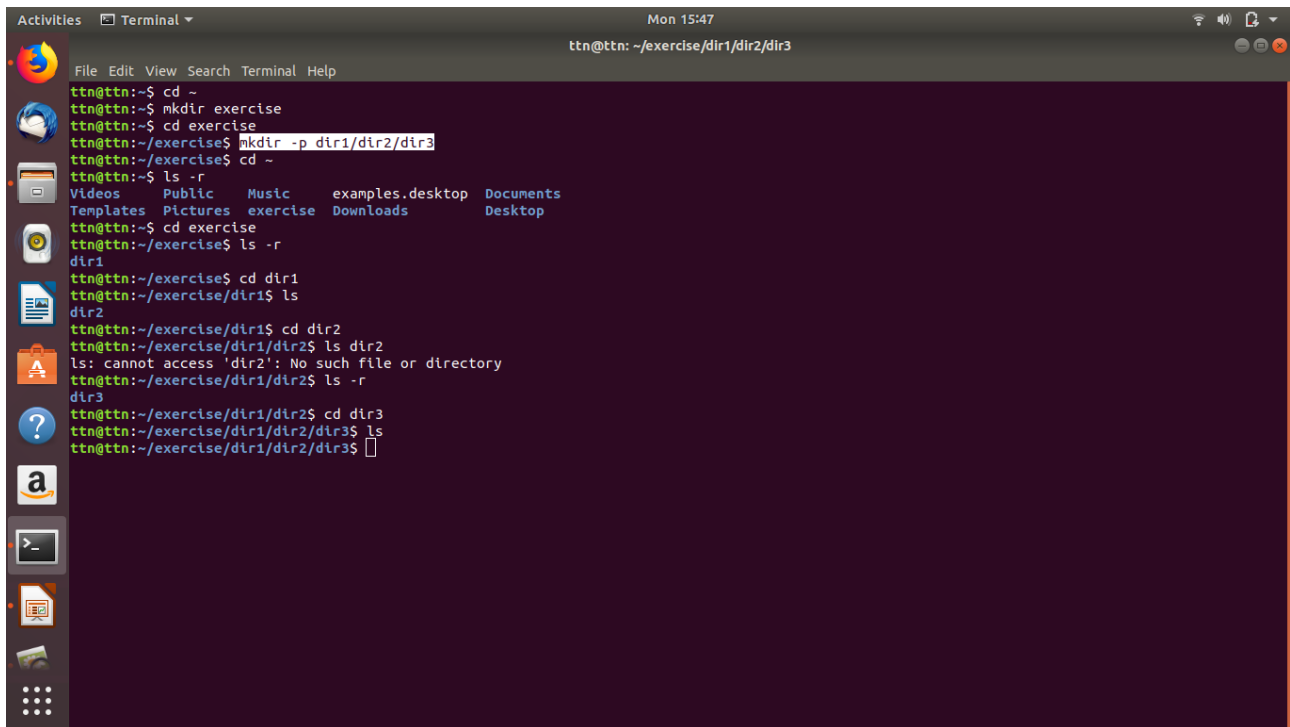


## Linux Assignment

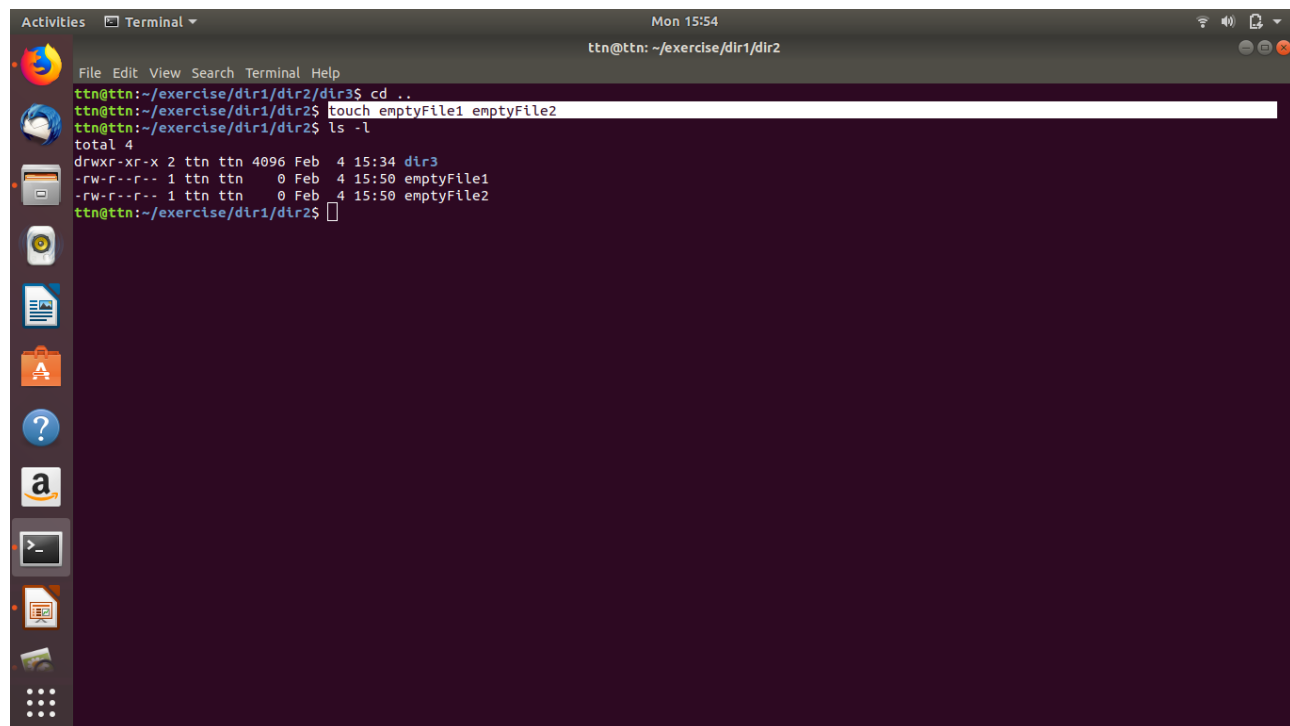
Q1. Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "exercise" with single command.



