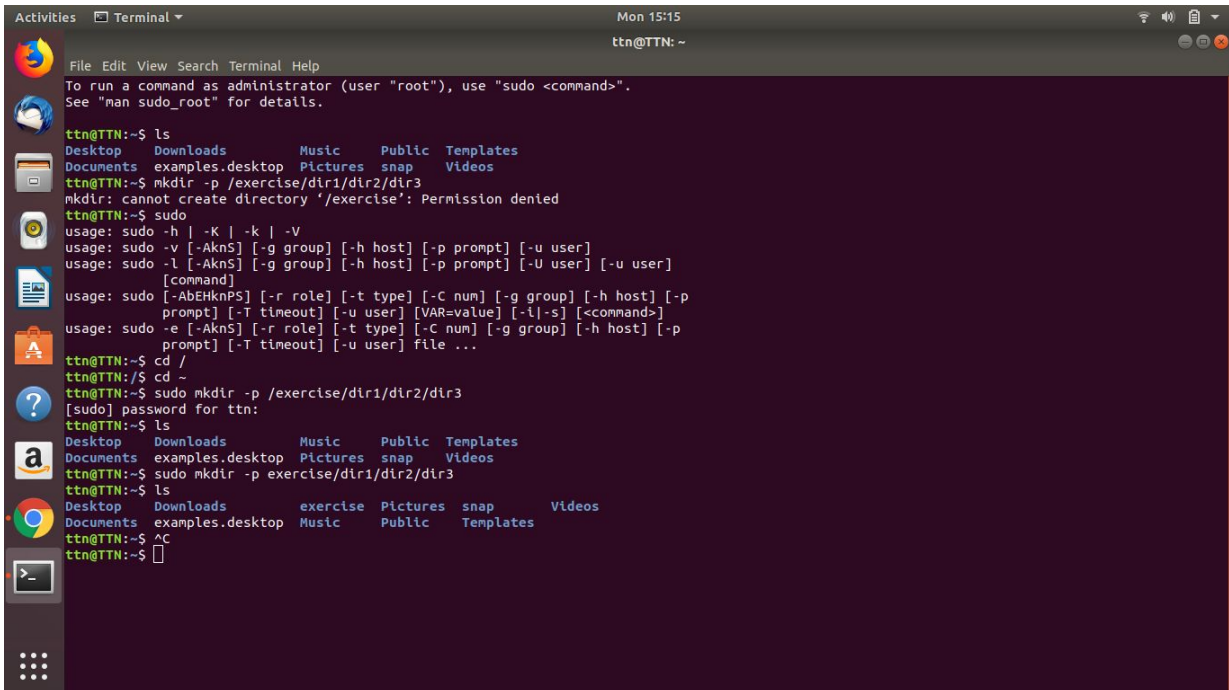


Exercise 1

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

Command : `sudo mkdir -p exercise/dir1/dir2/dir3`



```
Activities  Terminal  Mon 15:15
ttn@TTN: ~

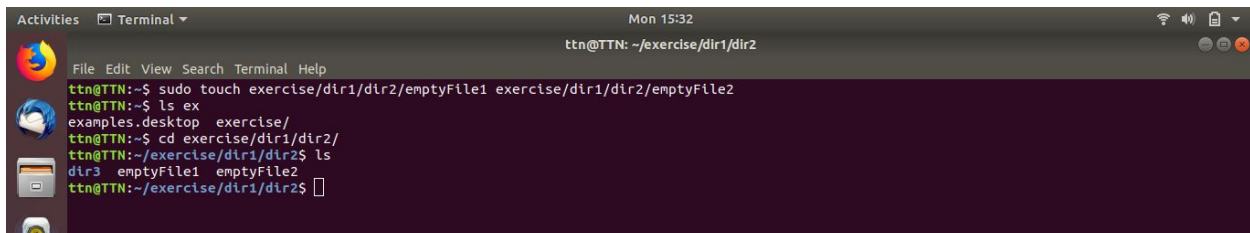
File Edit View Search Terminal Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ttn@TTN:~$ ls
Desktop  Downloads      Music      Public  Templates
Documents  examples.desktop  Pictures  snap    Videos
ttn@TTN:~$ mkdir -p /exercise/dir1/dir2/dir3
mkdir: cannot create directory '/exercise': Permission denied
ttn@TTN:~$ sudo
usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user]
[command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p
prompt] [-T timeout] [-u user] file ...

ttn@TTN:~$ cd /
ttn@TTN:/$ cd -
ttn@TTN:~$ sudo mkdir -p /exercise/dir1/dir2/dir3
[sudo] password for ttn:
ttn@TTN:~$ ls
Desktop  Downloads      exercise  Music      Public  Templates
Documents  examples.desktop  Pictures  snap    Videos
ttn@TTN:~$ sudo mkdir -p exercise/dir1/dir2/dir3
ttn@TTN:~$ ls
Desktop  Downloads      exercise  Music      Pictures  snap    Videos
Documents  examples.desktop  AC
ttn@TTN:~$
```

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

**Command : `touch exercise/dir1/dir2/dir3/emptyFile1.txt`
`exercise/dir1/dir2/dir3/emptyFile1.txt`**

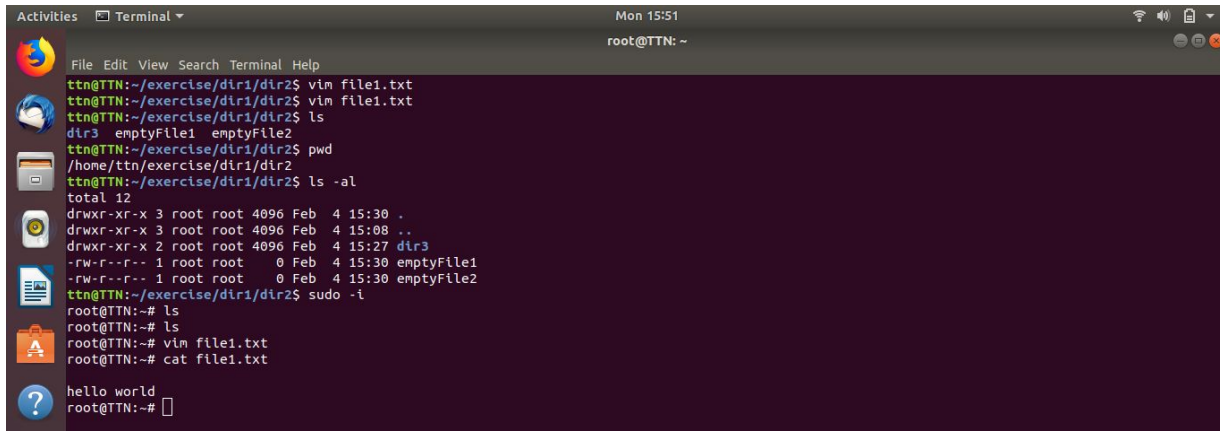


```
Activities  Terminal  Mon 15:32
ttn@TTN: ~/exercise/dir1/dir2

File Edit View Search Terminal Help
ttn@TTN:~$ sudo touch exercise/dir1/dir2/emptyFile1 exercise/dir1/dir2/emptyFile2
ttn@TTN:~$ ls ex
examples.desktop  exercise/
ttn@TTN:~$ cd exercise/dir1/dir2/
ttn@TTN:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@TTN:~/exercise/dir1/dir2$
```

