Introduction to Linux

Exercise 1

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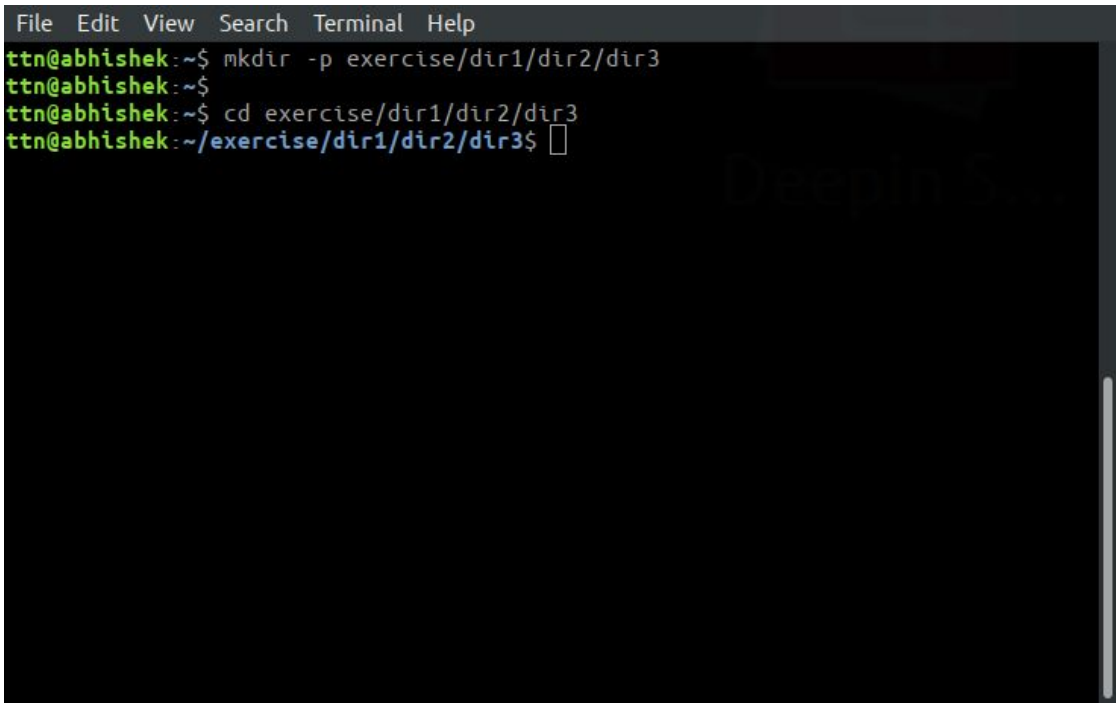
1) **Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "exercise" with single command.**

```
> mkdir -p exercise/dir1/dir2/dir3
```



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

```
> touch emptyFile1 emptyFile2
```

```
File  Edit  View  Search  Terminal  Help
ttn@abhishek:~$ mkdir -p exercise/dir1/dir2/dir3
ttn@abhishek:~$
ttn@abhishek:~$ cd ~/exercise/dir1/dir2/dir3
ttn@abhishek:~/exercise/dir1/dir2/dir3$
ttn@abhishek:~/exercise/dir1/dir2/dir3$
ttn@abhishek:~/exercise/dir1/dir2/dir3$ cd ~/exercise/dir1/dir2/
ttn@abhishek:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@abhishek:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@abhishek:~/exercise/dir1/dir2$
```

