

Practical-01

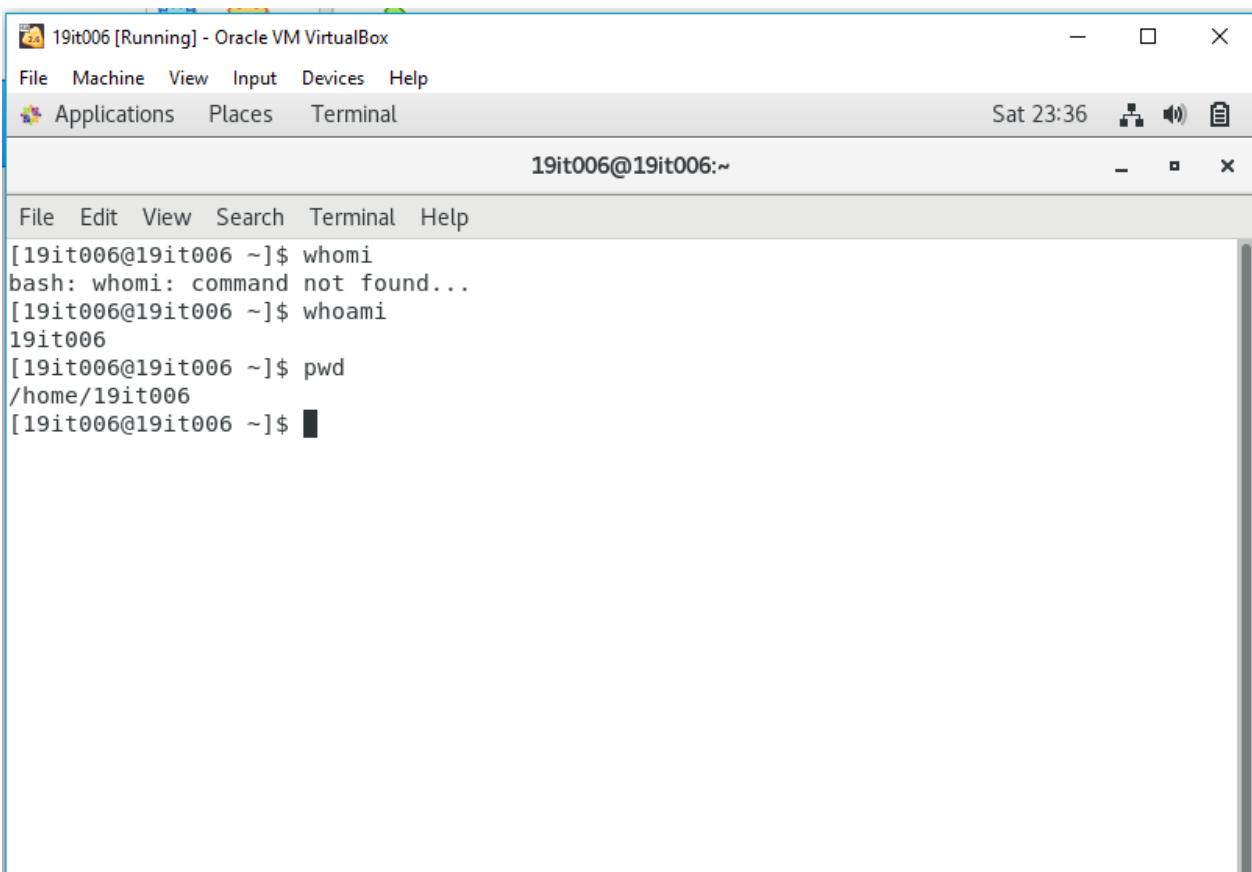
- Install Virtual box on your PC
- Create your first new VM (The specification is below)
- Download and Install Linux CentOS on your virtual box (PLEASE NOTE: During installation you will get the option to turn Ethernet ON or OFF. Please keep the Ethernet OFF for your installation)
- I would highly recommend that you install Linux OS the first time and then delete it. Then install the 2nd time and keep it. This will be a good practice for the OS installation

Specification for Linux VM is as follow:

- Memory = 2G
- Disk Space = 10G
- CPU = 1

Virtual Machine was already installed so now attaching the steps to how to change user name :

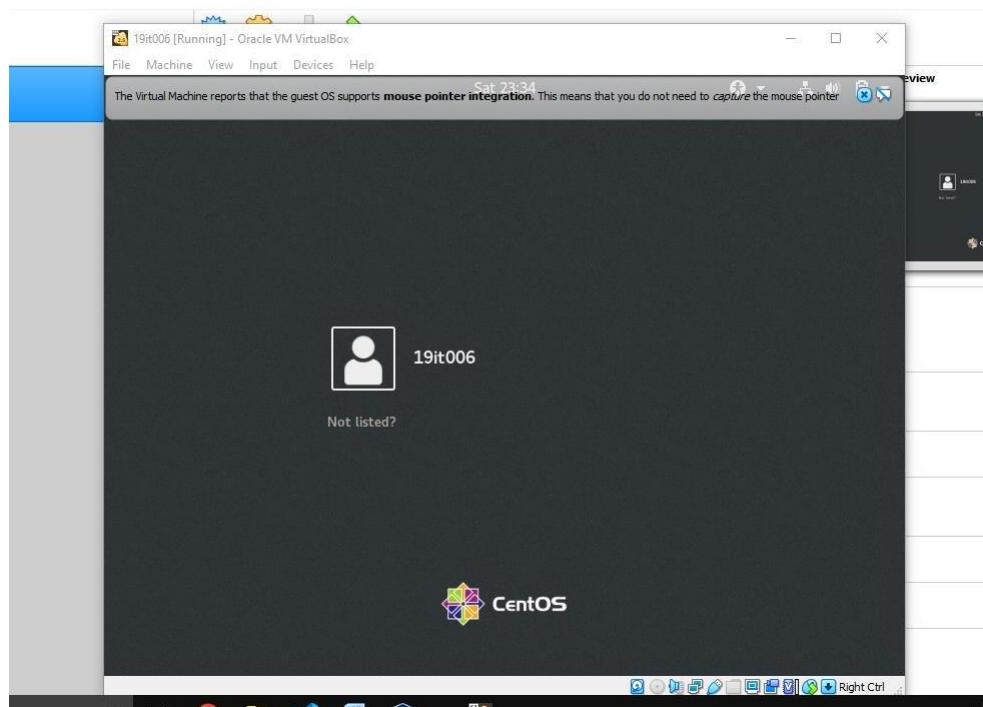
Step.01 : Login Usually and see the userna



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar shows "Sat 23:36" and icons for volume, battery, and network. The terminal prompt is "19it006@19it006:~". The terminal output shows:

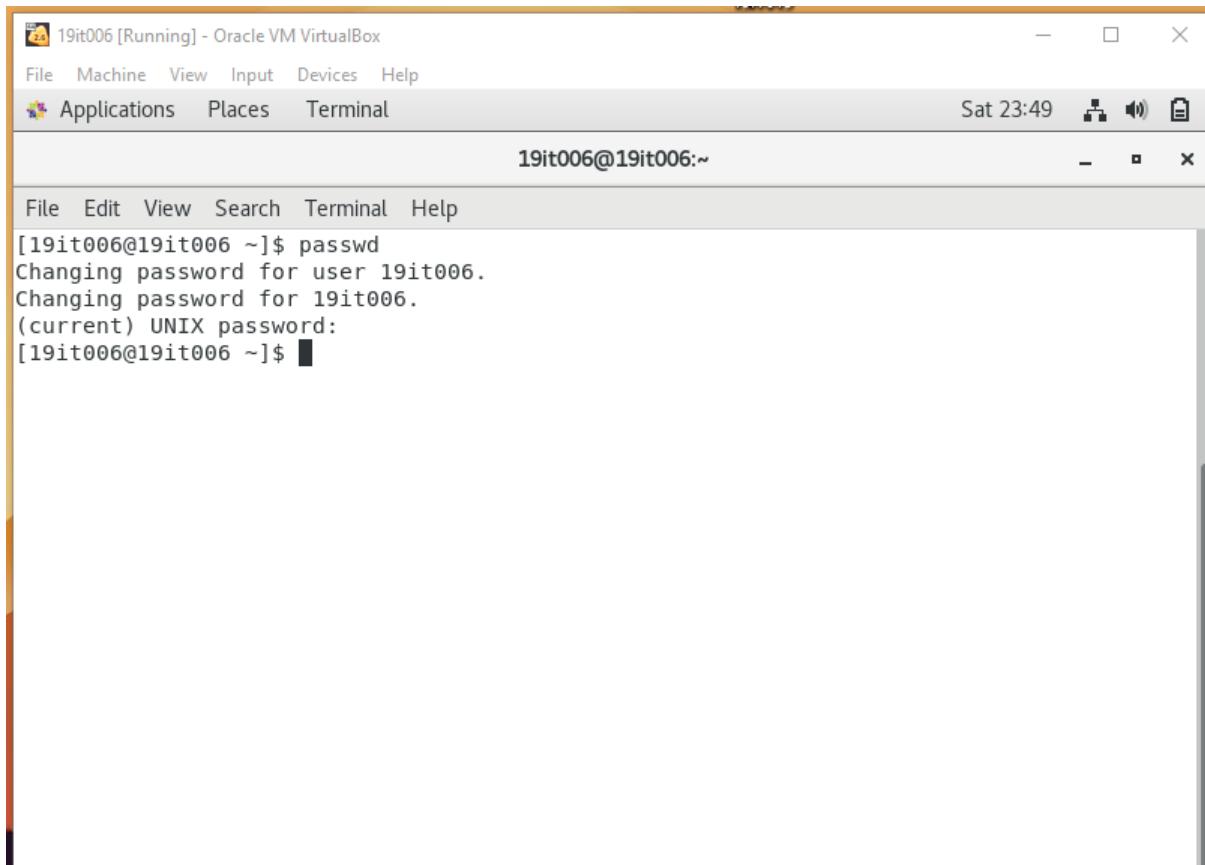
```
[19it006@19it006 ~]$ whomi  
bash: whomi: command not found...  
[19it006@19it006 ~]$ whoami  
19it006  
[19it006@19it006 ~]$ pwd  
/home/19it006  
[19it006@19it006 ~]$ █
```

Step.02: Exit the root user using exit command and restart your machine and you will see that the name is changed.



Practical.02

1. Change your password.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the bottom shows "19it006@19it006:~". The terminal content is as follows:

```
[19it006@19it006 ~]$ passwd
Changing password for user 19it006.
Changing password for 19it006.
(current) UNIX password:
[19it006@19it006 ~]$ █
```

2. Create 10 files under your home directory (File names = jerry, kramer, george, lex, clark, lois, homer, bart, lisa, and marge)

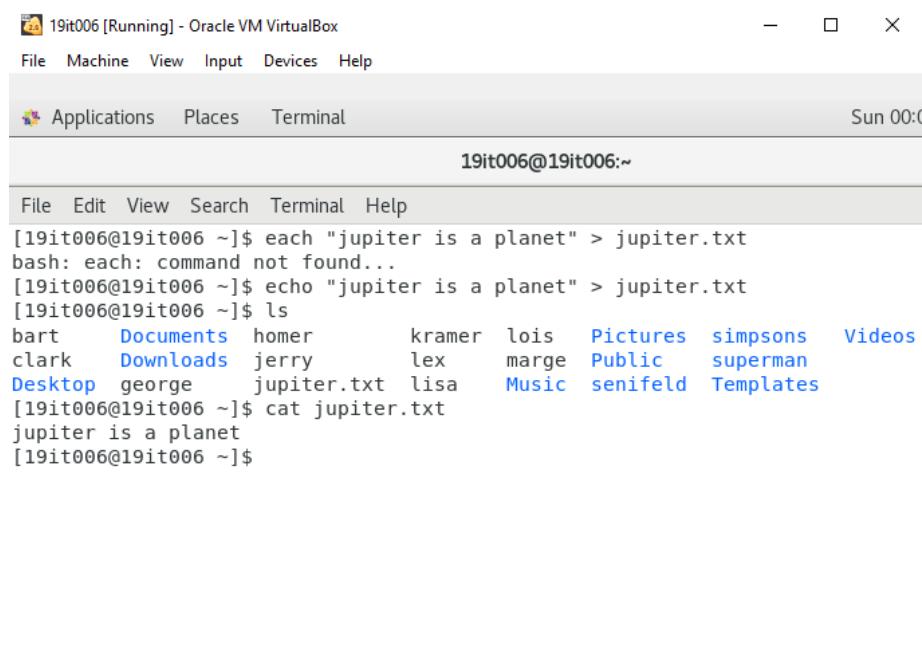
```
[19it006@19it006 ~]$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
[19it006@19it006 ~]$ touch jerry
.bash_history .cache/ Documents/.local/ Public/
.bash_logout .config/ Downloads/.mozilla/ Templates/
.bash_profile .dbus/ .esd_auth Music/ Videos/
.bashrc Desktop/.ICEauthority Pictures/
[19it006@19it006 ~]$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
[19it006@19it006 ~]$ touch jerry kramer george lex clark lois homer bart lisa
[19it006@19it006 ~]$ ls
bart Desktop Downloads homer kramer lisa marge Pictures Templates
clark Documents george jerry lex lois Music Public Videos
[19it006@19it006 ~]$
```

