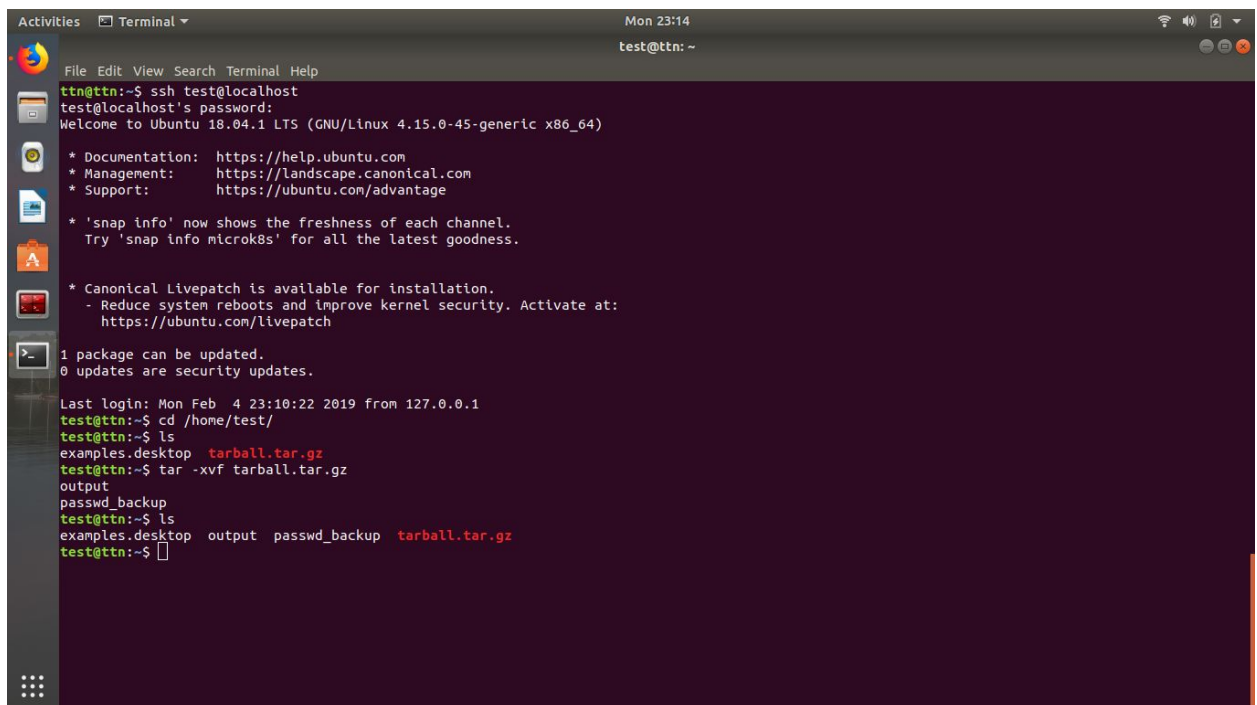
```
Mon 23:12
test@ttn: ~

File Edit View Search Terminal Help

ttn@ttn:~$ ls
Desktop Downloads exercise newfile passwd_backup Public tarball.tar.gz Videos
Documents examples.desktop Music output Pictures 'search?client=ubuntu' Templates wget-log

