Session 1: Introduction to Linux

Assignment

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

```
ttn@parth-choudhary:~$ ls
Desktop  dir1dir2dir3  Documents  Downloads  examples.desktop  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ mkdir -p exercise/dir1/dir2/dir3
ttn@parth-choudhary:~$ ls
Desktop  dir1dir2dir3  Documents  Downloads  examples.desktop  exercise  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ cd exercise
ttn@parth-choudhary:~/exercise$ ls
dir1
ttn@parth-choudhary:~/exercise$ cd dir1
ttn@parth-choudhary:~/exercise/dir1$ ls
dir2
ttn@parth-choudhary:~/exercise/dir1$ cd dir2
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls
dir3
ttn@parth-choudhary:~/exercise/dir1/dir2$ []
```

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

```
File  Edit  View  Search  Terminal  Help
ttn@parth-choudhary:~$ cd exercise/dir1/dir2
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls
dir3
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$ []
```

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

```
File  Edit  View  Search  Terminal  Help
ttn@parth-choudhary:~$ ls
Desktop  dir1dir2dir3  Documents  Downloads  examples.desktop  exercise  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ touch file1.txt
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls
Desktop  dir1dir2dir3  Documents  Downloads  examples.desktop  exercise  file1.txt  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ echo hello world > file1.txt
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ cat file1.txt
hello world
ttn@parth-choudhary:~$
```
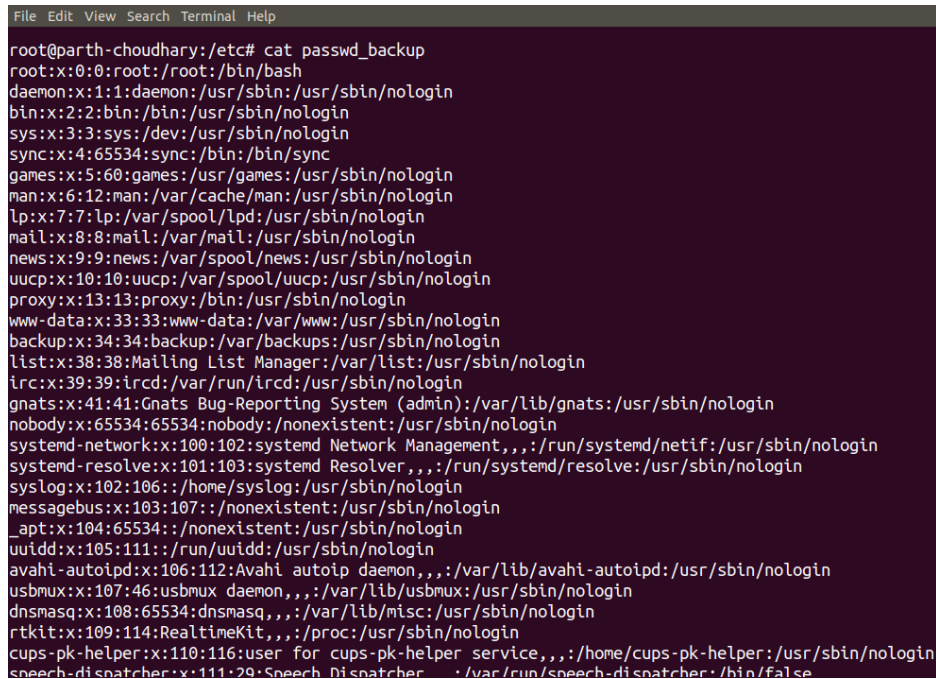
Ques 4. Find a "passwd" file using find command inside /etc. copy this files as passwd_copy and then rename this file as passwd_backup.

```
File  Edit  View  Search  Terminal  Help
ttn@parth-choudhary:~$ sudo su -
[sudo] password for ttn:
root@parth-choudhary:~# find /etc -name passwd
/etc/passwd
/etc/cron.daily/passwd
/etc/pam.d/passwd
root@parth-choudhary:~# cp /etc/passwd /etc/passwd_copy
root@parth-choudhary:~# ls /etc/passwd
/etc/passwd
root@parth-choudhary:~# ls -l /etc/passwd
-rw-r--r-- 1 root root 2398 Jan 28 17:32 /etc/passwd
root@parth-choudhary:~# ls -l /etc/passwd_copy
-rw-r--r-- 1 root root 2398 Feb  2 15:54 /etc/passwd_copy
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# mv passwd_copy passwd_backup
mv: cannot stat 'passwd_copy': No such file or directory
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# mv /etc/passwd_copy /etc/passwd_backup
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# ls -l /etc/passwd_backup
-rw-r--r-- 1 root root 2398 Feb  2 15:54 /etc/passwd_backup
root@parth-choudhary:~#
```