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 15:47, ttn@ttn: ~/exercise/dir1/dir2/dir3). The terminal shows the following commands and output:

```
ttn@ttn:~$ cd ~
ttn@ttn:~$ mkdir exercise
ttn@ttn:~$ cd exercise
ttn@ttn:~/exercise$ mkdir -p dir1/dir2/dir3
ttn@ttn:~/exercise$ cd ~
ttn@ttn:~$ ls -l
total 12
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 exercise
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 examples.desktop
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 Documents
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 Downloads
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 Desktop
ttn@ttn:~$ cd exercise
ttn@ttn:~/exercise$ ls -l
total 0
drwxr-xr-x  3 ttn ttn 4096 Feb  4 15:47 dir1
ttn@ttn:~/exercise$ cd dir1
ttn@ttn:~/exercise/dir1$ ls
total 0
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 dir2
ttn@ttn:~/exercise/dir1$ cd dir2
ttn@ttn:~/exercise/dir1/dir2$ ls
total 0
ls: cannot access 'dir2': No such file or directory
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 0
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:47 dir3
ttn@ttn:~/exercise/dir1/dir2$ cd dir3
ttn@ttn:~/exercise/dir1/dir2/dir3$ ls
total 0
ttn@ttn:~/exercise/dir1/dir2/dir3$
```

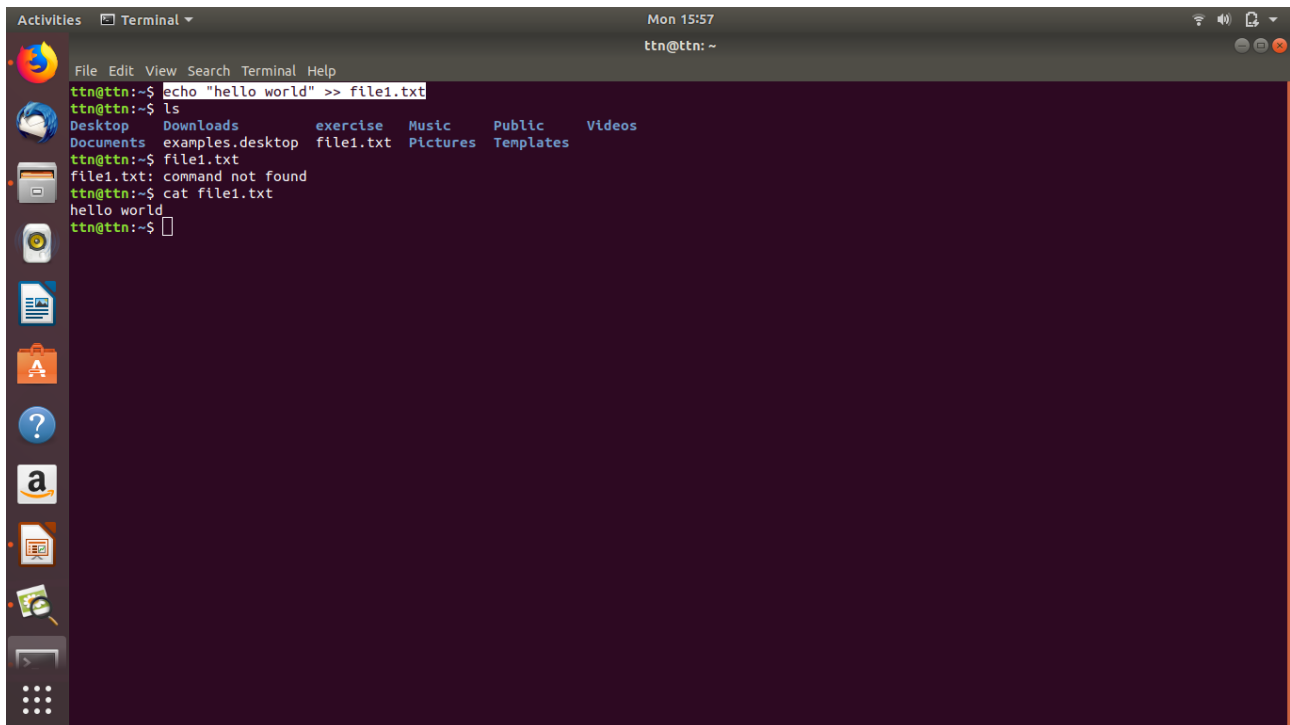
Q2. Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 15:54, ttn@ttn: ~/exercise/dir1/dir2). The terminal shows the following commands and output:

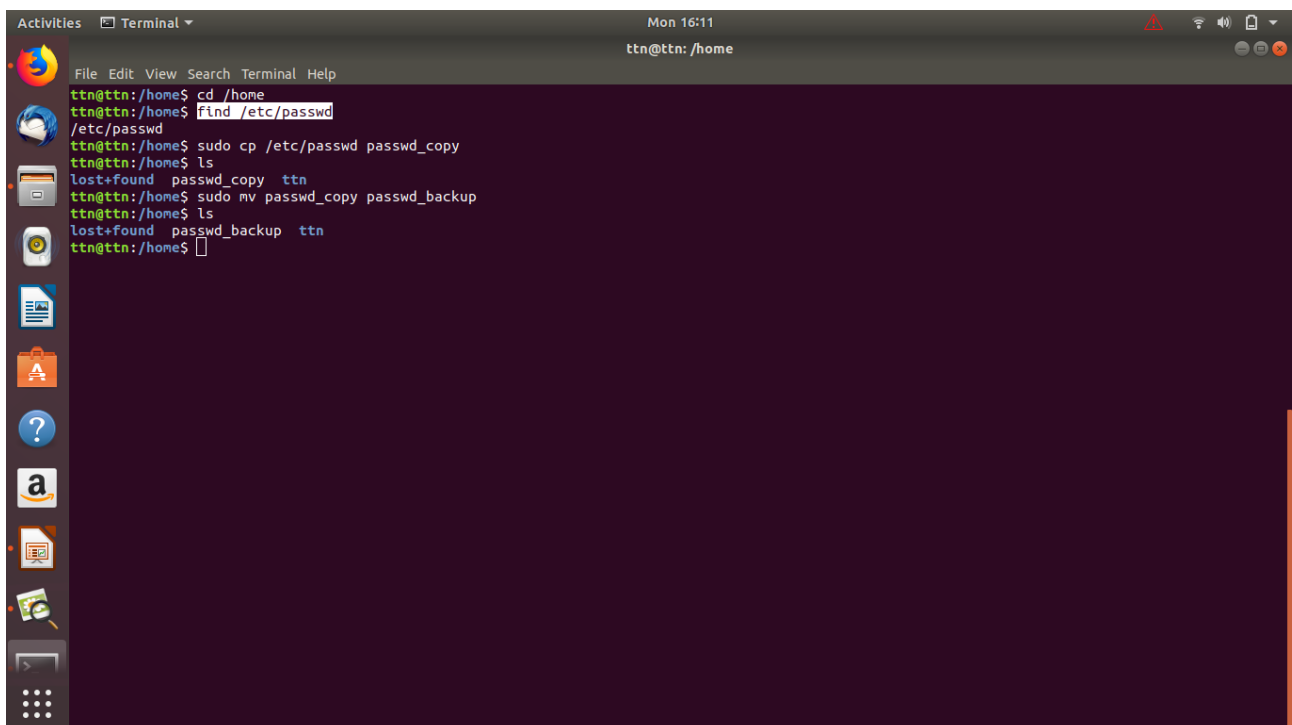
```
ttn@ttn:~/exercise/dir1/dir2$ cd ..
ttn@ttn:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x  2 ttn ttn 4096 Feb  4 15:34 dir3
-rw-r--r--  1 ttn ttn   0 Feb  4 15:50 emptyFile1
-rw-r--r--  1 ttn ttn   0 Feb  4 15:50 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$
```

Q3. 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 15:57, ttn@ttn: ~). The terminal shows the following commands and output:

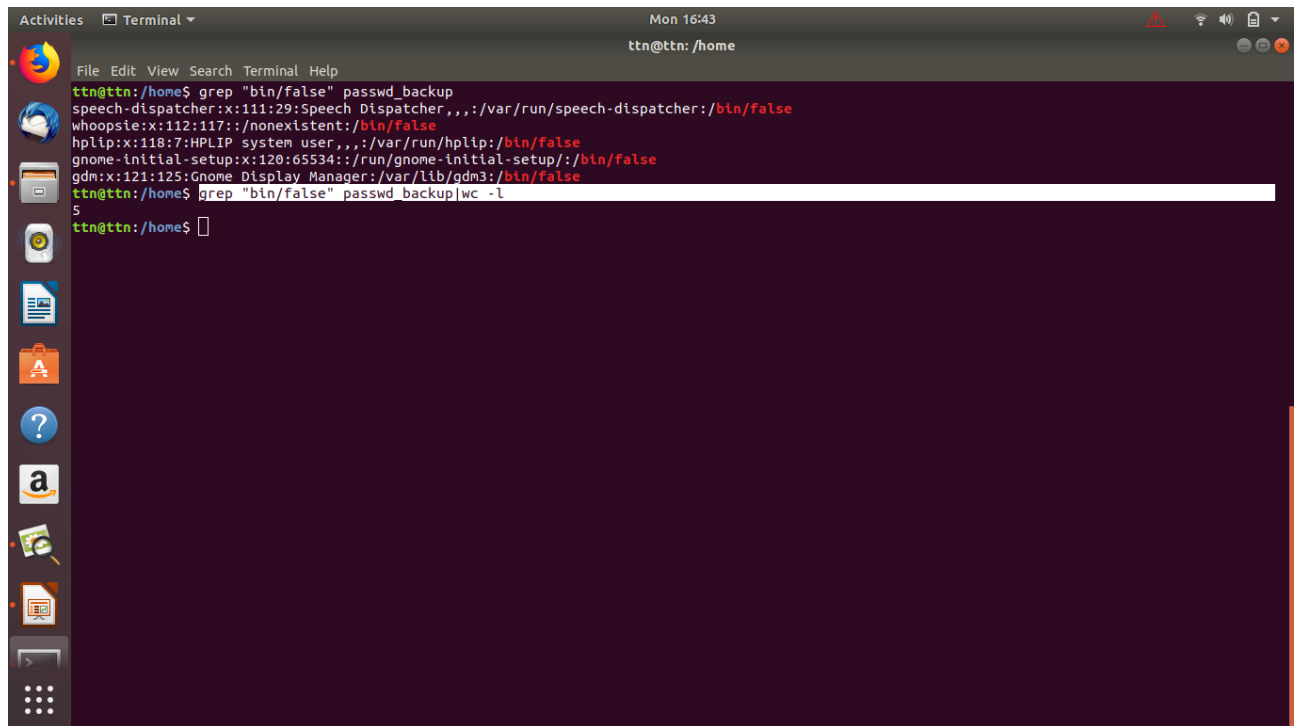
```
ttn@ttn:~$ echo "hello world" >> file1.txt
ttn@ttn:~$ ls
Desktop  Downloads  exercise  Music  Public  Videos
Documents  examples.desktop  file1.txt  Pictures  Templates
ttn@ttn:~$ file1.txt
file1.txt: command not found
ttn@ttn:~$ cat file1.txt
hello world
ttn@ttn:~$
```

Q4. 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 16:11, ttn@ttn: /home). The terminal shows the following commands and output:

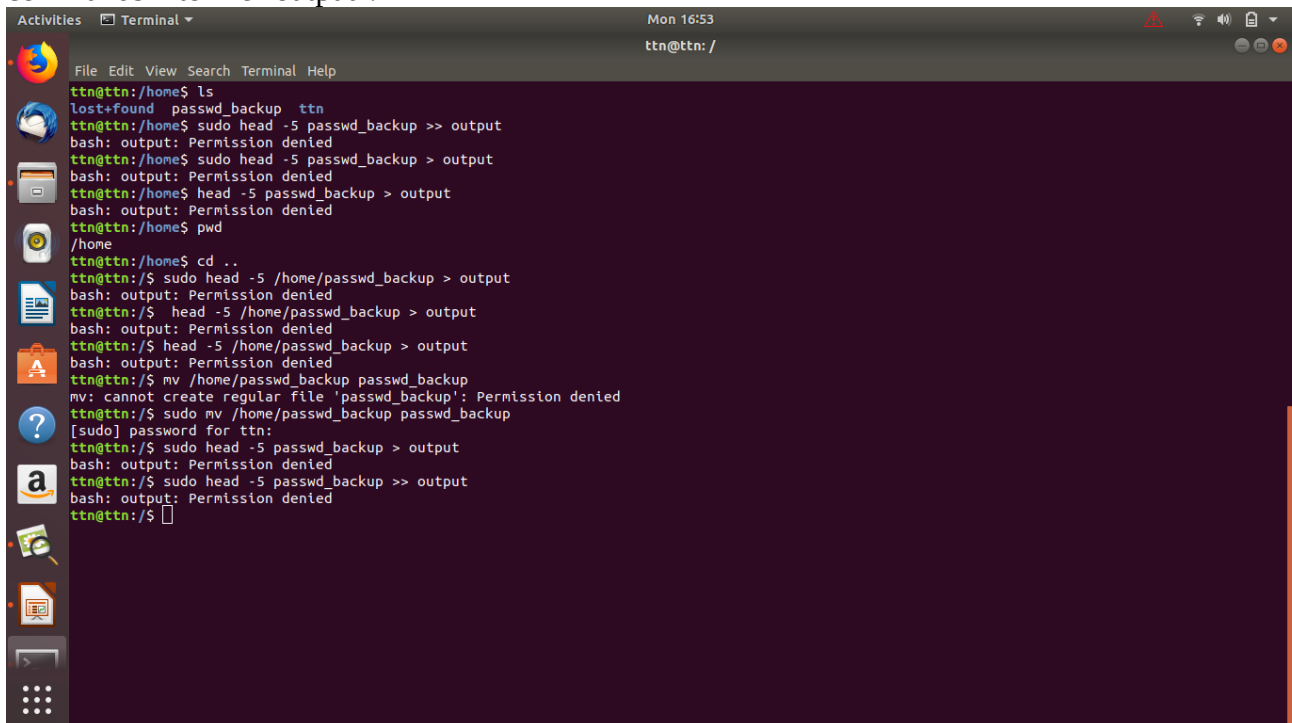
```
ttn@ttn:/home$ cd /home
ttn@ttn:/home$ find /etc/passwd
/etc/passwd
ttn@ttn:/home$ sudo cp /etc/passwd passwd_copy
ttn@ttn:/home$ ls
lost+found  passwd_copy  ttn
ttn@ttn:/home$ sudo mv passwd_copy passwd_backup
ttn@ttn:/home$ ls
lost+found  passwd_backup  ttn
ttn@ttn:/home$
```