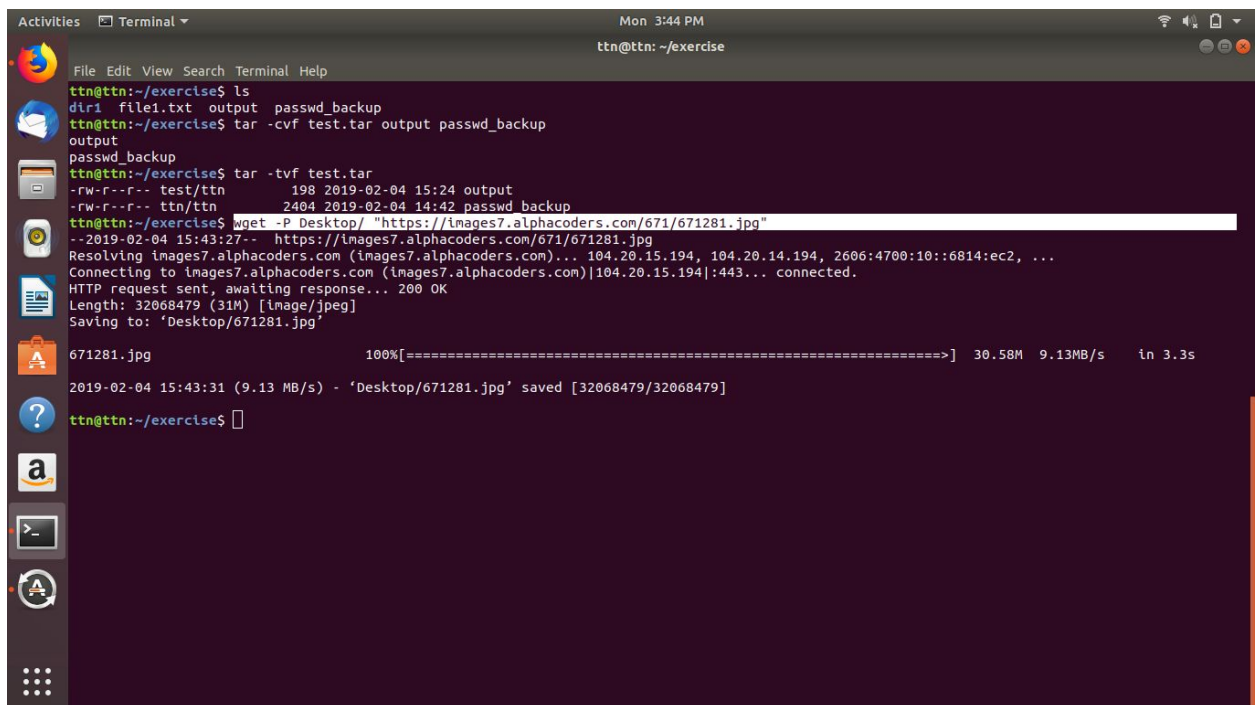
ttn@ttn:~$ scp tarball.tar.gz test@localhost:/home/test/
test@localhost's password:
tarball.tar.gz                               100% 10KB 6.1MB/s 00:00
ttn@ttn:~$ su test
Password:
test@ttn:/home/ttn$ cd /home/test
test@ttn:~$ ls
examples.desktop tarball.tar.gz
test@ttn:~$
```