Ques 5. Try reading passwd_backup file in multiple tools: less,more,cat,strings etc and find the difference in their usage.
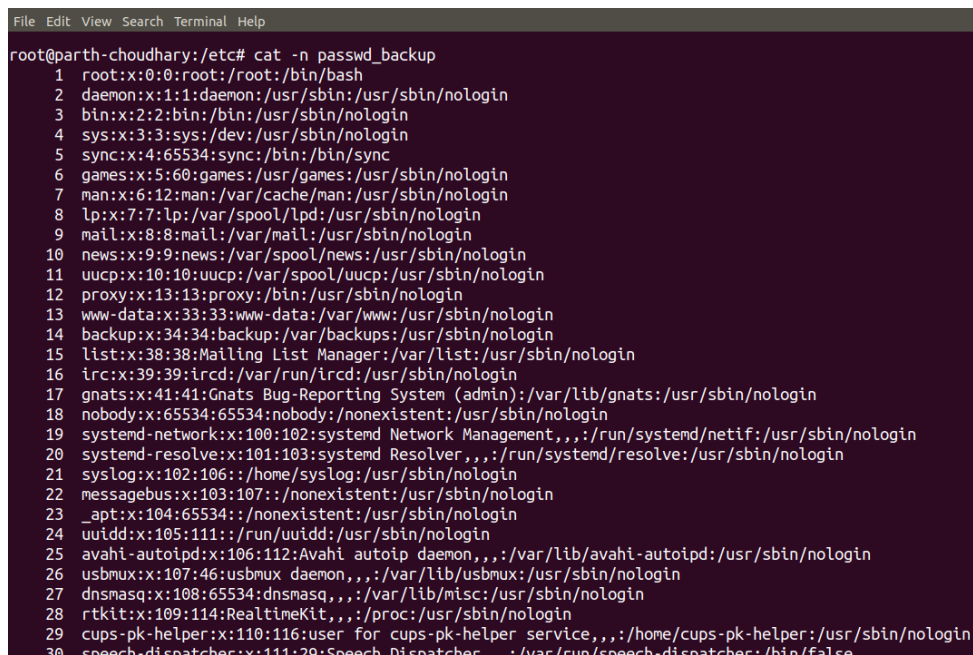
Sol. Following are the different tools(Commands) used to read the file with some different flags.

- cat


```
File Edit View Search Terminal Help
root@parth-choudhary:/etc# 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:Mailing 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
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
```

- cat –n


```
File Edit View Search Terminal Help
root@parth-choudhary:/etc# cat -n passwd_backup
     1  root:x:0:0:root:/root:/bin/bash
     2  daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
     3  bin:x:2:2:bin:/bin:/usr/sbin/nologin
     4  sys:x:3:3:sys:/dev:/usr/sbin/nologin
     5  sync:x:4:65534:sync:/bin:/bin/sync
     6  games:x:5:60:games:/usr/games:/usr/sbin/nologin
     7  man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
     8  lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
     9  mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
    10  news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
    11  uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
    12  proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
    13  www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
    14  backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
    15  list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
    16  irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
    17  gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
    18  nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
    19  systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
    20  systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
    21  syslog:x:102:106::/home/syslog:/usr/sbin/nologin
    22  messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
    23  _apt:x:104:65534::/nonexistent:/usr/sbin/nologin
    24  uuidd:x:105:111::/run/uuidd:/usr/sbin/nologin
    25  avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
    26  usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
    27  dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
    28  rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin
    29  cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
    30  speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
```