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

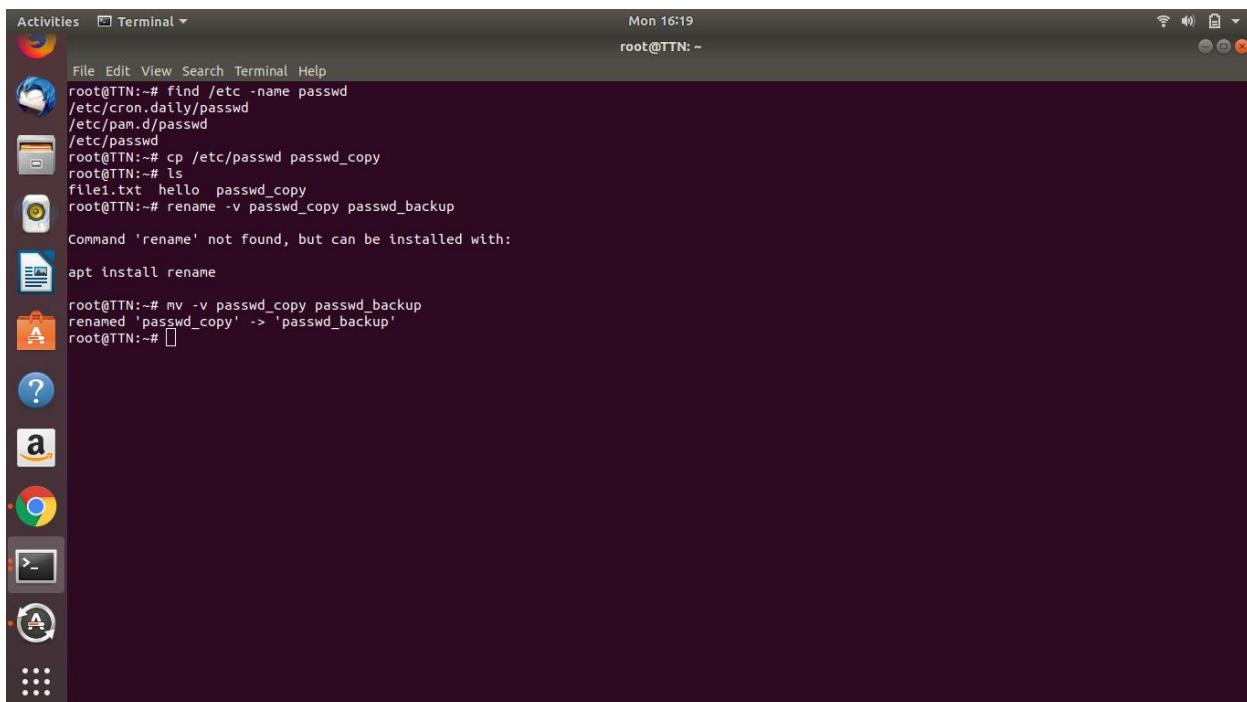
Command : `echo "hello world">file1.txt`
`cat file1.txt`

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 15:51, root@TTN: ~). The terminal shows a series of commands and their outputs. The user enters 'vim file1.txt' twice, then 'ls' showing 'dir3 emptyFile1 emptyFile2'. They use 'pwd' to show '/home/ttn/exercise/dir1/dir2', then 'ls -al' showing file permissions and timestamps. Finally, they run 'sudo -i' to become root, then 'ls', 'cat file1.txt' (outputting 'hello world'), and 'vim file1.txt' again.

```
ttn@TTN:~/exercise/dir1/dir2$ vim file1.txt
ttn@TTN:~/exercise/dir1/dir2$ vim file1.txt
ttn@TTN:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@TTN:~/exercise/dir1/dir2$ pwd
/home/ttn/exercise/dir1/dir2
ttn@TTN:~/exercise/dir1/dir2$ ls -al
total 12
drwxr-xr-x 3 root root 4096 Feb  4 15:30 .
drwxr-xr-x 3 root root 4096 Feb  4 15:08 ..
drwxr-xr-x 2 root root 4096 Feb  4 15:27 dir3
-rw-r--r-- 1 root root   0 Feb  4 15:30 emptyFile1
-rw-r--r-- 1 root root   0 Feb  4 15:30 emptyFile2
ttn@TTN:~/exercise/dir1/dir2$ sudo -i
root@TTN:~# ls
root@TTN:~# ls
root@TTN:~# vim file1.txt
root@TTN:~# cat file1.txt
hello world
root@TTN:~#
```

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

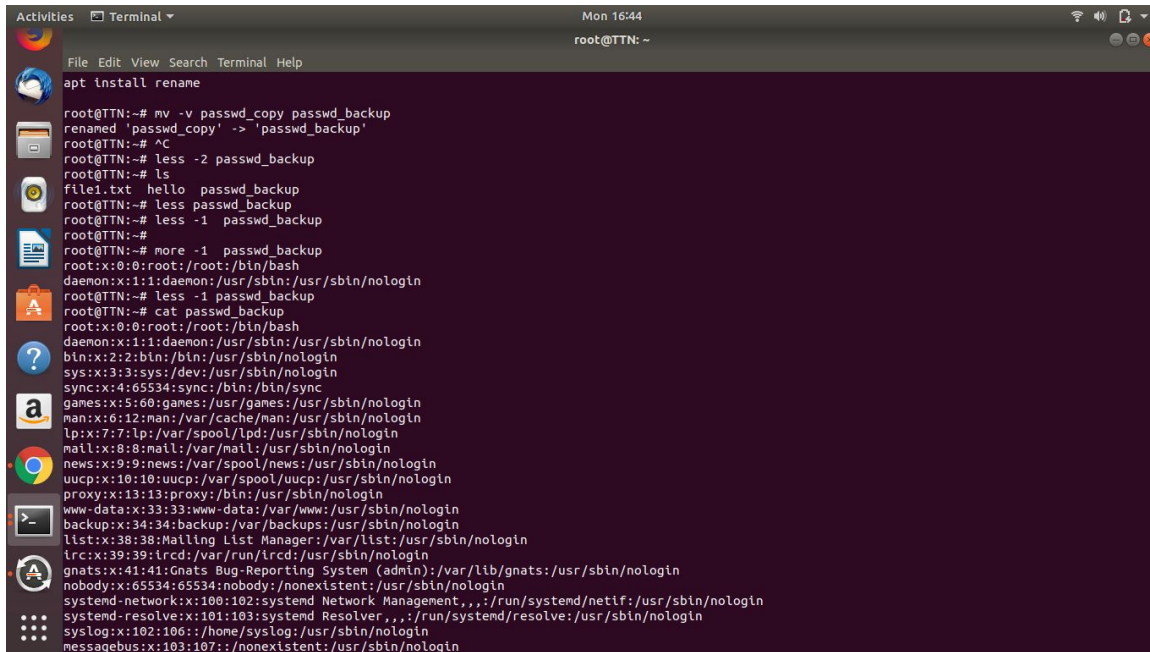
Command : `find /etc -name passwd`
`cp /etc/passwd passwd_copy`
`mv -v passwd_copy passwd_backup`

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 16:19, root@TTN: ~). The terminal shows the user running 'find /etc -name passwd' which returns '/etc/cron.daily/passwd', '/etc/pam.d/passwd', and '/etc/passwd'. They then run 'cp /etc/passwd passwd_copy', 'ls' (showing 'file1.txt hello passwd_copy'), and 'rename -v passwd_copy passwd_backup'. A message indicates 'rename' is not found but can be installed with 'apt install rename'. Finally, they run 'mv -v passwd_copy passwd_backup' which outputs 'renamed 'passwd_copy' -> 'passwd_backup''.

```
root@TTN:~# find /etc -name passwd
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
root@TTN:~# cp /etc/passwd passwd_copy
root@TTN:~# ls
file1.txt  hello  passwd_copy
root@TTN:~# rename -v passwd_copy passwd_backup
Command 'rename' not found, but can be installed with:
apt install rename
root@TTN:~# mv -v passwd_copy passwd_backup
renamed 'passwd_copy' -> 'passwd_backup'
root@TTN:~#
```