Q6. Find out the number of line in password\_backup containing "/bin/false"

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 16:43, ttn@ttn: /home). The terminal shows the command `grep "/bin/false" passwd_backup` being executed. The output lists several system users and their shell paths, with `/bin/false` highlighted in red for each. The command `grep "/bin/false" passwd_backup | wc -l` is then entered, and the output `5` is displayed.

```
ttn@ttn:/home$ 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
ttn@ttn:/home$ grep "/bin/false" passwd_backup | wc -l
5
ttn@ttn:/home$
```

Q7. 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 16:53, ttn@ttn: /). The terminal shows a series of commands to attempt to redirect the first 5 lines of `passwd_backup` to a file named `output`. The user first runs `ls` and `sudo head -5 passwd_backup >> output`, both failing with 'Permission denied'. They then try `sudo head -5 passwd_backup > output`, also failing. Next, they run `head -5 passwd_backup > output`, failing again. They then run `pwd` and `cd ..`. They then run `sudo head -5 /home/passwd_backup > output`, failing. They then run `head -5 /home/passwd_backup > output`, failing. They then run `head -5 /home/passwd_backup > output`, failing. They then run `mv /home/passwd_backup passwd_backup`, failing with 'cannot create regular file'. They then run `sudo mv /home/passwd_backup passwd_backup`, which prompts for a password. They then run `sudo head -5 passwd_backup > output`, failing. They then run `sudo head -5 passwd_backup >> output`, failing. Finally, they run `head -5 passwd_backup >> output`, which succeeds.

```
ttn@ttn:/home$ ls
lost+found  passwd_backup  ttn
ttn@ttn:/home$ sudo head -5 passwd_backup >> output
bash: output: Permission denied
ttn@ttn:/home$ sudo head -5 passwd_backup > output
bash: output: Permission denied
ttn@ttn:/home$ head -5 passwd_backup > output
bash: output: Permission denied
ttn@ttn:/home$ pwd
/home
ttn@ttn:/home$ cd ..
ttn@ttn:/ $ sudo head -5 /home/passwd_backup > output
bash: output: Permission denied
ttn@ttn:/ $ head -5 /home/passwd_backup > output
bash: output: Permission denied
ttn@ttn:/ $ head -5 /home/passwd_backup > output
bash: output: Permission denied
ttn@ttn:/ $ mv /home/passwd_backup passwd_backup
mv: cannot create regular file 'passwd_backup': Permission denied
ttn@ttn:/ $ sudo mv /home/passwd_backup passwd_backup
[sudo] password for ttn:
ttn@ttn:/ $ sudo head -5 passwd_backup > output
bash: output: Permission denied
ttn@ttn:/ $ sudo head -5 passwd_backup >> output
bash: output: Permission denied
ttn@ttn:/ $ head -5 passwd_backup >> output
```