3. Create 3 directories under your home directory (Dir name = seinfeld, superman and simpsons)

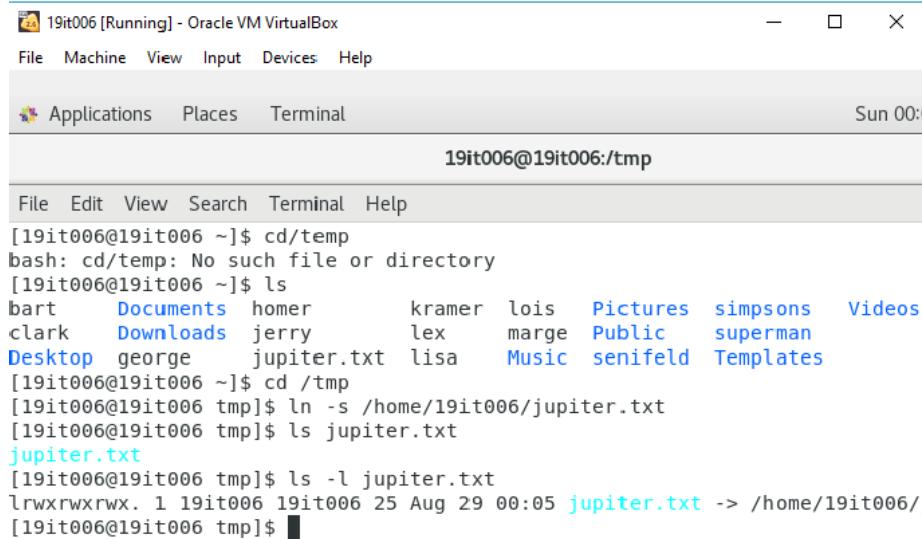
```
[19it006@19it006 ~]$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
[19it006@19it006 ~]$ touch jerry
.bash_history .cache/ Documents/.local/ Public/
.bash_logout .config/ Downloads/.mozilla/ Templates/
.bash_profile .dbus/ .esd_auth Music/ Videos/
.bashrc Desktop/.ICEauthority Pictures/
[19it006@19it006 ~]$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
[19it006@19it006 ~]$ touch jerry kramer george lex clark lois homer bart lisa
[19it006@19it006 ~]$ ls
bart Desktop Downloads homer kramer lisa marge Pictures Templates
clark Documents george jerry lex lois Music Public Videos
[19it006@19it006 ~]$ mkdir senifeld superman simpsons
[19it006@19it006 ~]$ ls
bart Documents homer lex marge Public superman
clark Downloads jerry lisa Music senifeld Templates
Desktop george kramer lois Pictures simpsons Videos
[19it006@19it006 ~]$ █
```

4. Create a new file jupiter and write to it as "Jupiter is a planet".Then create a soft link in /tmp directory.

- **Create a new file Jupiter and write to it as “Jupiter is a planet”**
- **Create soft link in /tmp directory**



```
[19it006@19it006 ~]$ each "jupiter is a planet" > jupiter.txt
bash: each: command not found...
[19it006@19it006 ~]$ echo "jupiter is a planet" > jupiter.txt
[19it006@19it006 ~]$ ls
bart    Documents   homer      kramer   lois    Pictures   simpsons   Videos
clark   Downloads   jerry      lex       marge   Public     superman
Desktop  george    jupiter.txt lisa     Music    seninfeld  Templates
[19it006@19it006 ~]$ cat jupiter.txt
jupiter is a planet
[19it006@19it006 ~]$
```

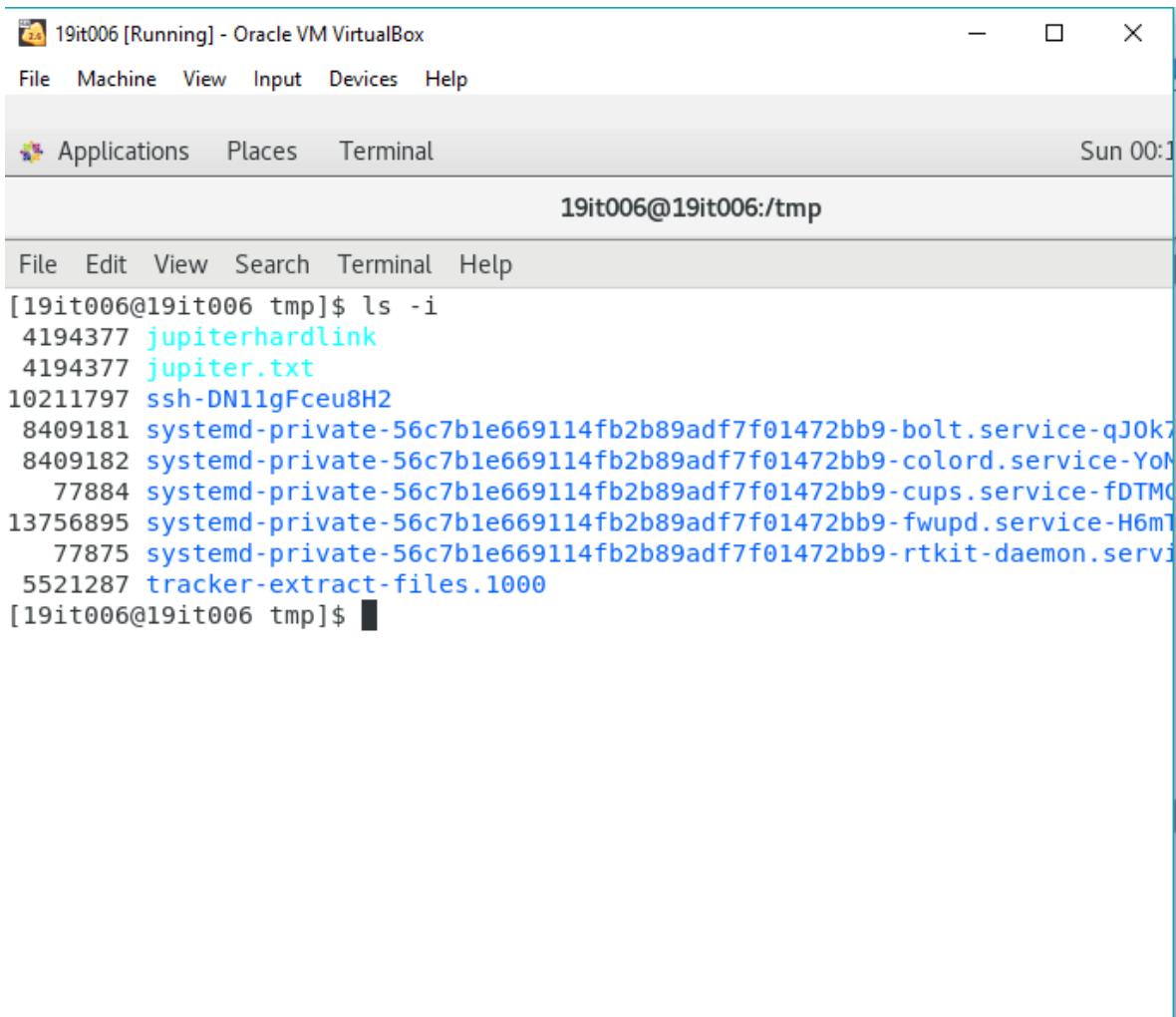


```
[19it006@19it006 ~]$ cd/temp
bash: cd/temp: No such file or directory
[19it006@19it006 ~]$ ls
bart    Documents   homer      kramer   lois    Pictures   simpsons   Videos
clark   Downloads   jerry      lex       marge   Public     superman
Desktop  george    jupiter.txt lisa     Music    seninfeld  Templates
[19it006@19it006 ~]$ cd /tmp
[19it006@19it006 tmp]$ ln -s /home/19it006/jupiter.txt
[19it006@19it006 tmp]$ ls jupiter.txt
jupiter.txt
[19it006@19it006 tmp]$ ls -l jupiter.txt
lrwxrwxrwx. 1 19it006 19it006 25 Aug 29 00:05 jupiter.txt -> /home/19it006/;
```

5. Also create a hard link of jupiter in /tmp directory

```
[19it006@19it006 ~]$ cd/temp
bash: cd/temp: No such file or directory
[19it006@19it006 ~]$ ls
bart    Documents   homer        kramer   lois    Pictures   simpsons   Videos
clark   Downloads   jerry        lex      marge   Public     superman
Desktop george     jupiter.txt lisa     Music    senifeld  Templates
[19it006@19it006 ~]$ cd /tmp
[19it006@19it006 tmp]$ ln -s /home/19it006/jupiter.txt
[19it006@19it006 tmp]$ ls jupiter.txt
jupiter.txt
[19it006@19it006 tmp]$ ls -l jupiter.txt
lrwxrwxrwx. 1 19it006 19it006 25 Aug 29 00:05 jupiter.txt -> /home/19it006/jupiter.txt
[19it006@19it006 tmp]$ ln jupiter.txt jupiterhardlink
[19it006@19it006 tmp]$ ls -l jupiterhardlink
lrwxrwxrwx. 2 19it006 19it006 25 Aug 29 00:05 jupiterhardlink -> /home/19it006/jupiter.txt
[19it006@19it006 tmp]$ ls -l jupiter.txt
lrwxrwxrwx. 2 19it006 19it006 25 Aug 29 00:05 jupiter.txt -> /home/19it006/jupiter.txt
[19it006@19it006 tmp]$ █
```

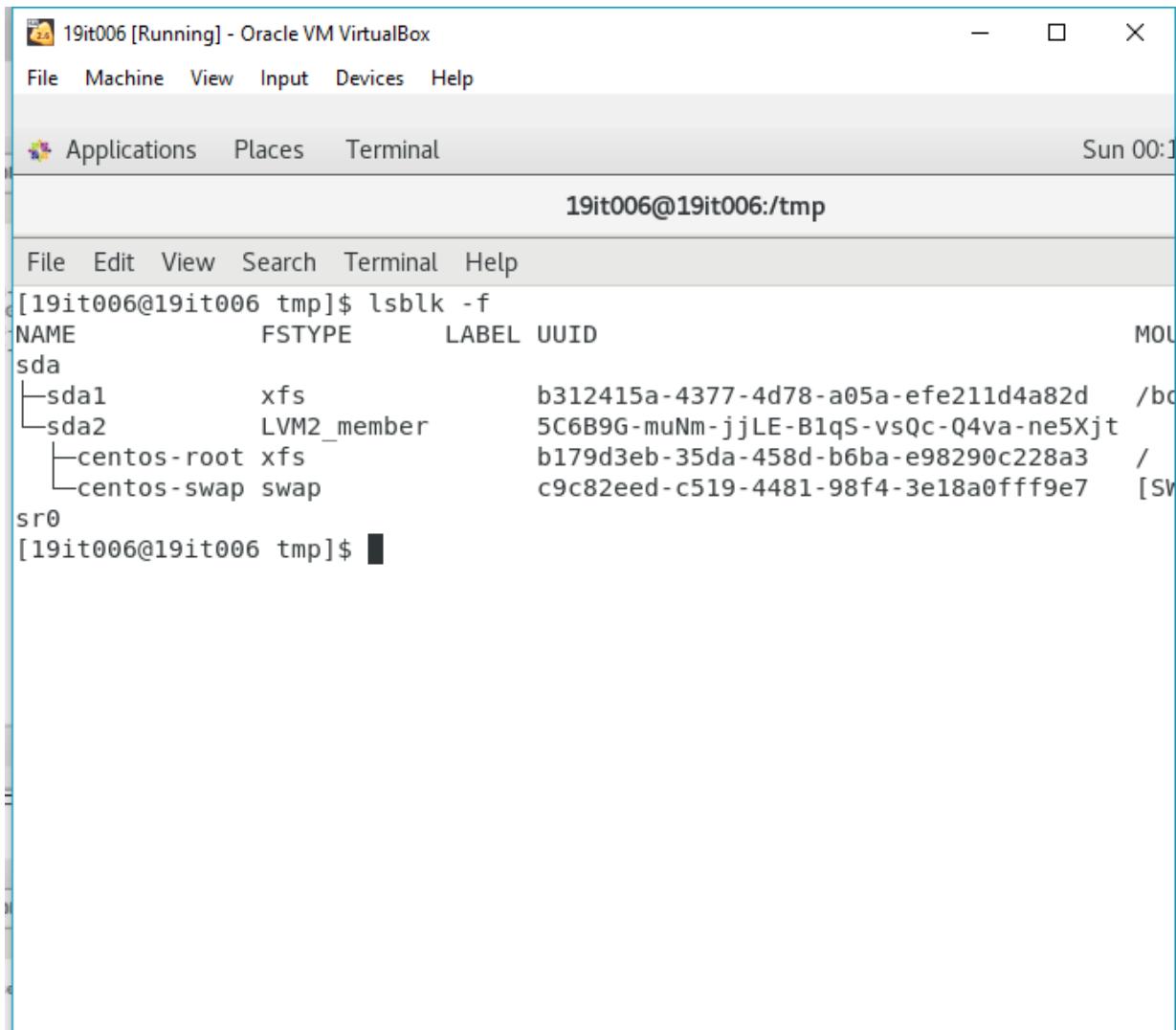
6. Check the inodes of both link.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window contains a terminal session with the following command and output:

```
[19it006@19it006 tmp]$ ls -i
4194377 jupiterhardlink
4194377 jupiter.txt
10211797 ssh-DN11gFceu8H2
8409181 systemd-private-56c7b1e669114fb2b89adf7f01472bb9-bolt.service-qJ0k7
8409182 systemd-private-56c7b1e669114fb2b89adf7f01472bb9-colord.service-YoN
77884 systemd-private-56c7b1e669114fb2b89adf7f01472bb9-cups.service-fDTMC
13756895 systemd-private-56c7b1e669114fb2b89adf7f01472bb9-fwupd.service-H6mI
77875 systemd-private-56c7b1e669114fb2b89adf7f01472bb9-rtkit-daemon.servi
5521287 tracker-extract-files.1000
[19it006@19it006 tmp]$
```