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

Command : **less passwd_backup**
 more -2 passwd_backup

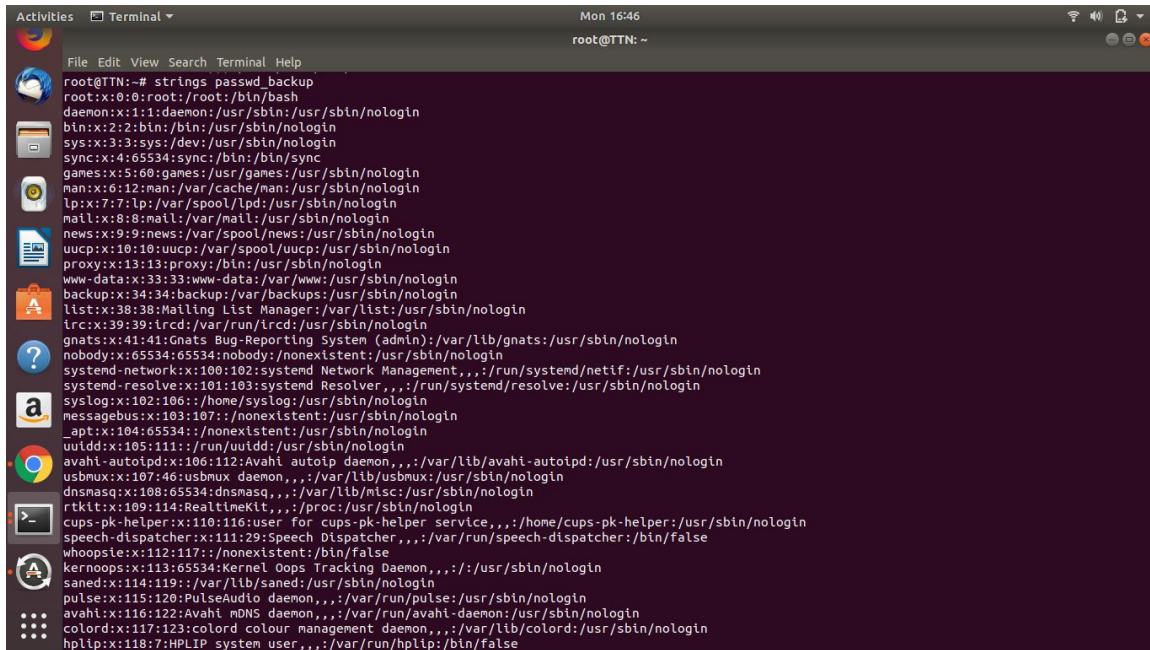


```
Activities  Terminal  Mon 16:44
root@TTN: ~

File Edit View Search Terminal Help
apt install rename

root@TTN:~# mv -v passwd_copy passwd_backup
renamed 'passwd_copy' -> 'passwd_backup'
root@TTN:~# ^C
root@TTN:~# less -2 passwd_backup
root@TTN:~# ls
file1.txt  hello  passwd_backup
root@TTN:~# less passwd_backup
root@TTN:~# less -1 passwd_backup
root@TTN:~#
root@TTN:~# more -1 passwd_backup
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
root@TTN:~# less -1 passwd_backup
root@TTN:~# 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:Mailling List Manager:/var/llst:/usr/sbin/nologin
lrc:x:39:39:lrcd:/var/run/lrcd:/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
```

Command : **cat passwd_backup**
 strings passwd_backup

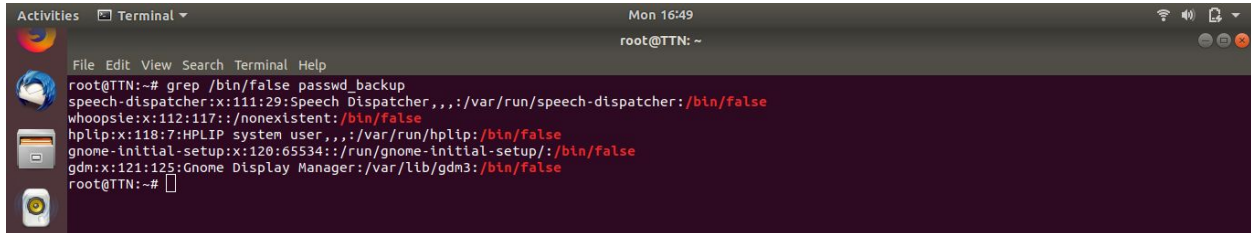


```
Activities  Terminal  Mon 16:46
root@TTN: ~

File Edit View Search Terminal Help
root@TTN:~# strings 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:Mailling List Manager:/var/list:/usr/sbin/nologin
lrc:x:39:39:lrcd:/var/run/lrcd:/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
whoopsle: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
```

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

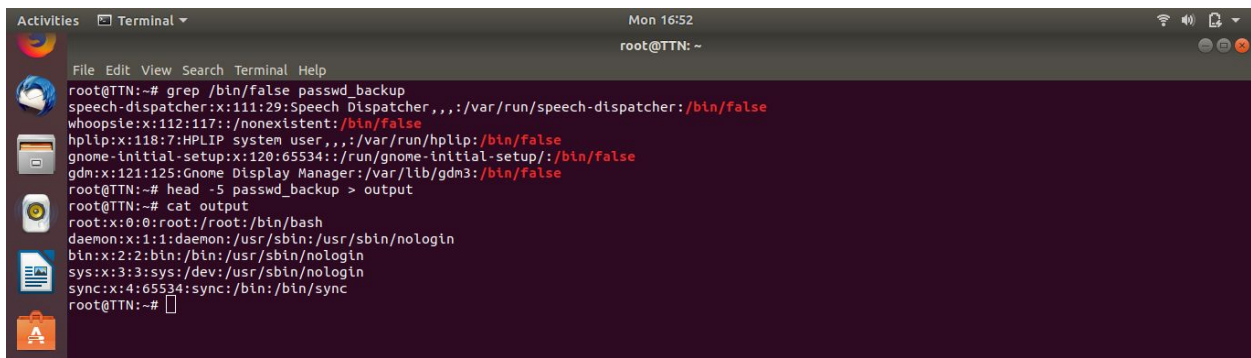
Command : `grep /bin/false passwd_backup`



```
root@TTN:~# grep /bin/false passwd_backup
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
whoopsie:x:112:117:/:nonexistent:/bin/false
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
gnome-initial-setup:x:120:65534:/:run/gnome-initial-setup:/bin/false
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false
root@TTN:~#
```

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

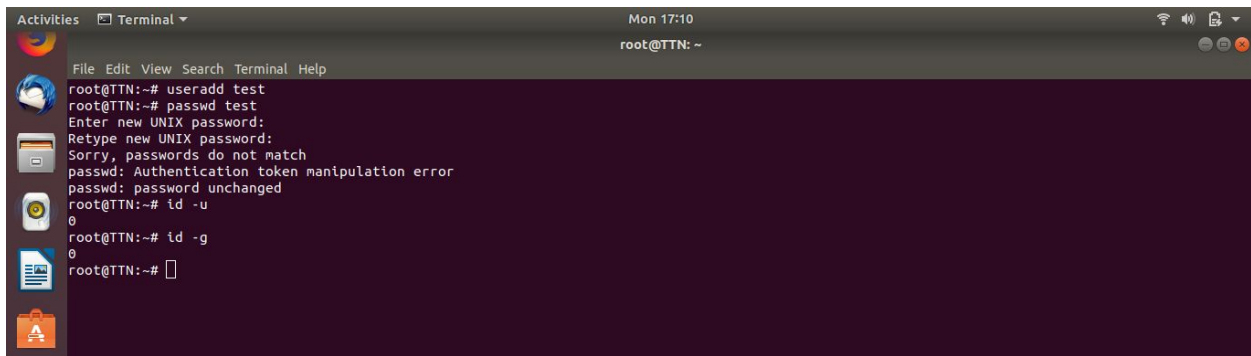
Command : `head -5 passwd_backup > output`



```
root@TTN:~# grep /bin/false passwd_backup
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
whoopsie:x:112:117:/:nonexistent:/bin/false
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
gnome-initial-setup:x:120:65534:/:run/gnome-initial-setup:/bin/false
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false
root@TTN:~# head -5 passwd_backup > output
root@TTN:~# 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@TTN:~#
```

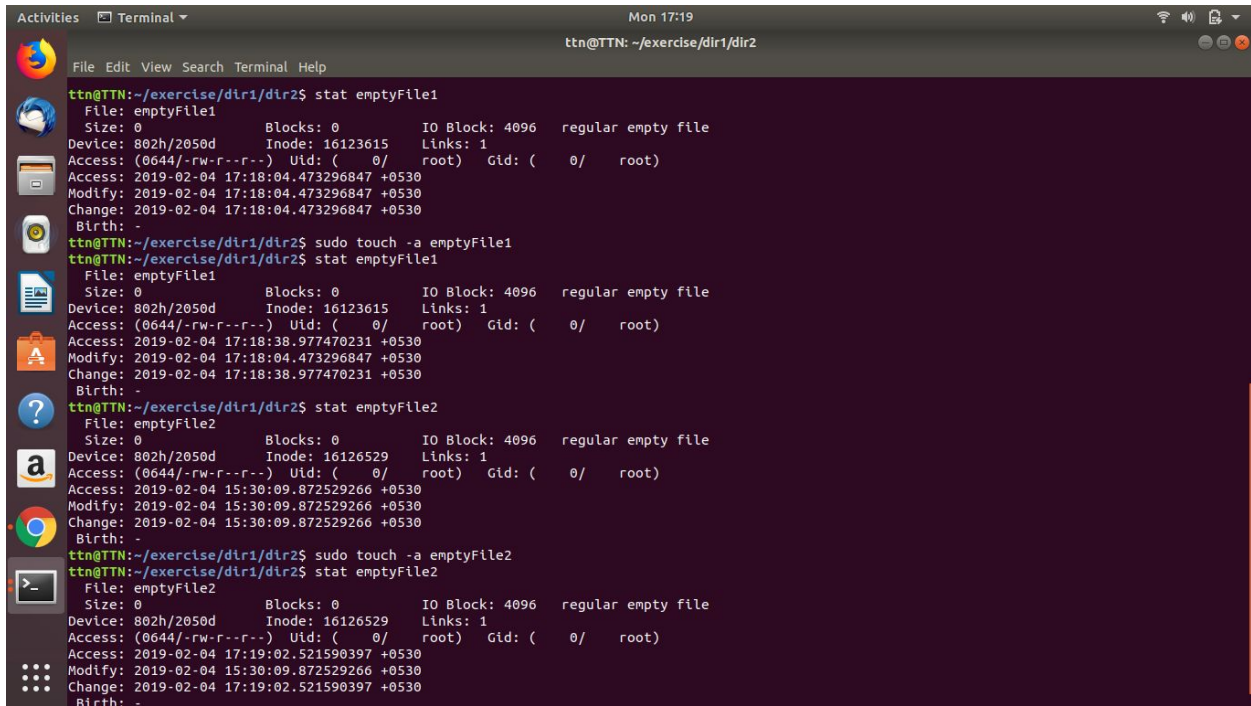
8. Create a "test" user,create its password and find out its uid and gid.