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

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help). The user 'test' logs into 'localhost' via SSH. The terminal shows the Ubuntu 18.04.1 LTS welcome message, system updates (1 package can be updated), and the user's last login. The user then navigates to '/home/test/' and lists files, showing 'examples.desktop' and 'tarball.tar.gz'. Finally, the user runs 'tar -xvf tarball.tar.gz' to extract the contents, listing 'output' and 'passwd\_backup' files.

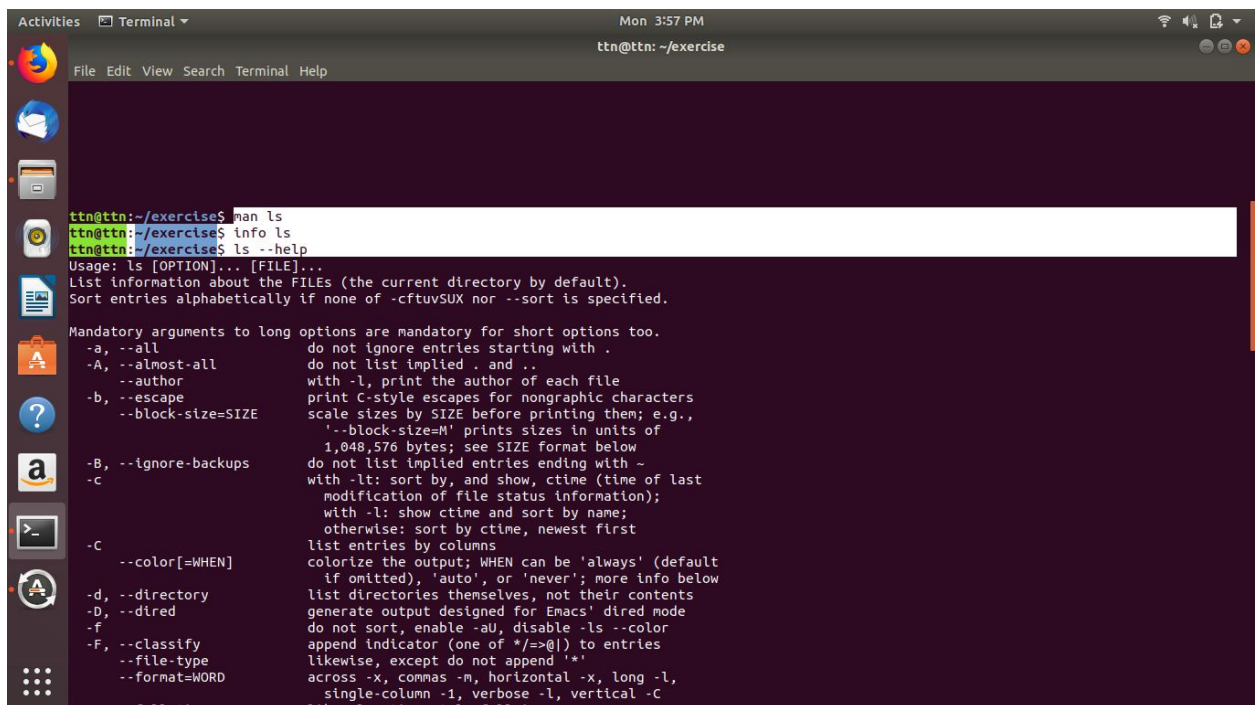
```
test@ttn: ~  
Mon 23:14  
test@ttn: ~  
File Edit View Search Terminal Help  
test@ttn:~$ ssh test@localhost  
test@localhost's password:  
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-45-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
* 'snap info' now shows the freshness of each channel.  
  Try 'snap info microk8s' for all the latest goodness.  
  
* Canonical Livepatch is available for installation.  
  - Reduce system reboots and improve kernel security. Activate at:  
    https://ubuntu.com/livepatch  
  
1 package can be updated.  
0 updates are security updates.  
  
Last login: Mon Feb  4 23:10:22 2019 from 127.0.0.1  
test@ttn:~$ cd /home/test/  
test@ttn:~$ ls  
examples.desktop  tarball.tar.gz  
test@ttn:~$ tar -xvf tarball.tar.gz  
output  
passwd_backup  
test@ttn:~$ ls  
examples.desktop  output  passwd_backup  tarball.tar.gz  
test@ttn:~$
```

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

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help). The user 'ttn' is in the directory '~/exercise'. The user lists files, showing 'dir1', 'file1.txt', 'output', and 'passwd\_backup'. The user then runs 'tar -cvf test.tar output passwd\_backup' to create a tarball. Next, the user runs 'tar -tvf test.tar' to list the contents of the tarball. Finally, the user runs 'wget -P Desktop/ "https://images7.alphacoders.com/671/671281.jpg"' to download an image from the web. The terminal shows the progress of the download, including the file size (32068479 bytes) and the save location ('Desktop/671281.jpg').

```
ttn@ttn: ~/exercise  
Mon 3:44 PM  
ttn@ttn: ~/exercise  
File Edit View Search Terminal Help  
ttn@ttn:~/exercise$ ls  
dir1  file1.txt  output  passwd_backup  
ttn@ttn:~/exercise$ tar -cvf test.tar output passwd_backup  
output  
passwd_backup  
ttn@ttn:~/exercise$ tar -tvf test.tar  
-rw-r--r-- test/ttn      198 2019-02-04 15:24 output  
-rw-r--r-- ttn/ttn      2404 2019-02-04 14:42 passwd_backup  
ttn@ttn:~/exercise$ wget -P Desktop/ "https://images7.alphacoders.com/671/671281.jpg"  
--2019-02-04 15:43:27-- https://images7.alphacoders.com/671/671281.jpg  
Resolving images7.alphacoders.com (images7.alphacoders.com)... 104.20.15.194, 104.20.14.194, 2606:4700:10::6814:ec2, ...  
Connecting to images7.alphacoders.com (images7.alphacoders.com)[104.20.15.194]:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 32068479 (31M) [image/jpeg]  
Saving to: 'Desktop/671281.jpg'  
  
671281.jpg                               100%[=====] 30.58M  9.13MB/s  in 3.3s  
2019-02-04 15:43:31 (9.13 MB/s) - 'Desktop/671281.jpg' saved [32068479/32068479]  
ttn@ttn:~/exercise$
```