7. Commands to determine the file system type in LinuxOS



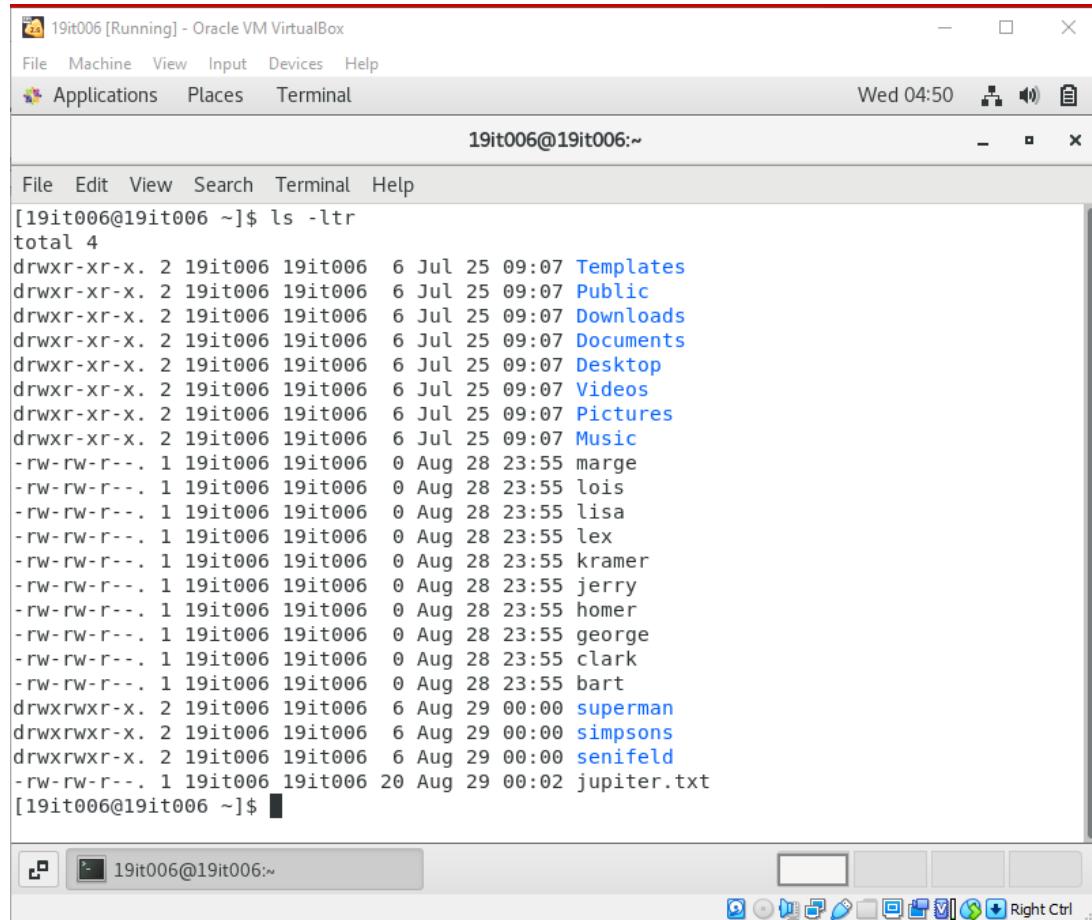
The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, Terminal, and a status bar showing Sun 00:1. The terminal prompt is 19it006@19it006:/tmp. The user runs the command lsblk -f, which lists disk blocks. The output shows:

NAME	FSTYPE	LABEL	UUID	MOUNTPOINT
sda				
└─sda1	xfs		b312415a-4377-4d78-a05a-efe211d4a82d	/boot
└─sda2	LVM2_member		5C6B9G-muNm-jjLE-B1qS-vsQc-Q4va-ne5Xjt	
└─centos-root	xfs		b179d3eb-35da-458d-b6ba-e98290c228a3	/
└─centos-swap	swap		c9c82eed-c519-4481-98f4-3e18a0fff9e7	[SWAP]
sr0				

[19it006@19it006 tmp]\$ █

Practical 3

- List files in your home directory by the last time they were modified



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the bottom shows "Wed 04:50" and icons for volume, battery, and network. The terminal itself has a title bar "19it006@19it006:~". The command entered was "ls -ltr", which lists the contents of the current directory (~) in long listing format. The output shows several files and directories, including "Templates", "Public", "Downloads", "Documents", "Desktop", "Videos", "Pictures", "Music", and several files named after Simpson characters: "marge", "lois", "lisa", "lex", "kramer", "jerry", "homer", "george", "clark", and "bart". There are also three symbolic links named "superman", "simpsons", and "seninfeld". A file named "jupiter.txt" is listed with a modification date of 20 Aug 29 00:02.

```
[19it006@19it006 ~]$ ls -ltr
total 4
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Templates
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Public
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Downloads
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Documents
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Desktop
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Videos
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Pictures
drwxr-xr-x. 2 19it006 19it006 6 Jul 25 09:07 Music
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 marge
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 lois
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 lisa
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 lex
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 kramer
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 jerry
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 homer
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 george
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 clark
-rw-rw-r--. 1 19it006 19it006 0 Aug 28 23:55 bart
drwxrwxr-x. 2 19it006 19it006 6 Aug 29 00:00 superman
drwxrwxr-x. 2 19it006 19it006 6 Aug 29 00:00 simpsons
drwxrwxr-x. 2 19it006 19it006 6 Aug 29 00:00 seninfeld
-rw-rw-r--. 1 19it006 19it006 20 Aug 29 00:02 jupiter.txt
[19it006@19it006 ~]$
```

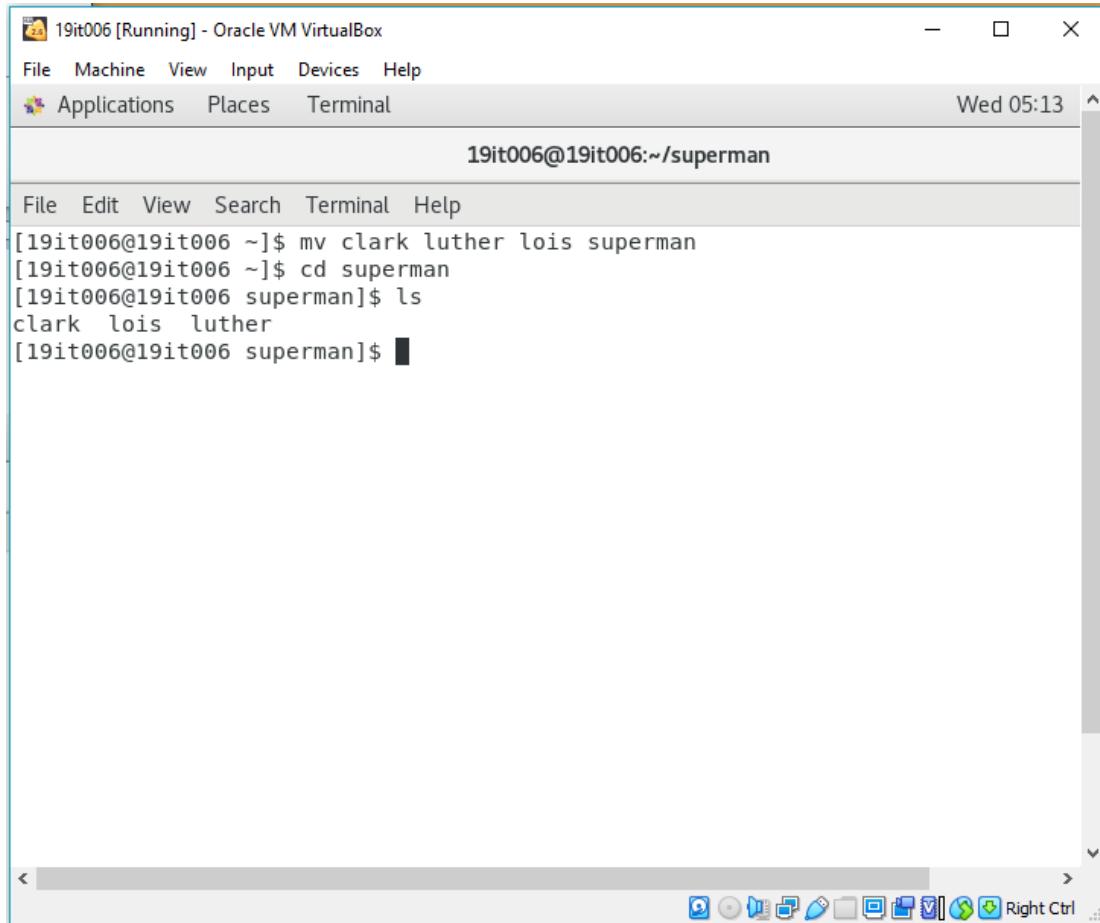
- Move jerry, george, kramer and puddy files into seinfeld directory

```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Wed 04:56
19it006@19it006:~/seninfeld
File Edit View Search Terminal Help
[19it006@19it006 ~]$ ls
bart Documents homer kramer lois Pictures simpsons Videos
clark Downloads jerry lex marge Public superman
Desktop george jupiter.txt lisa Music seninfeld Templates
[19it006@19it006 ~]$ mv jerry george kramer seinfeld
mv: target 'seinfeld' is not a directory
[19it006@19it006 ~]$ mv jerry george kramer seninfeld
[19it006@19it006 ~]$ ls
bart Documents jupiter.txt lois Pictures simpsons Videos
clark Downloads lex marge Public superman
Desktop homer lisa Music seninfeld Templates
[19it006@19it006 ~]$ cd seninfeld
[19it006@19it006 seninfeld]$ ls
george jerry kramer
[19it006@19it006 seninfeld]$
```

- Move homer, bart, marge, lisa files in simpsons directory

```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Wed 05:00
19it006@19it006:~/simpsons
File Edit View Search Terminal Help
[19it006@19it006 senifeld]$ cd senifeld
bash: cd: senifeld: No such file or directory
[19it006@19it006 senifeld]$ cd ..
[19it006@19it006 ~]$ ls
bart    Documents jupiter.txt lois    Pictures simpsons   Videos
clark   Downloads lex           marge   Public   superman
Desktop homer      lisa        Music    senifeld Templates
[19it006@19it006 ~]$ mv homer bart lisa marge simpsons
[19it006@19it006 ~]$ ls
clark   Documents jupiter.txt lois    Pictures senifeld superman   Videos
Desktop Downloads lex           Music   Public   simpsons Templates
[19it006@19it006 ~]$ cd simpsons
[19it006@19it006 simpsons]$ ls
bart  homer  lisa  marge
[19it006@19it006 simpsons]$
```

- Move clark, luther and lois files in superman directory



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a standard menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the top right shows the date and time as "Wed 05:13". The terminal prompt is "19it006@19it006:~/superman". Below the prompt, the user has run the following commands:

```
[19it006@19it006 ~]$ mv clark luther lois superman
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark  lois  luther
[19it006@19it006 superman]$
```

The terminal window is part of a desktop environment, with a dock visible at the bottom containing icons for various applications.

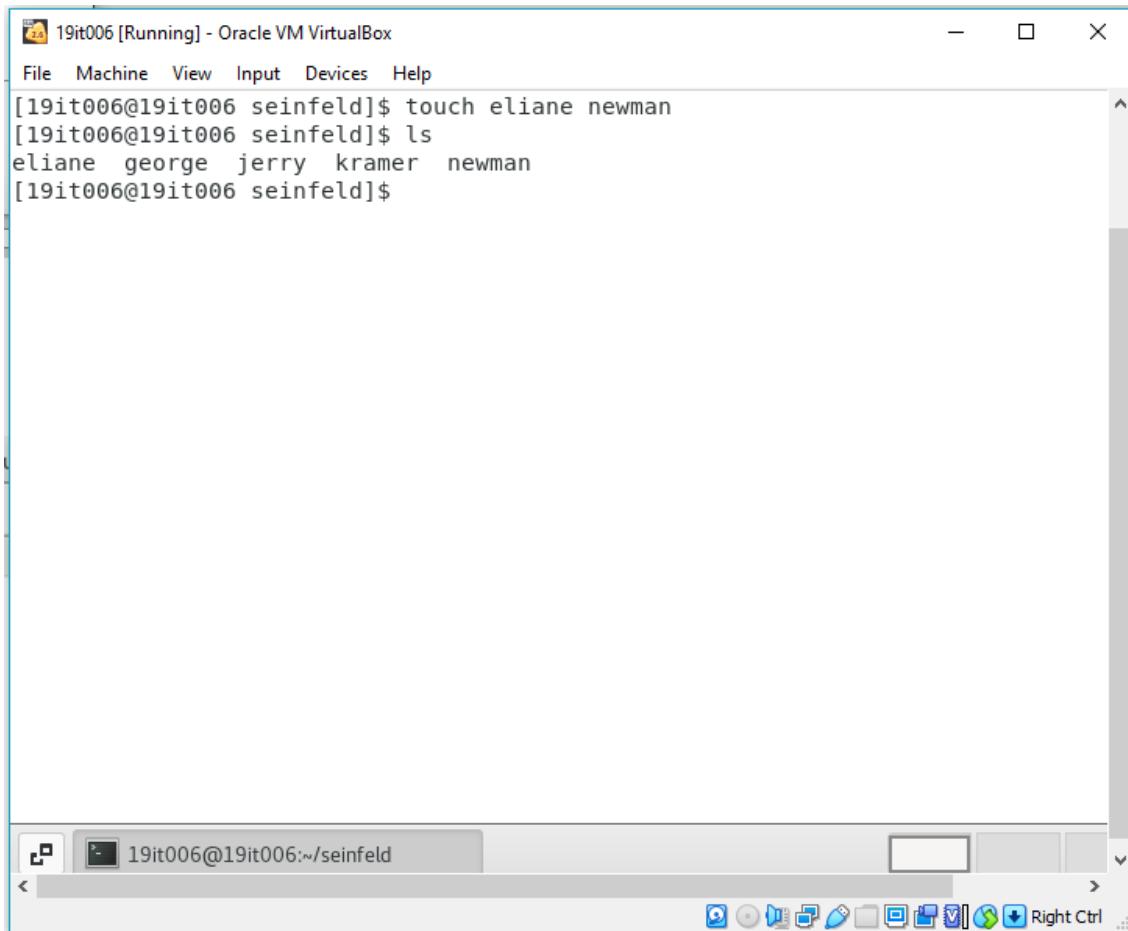
- List the content of seinfeld directory by the last time they were modified

The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The terminal is running on a Linux system with the command line interface. The user has entered the command "ls -ltr seinfeld". The output of the command is as follows:

```
[19it006@19it006 seinfeld]$ ls -ltr seinfeld
ls: cannot access seinfeld: No such file or directory
[19it006@19it006 seinfeld]$ cd ..
[19it006@19it006 ~]$ ls -ltr seinfeld
total 0
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
[19it006@19it006 ~]$ █
```

The terminal window also shows the user's prompt "[19it006@19it006 ~]\$". Below the terminal window, there is a toolbar with various icons.