Command : `useradd test`
`passwd test`
`id -u`
`id -g`



```
root@TTN:~# useradd test
root@TTN:~# passwd test
Enter new UNIX password:
Retype new UNIX password:
Sorry, passwords do not match
passwd: Authentication token manipulation error
passwd: password unchanged
root@TTN:~# id -u
0
root@TTN:~# id -g
0
root@TTN:~#
```

9. Change the timestamp of emptyFile1,emptyFile2 which are exist in dir2
- Command :** **sudo touch -a emptyFile1**
 sudo touch -a emptyFile2



The image shows a terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 17:19, ttn@TTN: ~/exercise/dir1/dir2). The terminal displays the following commands and their outputs:

```
ttn@TTN:~/exercise/dir1/dir2$ stat emptyFile1
File: emptyFile1
Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 802h/2050d Inode: 16123615  Links: 1
Access: (0644/-rw-r--r--)  Uid: (   0/   root)   Gid: (   0/   root)
Access: 2019-02-04 17:18:04.473296847 +0530
Modify: 2019-02-04 17:18:04.473296847 +0530
Change: 2019-02-04 17:18:04.473296847 +0530
Birth: -

ttn@TTN:~/exercise/dir1/dir2$ sudo touch -a emptyFile1
ttn@TTN:~/exercise/dir1/dir2$ stat emptyFile1
File: emptyFile1
Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 802h/2050d Inode: 16123615  Links: 1
Access: (0644/-rw-r--r--)  Uid: (   0/   root)   Gid: (   0/   root)
Access: 2019-02-04 17:18:38.977470231 +0530
Modify: 2019-02-04 17:18:04.473296847 +0530
Change: 2019-02-04 17:18:38.977470231 +0530
Birth: -

ttn@TTN:~/exercise/dir1/dir2$ stat emptyFile2
File: emptyFile2
Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 802h/2050d Inode: 16126529  Links: 1
Access: (0644/-rw-r--r--)  Uid: (   0/   root)   Gid: (   0/   root)
Access: 2019-02-04 15:30:09.872529266 +0530
Modify: 2019-02-04 15:30:09.872529266 +0530
Change: 2019-02-04 15:30:09.872529266 +0530
Birth: -

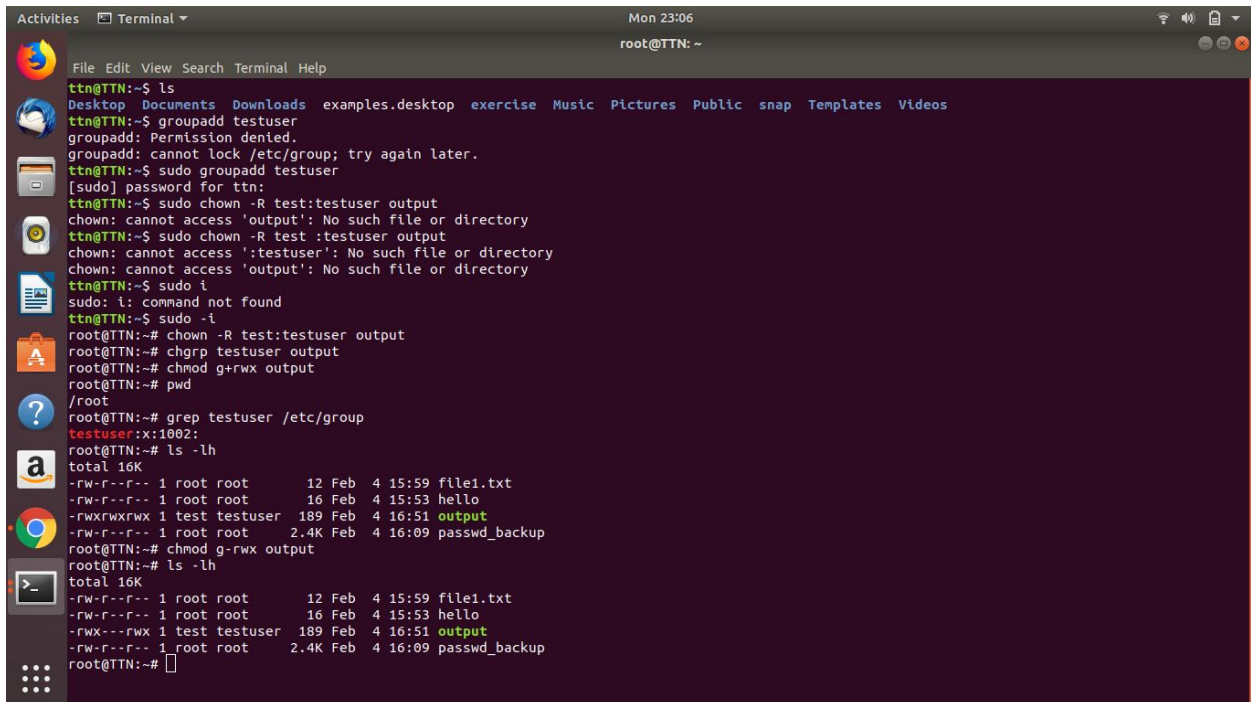
ttn@TTN:~/exercise/dir1/dir2$ sudo touch -a emptyFile2
ttn@TTN:~/exercise/dir1/dir2$ stat emptyFile2
File: emptyFile2
Size: 0          Blocks: 0          IO Block: 4096   regular empty file
Device: 802h/2050d Inode: 16126529  Links: 1
Access: (0644/-rw-r--r--)  Uid: (   0/   root)   Gid: (   0/   root)
Access: 2019-02-04 17:19:02.521590397 +0530
Modify: 2019-02-04 15:30:09.872529266 +0530
Change: 2019-02-04 17:19:02.521590397 +0530
Birth: -
```


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.

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

Command :