- cat –n | more


```
File   Edit   View   Search   Terminal   Help
     1  root:x:0:0:root:/root:/bin/bash
     2  daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
     3  bin:x:2:2:bin:/bin:/usr/sbin/nologin
     4  sys:x:3:3:sys:/dev:/usr/sbin/nologin
     5  sync:x:4:65534:sync:/bin:/bin/sync
     6  games:x:5:60:games:/usr/games:/usr/sbin/nologin
     7  man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
     8  lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
     9  mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
    10  news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
    11  uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
    12  proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
    13  www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
    14  backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
    15  list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
    16  irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
    17  gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
    18  nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
    19  systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
    20  systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
    21  syslog:x:102:106::/home/syslog:/usr/sbin/nologin
    22  messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
    23  _apt:x:104:65534::/nonexistent:/usr/sbin/nologin
    24  uuidd:x:105:111::/run/uuidd:/usr/sbin/nologin
    25  avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
    26  usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
    27  dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
    28  rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin
    29  cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
    30  speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
--More--
```

- cat –n | less


```
File   Edit   View   Search   Terminal   Help
    12  proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
    13  www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
    14  backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
    15  list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
    16  irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
    17  gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
    18  nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
    19  systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
    20  systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
    21  syslog:x:102:106::/home/syslog:/usr/sbin/nologin
    22  messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
    23  _apt:x:104:65534::/nonexistent:/usr/sbin/nologin
    24  uuidd:x:105:111::/run/uuidd:/usr/sbin/nologin
    25  avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
    26  usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
    27  dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
    28  rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin
    29  cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
    30  speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
    31  whoopsie:x:112:117::/nonexistent:/bin/false
    32  kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/:/usr/sbin/nologin
    33  saned:x:114:119::/var/lib/saned:/usr/sbin/nologin
    34  pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
    35  avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin
    36  colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
    37  hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
    38  geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin
    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
    41  ttn:x:1000:1000:TTN,,,:/home/ttn:/bin/bash
(END)
```

o **more**

```
File Edit View Search Terminal Help
root@parth-choudhary:/etc# more 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:Mailing 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
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
```

o **more −5**

```
File Edit View Search Terminal Help
root@parth-choudhary:/etc# more -5 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
--More--(7%)
```

- more +5

```
File Edit View Search Terminal Help
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:Mailing 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
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
--More--(95%)
```

- less

```
File Edit View Search Terminal Help
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:Mailing 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
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
:
```

- o /pattern Search(Flag of less command)

```
File   Edit   View   Search   Terminal   Help
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:Mailing 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
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
:
```

- o Less –N

```
File   Edit   View   Search   Terminal   Help
    12 proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
    13 www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
    14 backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
    15 list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
    16 irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
    17 gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
    18 nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
    19 systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
    20 systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
    21 syslog:x:102:106::/home/syslog:/usr/sbin/nologin
    22 messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
    23 _apt:x:104:65534::/nonexistent:/usr/sbin/nologin
    24 uuidd:x:105:111::/run/uuidd:/usr/sbin/nologin
    25 avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
    26 usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
    27 dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
    28 rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin
    29 cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
    30 speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
    31 whoopsie:x:112:117::/nonexistent:/bin/false
    32 kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/:/usr/sbin/nologin
    33 saned:x:114:119::/var/lib/saned:/usr/sbin/nologin
    34 pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
    35 avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin
    36 colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
    37 hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
    38 geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin
    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
    41 ttn:x:1000:1000:TTN,,,:/home/ttn:/bin/bash
(END)
```

- tail and tail –4

- head and head -4

Seeing all the reading tools (Commands) the difference we find is:

Cat displays the whole content of the file at once at the terminal.

More and less are pagers allowing us to view the content in forms of a pages from starting to end and end to starting respectively.

Head and less commands allows us to view the content of the file line wise from top to bottom and bottom to top respectively.