- Create 2 new files in seinfeld directory, eliane and newman

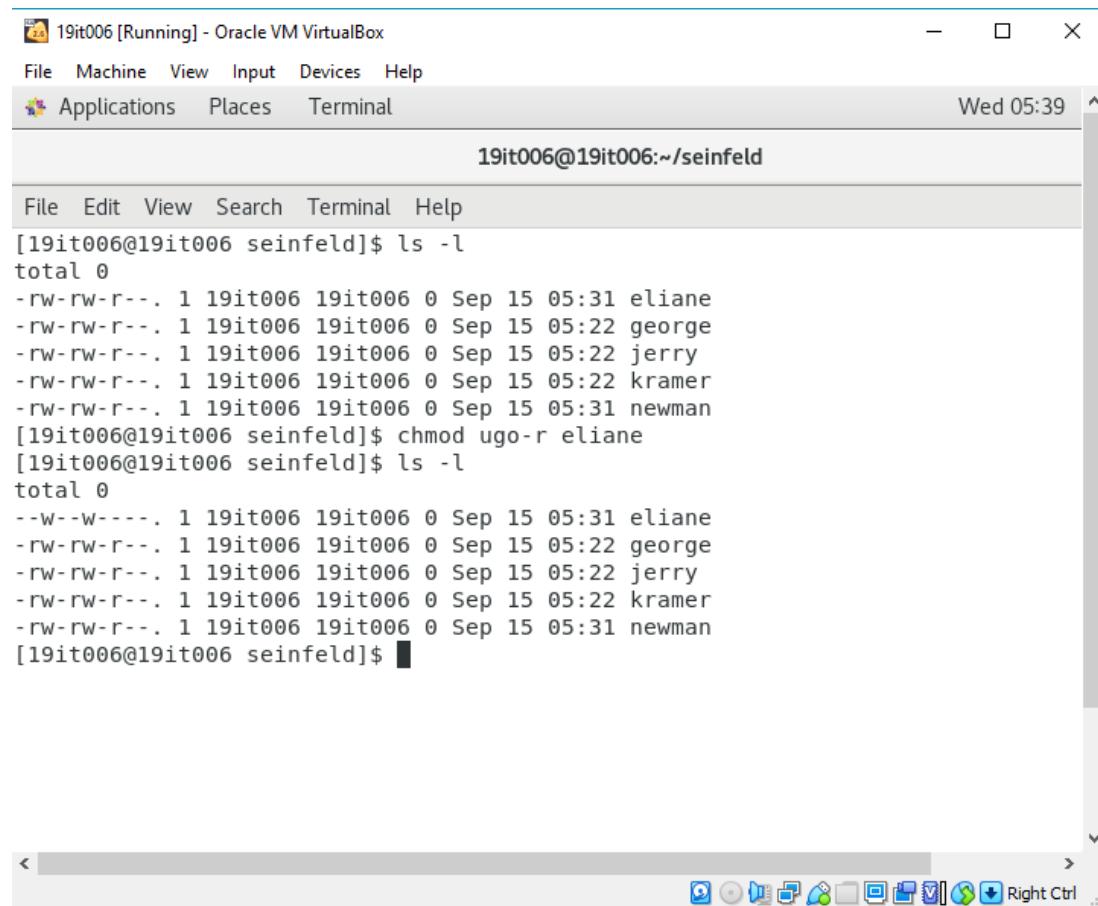


The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window contains the following command history:

```
[19it006@19it006 seinfeld]$ touch eliane newman
[19it006@19it006 seinfeld]$ ls
eliane george jerry kramer newman
[19it006@19it006 seinfeld]$
```

The terminal window has a standard Linux-style interface with a menu bar (File, Machine, View, Input, Devices, Help), a scroll bar, and a toolbar at the bottom with icons for copy, paste, cut, and others.

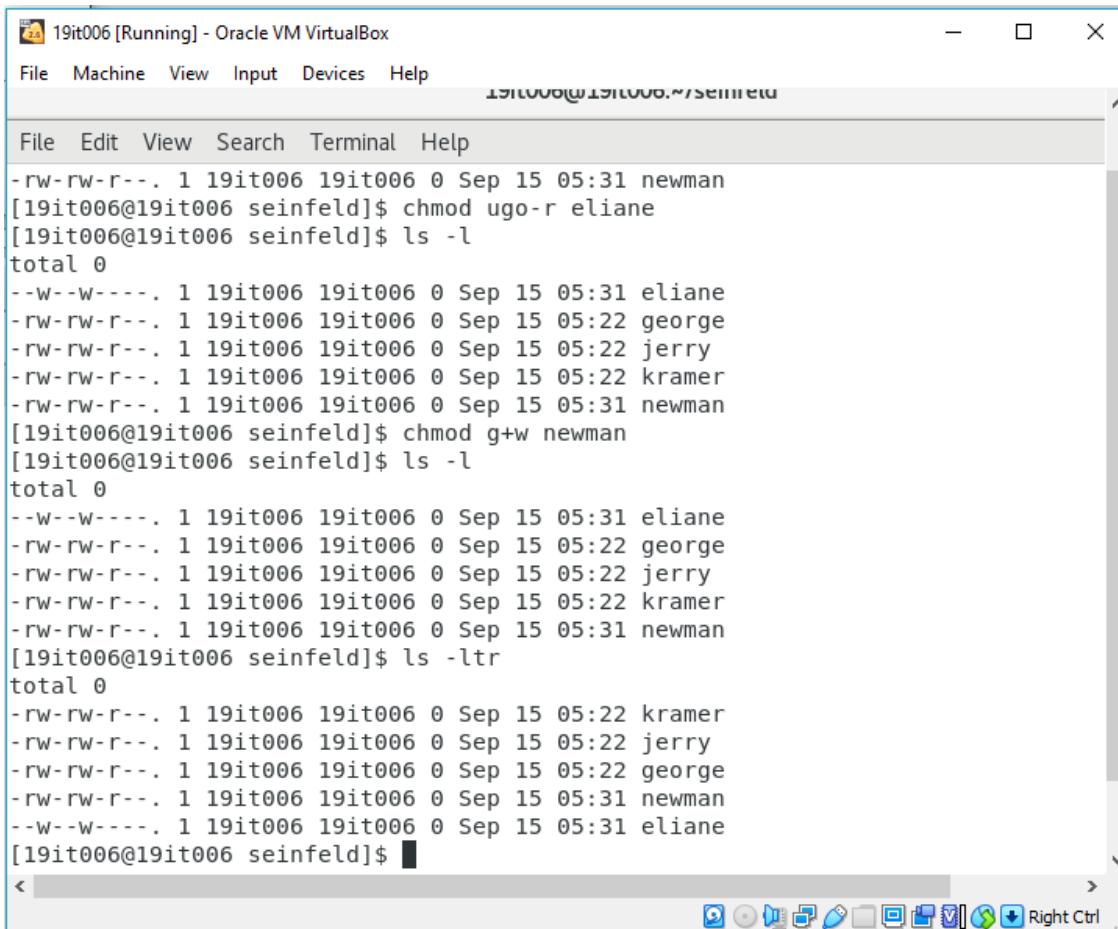
- change file permission of eliane to remove read access from everyone



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a standard Linux desktop interface with a menu bar (File, Machine, View, Input, Devices, Help) and a toolbar below it (Applications, Places, Terminal). The status bar at the top right shows the date and time: "Wed 05:39". The terminal itself displays the following command-line session:

```
19it006@19it006:~/seinfeld
File Edit View Search Terminal Help
[19it006@19it006 seinfeld]$ ls -l
total 0
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 eliane
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
[19it006@19it006 seinfeld]$ chmod ugo-r eliane
[19it006@19it006 seinfeld]$ ls -l
total 0
--w--w----. 1 19it006 19it006 0 Sep 15 05:31 eliane
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
[19it006@19it006 seinfeld]$
```

- change file permission of newman to add write permissions to only group



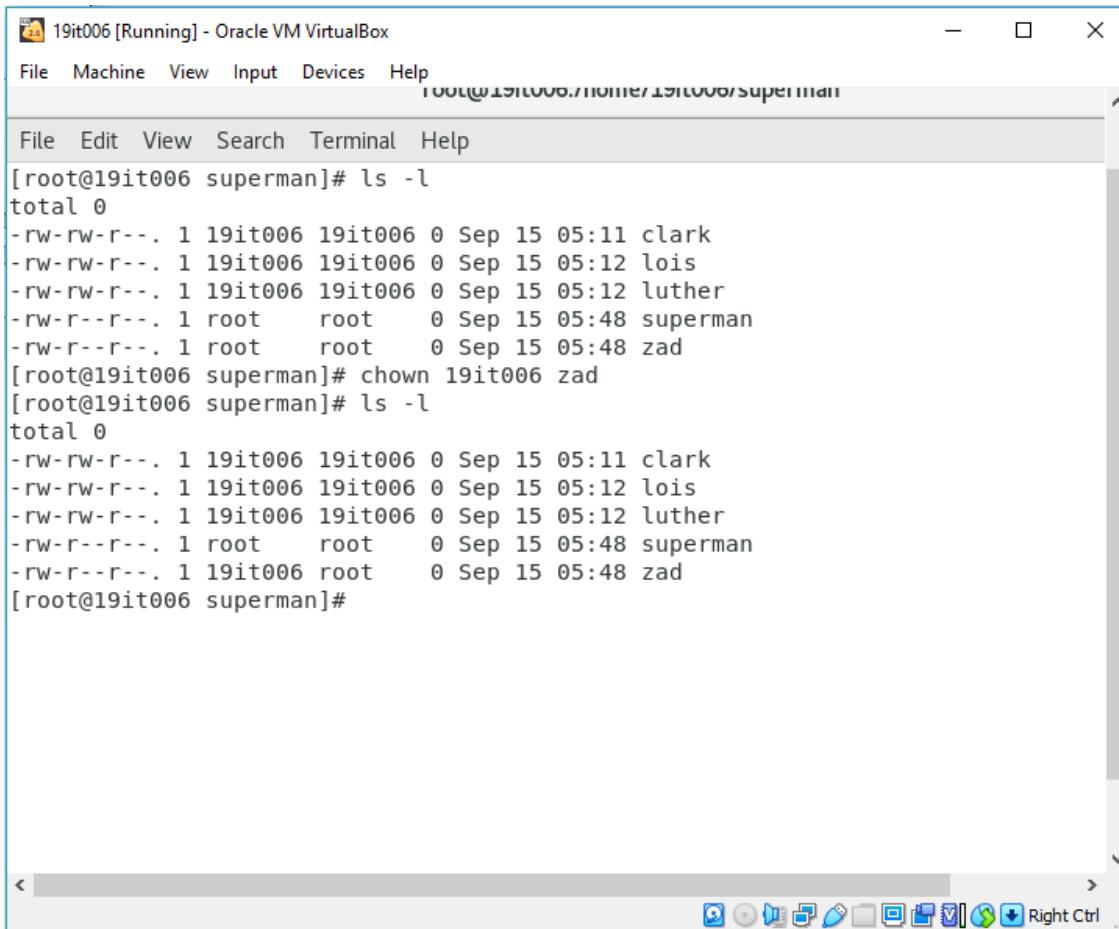
```
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
[19it006@19it006 seinfeld]$ chmod ugo-r eliane
[19it006@19it006 seinfeld]$ ls -l
total 0
--w--w----. 1 19it006 19it006 0 Sep 15 05:31 eliane
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
[19it006@19it006 seinfeld]$ chmod g+w newman
[19it006@19it006 seinfeld]$ ls -l
total 0
--w--w----. 1 19it006 19it006 0 Sep 15 05:31 eliane
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
[19it006@19it006 seinfeld]$ ls -ltr
total 0
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 kramer
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 jerry
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:22 george
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:31 newman
--w--w----. 1 19it006 19it006 0 Sep 15 05:31 eliane
[19it006@19it006 seinfeld]$
```