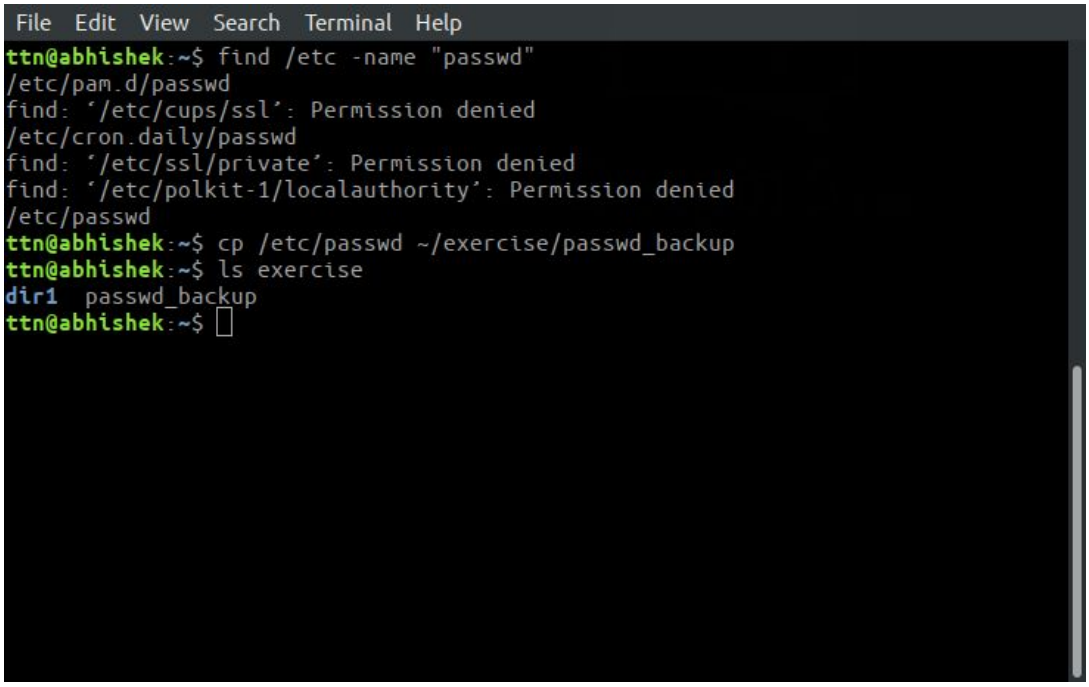
3) **Create one file file1.txt containing text "hello world" and save it.**

```
> echo "hello world" > file1.txt
```

```
File  Edit  View  Search  Terminal  Help
ttn@abhishek:~$ mkdir -p exercise/dir1/dir2/dir3
ttn@abhishek:~$
ttn@abhishek:~$ cd ~/exercise/dir1/dir2/dir3
ttn@abhishek:~/exercise/dir1/dir2/dir3$
ttn@abhishek:~/exercise/dir1/dir2/dir3$
ttn@abhishek:~/exercise/dir1/dir2/dir3$ cd ~/exercise/dir1/dir2/
ttn@abhishek:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@abhishek:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@abhishek:~/exercise/dir1/dir2$ echo "hello world" > file1.txt
ttn@abhishek:~/exercise/dir1/dir2$ cat file1.txt
hello world
ttn@abhishek:~/exercise/dir1/dir2$
```

4) **Find a "passwd" file using find command inside /etc. copy this files as passwd_copy and then rename this file as passwd_backup.**

```
> find /etc -name "passwd"
> cp /etc/passwd ~/exercise/passwd_backup
```



5) **Try reading passwd_backup file in multiple tools: less,more,cat,strings etc and find the difference in their usage.**

```
> head passwd_backup
> tail passwd_backup
> Less passwd_backup
```

```
File  Edit  View  Search  Terminal  Help
_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
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
ttn:x:1000:1000:Abhishek:/home/ttn:/bin/bash
ttn@abhishek:~/exercise$ head 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
ttn@abhishek:~/exercise$ less passwd_backup
ttn@abhishek:~/exercise$
```

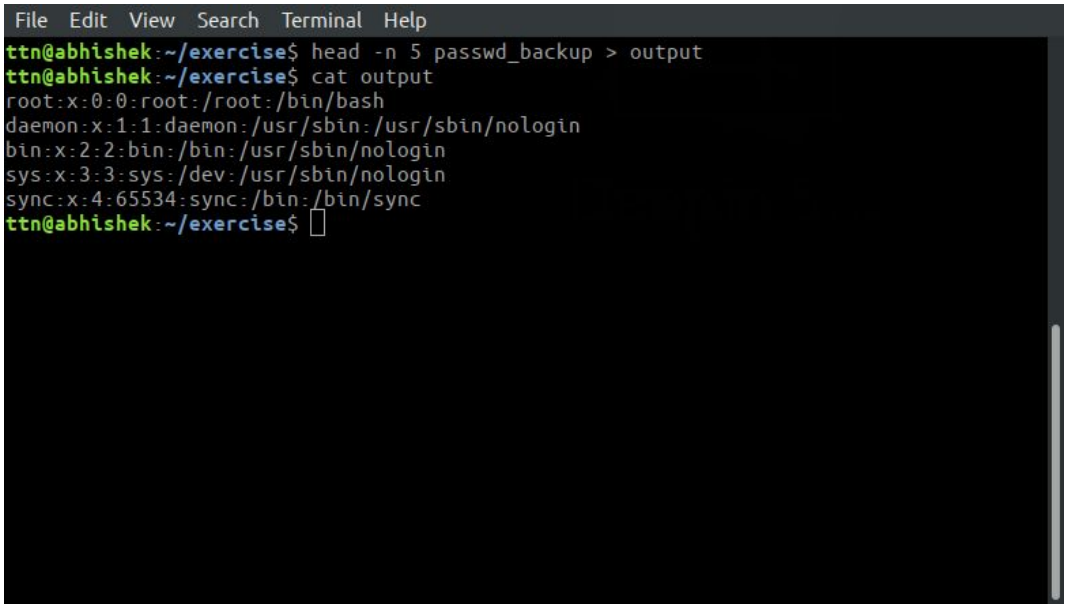
6) **Find out the number of line in password_backup containing "/bin/false".**

```
> grep -rnw passwd_backup -e "/bin/false" | wc -l
```

```
File  Edit  View  Search  Terminal  Help
ttn@abhishek:~/exercise$ grep -rnw passwd_backup -e "/bin/false"
30:speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/fa
lse
31:whoopsie:x:112:117::/nonexistent:/bin/false
37:hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
39:gnome-initial-setup:x:120:65534::/run/gnome-initial-setup/:/bin/false
40:gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false
ttn@abhishek:~/exercise$ grep -rnw passwd_backup -e "/bin/false" | wc -l
5
ttn@abhishek:~/exercise$
```