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

```
File  Edit  View  Search  Terminal  Help
root@parth-choudhary:/etc# grep -c "/bin/false" passwd_backup
5
root@parth-choudhary:/etc#
```

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

```
File  Edit  View  Search  Terminal  Help
root@parth-choudhary:/etc# head -5 passwd_backup > output
root@parth-choudhary:/etc# 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@parth-choudhary:/etc#
```

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

```
File  Edit  View  Search  Terminal  Help
root@parth-choudhary:~# adduser test
Adding user `test' ...
Adding new group `test' (1001) ...
Adding new user `test' (1001) with group `test' ...
The home directory `/home/test' already exists.  Not copying from `/etc/skel'.
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for test
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# id test
uid=1001(test) gid=1001(test) groups=1001(test)
root@parth-choudhary:~#
```

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

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  file1.txt  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$ cd exercise/dir1/dir2
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls
dir3  emptyFile1  emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb  2 15:39 dir3
-rw-r--r-- 1 ttn ttn    0 Feb  2 15:42 emptyFile1
-rw-r--r-- 1 ttn ttn    0 Feb  2 15:42 emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ touch -t 202103211240.55 emptyFile1
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls -l emptyFile1
-rw-r--r-- 1 ttn ttn 0 Mar 21  2021 emptyFile1
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ touch -t 203208211240.55 emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$
ttn@parth-choudhary:~/exercise/dir1/dir2$ ls -l emptyFile2
-rw-r--r-- 1 ttn ttn 0 Aug 21  2032 emptyFile2
ttn@parth-choudhary:~/exercise/dir1/dir2$
```

Ques 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.

```
File Edit View Search Terminal Help
root@parth-choudhary:~# su test
test@parth-choudhary:/root$ ls -l /etc/output
-rw-r--r-- 1 root root 189 Feb  2 16:58 /etc/output
test@parth-choudhary:/root$ echo hello > /etc/output
bash: /etc/output: Permission denied
test@parth-choudhary:/root$ exit
exit
root@parth-choudhary:~# chmod 666 /etc/output
root@parth-choudhary:~# ls -l /etc/output
-rw-rw-rw- 1 root root 189 Feb  2 16:58 /etc/output
root@parth-choudhary:~# su test
test@parth-choudhary:/root$ echo hello > /etc/output
test@parth-choudhary:/root$ cat /etc/output
hello
test@parth-choudhary:/root$
```

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

```
File Edit View Search Terminal Help
root@parth-choudhary:~# groupadd -g 241 parth
root@parth-choudhary:~# usermod -G parth test
root@parth-choudhary:~# id test
uid=1001(test) gid=1001(test) groups=1001(test),241(parth)
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# chgrp parth /etc/output
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# ls -l /etc/output
-rw-rw-rw- 1 root parth 6 Feb  2 18:17 /etc/output
root@parth-choudhary:~# cat /etc/output
hello
root@parth-choudhary:~# echo world >> /etc/output
root@parth-choudhary:~# cat /etc/output
hello
world
root@parth-choudhary:~# ls -l /etc/output
-rw-rw-rw- 1 root parth 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~# chgrp root /etc/output
root@parth-choudhary:~# chmod 644 /etc/output
root@parth-choudhary:~# ls -l /etc/output
-rw-r--r-- 1 root root 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~#
```

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