- Become root and cd into your home directory (e.g.,/home/admin).
Then create 2 new files superman and zad in superman directory

The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The terminal session starts with the user being prompted for a password. After logging in as root, the user navigates to their home directory and creates a new directory named "superman". Inside this directory, two files are created: "superman" and "zad". The terminal output is as follows:

```
[19it006@19it006 seinfeld]$ cd ..
[19it006@19it006 ~]$ su -
Password:
Last login: Sun Jul 25 11:20:28 EDT 2021 on pts/0
[root@19it006 ~]# cd /home/19IT006
-bash: cd: /home/19IT006: No such file or directory
[root@19it006 ~]# cd /home/19it006
[root@19it006 19it006]# ls
Desktop  Downloads  lex    Pictures  seinfeld  superman  Videos
Documents jupiter.txt  Music   Public    simpsons  Templates
[root@19it006 19it006]# cd superman
[root@19it006 superman]# ls
clark  lois  luther
[root@19it006 superman]# touch superman zad
[root@19it006 superman]# ls
clark  lois  luther  superman  zad
[root@19it006 superman]#
```

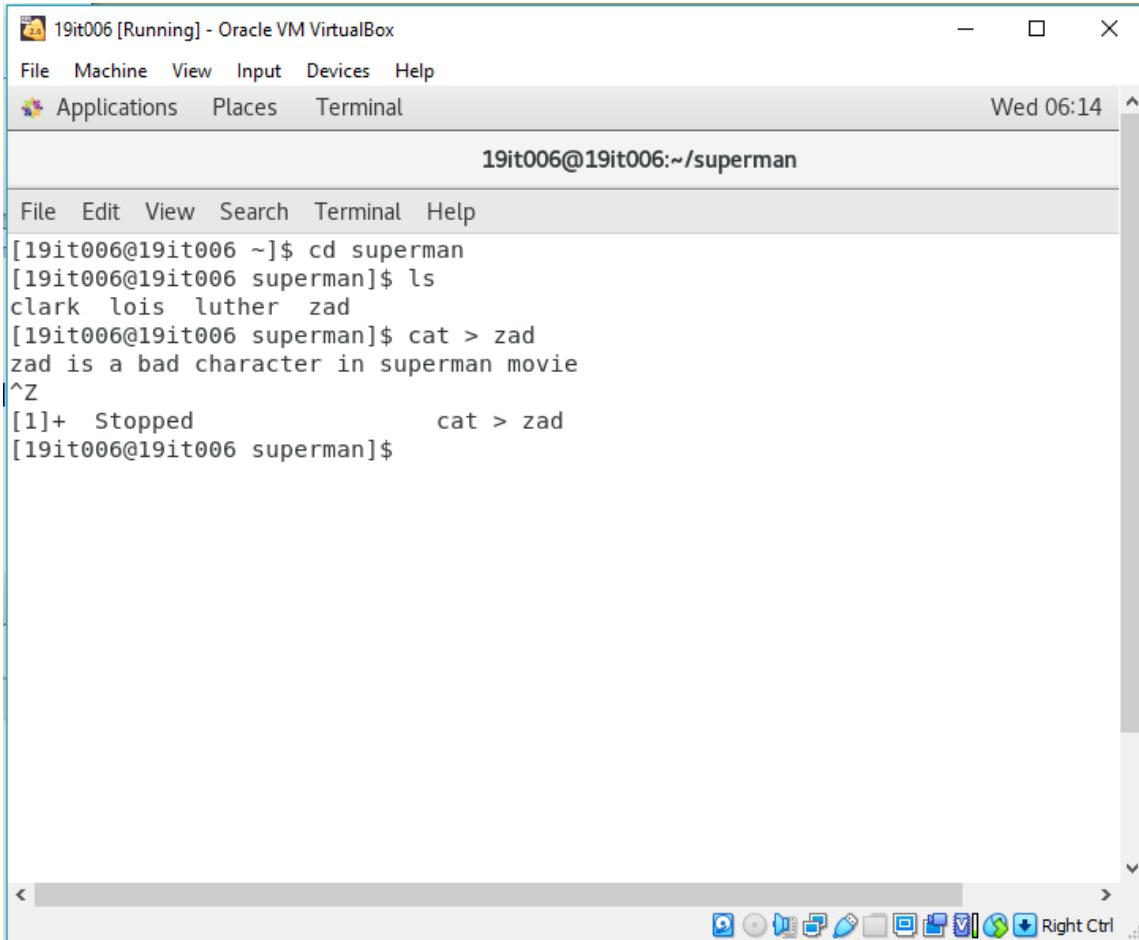
- Change ownership of zad file from root to your username



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, and a toolbar below it. The main area displays a terminal session:

```
[root@19it006 superman]# ls -l
total 0
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:11 clark
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:12 lois
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:12 luther
-rw-r--r--. 1 root      root     0 Sep 15 05:48 superman
-rw-r--r--. 1 root      root     0 Sep 15 05:48 zad
[root@19it006 superman]# chown 19it006 zad
[root@19it006 superman]# ls -l
total 0
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:11 clark
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:12 lois
-rw-rw-r--. 1 19it006 19it006 0 Sep 15 05:12 luther
-rw-r--r--. 1 root      root     0 Sep 15 05:48 superman
-rw-r--r--. 1 19it006 root     0 Sep 15 05:48 zad
[root@19it006 superman]#
```

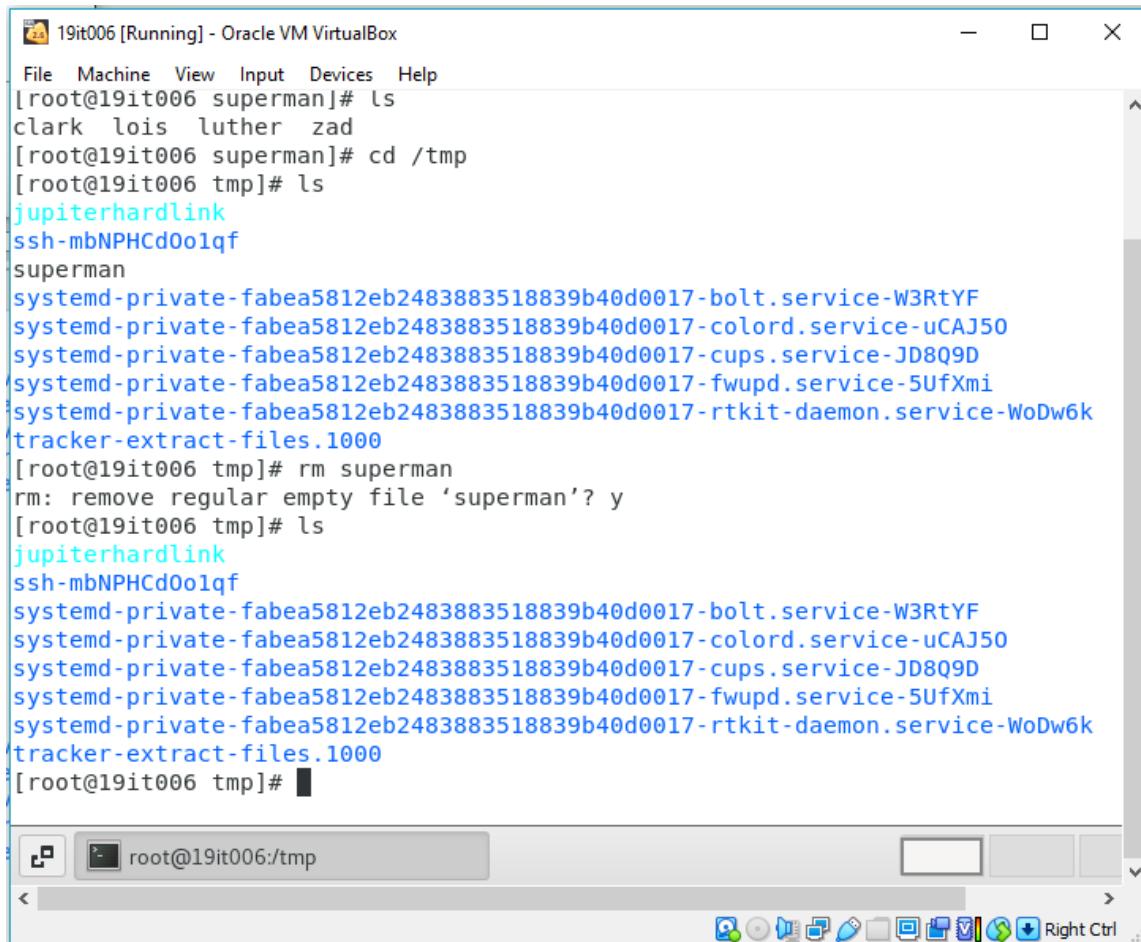
- Change group ownership of zad from root to your username



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "19it006 [Running] - Oracle VM VirtualBox". The window menu bar includes File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the bottom right shows the date and time as "Wed 06:14". The terminal prompt is "19it006@19it006:~/superman". The terminal history shows the following commands:

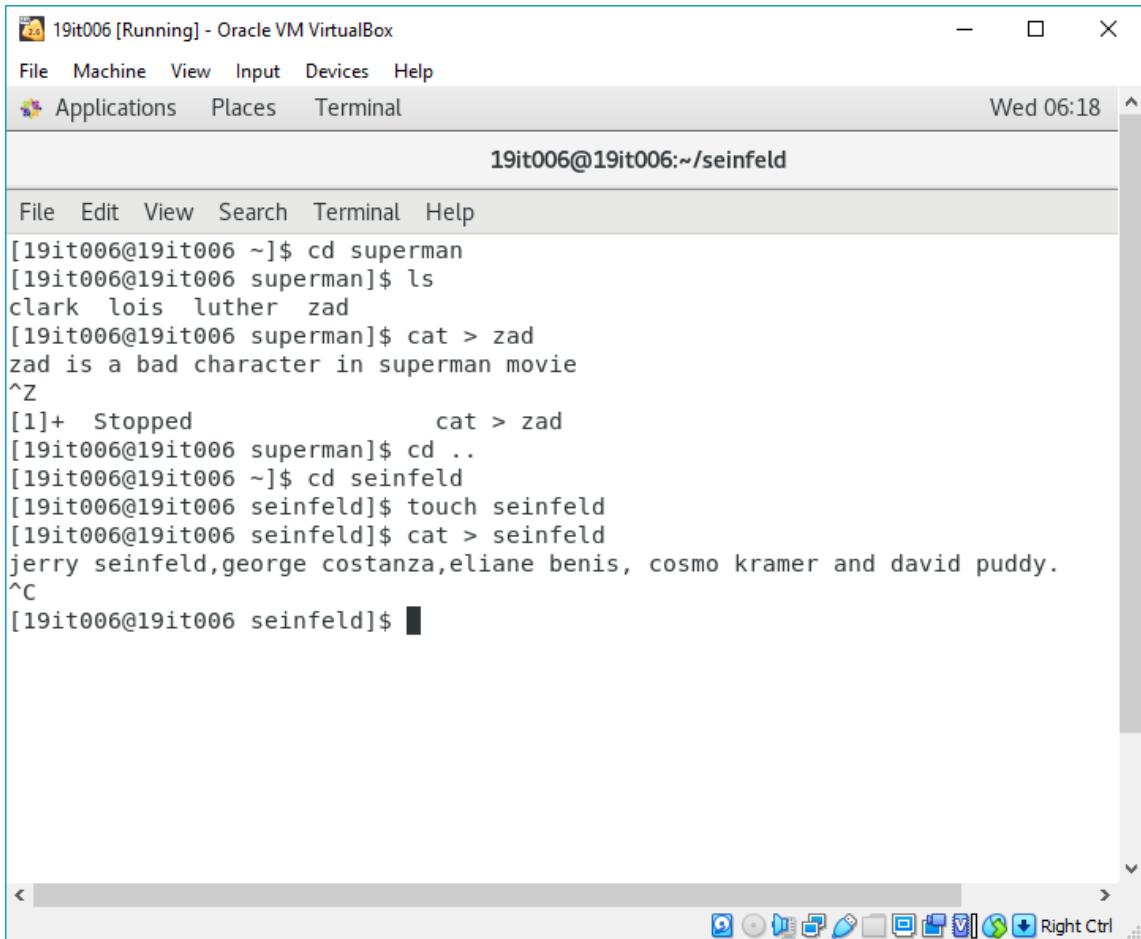
```
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ cat > zad
zad is a bad character in superman movie
^Z
[1]+  Stopped                  cat > zad
[19it006@19it006 superman]$
```

- Then move superman file to /tmp directory



```
[root@19it006 superman]# ls
clark lois luther zad
[root@19it006 superman]# cd /tmp
[root@19it006 tmp]# ls
jupiterhardlink
ssh-mbNPHCd0o1qf
superman
systemd-private-fabea5812eb2483883518839b40d0017-bolt.service-W3RtYF
systemd-private-fabea5812eb2483883518839b40d0017-colord.service-uCAJ50
systemd-private-fabea5812eb2483883518839b40d0017-cups.service-JD8Q9D
systemd-private-fabea5812eb2483883518839b40d0017-fwupd.service-5Ufxmi
systemd-private-fabea5812eb2483883518839b40d0017-rtkit-daemon.service-WoDw6k
tracker-extract-files.1000
[root@19it006 tmp]# rm superman
rm: remove regular empty file 'superman'? y
[root@19it006 tmp]# ls
jupiterhardlink
ssh-mbNPHCd0o1qf
systemd-private-fabea5812eb2483883518839b40d0017-bolt.service-W3RtYF
systemd-private-fabea5812eb2483883518839b40d0017-colord.service-uCAJ50
systemd-private-fabea5812eb2483883518839b40d0017-cups.service-JD8Q9D
systemd-private-fabea5812eb2483883518839b40d0017-fwupd.service-5Ufxmi
systemd-private-fabea5812eb2483883518839b40d0017-rtkit-daemon.service-WoDw6k
tracker-extract-files.1000
[root@19it006 tmp]#
```