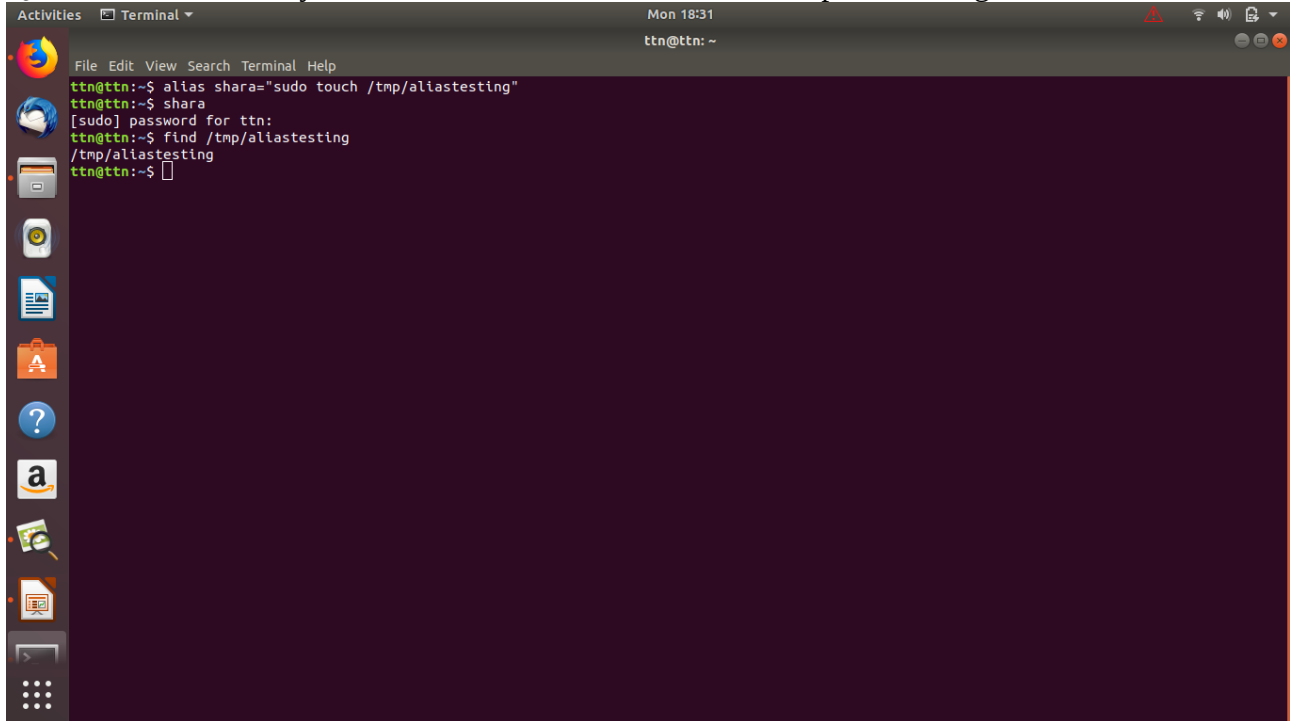
Q8. Create a "test" user, create its password and find out its uid and gid.

```
Activities Terminal Mon 17:58 root@ttn: ~
File Edit View Search Terminal Help
ttn@ttn:~$ sudo bash
[sudo] password for ttn:
root@ttn:~# userdel test
root@ttn:~# clear
root@ttn:~# useradd test
root@ttn:~# passwd test
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@ttn:~# id -u test
1003
root@ttn:~# id -g test
1003
root@ttn:~#
```

Q9. Change the timestamp of emptyFile1, emptyFile2 which are exist in dir2

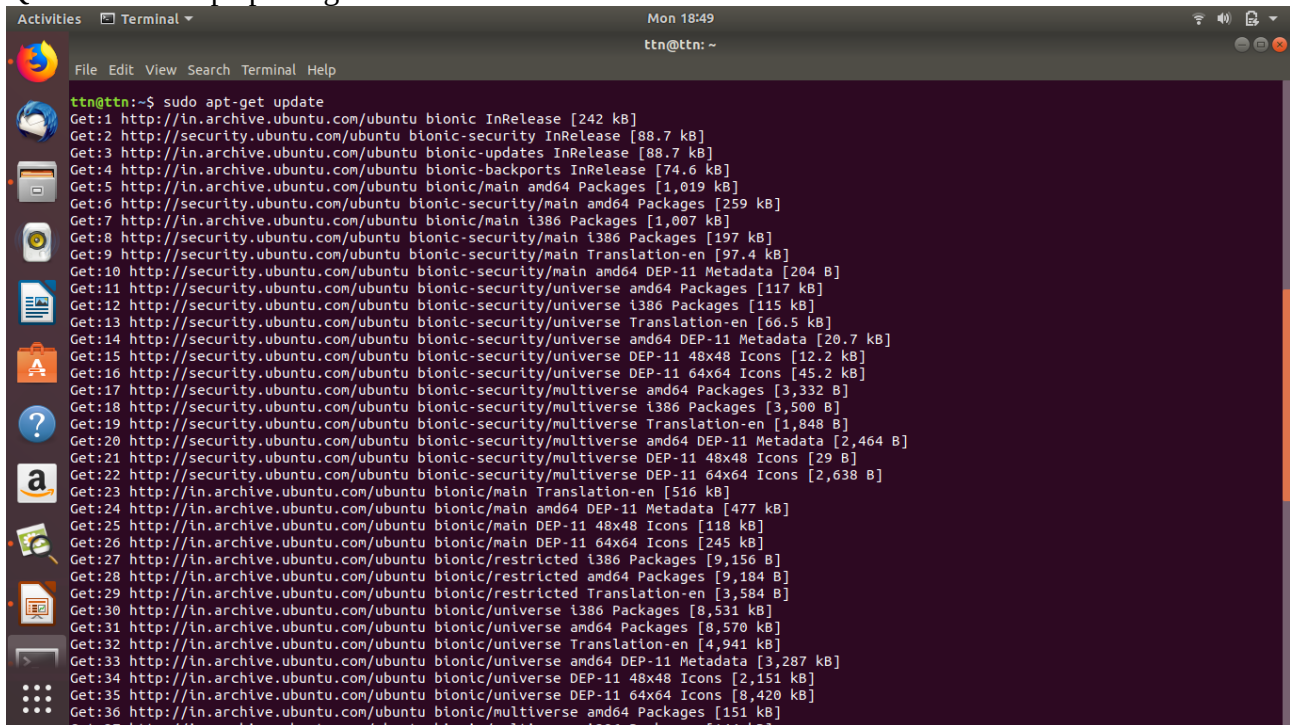
```
Activities Terminal Mon 17:55 Laptop battery low Approximately 17 minutes remaining (10%)
File Edit View Search Terminal Help
root@ttn:~# useradd testuser
root@ttn:~# passwd testuser
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@ttn:~# id -u testuser
1002
root@ttn:~# id -g testuser
1002
root@ttn:~# cd exercise/dir1/dir2
root@ttn:~/exercise/dir1/dir2# ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb 4 15:34 dir3
-rw-r--r-- 1 ttn ttn 0 Feb 4 15:50 emptyFile1
-rw-r--r-- 1 ttn ttn 0 Feb 4 15:50 emptyFile2
root@ttn:~/exercise/dir1/dir2# touch emptyFile1 emptyFile2
root@ttn:~/exercise/dir1/dir2# ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb 4 15:34 dir3
-rw-r--r-- 1 ttn ttn 0 Feb 4 17:55 emptyFile1
-rw-r--r-- 1 ttn ttn 0 Feb 4 17:55 emptyFile2
root@ttn:~/exercise/dir1/dir2#
```