```
File Edit View Search Terminal Help
root@parth-choudhary:~# ls -l /etc/output
-rw-r--r-- 1 root root 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~# chmod o+wx /etc/output
root@parth-choudhary:~# ls -l /etc/output
-rw-r--rwx 1 root root 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# cat ls -l /etc/output
cat: invalid option -- 'l'
Try 'cat --help' for more information.
root@parth-choudhary:~# cat /etc/output
hello
world
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# echo this is a output file > /etc/output
root@parth-choudhary:~# cat /etc/output
this is a output file
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# chmod o-wx /etc/output
root@parth-choudhary:~# ls -l /etc/output
-rw-r--r-- 1 root root 22 Feb  2 18:57 /etc/output
root@parth-choudhary:~#
```
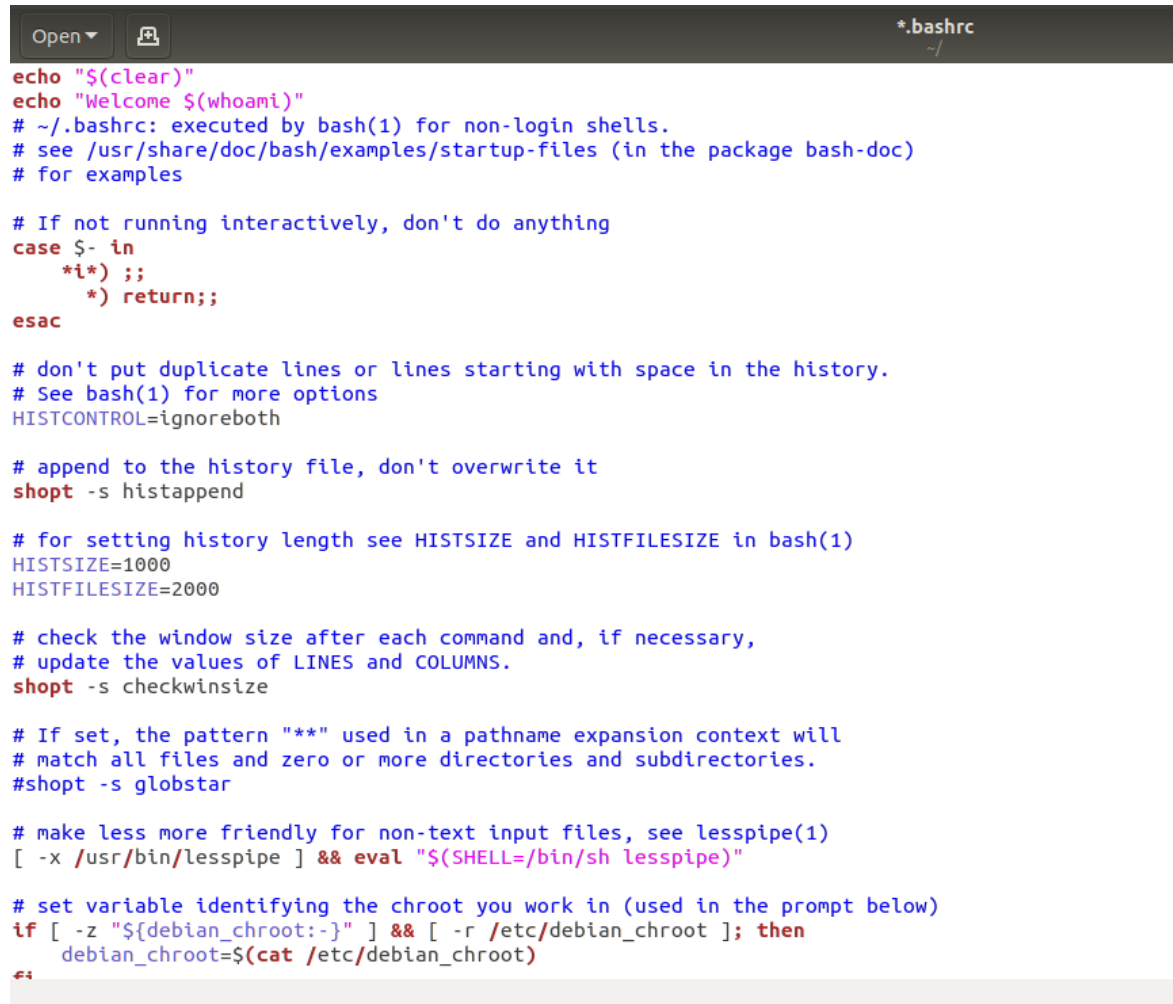
3. Change the ownership to edit the file.