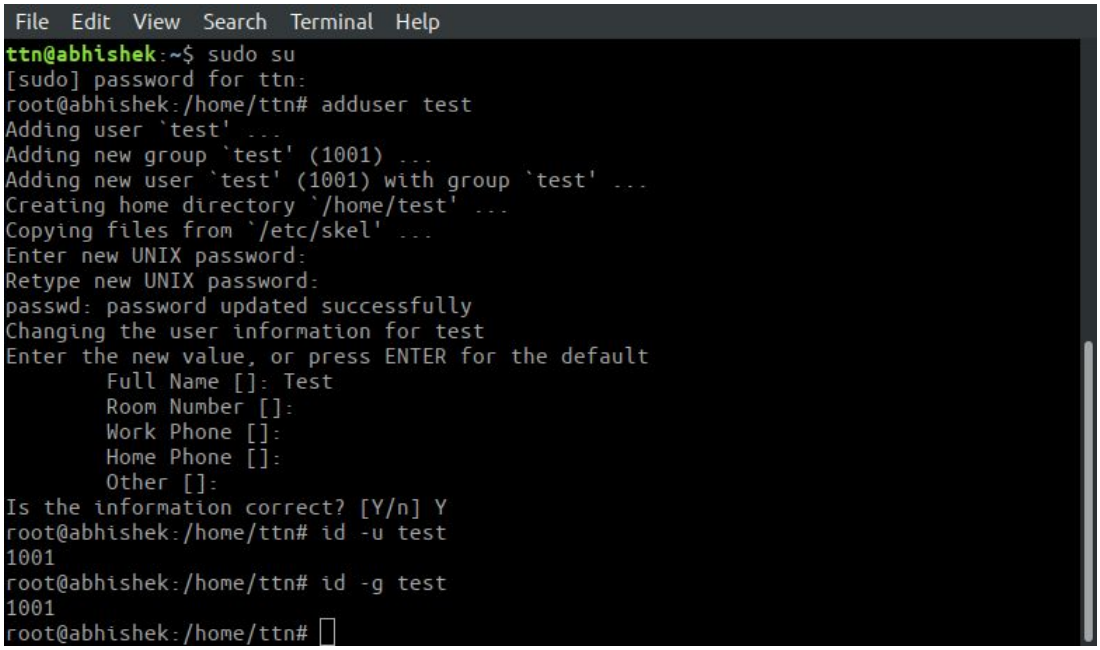
7) **Get the first 5 lines of a file “password_backup” and Redirect the output of the above commands into file "output".**

```
> head -n 5 passwd_backup > output
```



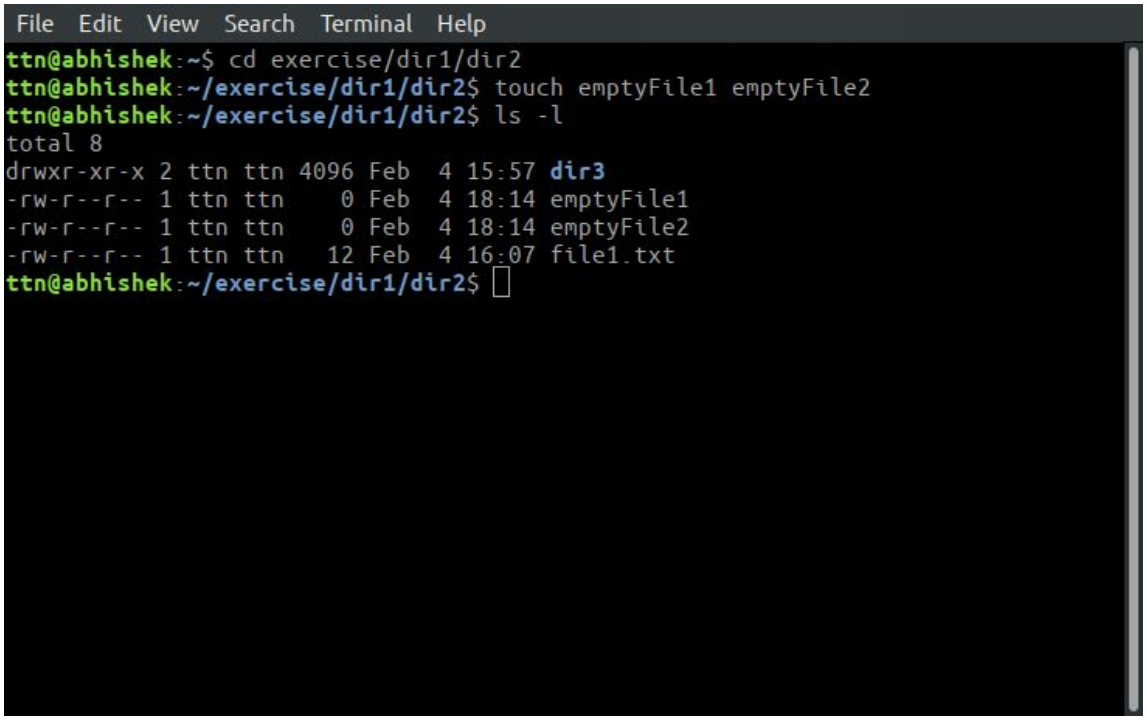
8) Create a "test" user,create its password and find out its uid and gid.

```
> adduser test
> id -u test
> id -g test
```