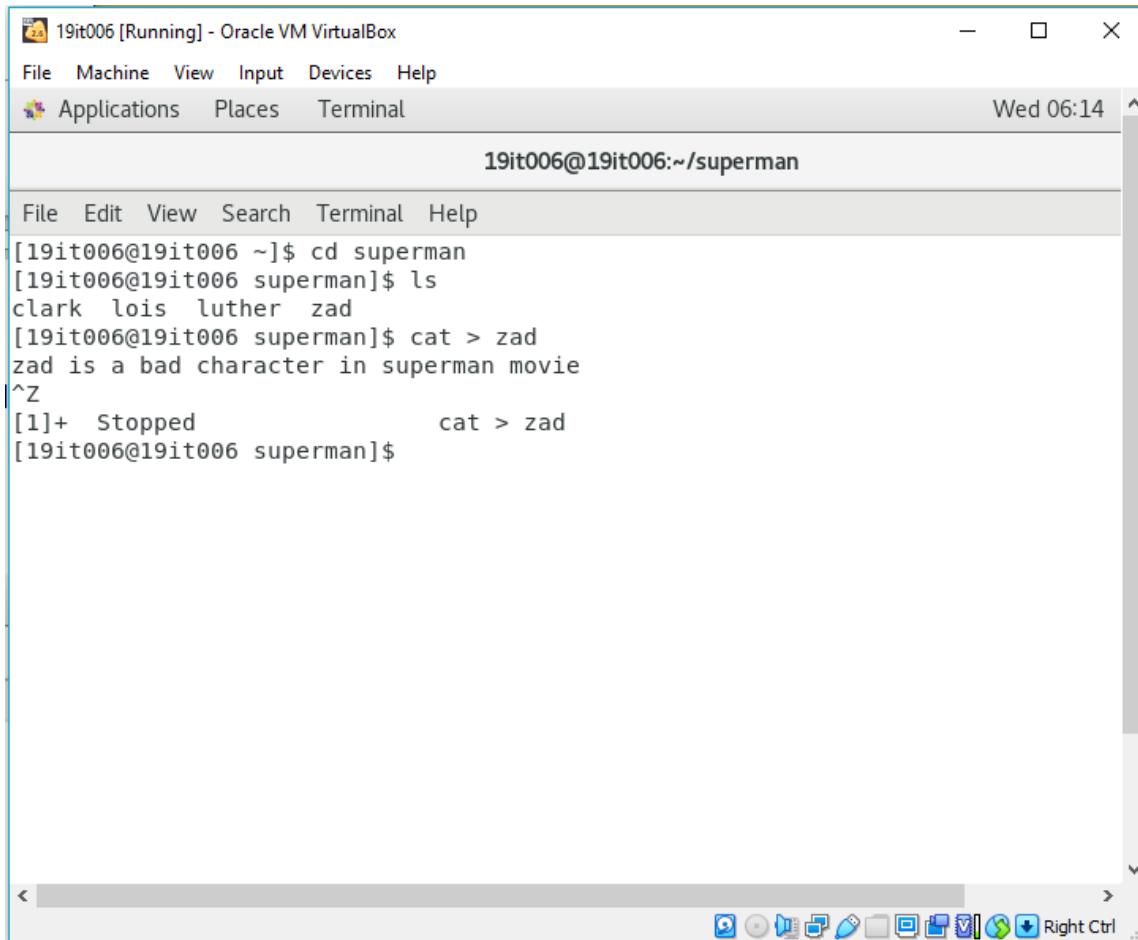
- Remove superman file from /tmp directory



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar shows "Wed 06:18". The terminal prompt is "19it006@19it006:~/seinfeld". The command history is as follows:

```
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ cat > zad
zad is a bad character in superman movie
^Z
[1]+ Stopped                  cat > zad
[19it006@19it006 superman]$ cd ..
[19it006@19it006 ~]$ cd seinfeld
[19it006@19it006 seinfeld]$ touch seinfeld
[19it006@19it006 seinfeld]$ cat > seinfeld
jerry seinfeld,george costanza,eliane benis, cosmo kramer and david puddy.
^C
[19it006@19it006 seinfeld]$
```

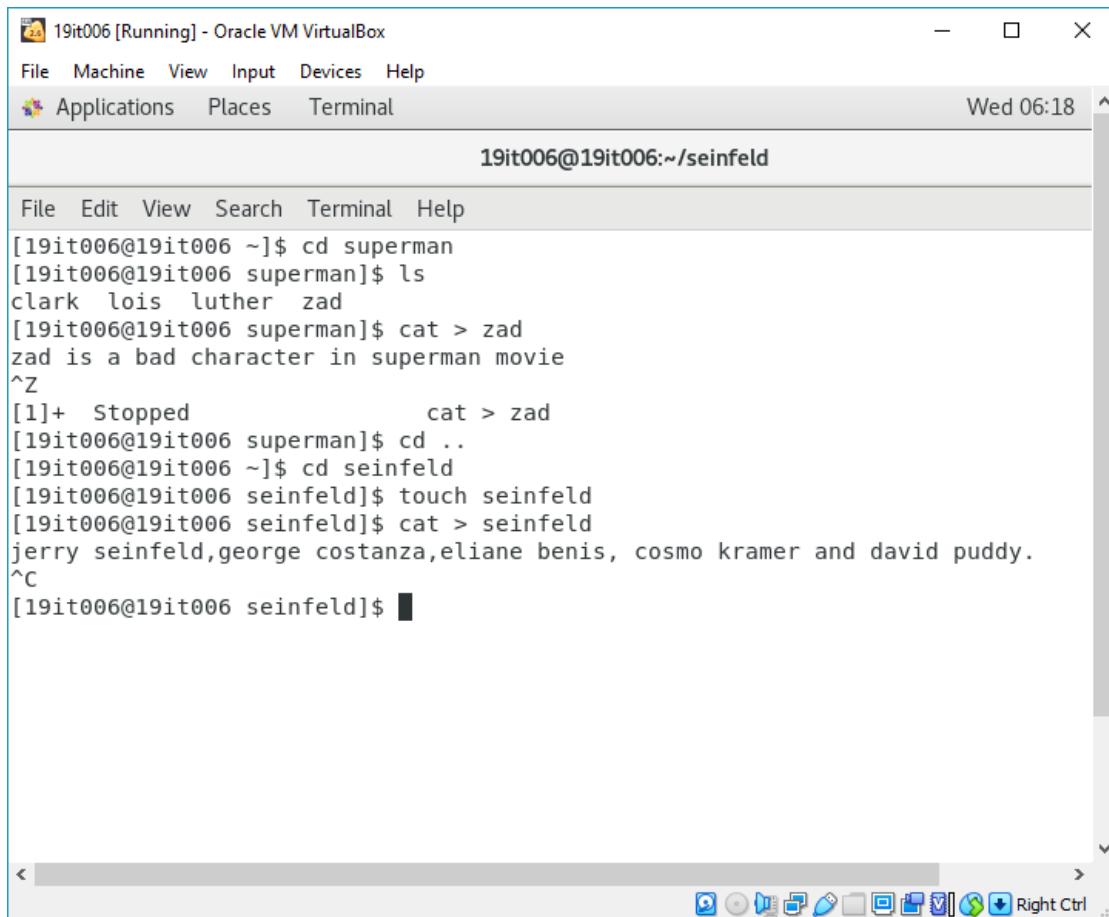
- Exit out of root account
- Go back to superman directory in your home directory and add this line to zad file "zad is a bad character in superman movie"



The screenshot shows a terminal window with the following content:

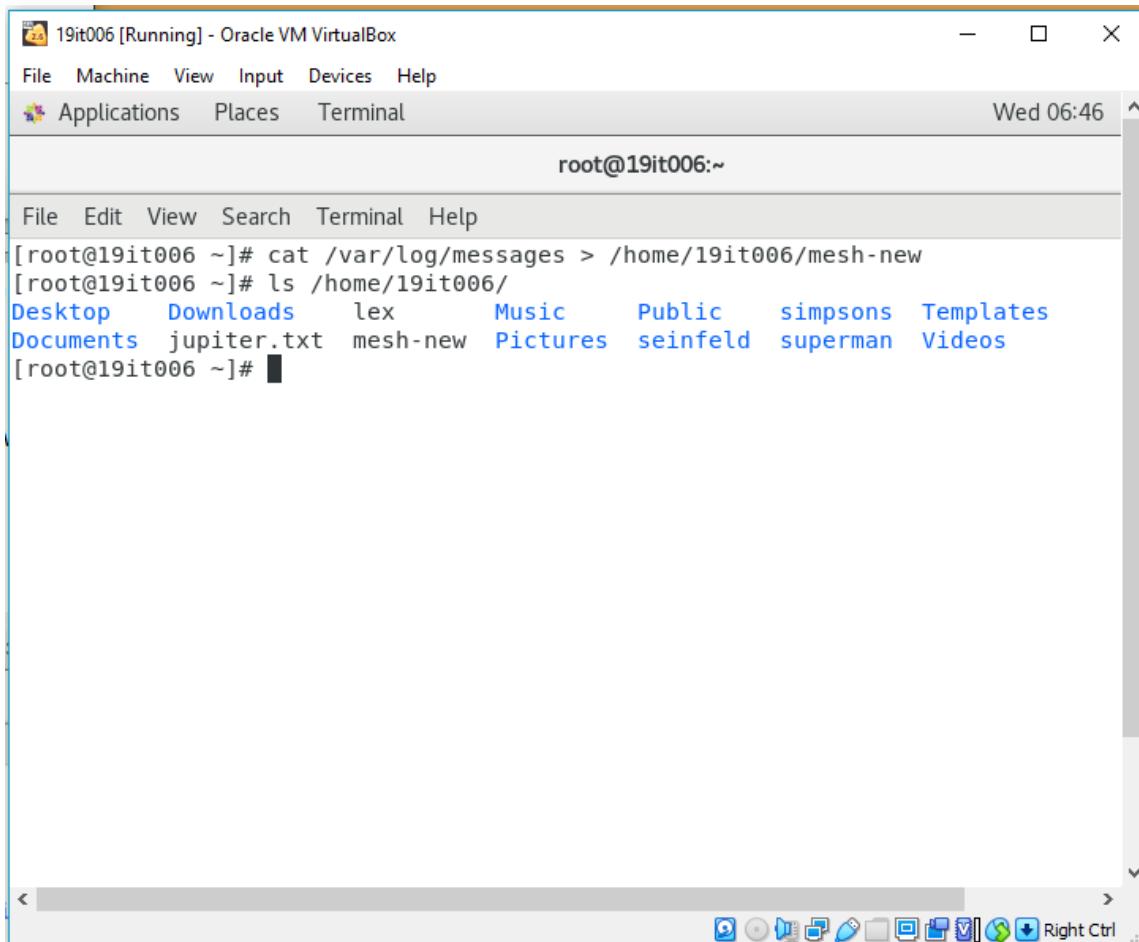
```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Wed 06:14
19it006@19it006:~/superman
File Edit View Search Terminal Help
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ cat > zad
zad is a bad character in superman movie
^Z
[1]+ Stopped                  cat > zad
[19it006@19it006 superman]$
```

- Then go seinfeld directory and create a new file seinfeld.
- Add 5 seinfeld character's name in seinfeld file. Jerry Seinfeld, George Costanza, Eliane Benis, Cosmo Kramer, and David Puddy