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

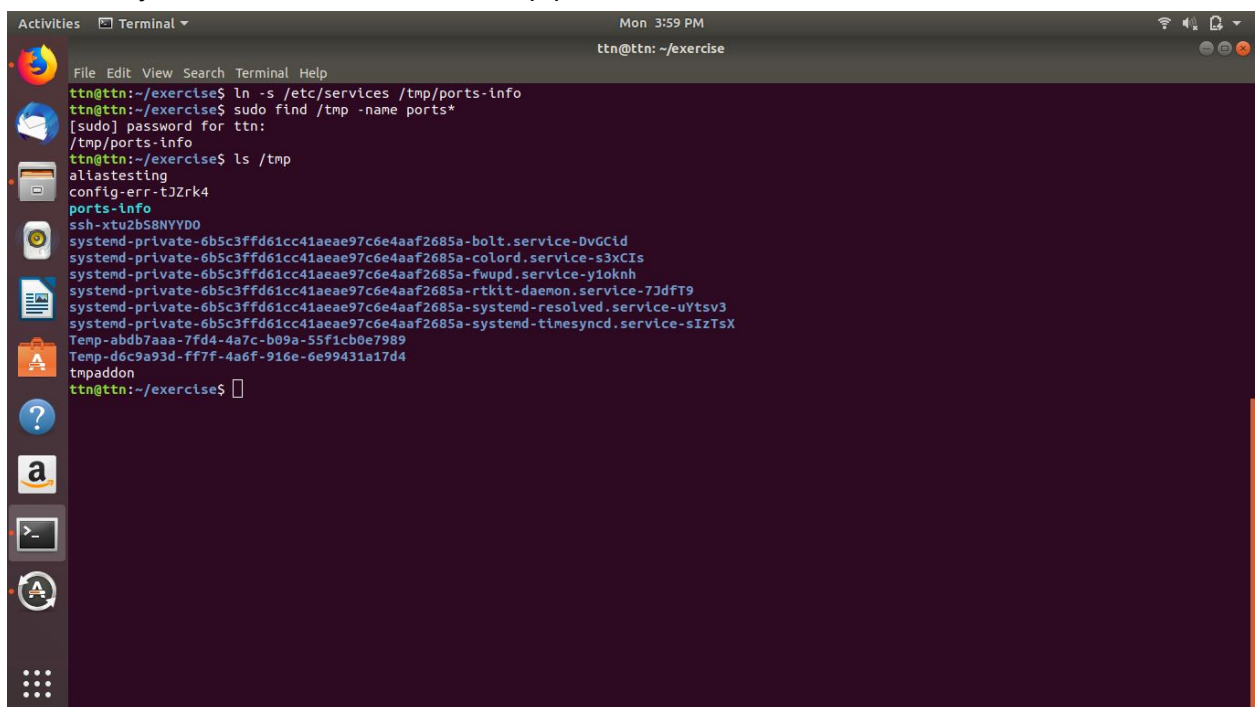


```
Mon 3:57 PM
ttn@ttn: ~/exercise

ttn@ttn:~/exercise$ man ls
ttn@ttn:~/exercise$ info ls
ttn@ttn:~/exercise$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILES (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.
  -a, --all                do not ignore entries starting with .
  -A, --almost-all        do not list implied . and ..
  -l, --long               with -l, print the author of each file
  -b, --escape             print C-style escapes for nongraphic characters
                        --block-size=SIZE  scale sizes by SIZE before printing them; e.g.,
                        '--block-size=M' prints sizes in units of
                        1,048,576 bytes; see SIZE format below
  -B, --ignore-backups    do not list implied entries ending with ~
  -c                      do not list implied entries ending with ~
                        with -lt: sort by, and show, ctime (time of last
                        modification of file status information);
                        with -l: show ctime and sort by name;
                        otherwise: sort by ctime, newest first
  -C                      list entries by columns
                        --color[=WHEN]    colorize the output; WHEN can be 'always' (default
                        if omitted), 'auto', or 'never'; more info below
  -d, --directory         list directories themselves, not their contents
  -D, --dired              generate output designed for Emacs' dired mode
  -f                      do not sort, enable -aU, disable -ls --color
  -F, --classify           append indicator (one of */=>@|) to entries
                        likewise, except do not append '*'
                        --format=WORD      across -x, commas -m, horizontal -x, long -l,
                        single-column -1, verbose -l, vertical -C
                        --full-time       like -l --time-style=full-iso
```