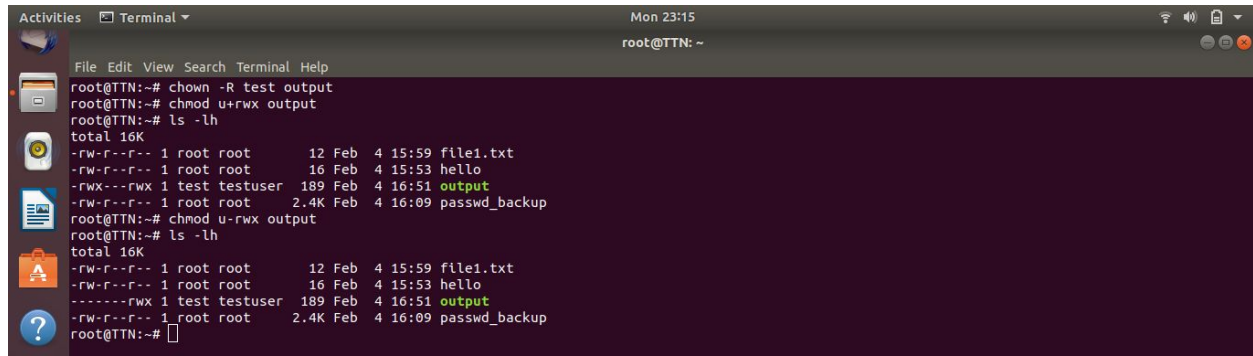
```
groupadd testuser
chown -R test:testuser output
chgrp testuser output
chmod g+rw output
chmod g-rwx output
```



```
Activities Terminal Mon 23:06 root@TTN: ~
File Edit View Search Terminal Help
Desktop Documents Downloads examples.desktop exercise Music Pictures Public snap Templates Videos
ttn@TTN:~$ ls
ttn@TTN:~$ groupadd testuser
groupadd: Permission denied.
groupadd: cannot lock /etc/group; try again later.
ttn@TTN:~$ sudo groupadd testuser
[sudo] password for ttn:
ttn@TTN:~$ sudo chown -R test:testuser output
chown: cannot access 'output': No such file or directory
ttn@TTN:~$ sudo chown -R test:testuser output
chown: cannot access ':testuser': No such file or directory
chown: cannot access 'output': No such file or directory
ttn@TTN:~$ sudo i
sudo: i: command not found
ttn@TTN:~$ sudo -i
root@TTN:~# chown -R test:testuser output
root@TTN:~# chgrp testuser output
root@TTN:~# chmod g+rw output
root@TTN:~# pwd
/root
root@TTN:~# grep testuser /etc/group
testuser:x:1002:
root@TTN:~# ls -lh
total 16K
-rw-r--r-- 1 root root 12 Feb 4 15:59 file1.txt
-rw-r--r-- 1 root root 16 Feb 4 15:53 hello
-rwxrwxrwx 1 test testuser 189 Feb 4 16:51 output
-rw-r--r-- 1 root root 2.4K Feb 4 16:09 passwd_backup
root@TTN:~# chmod g-rwx output
root@TTN:~# ls -lh
total 16K
-rw-r--r-- 1 root root 12 Feb 4 15:59 file1.txt
-rw-r--r-- 1 root root 16 Feb 4 15:53 hello
-rwx---rwx 1 test testuser 189 Feb 4 16:51 output
-rw-r--r-- 1 root root 2.4K Feb 4 16:09 passwd_backup
root@TTN:~#
```

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

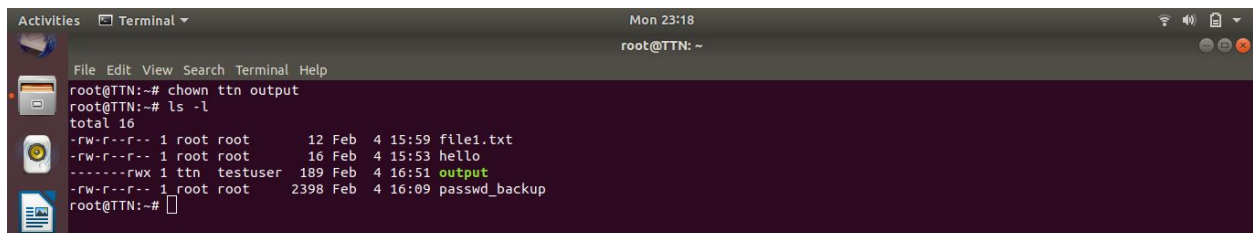
Command : **chown -R test output**
 chmod u+rw output
 chmod u-rwx output



```
root@TTN:~# chown -R test output
root@TTN:~# chmod u+rw output
root@TTN:~# ls -lh
total 16K
-rw-r--r-- 1 root root      12 Feb  4 15:59 file1.txt
-rw-r--r-- 1 root root      16 Feb  4 15:53 hello
-rwx---rwx 1 test testuser 189 Feb  4 16:51 output
-rw-r--r-- 1 root root    2.4K Feb  4 16:09 passwd_backup
root@TTN:~# chmod u-rwx output
root@TTN:~# ls -lh
total 16K
-rw-r--r-- 1 root root      12 Feb  4 15:59 file1.txt
-rw-r--r-- 1 root root      16 Feb  4 15:53 hello
-rwx---rwx 1 test testuser 189 Feb  4 16:51 output
-rw-r--r-- 1 root root    2.4K Feb  4 16:09 passwd_backup
root@TTN:~#
```

3. Change the ownership to edit the file.

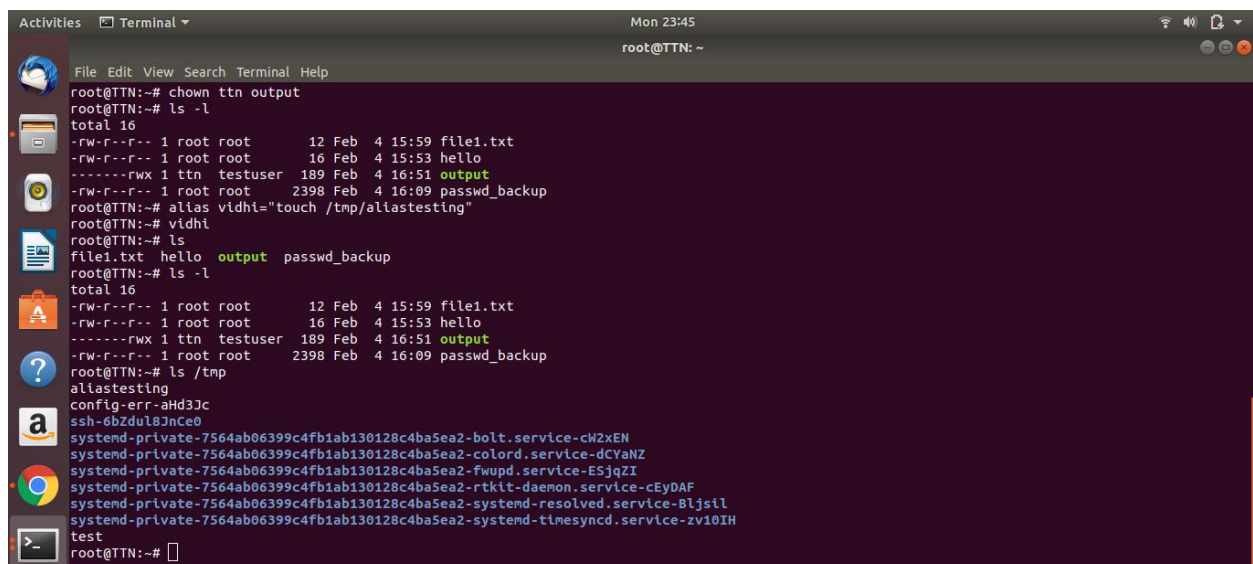
Command : **chown ttn output**



```
root@TTN:~# chown ttn output
root@TTN:~# ls -l
total 16
-rw-r--r-- 1 root root      12 Feb  4 15:59 file1.txt
-rw-r--r-- 1 root root      16 Feb  4 15:53 hello
-rwx---rwx 1 ttn testuser 189 Feb  4 16:51 output
-rw-r--r-- 1 root root    2398 Feb  4 16:09 passwd_backup
root@TTN:~#
```

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

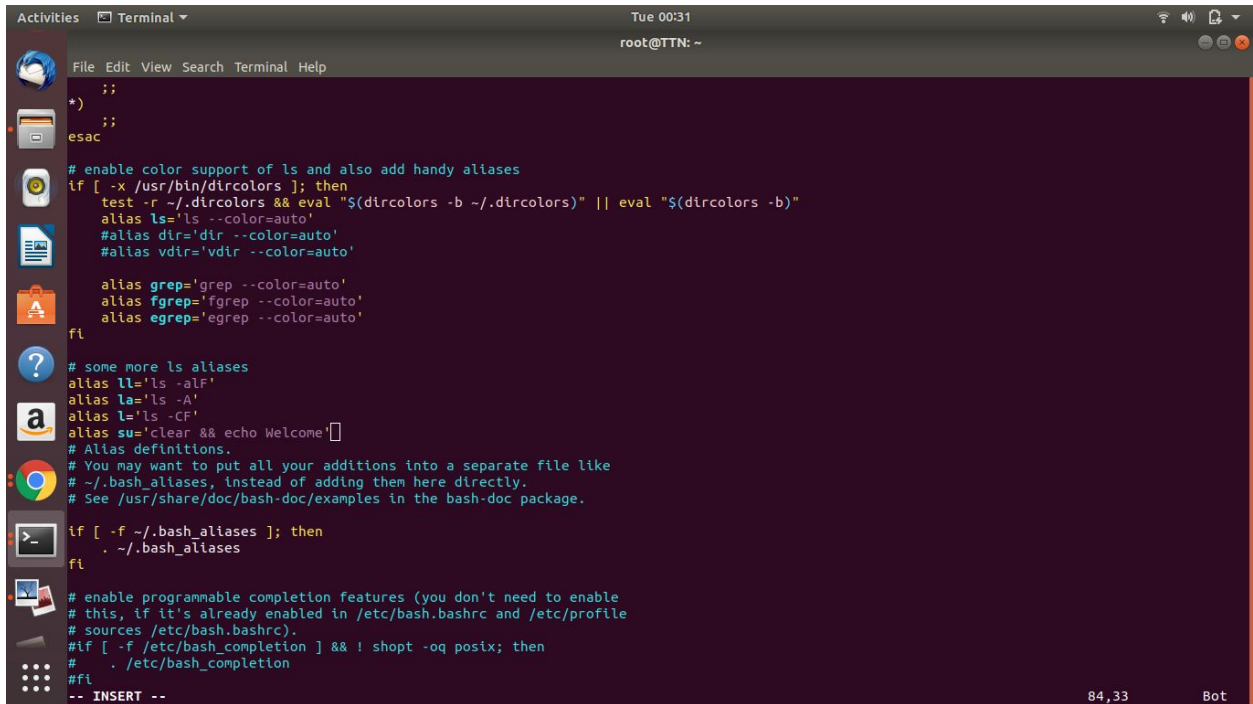
Command : **alias vidhi='touch /tmp/aliastesting'**