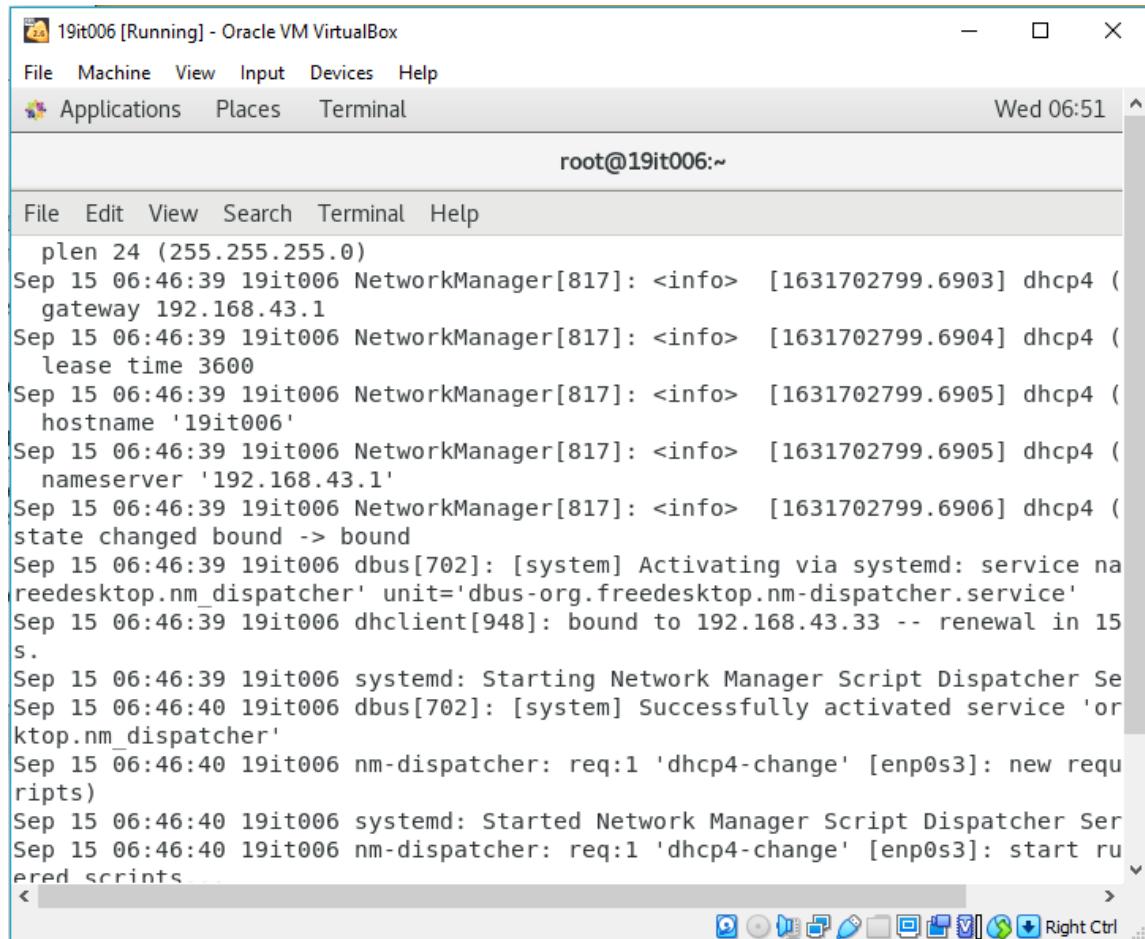
```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Wed 06:18
19it006@19it006:~/seinfeld
File Edit View Search Terminal Help
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ cat > zad
zad is a bad character in superman movie
^Z
[1]+ Stopped cat > zad
[19it006@19it006 superman]$ cd ..
[19it006@19it006 ~]$ cd seinfeld
[19it006@19it006 seinfeld]$ touch seinfeld
[19it006@19it006 seinfeld]$ cat > seinfeld
jerry seinfeld,george costanza,eliane benis, cosmo kramer and david puddy.
^C
[19it006@19it006 seinfeld]$
```

- Become root user again
- Do cat /var/log/messages and output to a file called mesg-new in your home directory (e.g.,/home/Admin)



```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Wed 06:46
root@19it006:~
File Edit View Search Terminal Help
[root@19it006 ~]# cat /var/log/messages > /home/19it006/mesh-new
[root@19it006 ~]# ls /home/19it006/
Desktop Downloads lex Music Public simpsons Templates
Documents jupiter.txt mesh-new Pictures seinfeld superman Videos
[root@19it006 ~]#
```

- Read the mesg-new file with cat, more and less commands and practice



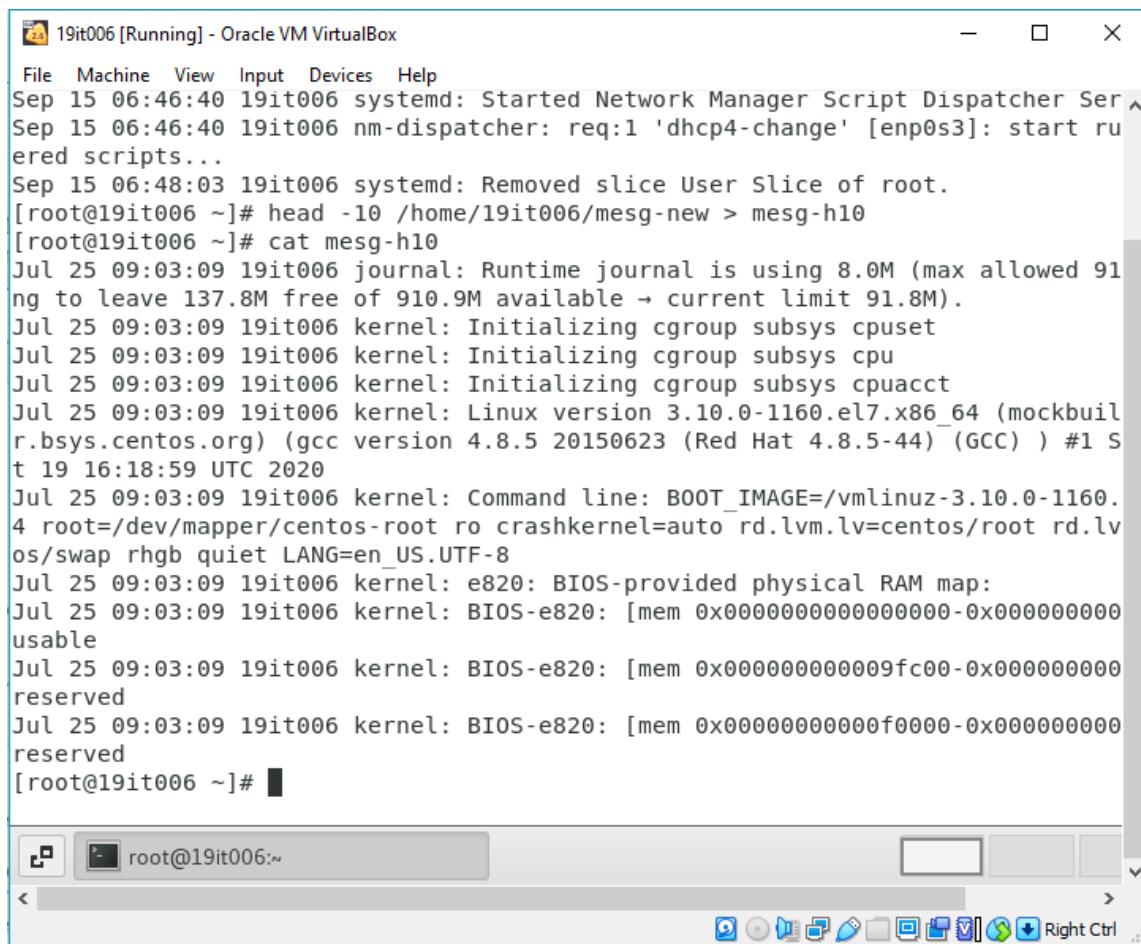
The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar shows "Wed 06:51". The terminal prompt is "root@19it006:~". The main area displays a log of network configuration messages:

```
plen 24 (255.255.255.0)
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6903] dhcpc4 (
  gateway 192.168.43.1
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6904] dhcpc4 (
  lease time 3600
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6905] dhcpc4 (
  hostname '19it006'
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6905] dhcpc4 (
  nameserver '192.168.43.1'
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6906] dhcpc4 (
  state changed bound -> bound
Sep 15 06:46:39 19it006 dbus[702]: [system] Activating via systemd: service na
reedesktop.nm_dispatcher' unit='dbus-org.freedesktop.nm-dispatcher.service'
Sep 15 06:46:39 19it006 dhclient[948]: bound to 192.168.43.33 -- renewal in 15
s.
Sep 15 06:46:39 19it006 systemd: Starting Network Manager Script Dispatcher Se
Sep 15 06:46:40 19it006 dbus[702]: [system] Successfully activated service 'or
ktop.nm_dispatcher'
Sep 15 06:46:40 19it006 nm-dispatcher: req:1 'dhcpc4-change' [enp0s3]: new requ
ripts)
Sep 15 06:46:40 19it006 systemd: Started Network Manager Script Dispatcher Ser
Sep 15 06:46:40 19it006 nm-dispatcher: req:1 'dhcpc4-change' [enp0s3]: start ru
ered scripts
```

Course Code: IT343
IT343 : Operating System
Lab Teacher: Rekha Karangiva

Roll_Number: 19IT006
laboratory-A1

- View the first 10 lines of mesg-new file and output to a file name mesg-h10

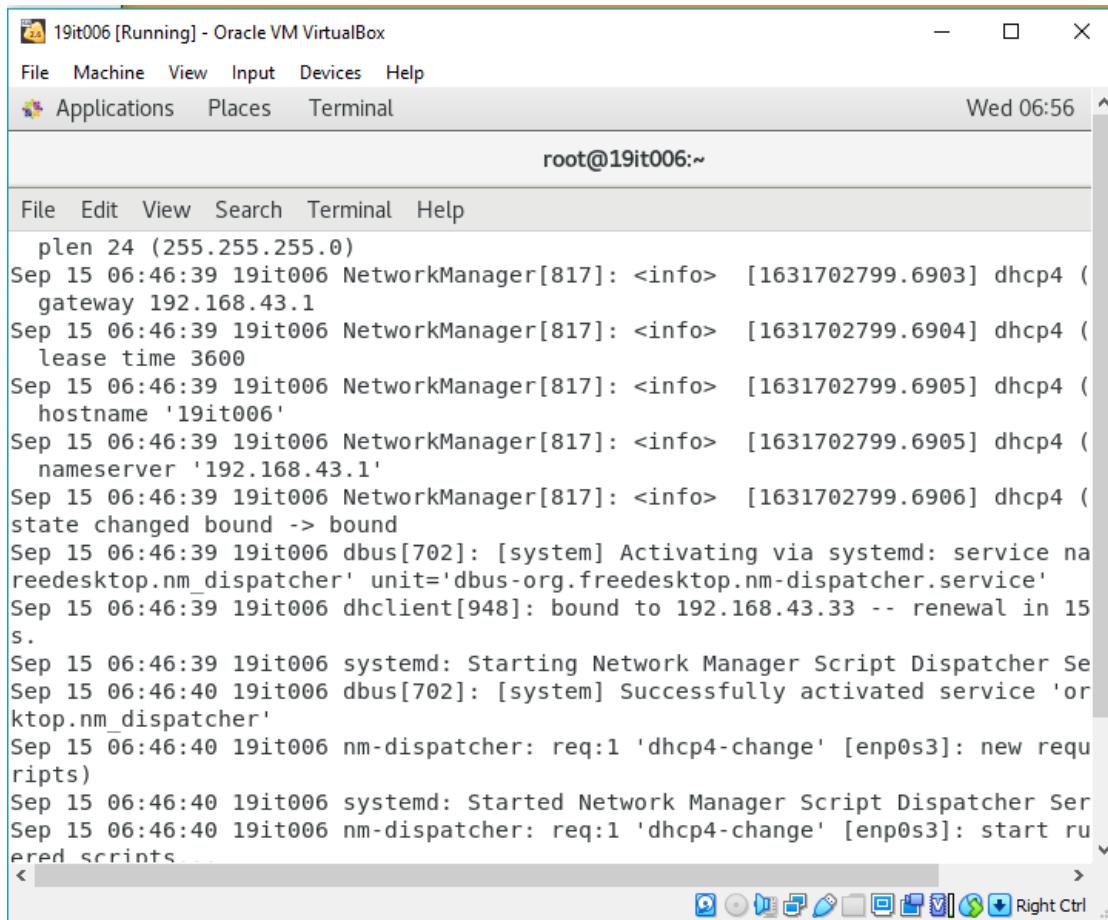


The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window displays a command-line interface where the user has run the command "head -10 /home/19it006/mesg-new > mesg-h10". The terminal shows the system log output, which includes messages from the kernel and other system services. The log output is as follows:

```
File Machine View Input Devices Help
Sep 15 06:46:40 19it006 systemd: Started Network Manager Script Dispatcher Service
Sep 15 06:46:40 19it006 nm-dispatcher: req:1 'dhcp4-change' [enp0s3]: start running scripts...
Sep 15 06:48:03 19it006 systemd: Removed slice User Slice of root.
[root@19it006 ~]# head -10 /home/19it006/mesg-new > mesg-h10
[root@19it006 ~]# cat mesg-h10
Jul 25 09:03:09 19it006 journal: Runtime journal is using 8.0M (max allowed 91
ng to leave 137.8M free of 910.9M available → current limit 91.8M).
Jul 25 09:03:09 19it006 kernel: Initializing cgroup subsys cpuset
Jul 25 09:03:09 19it006 kernel: Initializing cgroup subsys cpu
Jul 25 09:03:09 19it006 kernel: Initializing cgroup subsys cpacct
Jul 25 09:03:09 19it006 kernel: Linux version 3.10.0-1160.el7.x86_64 (mockbuil
r.centos.org) (gcc version 4.8.5 20150623 (Red Hat 4.8.5-44) (GCC) ) #1 S
t 19 16:18:59 UTC 2020
Jul 25 09:03:09 19it006 kernel: Command line: BOOT_IMAGE=/vmlinuz-3.10.0-1160.
4 root=/dev/mapper/centos-root ro crashkernel=auto rd.lvm.lv=centos/root rd.lv
os/swap rhgb quiet LANG=en_US.UTF-8
Jul 25 09:03:09 19it006 kernel: e820: BIOS-provided physical RAM map:
Jul 25 09:03:09 19it006 kernel: BIOS-e820: [mem 0x0000000000000000-0x0000000000
usable
Jul 25 09:03:09 19it006 kernel: BIOS-e820: [mem 0x000000000009fc00-0x0000000000
reserved
Jul 25 09:03:09 19it006 kernel: BIOS-e820: [mem 0x00000000000f0000-0x0000000000
reserved
[root@19it006 ~]#
```

The terminal window also shows a command history at the bottom, indicating the user was at the root prompt.