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

```
> touch emptyFile1 emptyFile2
```



10) Login as test user and edit the "output" file created above. Since the permission won't allow you to save the changes. Configure such that test user can edit it.

- **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**
- **Make the file editable to the world so that test user can access it. Revert the changes after verification.**
- **Change the ownership to edit the file.**

> `chown :test output`

> `chmod 664 output`

> su - test

> `echo hello >> output`

```
File  Edit  View  Search  Terminal  Help
ttn@abhishek:~/exercise$ ls -l output
-rw-r--r-- 1 ttn ttn 189 Feb  5 01:31 output
ttn@abhishek:~/exercise$ sudo chown :test output
ttn@abhishek:~/exercise$ sudo chmod 664 output
ttn@abhishek:~/exercise$ ls -l output
-rw-rw-r-- 1 ttn test 189 Feb  5 01:31 output
ttn@abhishek:~/exercise$ su - test
Password:
test@abhishek:~$ cd /home/ttn/exercise/
test@abhishek:/home/ttn/exercise$ echo hello >> output
test@abhishek:/home/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
hello
test@abhishek:/home/ttn/exercise$
test@abhishek:/home/ttn/exercise$
```

> chmod 666 output

> chmod 644 output

```
File  Edit  View  Search  Terminal  Help
test@abhishek:/home/ttn/exercise$ echo hello >> output
test@abhishek:/home/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
hello
test@abhishek:/home/ttn/exercise$
test@abhishek:/home/ttn/exercise$ su - ttn
Password:
ttn@abhishek:~$ cd exercise
ttn@abhishek:~/exercise$ sudo chmod 666 output
ttn@abhishek:~/exercise$ ls -l output
-rw-rw-rw- 1 ttn test 195 Feb  5 01:53 output
ttn@abhishek:~/exercise$ sudo chmod 644 output
ttn@abhishek:~/exercise$ ls -l output
-rw-r--r-- 1 ttn test 195 Feb  5 01:53 output
ttn@abhishek:~/exercise$
```

> chown test: output

```
File  Edit  View  Search  Terminal  Help
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
hello
test@abhishek:/home/ttn/exercise$
test@abhishek:/home/ttn/exercise$ su - ttn
Password:
ttn@abhishek:~$ cd exercise
ttn@abhishek:~/exercise$ sudo chmod 666 output
ttn@abhishek:~/exercise$ ls -l output
-rw-rw-rw- 1 ttn test 195 Feb  5 01:53 output
ttn@abhishek:~/exercise$ sudo chmod 644 output
ttn@abhishek:~/exercise$ ls -l output
-rw-r--r-- 1 ttn test 195 Feb  5 01:53 output
ttn@abhishek:~/exercise$ chown test: output
chown: changing ownership of 'output': Operation not permitted
ttn@abhishek:~/exercise$ sudo chown test: output
ttn@abhishek:~/exercise$ ls -l output
-rw-r--r-- 1 test test 195 Feb  5 01:53 output
ttn@abhishek:~/exercise$
```