```
File Edit View Search Terminal Help
root@parth-choudhary:~# groupadd -g 241 parth
root@parth-choudhary:~# usermod -G parth test
root@parth-choudhary:~# id test
uid=1001(test) gid=1001(test) groups=1001(test),241(parth)
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# chgrp parth /etc/output
root@parth-choudhary:~#
root@parth-choudhary:~#
root@parth-choudhary:~# ls -l /etc/output
-rw-rw-rw- 1 root parth 6 Feb  2 18:17 /etc/output
root@parth-choudhary:~# cat /etc/output
hello
root@parth-choudhary:~# echo world >> /etc/output
root@parth-choudhary:~# cat /etc/output
hello
world
root@parth-choudhary:~# ls -l /etc/output
-rw-rw-rw- 1 root parth 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~# chgrp root /etc/output
root@parth-choudhary:~# chmod 644 /etc/output
root@parth-choudhary:~# ls -l /etc/output
-rw-r--r-- 1 root root 12 Feb  2 18:42 /etc/output
root@parth-choudhary:~#
```

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

```
Activities    Terminal ▼                              Tue 7:12 PM
                                    ttn@parth-choudhary: ~
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  file1.txt  Music  Pictures  Public  Templates  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ alias parth="mkdir -p tmp/aliastesting"
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ parth
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls
Desktop  Documents  Downloads  examples.desktop  exercise  file1.txt  Music  Pictures  Public  Templates  tmp  Videos
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ cd tmp
ttn@parth-choudhary:~/tmp$
ttn@parth-choudhary:~/tmp$ ls
aliastesting
ttn@parth-choudhary:~/tmp$ cd ~
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ unalias parth
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ parth

Command 'parth' not found, did you mean:

  command 'partx' from deb util-linux

Try: sudo apt install <deb name>

ttn@parth-choudhary:~$
```

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

```
Open ▾   ⊞                                              *.bashrc
                                                          ~/
echo "$(clear)"
echo "Welcome $(whoami)"
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

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

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

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

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

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

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

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "${debian_chroot:-}" ] && [ -r /etc/debian_chroot ]; then
    debian_chroot=$(cat /etc/debian_chroot)
fi
```

Ques 13. Install "zip" package.

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

Ques 15. scp this file to test user

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ scp archive.zip test@192.168.0.108:/tmp
test@192.168.0.108's password:
archive.zip                                                          100% 1186     2.4MB/s   00:00
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ su test
Password:
test@parth-choudhary:/home/ttn$
test@parth-choudhary:/home/ttn$ cd ..
test@parth-choudhary:/home$ ls
lost+found  test  ttn
test@parth-choudhary:/home$ cd ..
test@parth-choudhary:/$ ls
bin   cdrom    dev  home       initrd.img.old  lib64      media  opt   root  sbin  srv  tmp  var  vmlinuz.old
boot  Desktop  etc  initrd.img  lib            lost+found  mnt   proc  run   snap  sys  usr  vmlinuz
test@parth-choudhary:/$ cd tmp
test@parth-choudhary:/tmp$ ls
archive.zip
config-err-c4m5pQ
ssh-YPDvycXB3pkN
systemd-private-0baafd28e73242f9a243818243e3f7e2-bolt.service-3oucXD
systemd-private-0baafd28e73242f9a243818243e3f7e2-colord.service-3jHQDz
systemd-private-0baafd28e73242f9a243818243e3f7e2-ModemManager.service-rGdv7H
systemd-private-0baafd28e73242f9a243818243e3f7e2-rtkit-daemon.service-3zQAm3
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-resolved.service-SPd74J
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-timesyncd.service-UhqZcN
test@parth-choudhary:/tmp$
```

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

```
File Edit View Search Terminal Help
test@parth-choudhary:/tmp$ ls
archive.zip
config-err-c4m5pQ
ssh-YPDvycXB3pkN
systemd-private-0baafd28e73242f9a243818243e3f7e2-bolt.service-3oucXD
systemd-private-0baafd28e73242f9a243818243e3f7e2-colord.service-3jHQDz
systemd-private-0baafd28e73242f9a243818243e3f7e2-ModemManager.service-rGdv7H
systemd-private-0baafd28e73242f9a243818243e3f7e2-rtkit-daemon.service-3zQAm3
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-resolved.service-SPd74J
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-timesyncd.service-UhqZcN
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$ unzip archive.zip
Archive:  archive.zip
  inflating: archive.tar
test@parth-choudhary:/tmp$ ls
archive.tar
archive.zip
config-err-c4m5pQ
ssh-YPDvycXB3pkN
systemd-private-0baafd28e73242f9a243818243e3f7e2-bolt.service-3oucXD
systemd-private-0baafd28e73242f9a243818243e3f7e2-colord.service-3jHQDz
systemd-private-0baafd28e73242f9a243818243e3f7e2-ModemManager.service-rGdv7H
systemd-private-0baafd28e73242f9a243818243e3f7e2-rtkit-daemon.service-3zQAm3
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-resolved.service-SPd74J
systemd-private-0baafd28e73242f9a243818243e3f7e2-systemd-timesyncd.service-UhqZcN
test@parth-choudhary:/tmp$ tar -tvf archive.tar
-rw-r--r-- root/root       22 2021-02-02 18:57 etc/output
-rw-r--r-- root/root     2398 2021-02-02 15:54 etc/passwd_backup
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
test@parth-choudhary:/tmp$
```