Q11. 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 18:31, ttn@ttn: ~). The terminal shows the following commands and output:

```
ttn@ttn:~$ alias shara="sudo touch /tmp/aliastesting"
ttn@ttn:~$ shara
[sudo] password for ttn:
ttn@ttn:~$ find /tmp/aliastesting
/tmp/aliastesting
ttn@ttn:~$
```

Q13. Install “zip” package.

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Mon 18:49, ttn@ttn: ~). The terminal shows the following commands and output:

```
ttn@ttn:~$ sudo apt-get update
Get:1 http://in.archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 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/main amd64 Packages [259 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu bionic/main i386 Packages [1,007 kB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/main i386 Packages [197 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [97.4 kB]
Get:10 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [204 B]
Get:11 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [117 kB]
Get:12 http://security.ubuntu.com/ubuntu bionic-security/universe i386 Packages [115 kB]
Get:13 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [66.5 kB]
Get:14 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [20.7 kB]
Get:15 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 48x48 Icons [12.2 kB]
Get:16 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 64x64 Icons [45.2 kB]
Get:17 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [3,332 B]
Get:18 http://security.ubuntu.com/ubuntu bionic-security/multiverse i386 Packages [3,500 B]
Get:19 http://security.ubuntu.com/ubuntu bionic-security/multiverse Translation-en [1,848 B]
Get:20 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:21 http://security.ubuntu.com/ubuntu bionic-security/multiverse DEP-11 48x48 Icons [29 B]
Get:22 http://security.ubuntu.com/ubuntu bionic-security/multiverse DEP-11 64x64 Icons [2,638 B]
Get:23 http://in.archive.ubuntu.com/ubuntu bionic/main Translation-en [516 kB]
Get:24 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 DEP-11 Metadata [477 kB]
Get:25 http://in.archive.ubuntu.com/ubuntu bionic/main DEP-11 48x48 Icons [118 kB]
Get:26 http://in.archive.ubuntu.com/ubuntu bionic/main DEP-11 64x64 Icons [245 kB]
Get:27 http://in.archive.ubuntu.com/ubuntu bionic/restricted i386 Packages [9,156 B]
Get:28 http://in.archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [9,184 B]
Get:29 http://in.archive.ubuntu.com/ubuntu bionic/restricted Translation-en [3,584 B]
Get:30 http://in.archive.ubuntu.com/ubuntu bionic/universe i386 Packages [8,531 kB]
Get:31 http://in.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8,570 kB]
Get:32 http://in.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4,941 kB]
Get:33 http://in.archive.ubuntu.com/ubuntu bionic/universe amd64 DEP-11 Metadata [3,287 kB]
Get:34 http://in.archive.ubuntu.com/ubuntu bionic/universe DEP-11 48x48 Icons [2,151 kB]
Get:35 http://in.archive.ubuntu.com/ubuntu bionic/universe DEP-11 64x64 Icons [8,420 kB]
Get:36 http://in.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
```

```
Activities Terminal Mon 18:49 ttn@ttn: ~
File Edit View Search Terminal Help
Get:46 http://in.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [66.7 kB]
Get:47 http://in.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 64x64 Icons [123 kB]
Get:48 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted i386 Packages [6,928 B]
Get:49 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [6,992 B]
Get:50 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [3,076 B]
Get:51 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages [716 kB]
Get:52 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [725 kB]
Get:53 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [183 kB]
Get:54 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [202 kB]
Get:55 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 48x48 Icons [187 kB]
Get:56 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64 Icons [348 kB]
Get:57 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [6,388 B]
Get:58 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse i386 Packages [6,540 B]
Get:59 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [3,452 B]
Get:60 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:61 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 48x48 Icons [29 B]
Get:62 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 64x64 Icons [2,638 B]
Get:63 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe i386 Packages [3,472 B]
Get:64 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [3,472 B]
Get:65 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [1,604 B]
Get:66 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-11 Metadata [7,340 B]
Get:67 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe DEP-11 48x48 Icons [29 B]
Get:68 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe DEP-11 64x64 Icons [29 B]
Fetched 45.5 MB in 45s (1,016 kB/s)
Reading package lists... Done
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 430 not upgraded.
ttn@ttn:~$ sudo apt-get install unzip
Reading package lists... Done
Building dependency tree
Reading state information... Done
unzip is already the newest version (6.0-21ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 430 not upgraded.
ttn@ttn:~$
```