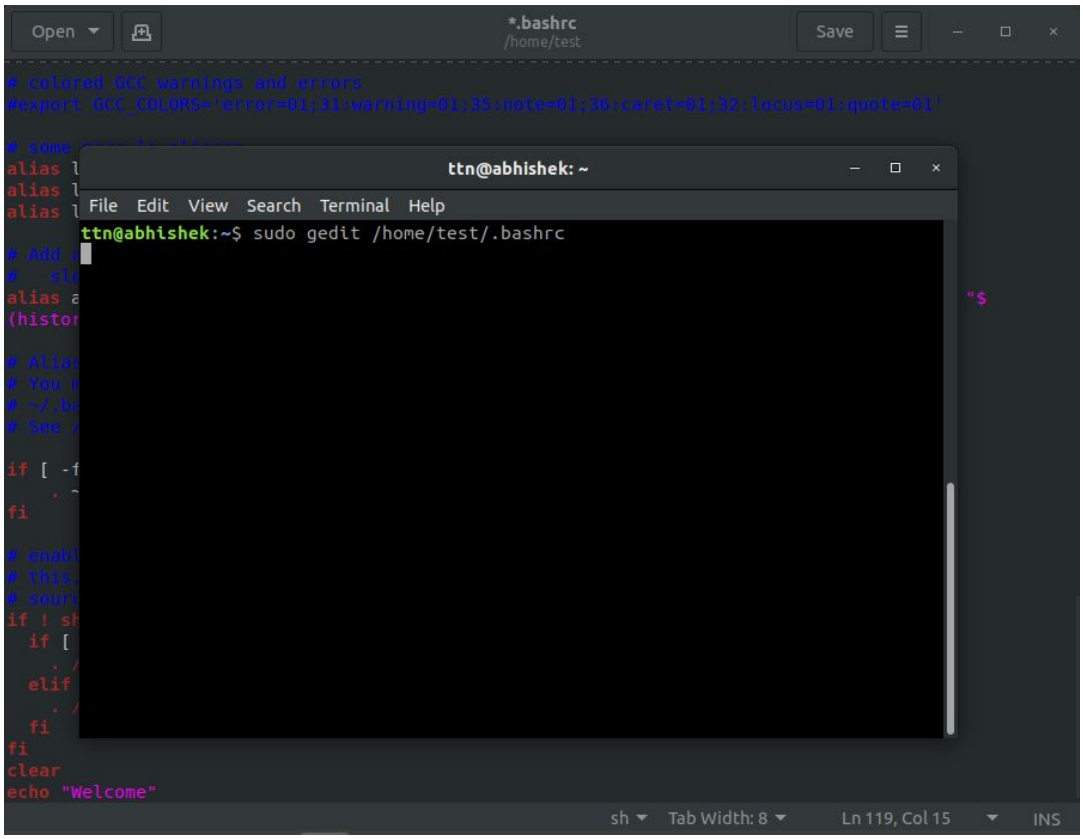
11) Create alias with your name so that it creates a file as "/tmp/aliastesting".

> alias abhishek='mkdir -p /tmp/aliastesting'

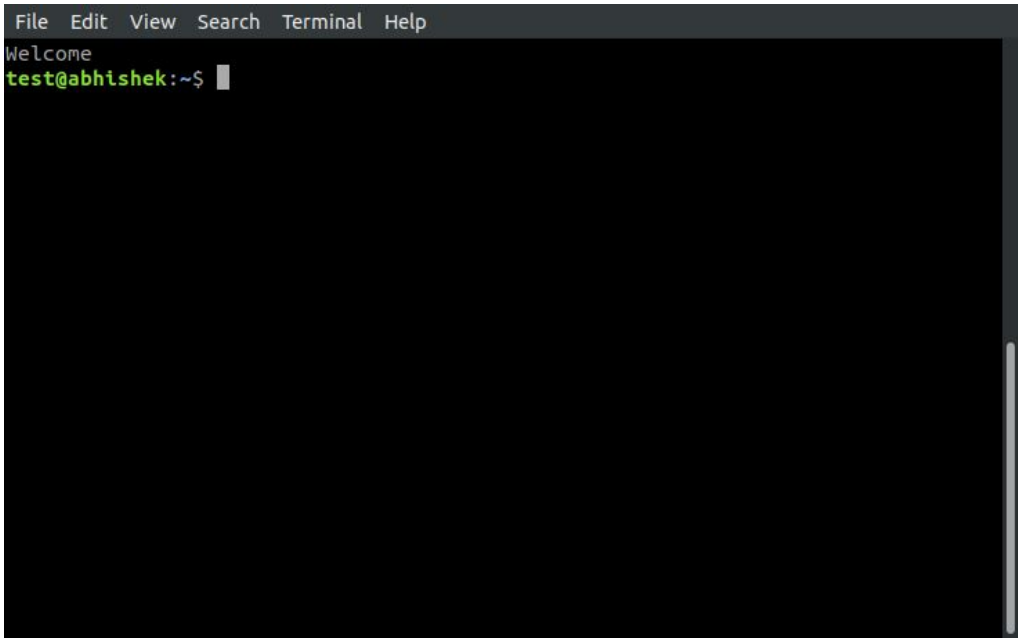
```
File  Edit  View  Search  Terminal  Help
ttn@abhishek:/tmp$ alias abhishek='mkdir -p /tmp/aliastesting'
ttn@abhishek:/tmp$ abhishek
ttn@abhishek:/tmp$ ls -l /tmp/aliastesting
total 0
ttn@abhishek:/tmp$
```