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

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ wget https://www.gettyimages.in/gi-resources/images/500px/983794168.jpg
--2021-02-02 23:03:07--  https://www.gettyimages.in/gi-resources/images/500px/983794168.jpg
Resolving www.gettyimages.in (www.gettyimages.in)... 99.86.47.124, 99.86.47.108, 99.86.47.39, ...
Connecting to www.gettyimages.in (www.gettyimages.in)|99.86.47.124|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 98468 (96K) [image/jpeg]
Saving to: '983794168.jpg'

983794168.jpg          100%[===================================================>]  96.16K  --.-KB/s    in 0.02s

2021-02-02 23:03:07 (5.35 MB/s) - '983794168.jpg' saved [98468/98468]

ttn@parth-choudhary:~$ ls
983794168.jpg  archive.zip  Documents  examples.desktop  file1.txt  Pictures  Templates  Videos
archive.tar    Desktop      Downloads  exercise          Music      Public    tmp        wget-log
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ sudo mv 983794168.jpg /home/ttn/Desktop
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls
archive.tar  Desktop     Downloads         exercise  Music      Public     tmp   wget-log
archive.zip  Documents   examples.desktop  file1.txt  Pictures  Templates  Videos
ttn@parth-choudhary:~$ cd Desktop
ttn@parth-choudhary:~/Desktop$ ls
983794168.jpg
ttn@parth-choudhary:~/Desktop$
```

Ques 18. How to get help of commands usages.

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ cat --help
Usage: cat [OPTION]... [FILE]...
Concatenate FILE(s) to standard output.

With no FILE, or when FILE is -, read standard input.

  -A, --show-all           equivalent to -vET
  -b, --number-nonblank    number nonempty output lines, overrides -n
  -e                       equivalent to -vE
  -E, --show-ends          display $ at end of each line
  -n, --number             number all output lines
  -s, --squeeze-blank      suppress repeated empty output lines
  -t                       equivalent to -vT
  -T, --show-tabs          display TAB characters as ^I
  -u                       (ignored)
  -v, --show-nonprinting   use ^ and M- notation, except for LFD and TAB
      --help     display this help and exit
      --version  output version information and exit

Examples:
  cat f - g  Output f's contents, then standard input, then g's contents.
  cat        Copy standard input to standard output.

GNU coreutils online help: <http://www.gnu.org/software/coreutils/>
Full documentation at: <http://www.gnu.org/software/coreutils/cat>
or available locally via: info '(coreutils) cat invocation'
ttn@parth-choudhary:~$
```

```
File  Edit  View  Search  Terminal  Help
ttn@parth-choudhary:~$ wc --help
Usage: wc [OPTION]... [FILE]...
  or:  wc [OPTION]... --files0-from=F
Print newline, word, and byte counts for each FILE, and a total line if
more than one FILE is specified.  A word is a non-zero-length sequence of
characters delimited by white space.

With no FILE, or when FILE is -, read standard input.

The options below may be used to select which counts are printed, always in
the following order: newline, word, character, byte, maximum line length.
  -c, --bytes            print the byte counts
  -m, --chars            print the character counts
  -l, --lines            print the newline counts
      --files0-from=F    read input from the files specified by
                           NUL-terminated names in file F;
                           If F is - then read names from standard input
  -L, --max-line-length  print the maximum display width
  -w, --words            print the word counts
      --help     display this help and exit
      --version  output version information and exit

GNU coreutils online help: <http://www.gnu.org/software/coreutils/>
Full documentation at: <http://www.gnu.org/software/coreutils/wc>
or available locally via: info '(coreutils) wc invocation'
ttn@parth-choudhary:~$ 
```

```