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

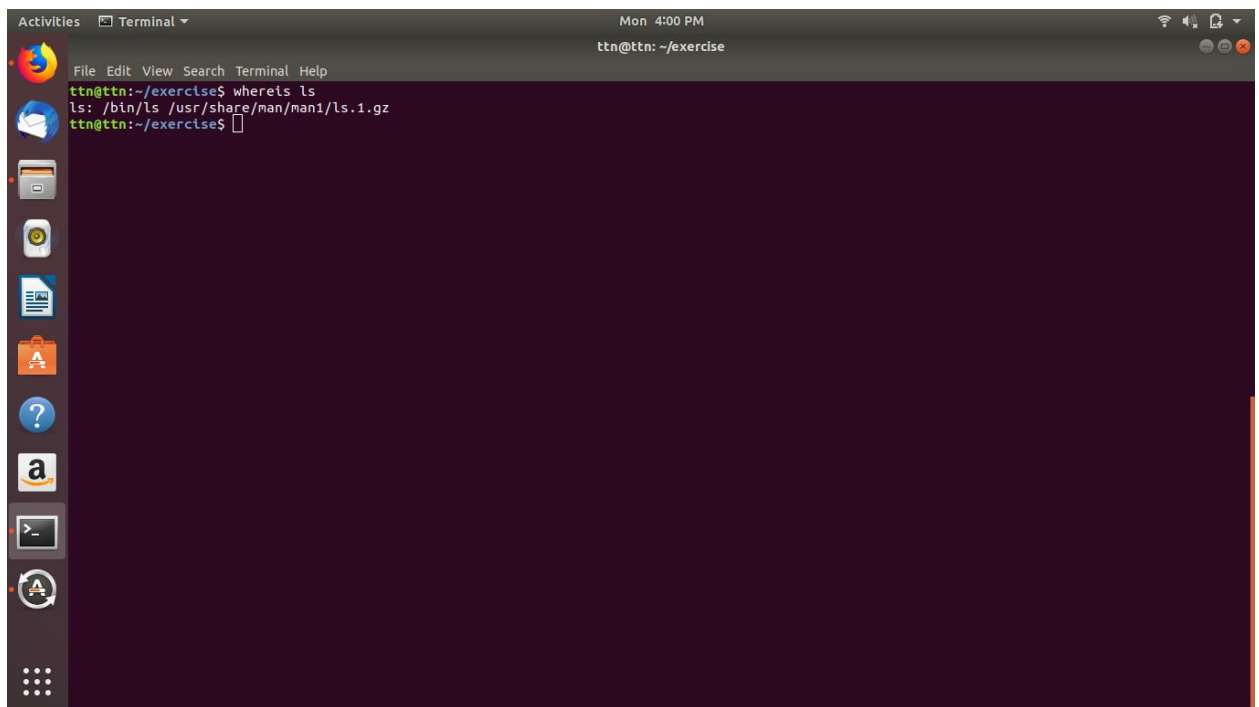


```
Mon 3:59 PM
ttn@ttn: ~/exercise

ttn@ttn:~/exercise$ ln -s /etc/services /tmp/ports-info
ttn@ttn:~/exercise$ sudo find /tmp -name ports*
[sudo] password for ttn:
/tmp/ports-info
ttn@ttn:~/exercise$ ls /tmp
aliastesting
config-err-tJZrk4
ports-info
ssh-txu2bS8NYVD0
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-bolt.service-DvGCid
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-colord.service-s3xCIs
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-fwupd.service-y1oknh
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-rtkit-daemon.service-7JdfT9
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-systemd-resolved.service-uYtsv3
systemd-private-6b5c3ffd61cc41aeae97c6e4aaf2685a-systemd-timesyncd.service-sIZTsX
Temp-abdb7aaa-7fd4-4a7c-b09a-55f1cb0e7989
Temp-d6c9a93d-ff7f-4a6f-916e-6e99431a17d4
tmpaddon
ttn@ttn:~/exercise$
```

## 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 joinee you do not have any idea about where is that

Installed. How can you check that?



A terminal window titled "Terminal" is shown. The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal output shows the command `whereis ls` being executed, resulting in the output `ls: /bin/ls /usr/share/man/man1/ls.1.gz`. The prompt `ttn@ttn: ~/exercise` is visible at the bottom of the terminal. The window's title bar indicates the date and time as "Mon 4:00 PM". The window's status bar shows the username and host as "ttn@ttn: ~/exercise". The window's left sidebar contains a list of application icons, including a file manager, a terminal, a web browser, a mail client, a calendar, a clock, a weather app, a music player, a video player, a game, a social media app, a shopping app, a search app, an Amazon app, a terminal, and a terminal.

```
ttn@ttn:~/exercise$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz
ttn@ttn:~/exercise$
```