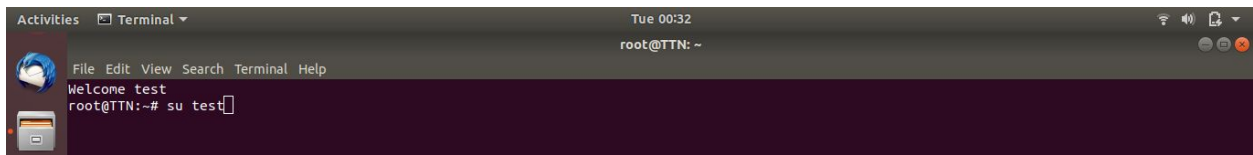
```
root@TTN:~# chown ttn output
root@TTN:~# ls -l
total 16
-rw-r--r-- 1 root root      12 Feb  4 15:59 file1.txt
-rw-r--r-- 1 root root      16 Feb  4 15:53 hello
-rwx---rwx 1 ttn testuser 189 Feb  4 16:51 output
-rw-r--r-- 1 root root    2398 Feb  4 16:09 passwd_backup
root@TTN:~# alias vidhi="touch /tmp/aliastesting"
root@TTN:~# vidhi
root@TTN:~# ls
file1.txt hello output passwd_backup
root@TTN:~# ls -l
total 16
-rw-r--r-- 1 root root      12 Feb  4 15:59 file1.txt
-rw-r--r-- 1 root root      16 Feb  4 15:53 hello
-rwx---rwx 1 ttn testuser 189 Feb  4 16:51 output
-rw-r--r-- 1 root root    2398 Feb  4 16:09 passwd_backup
root@TTN:~# ls /tmp
aliastesting
config-err-aHd3Jc
ssh-6bZdu18Jnce0
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-bolt.service-cW2xEN
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-colord.service-dCYaNZ
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-fwupd.service-ESjqZI
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-rtkit-daemon.service-cEyDAF
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-systemd-resolved.service-8Ljsil
systemd-private-7564ab06399c4fb1ab130128c4ba5ea2-systemd-timesyncd.service-zv10IH
test
root@TTN:~#
```

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

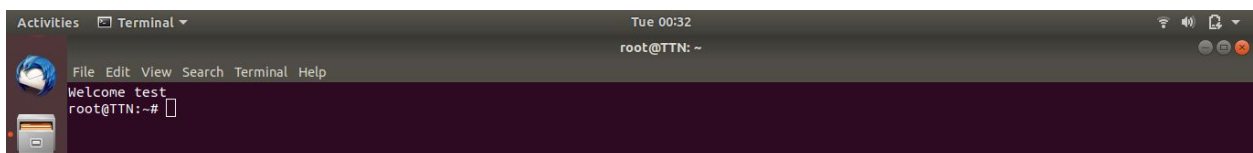
Command : **vim ~/.bashrc**
 alias su="clear && echo Welcome"
 su test

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:31, root@TTN: ~). The terminal shows the contents of the ~/.bashrc file being edited. The file includes comments about enabling color support, defining aliases for ls, dir, vdir, grep, fgrep, and egrep, and defining more ls aliases. The key change is the addition of the line 'alias su="clear && echo Welcome"' at the end of the alias definitions. The terminal also shows the command 'su test' being entered at the bottom.

```
;;  
*)  
;;  
esac  
  
# enable color support of ls and also add handy aliases  
if [ -x /usr/bin/dircolors ]; then  
    test -r ~/.dircolors && eval "$(dircolors -b ~/.dircolors)" || eval "$(dircolors -b)"  
    alias ls='ls --color=auto'  
    #alias dir='dir --color=auto'  
    #alias vdir='vdir --color=auto'  
  
    alias grep='grep --color=auto'  
    alias fgrep='fgrep --color=auto'  
    alias egrep='egrep --color=auto'  
fi  
  
# some more ls aliases  
alias ll='ls -aLF'  
alias la='ls -A'  
alias l='ls -CF'  
alias su="clear && echo Welcome"  
# Alias definitions.  
# You may want to put all your additions into a separate file like  
# ~/.bash_aliases, instead of adding them here directly.  
# See /usr/share/doc/bash-doc/examples in the bash-doc package.  
  
if [ -f ~/.bash_aliases ]; then  
    . ~/.bash_aliases  
fi  
  
# enable programmable completion features (you don't need to enable  
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile  
# sources /etc/bash.bashrc).  
#if [ -f /etc/bash_completion ] && ! shopt -oq posix; then  
#    . /etc/bash_completion  
#fi  
-- INSERT --
```

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:32, root@TTN: ~). The terminal shows the output of the 'su test' command. The prompt changes from 'root@TTN: ~' to 'test@TTN: ~', and the screen is cleared, displaying 'Welcome test' on the first line.

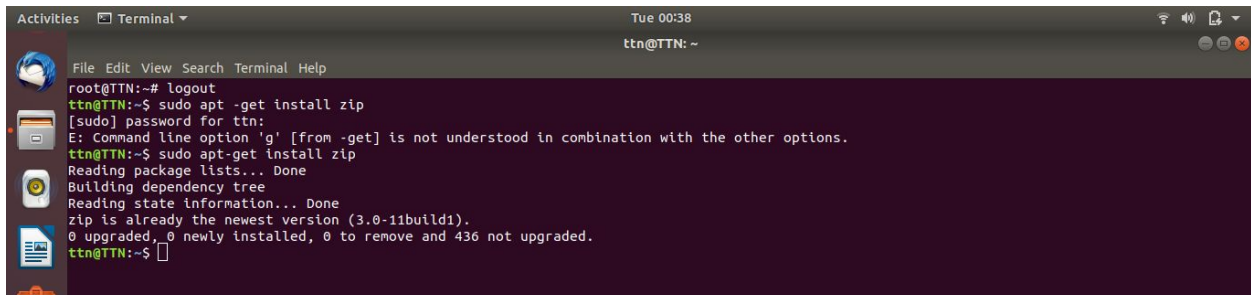
```
Welcome test  
root@TTN:~# su test
```

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 00:32, root@TTN: ~). The terminal shows the output of the 'su test' command. The prompt changes from 'root@TTN: ~' to 'test@TTN: ~', and the screen is cleared, displaying 'Welcome test' on the first line.

```
Welcome test  
root@TTN:~#
```


13. Install "zip" package.

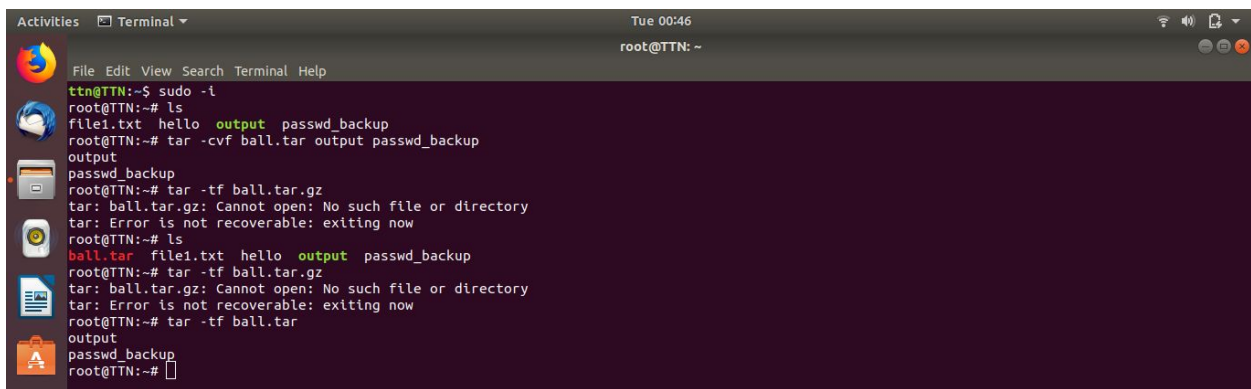
Command : `sudo apt-get install zip`



```
root@TTN:~# logout
ttn@TTN:~$ sudo apt -get install zip
[sudo] password for ttn:
E: Command line option 'g' [from -get] is not understood in combination with the other options.
ttn@TTN:~$ 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).
0 upgraded, 0 newly installed, 0 to remove and 436 not upgraded.
ttn@TTN:~$
```