File  Edit  View  Search  Terminal  Help
ttn@parth-choudhary:~$ help | head -25
GNU bash, version 4.4.20(1)-release (x86_64-pc-linux-gnu)
These shell commands are defined internally.  Type `help' to see this list.
Type `help name' to find out more about the function `name'.
Use `info bash' to find out more about the shell in general.
Use `man -k' or `info' to find out more about commands not in this list.

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

 job_spec [&]                                               history [-c] [-d offset] [n] or history -anrw [filename] or history -ps>
 (( expression ))                                          if COMMANDS; then COMMANDS; [ elif COMMANDS; then COMMANDS; ]... [ else>
 . filename [arguments]                                    jobs [-lnprs] [jobspec ...] or jobs -x command [args]
 :                                                         kill [-s sigspec | -n signum | -sigspec] pid | jobspec ... or kill -l [>
 [ arg... ]                                                let arg [arg ...]
 [[ expression ]]                                          local [option] name[=value] ...
 alias [-p] [name[=value] ... ]                            logout [n]
 bg [job_spec ...]                                         mapfile [-d delim] [-n count] [-O origin] [-s count] [-t] [-u fd] [-C c>
 bind [-lpsvPSVX] [-m keymap] [-f filename] [-q name] [-u name] [-r keyse>  popd [-n] [+N | -N]
 break [n]                                                 printf [-v var] format [arguments]
 builtin [shell-builtin [arg ...]]                         pushd [-n] [+N | -N | dir]
 caller [expr]                                             pwd [-LP]
 case WORD in [PATTERN [| PATTERN]...) COMMANDS ;;]... esac read [-ers] [-a array] [-d delim] [-i text] [-n nchars] [-N nchars] [-p>
 cd [-L|[-P [-e]] [-@]] [dir]                              readarray [-n count] [-O origin] [-s count] [-t] [-u fd] [-C callback] >
 command [-pVv] command [arg ...]                          readonly [-aAf] [name[=value] ...] or readonly -p
 compgen [-abcdefgjksuv] [-o option] [-A action] [-G globpat] [-W wordlis>  return [n]
 complete [-abcdefgjksuv] [-pr] [-DE] [-o option] [-A action] [-G globpat> select NAME [in WORDS ... ;] do COMMANDS; done
ttn@parth-choudhary:~$ 
```

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

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ ls -l /etc/services
-rw-r--r-- 1 root root 19183 Dec 26  2016 /etc/services
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls -l /tmp/ports-info
ls: cannot access '/tmp/ports-info': No such file or directory
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ln -s /etc/services /tmp/ports-info
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls -l /etc/services
-rw-r--r-- 1 root root 19183 Dec 26  2016 /etc/services
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ ls -l /tmp/ports-info
lrwxrwxrwx 1 ttn ttn 13 Feb  2 23:23 /tmp/ports-info -> /etc/services
ttn@parth-choudhary:~$
```

Ques 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?

```
File Edit View Search Terminal Help
ttn@parth-choudhary:~$ whereis pwd
pwd: /bin/pwd /usr/share/man/man1/pwd.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis cat
cat: /bin/cat /usr/share/man/man1/cat.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis cp
cp: /bin/cp /usr/share/man/man1/cp.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis vi
vi: /usr/bin/vi /usr/share/man/man1/vi.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis tar
tar: /usr/lib/tar /bin/tar /usr/share/man/man1/tar.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis mkdir
mkdir: /bin/mkdir /usr/share/man/man1/mkdir.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis clear
clear: /usr/bin/clear /usr/share/man/man1/clear.1.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$ whereis history
history: /usr/share/man/man3/history.3readline.gz
ttn@parth-choudhary:~$
ttn@parth-choudhary:~$
```