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

> `sudo gedit /home/test/.bashrc`

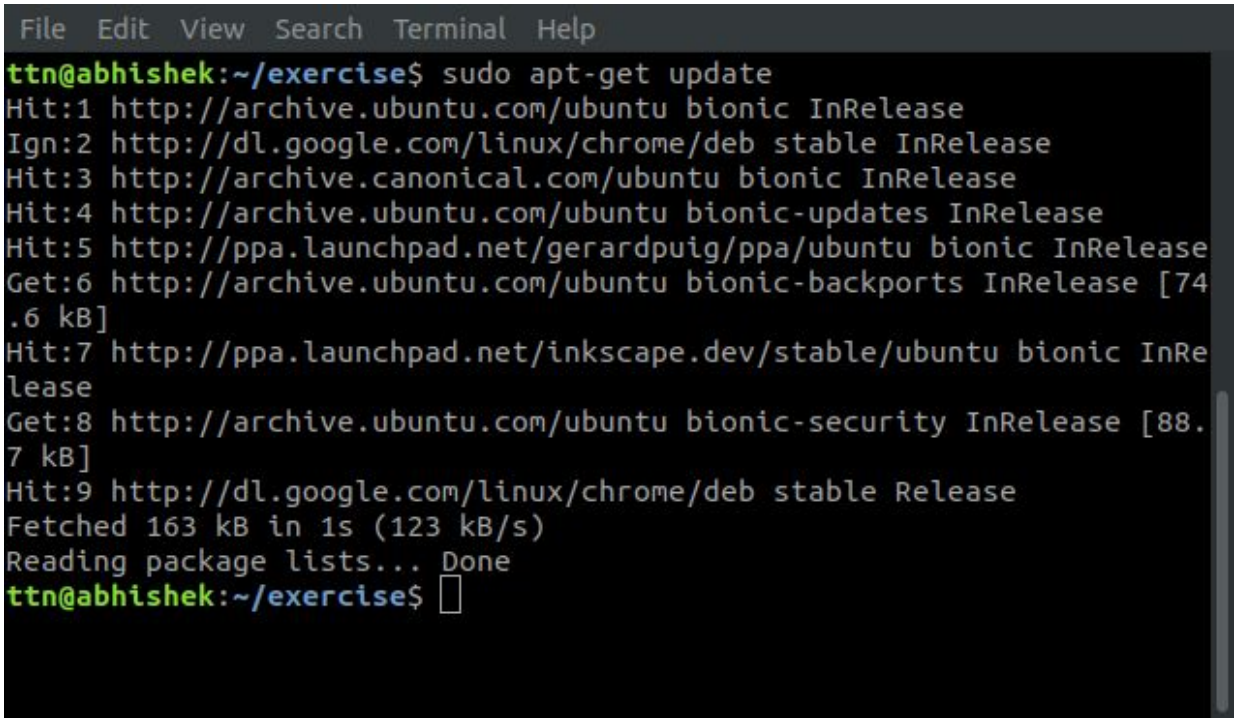


> `su - test`



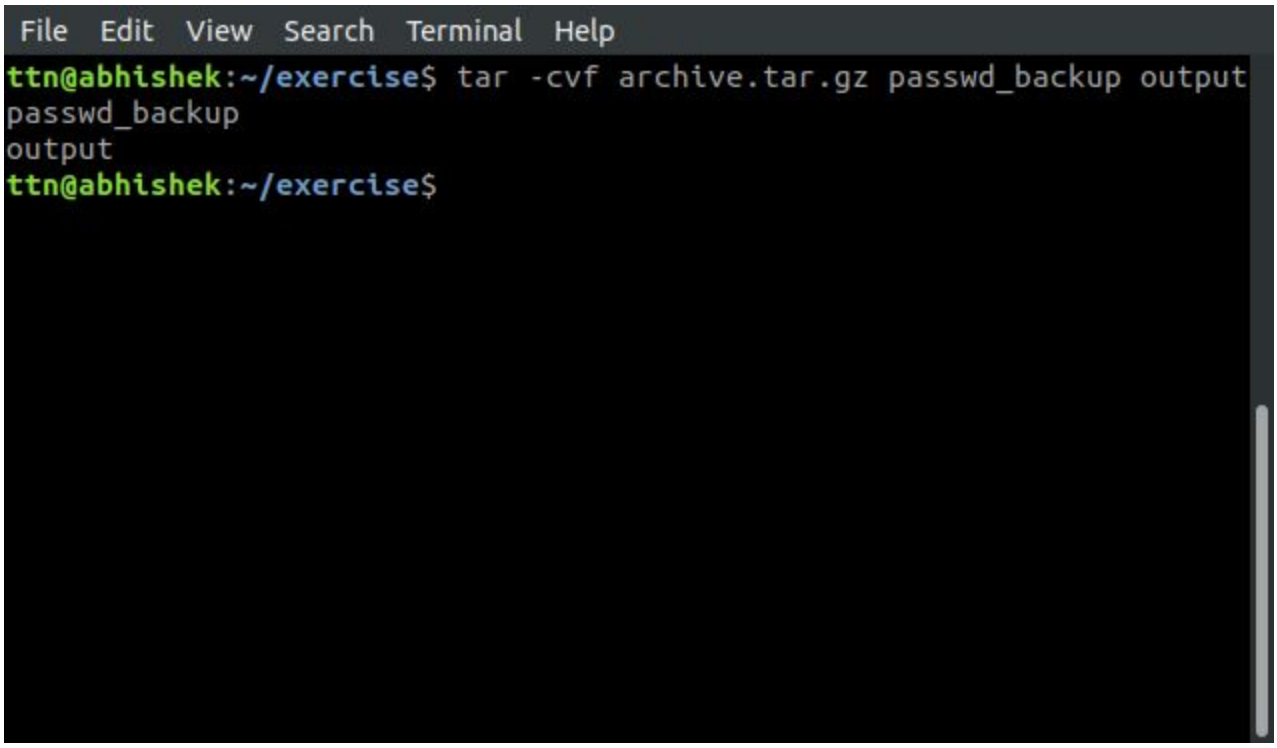
13) **Install “zip” package.**

> `sudo apt-get update`



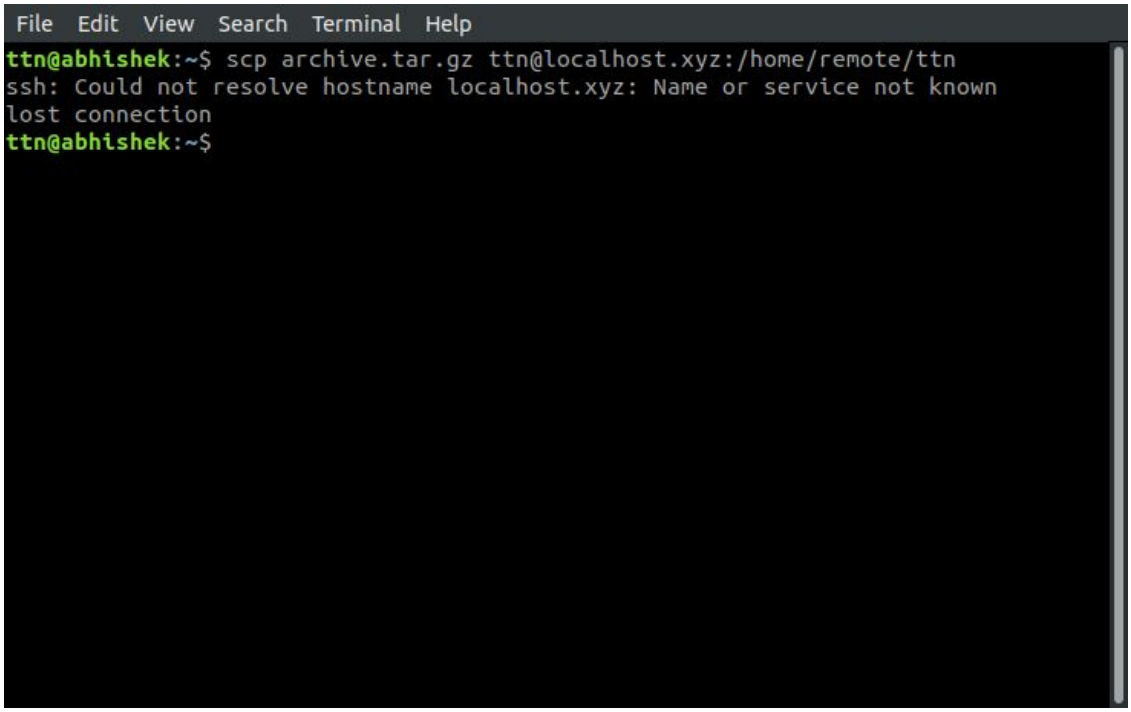
14) Compress "output" and "password_backup" files into a tar ball. List the files present inside the tar created.

```
> tar -cvf archive.tar.gz passwd_backup output
```



15) scp this file to test user

```
> scp archive.tar.gz ttn@localhost.xyz:/home/remote/ttn
```