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

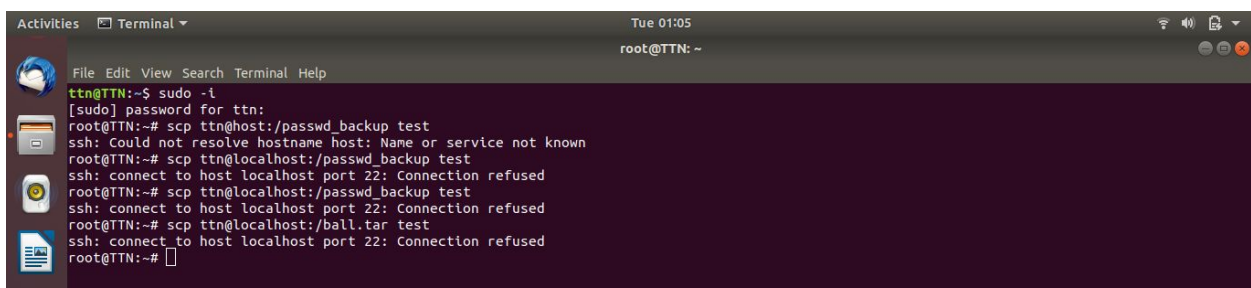
Command : `tar -cvf ball.tar output passwd_backup`
`tar -tf ball.tar`



```
ttn@TTN:~$ sudo -i
root@TTN:~# ls
file1.txt  hello  output  passwd_backup
root@TTN:~# tar -cvf ball.tar output passwd_backup
output
passwd_backup
root@TTN:~# tar -tf ball.tar.gz
tar: ball.tar.gz: Cannot open: No such file or directory
tar: Error is not recoverable: exiting now
root@TTN:~# ls
ball.tar  file1.txt  hello  output  passwd_backup
root@TTN:~# tar -tf ball.tar.gz
tar: ball.tar.gz: Cannot open: No such file or directory
tar: Error is not recoverable: exiting now
root@TTN:~# tar -tf ball.tar
output
passwd_backup
root@TTN:~#
```

15. scp this file to test user

Command : `scp ttn@localhost:/ball.tar test`



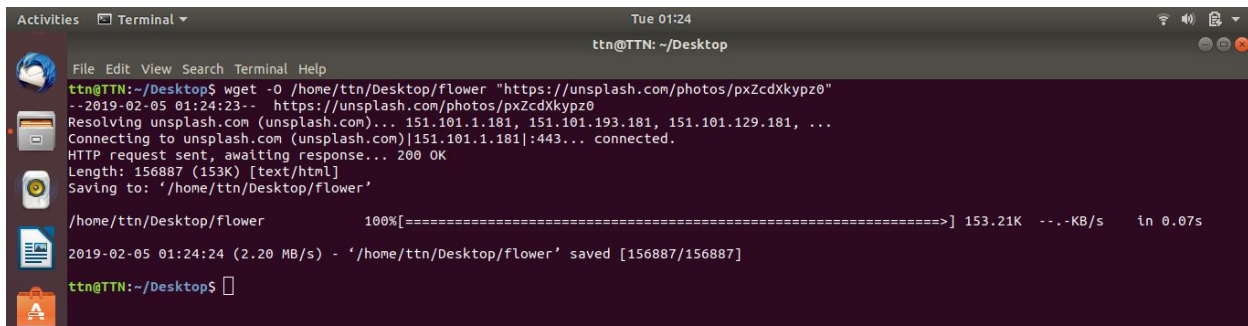
```
ttn@TTN:~$ sudo -i
[sudo] password for ttn:
root@TTN:~# scp ttn@host:/passwd_backup test
ssh: Could not resolve hostname host: Name or service not known
root@TTN:~# scp ttn@localhost:/passwd_backup test
ssh: connect to host localhost port 22: Connection refused
root@TTN:~# scp ttn@localhost:/passwd_backup test
ssh: connect to host localhost port 22: Connection refused
root@TTN:~# scp ttn@localhost:/ball.tar test
ssh: connect to host localhost port 22: Connection refused
root@TTN:~#
```

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

Command : `tar czv ball.tar | ssh root@remoteserver 'cat | tar xz -C /remotedir'`

17. Download any image from web and move to desktop

Command : `wget -O /home/ttn/Desktop/flower 'https://unsplash.com/photos/pxZcdXkypz0'`



```
Activities Terminal Tue 01:24
ttn@TTN: ~/Desktop
File Edit View Search Terminal Help
ttn@TTN:~/Desktop$ wget -O /home/ttn/Desktop/flower "https://unsplash.com/photos/pxZcdXkypz0"
--2019-02-05 01:24:23-- https://unsplash.com/photos/pxZcdXkypz0
Resolving unsplash.com (unsplash.com)... 151.101.1.181, 151.101.193.181, 151.101.129.181, ...
Connecting to unsplash.com (unsplash.com)[151.101.1.181]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 156887 (153K) [text/html]
Saving to: '/home/ttn/Desktop/flower'

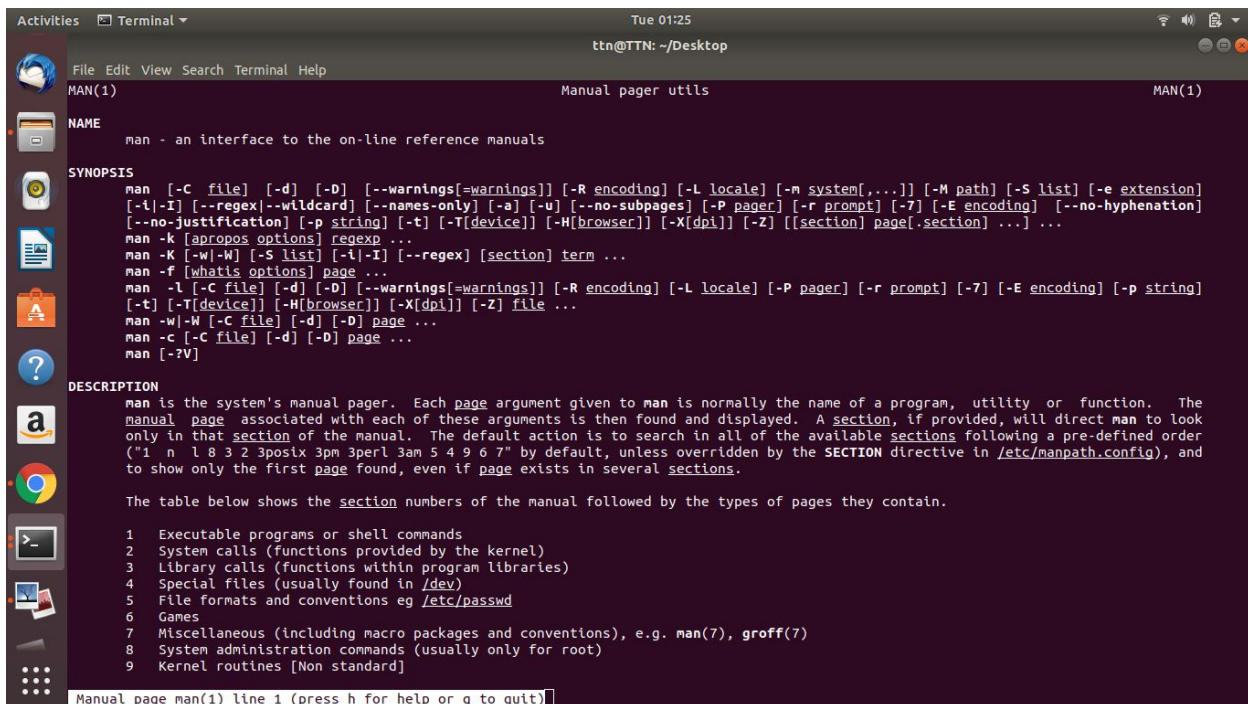
/home/ttn/Desktop/flower      100%[=====] 153.21K  --.-KB/s   in 0.07s

2019-02-05 01:24:24 (2.20 MB/s) - '/home/ttn/Desktop/flower' saved [156887/156887]

ttn@TTN:~/Desktop$
```