Q14. Compress "output" and "password\_backup" files into a tar ball. List the files present inside the tar created.

```
Activities Terminal Tue 15:00 ttn@ttn: /
File Edit View Search Terminal Tabs Help
ttn@ttn:~$ ls
ball.tar.gz  boot  dev  home  initrd.img.old  lib64  media  opt  output.txt  proc  run  snap  sys  usr  vmlinuz
bin          cdrom  etc  initrd.img  lib      lost+found  mnt  output  passwd_backup  root /sbin  srv  tmp  var
ttn@ttn:~$ sudo tar -cvf ball.tar.gz output passwd_backup
output
passwd_backup
ttn@ttn:~$
```

```
Activities Terminal Tue 15:03
ttn@ttn: /
File Edit View Search Terminal Tabs Help
ttn@ttn: ~
ttn@ttn: ~
ttn@ttn: /
ttn@ttn:/$ tar -tvf ball.tar.gz
-rw-r--r-- root/root      0 2019-02-04 17:25 output
-rwxrwxrwx root/root    2398 2019-02-04 16:11 passwd_backup
ttn@ttn:/$
```

Q17. Download any image from web and move to desktop

```
Activities Terminal Tue 15:46
ttn@ttn: ~/Desktop
File Edit View Search Terminal Tabs Help
ttn@ttn: ~
ttn@ttn: ~
ttn@ttn: ~/Desktop
ttn@ttn:~/Desktop$ sudo wget https://www.google.com/search?q=to+the+new&source=lnms&tbn=isch&sa=X&ved=0ahUKEwj0_IbvqaTgAhWLL48KHU3aAsIQ_AUIECgD&biw=1299&bih=639#imgsrc=9afXBC3fp4oP8M: > /home/ttn/Desktop/image
[13] 1730
[14] 1731
[15] 1732
[16] 1733
[17] 1734
[18] 1735
[14] Done source=lnms
[17] Done ved=0ahUKEwj0_IbvqaTgAhWLL48KHU3aAsIQ_AUIECgD
ttn@ttn:~/Desktop$ ls
image
[13]+ Stopped sudo wget https://www.google.com/search?q=to+the+new
[15] Done tbn=isch
[16] Done sa=X
[18] Done biw=1299
ttn@ttn:~/Desktop$
```

Q18. How to get help of commands usages.

```
ttn@ttn:~$ 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 ..
      --author             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                       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
```

```
ttn@ttn:~$ apropos ls
aconnect (1) - ALSA sequencer connection manager
add-shell (8) - add shells to the list of valid login shells
alsa-info.sh (1) - command-line utility to gather information about the A...
alsabat (1) - command-line sound tester for ALSA sound card driver
alsactl (1) - advanced controls for ALSA soundcard driver
alsactl_init (7) - alsa control management - initialization
alsaloop (1) - command-line PCM loopback
alsamixer (1) - soundcard mixer for ALSA soundcard driver, with ncurses...
amidi (1) - read from and write to ALSA RawMIDI ports
amixer (1) - command-line mixer for ALSA soundcard driver
aplay (1) - command-line sound recorder and player for ALSA soundc...
arecord (1) - command-line sound recorder and player for ALSA soundc...
aseqdump (1) - show the events received at an ALSA sequencer port
aseqnet (1) - ALSA sequencer connectors over network
blockdev (8) - call block device ioctls from the command line
c++filt (1) - Demangle C++ and Java symbols.
credentials (7) - process identifiers
Data::Dump::Trace (3pm) - Helpers to trace function and method calls
default.pa (5) - PulseAudio Sound Server Startup Script
dircolors (1) - color setup for ls
enchant-lsmod (1) - Show information about available spell-checking module...
evince-thumbnailer (1) - create png thumbnails from PostScript and PDF documents
```



Q19. Create a symlink of /etc/services into /tmp/ports-info

```
File Edit View Search Terminal Help
ttn@ttn:~$ ln -s /etc/services/info /tmp/ports-info
ttn@ttn:~$
```

Q20. 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?

```
Activities Terminal Tue 16:20
ttn@ttn: ~/Desktop
File Edit View Search Terminal Tabs Help
ttn@ttn: ~
ttn@ttn: ~
ttn@ttn: ~/Desktop
ttn@ttn:~/Desktop$ whereis grep
grep: /bin/grep /usr/share/man/man1/grep.1.gz /usr/share/info/grep.info.gz
ttn@ttn:~/Desktop$
```