16) Unzip this tar bar by logging into the remote server

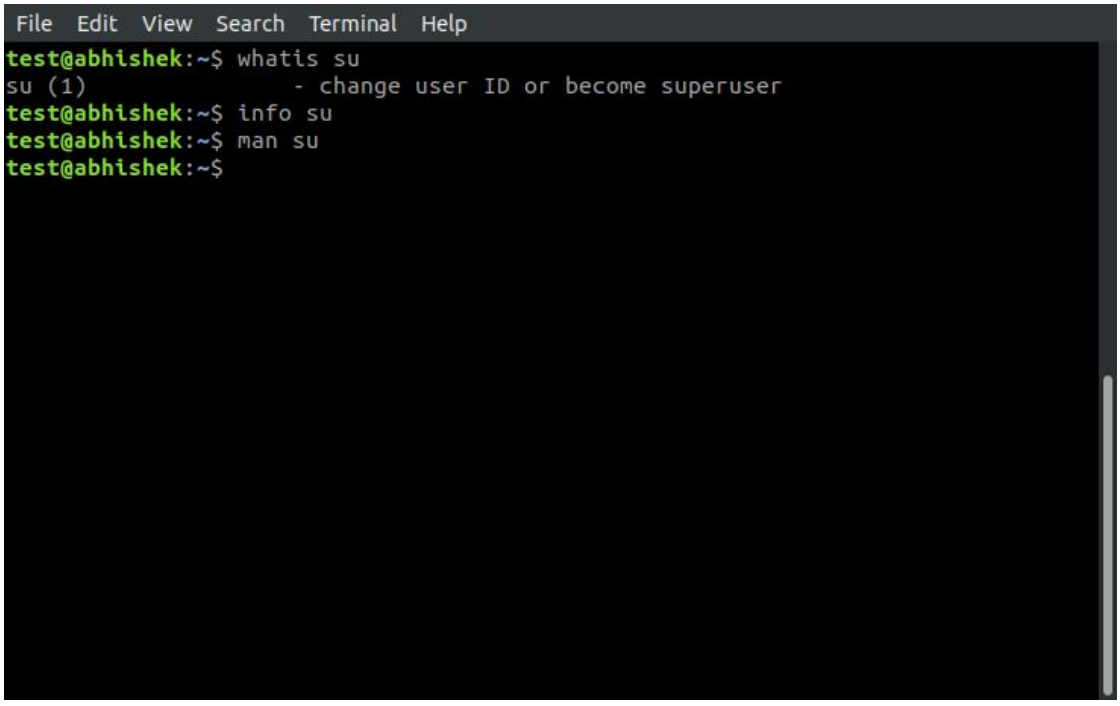
> `ssh user@host tar czf - /home/remote/ttn/`

17) Download any image from web and move to desktop

> `wget http://www.tothenew.com/themes/ttnd/images/logo.png | mv ~/logo.png ~/Desktop`

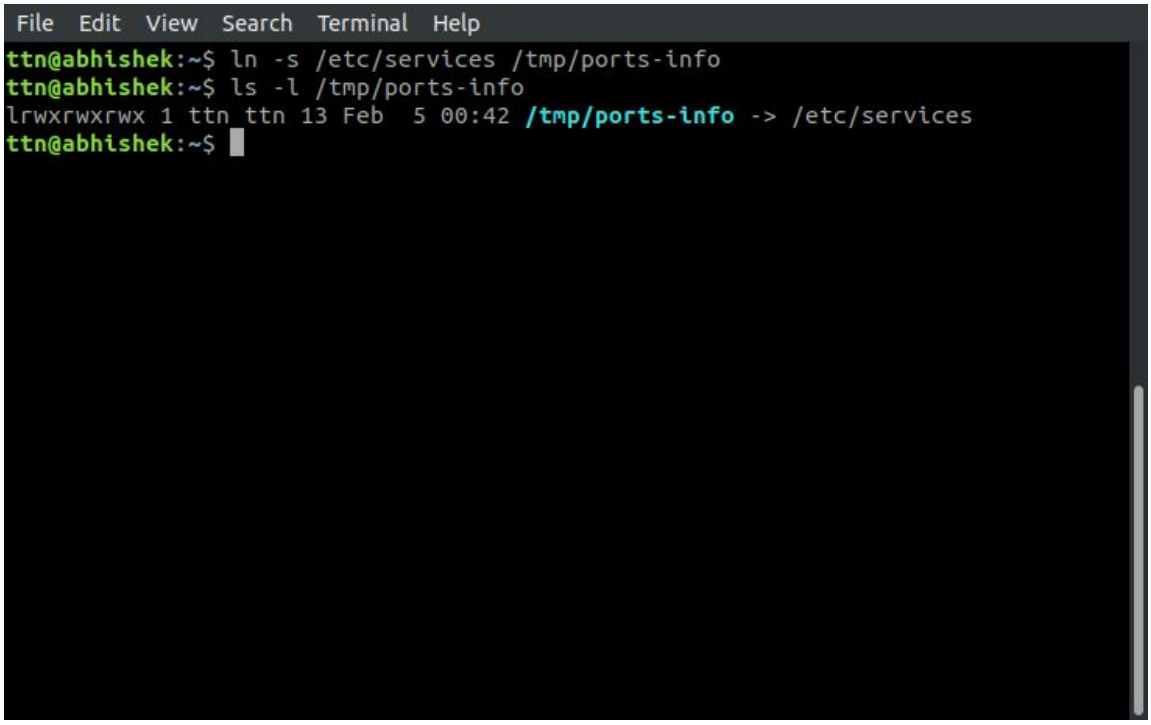
18) How to get help of commands usages.

> by using whatis <command> , info <command>, man <command>, etc



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

> `ln -s /etc/services /tmp/ports-info`



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?

> By using where is command

Ex-