18. How to get help of commands usages.

Command : `man`



```
Activities Terminal Tue 01:25
ttn@TTN: ~/Desktop
File Edit View Search Terminal Help
MAN(1) Manual pager utils MAN(1)
NAME
man - an interface to the on-line reference manuals
SYNOPSIS
man [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-m system,...] [-M path] [-S list] [-e extension]
[-i-I] [--regex|--wildcard] [--names-only] [-a] [-u] [--no-subpages] [-P pager] [-r prompt] [-7] [-E encoding] [--no-hyphenation]
[--no-justification] [-p string] [-t] [-T[device]] [-H[browser]] [-X[dpi]] [-Z] [[section] page[.section] ...] ...
man -k [apropos options] regexp ...
man -K [-w|-W] [-S list] [-i|-I] [--regex] [section] term ...
man -f [whatis options] page ...
man -l [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-P pager] [-r prompt] [-7] [-E encoding] [-p string]
[-t] [-T[device]] [-H[browser]] [-X[dpi]] [-Z] file ...
man -w|-W [-C file] [-d] [-D] page ...
man -c [-C file] [-d] [-D] page ...
man [-?V]
DESCRIPTION
man is the system's manual pager. Each page argument given to man is normally the name of a program, utility or function. The
manual page associated with each of these arguments is then found and displayed. A section, if provided, will direct man to look
only in that section of the manual. The default action is to search in all of the available sections following a pre-defined order
("1 n l 8 3 2 3posix 3pm 3perl 3am 5 4 9 6 7" by default, unless overridden by the SECTION directive in /etc/manpath.config), and
to show only the first page found, even if page exists in several sections.

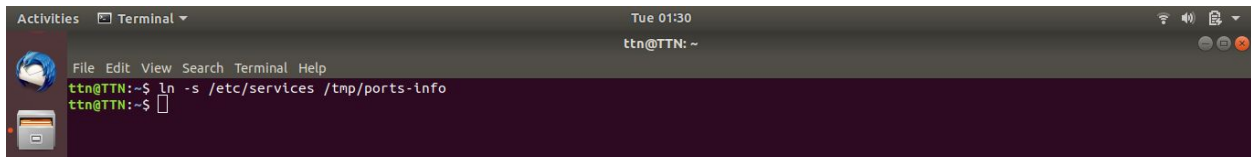
The table below shows the section numbers of the manual followed by the types of pages they contain.

1 Executable programs or shell commands
2 System calls (functions provided by the kernel)
3 Library calls (functions within program libraries)
4 Special files (usually found in /dev)
5 File formats and conventions eg /etc/passwd
6 Games
7 Miscellaneous (including macro packages and conventions), e.g. man(7), groff(7)
8 System administration commands (usually only for root)
9 Kernel routines [Non standard]

Manual page man(1) line 1 (press h for help or q to quit)
```

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

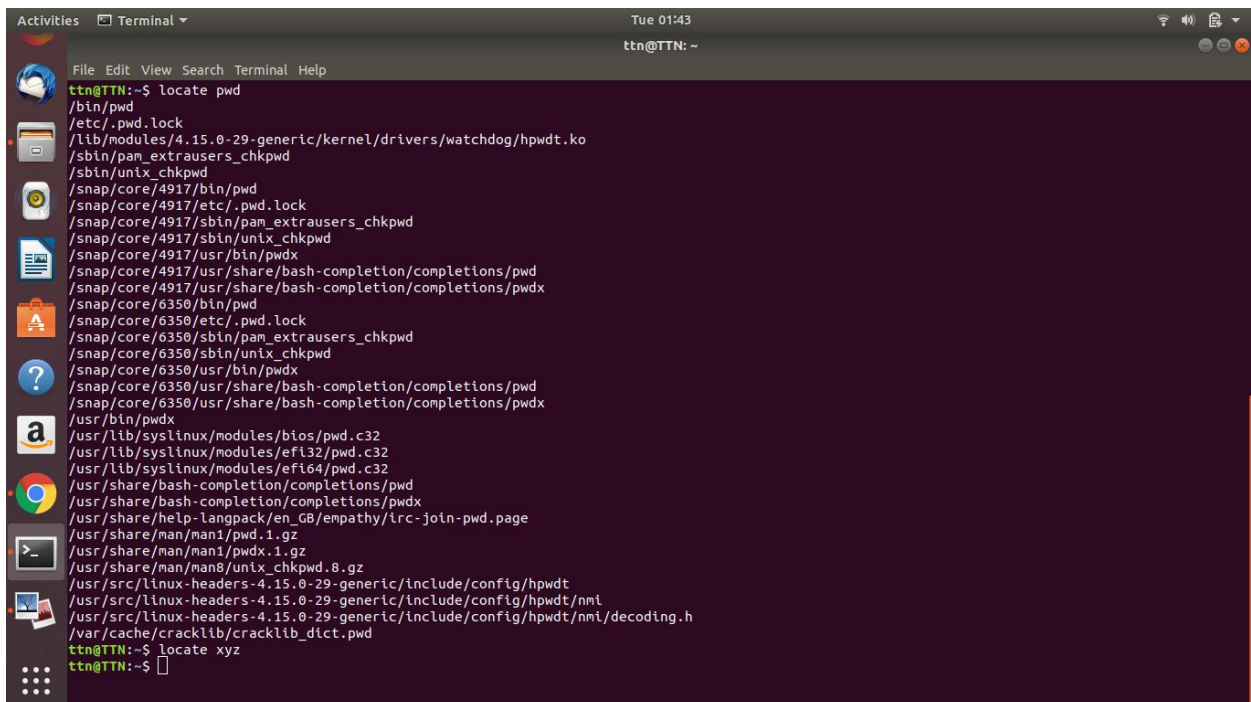
Command : `ln -s /etc/services /tmp/ports-info`



```
Activities Terminal Tue 01:30 ttn@TTN: ~
ttn@TTN:~$ ln -s /etc/services /tmp/ports-info
ttn@TTN:~$
```

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?

Command : `locate xyz`
or `whereis xyz`



```
Activities Terminal Tue 01:43 ttn@TTN: ~
ttn@TTN:~$ locate xyz
/bin/pwd
/etc/.pwd.lock
/lib/modules/4.15.0-29-generic/kernel/drivers/watchdog/hpwdt.ko
/sbin/pam_extrausers_chkpwd
/sbin/unix_chkpwd
/snap/core/4917/bin/pwd
/snap/core/4917/etc/.pwd.lock
/snap/core/4917/sbin/pam_extrausers_chkpwd
/snap/core/4917/sbin/unix_chkpwd
/snap/core/4917/usr/bin/pwdx
/snap/core/4917/usr/share/bash-completion/completions/pwd
/snap/core/4917/usr/share/bash-completion/completions/pwdx
/snap/core/6350/bin/pwd
/snap/core/6350/etc/.pwd.lock
/snap/core/6350/sbin/pam_extrausers_chkpwd
/snap/core/6350/sbin/unix_chkpwd
/snap/core/6350/usr/bin/pwdx
/snap/core/6350/usr/share/bash-completion/completions/pwd
/snap/core/6350/usr/share/bash-completion/completions/pwdx
/usr/bin/pwdx
/usr/lib/syslinux/modules/bios/pwd.c32
/usr/lib/syslinux/modules/efi32/pwd.c32
/usr/lib/syslinux/modules/efi64/pwd.c32
/usr/share/bash-completion/completions/pwd
/usr/share/bash-completion/completions/pwdx
/usr/share/help-langpack/en_GB/empathy/irc-join-pwd.page
/usr/share/man/man1/pwd.1.gz
/usr/share/man/man1/pwdx.1.gz
/usr/share/man/man8/unix_chkpwd.8.gz
/usr/src/linux-headers-4.15.0-29-generic/include/config/hpwdt
/usr/src/linux-headers-4.15.0-29-generic/include/config/hpwdt/nmi
/usr/src/linux-headers-4.15.0-29-generic/include/config/hpwdt/nmi/decoding.h
/var/cache/cracklib/cracklib_dict.pwd
ttn@TTN:~$ locate xyz
ttn@TTN:~$
```