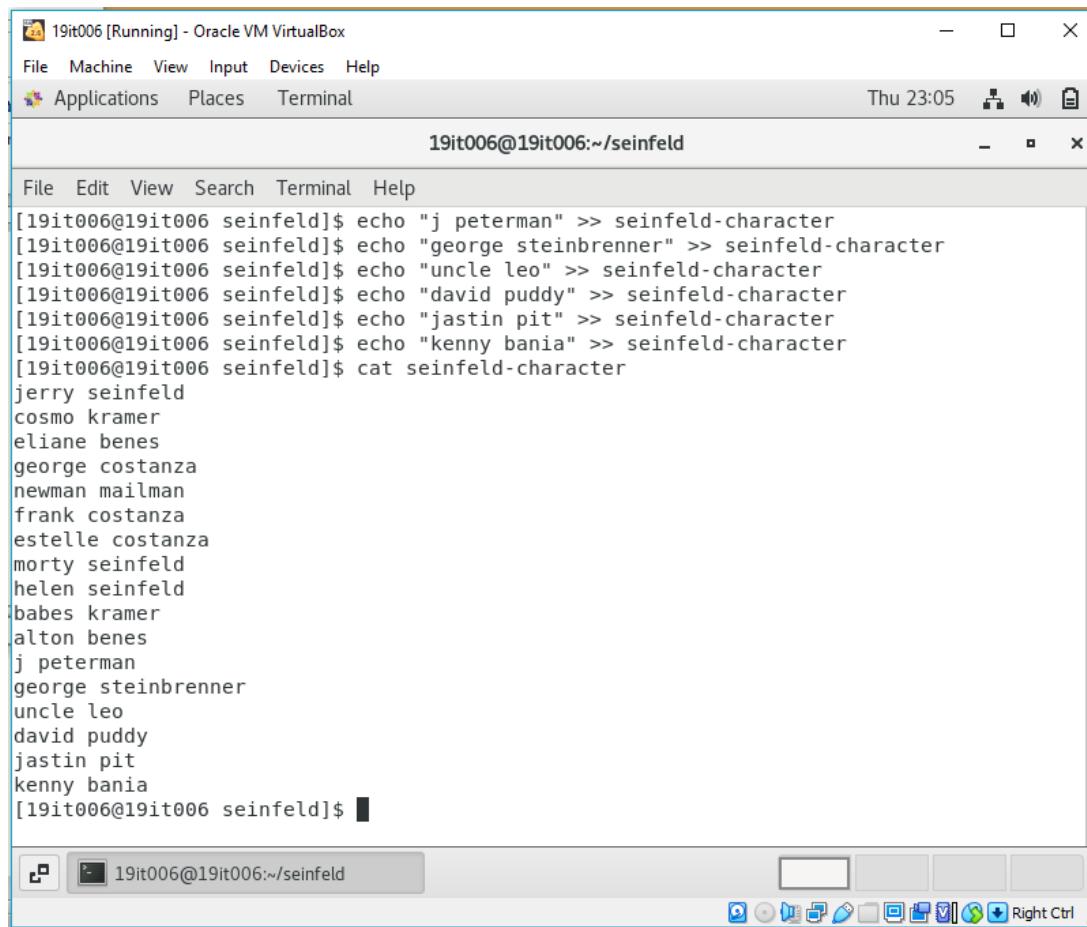
- View the last 20 lines of mesg-new file and output to a file name mesg-t20



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar shows "Wed 06:56". The terminal prompt is "root@19it006:~". The main area displays the following log entries:

```
File Edit View Terminal Help
plen 24 (255.255.255.0)
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6903] dhcp4 (
  gateway 192.168.43.1
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6904] dhcp4 (
  lease time 3600
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6905] dhcp4 (
  hostname '19it006'
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6905] dhcp4 (
  nameserver '192.168.43.1'
Sep 15 06:46:39 19it006 NetworkManager[817]: <info> [1631702799.6906] dhcp4 (
  state changed bound -> bound
Sep 15 06:46:39 19it006 dbus[702]: [system] Activating via systemd: service na
reedesktop.nm_dispatcher' unit='dbus-org.freedesktop.nm-dispatcher.service'
Sep 15 06:46:39 19it006 dhclient[948]: bound to 192.168.43.33 -- renewal in 15
s.
Sep 15 06:46:39 19it006 systemd: Starting Network Manager Script Dispatcher Se
Sep 15 06:46:40 19it006 dbus[702]: [system] Successfully activated service 'or
ktop.nm_dispatcher'
Sep 15 06:46:40 19it006 nm-dispatcher: req:1 'dhcp4-change' [enp0s3]: new requ
ripts)
Sep 15 06:46:40 19it006 systemd: Started Network Manager Script Dispatcher Ser
Sep 15 06:46:40 19it006 nm-dispatcher: req:1 'dhcp4-change' [enp0s3]: start ru
ered scripts
```

- Exit out of root user
- Go to seinfeld directory in your home directory and create a new file “seinfeld-character”
- Add text to seinfeld-character file using echo command. Each character should be in one line, "Jerry Seinfeld, Cosmo Kramer, Eliane Benes, George Costanza, Newman Mailman, Frank Costanza, Estelle Costanza, Morty Seinfeld, Helen Seinfeld, Babes Kramer, Alton Benes, J Peterman, George Steinbrenner, Uncle Leo, David Puddy, Justin Pit and Kenny Bania"



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is '19it006 [Running] - Oracle VM VirtualBox'. The terminal content shows the following commands being run:

```
[19it006@19it006 seinfeld]$ echo "j peterman" >> seinfeld-character
[19it006@19it006 seinfeld]$ echo "george steinbrenner" >> seinfeld-character
[19it006@19it006 seinfeld]$ echo "uncle leo" >> seinfeld-character
[19it006@19it006 seinfeld]$ echo "david puddy" >> seinfeld-character
[19it006@19it006 seinfeld]$ echo "jastin pit" >> seinfeld-character
[19it006@19it006 seinfeld]$ echo "kenny bania" >> seinfeld-character
[19it006@19it006 seinfeld]$ cat seinfeld-character
jerry seinfeld
cosmo kramer
eliane benes
george costanza
newman mailman
frank costanza
estelle costanza
morty seinfeld
helen seinfeld
babes kramer
alton benes
j peterman
george steinbrenner
uncle leo
david puddy
jastin pit
kenny bania
[19it006@19it006 seinfeld]$
```

Course Code: IT343
IT343 : Operating System
Lab Teacher: Rekha Karangiva

Roll_Number: 19IT006
laboratory-A1

- Use cut command to cut the first 4 letters of each line from seinfeld-characters file and output to a different file name (name = filters-files)

```
[19it006@19it006 seinfeld]$ cat 1-4 seinfeld-character > filter-files
cat: 1-4: No such file or directory
[19it006@19it006 seinfeld]$ cat -c 1-4 seinfeld-character > filter-files
cat: invalid option -- 'c'
Try 'cat --help' for more information.
[19it006@19it006 seinfeld]$ cut -c 1-4 seinfeld-character > filter-files
[19it006@19it006 seinfeld]$ cat filter-files
jerr
cosm
elia
geor
newm
fran
este
mort
hele
babe
alto
j pe
geor
uncl
davi
jast
kenn
[19it006@19it006 seinfeld]$
```

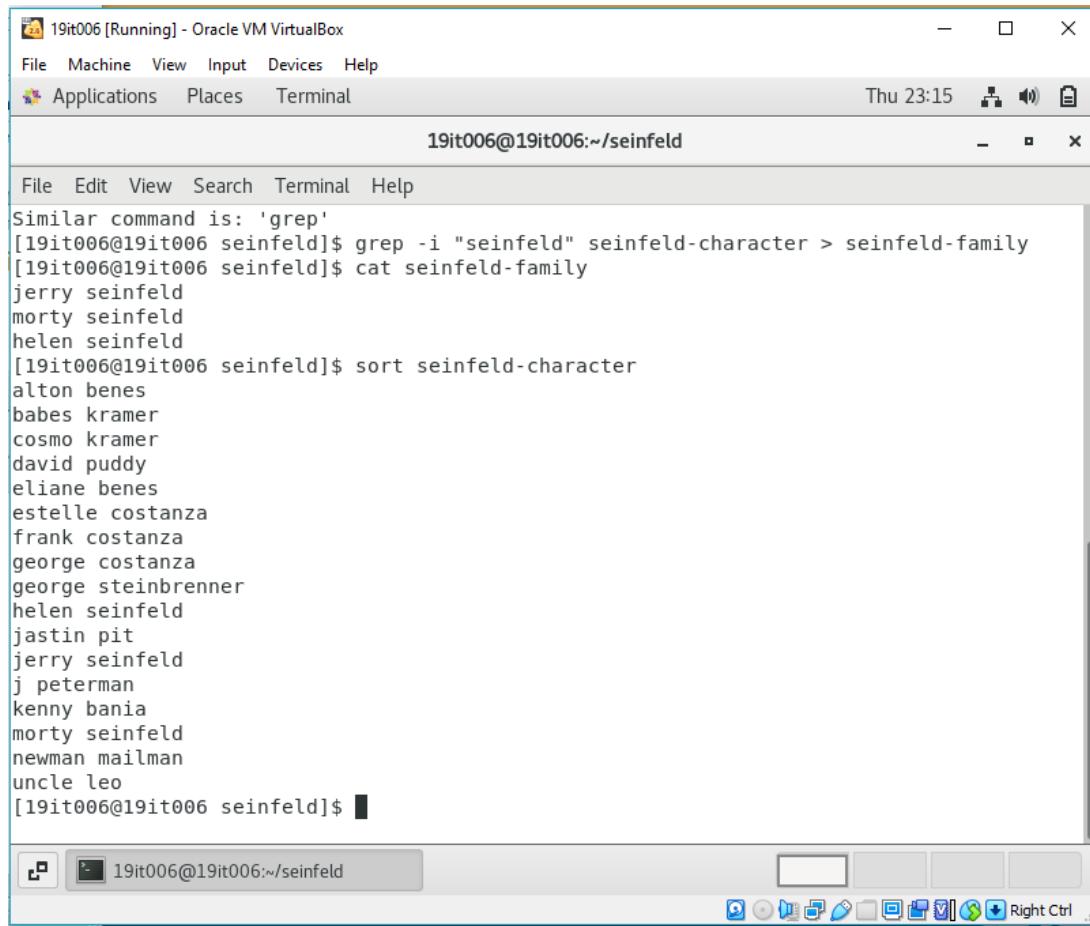
- Use awk command to get only the 2nd column of seinfeld-characters and output to the filters-files without removing any other text from it

```
[19it006@19it006 seinfeld]$ awk {'print $2'} seinfeld-character >> filter-files
[19it006@19it006 seinfeld]$ cat filter-files
jerr
cosm
elia
geor
newm
fran
este
mort
hele
babe
alto
j pe
geor
uncl
davi
jast
kenn
seinfeld
kramer
benes
costanza
mailman
costanza
costanza
```

- Use grep command to only grep seinfeld and output to a new file call it seinfeld-family

```
[19it006@19it006 seinfeld]$ grrep -i "seinfeld" seinfeld-character > seinfeld-family
bash: grrep: command not found...
Similar command is: 'grep'
[19it006@19it006 seinfeld]$ grep -i "seinfeld" seinfeld-character > seinfeld-family
[19it006@19it006 seinfeld]$ cat seinfeld-family
jerry seinfeld
morty seinfeld
helen seinfeld
[19it006@19it006 seinfeld]$
```

- Use sort command, uniq and wc command to practice whichever way you like by creating new files or working with existing files



The screenshot shows a terminal window titled '19it006 [Running] - Oracle VM VirtualBox'. The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the top right shows 'Thu 23:15'. The terminal window itself has a title bar '19it006@19it006:~/seinfeld'. The main area of the terminal displays the following command-line session:

```
Similar command is: 'grep'  
[19it006@19it006 seinfeld]$ grep -i "seinfeld" seinfeld-character > seinfeld-family  
[19it006@19it006 seinfeld]$ cat seinfeld-family  
jerry seinfeld  
morty seinfeld  
helen seinfeld  
[19it006@19it006 seinfeld]$ sort seinfeld-character  
alton benes  
babes kramer  
cosmo kramer  
david pudgy  
eliane benes  
estelle costanza  
frank costanza  
george costanza  
george steinbrenner  
helen seinfeld  
jastin pit  
jerry seinfeld  
j peterman  
kenny bania  
morty seinfeld  
newman mailman  
uncle leo  
[19it006@19it006 seinfeld]$
```

The terminal window has a scroll bar on the right side. The bottom of the window shows a toolbar with icons for copy, paste, and other functions, and a status bar with '19it006@19it006:~/seinfeld' and 'Right Ctrl'.

The screenshot shows a Linux desktop environment within a VirtualBox window. The terminal window title is '19it006 [Running] - Oracle VM VirtualBox'. The terminal content displays a command-line session:

```
Similar command is: 'ss'
[19it006@19it006 seinfeld]$ cd ..
[19it006@19it006 ~]$ cat hellow
cat: hellow: No such file or directory
[19it006@19it006 ~]$ cat hello
cat: hello: No such file or directory
[19it006@19it006 ~]$ ls
Desktop Downloads lex mesh-new Pictures seinfeld superman Videos
Documents jupiter.txt mesg-new Music Public simpsons Templates
[19it006@19it006 ~]$ cat hello
cat: hello: No such file or directory
[19it006@19it006 ~]$ cat > hellow
hellow
hi
cat
dog
hellow
Hi
^C
[19it006@19it006 ~]$ sort hello | uniq -iu
sort: cannot read: hello: No such file or directory
[19it006@19it006 ~]$ sort hellow | uniq -iu
cat
dog
[19it006@19it006 ~]$
```

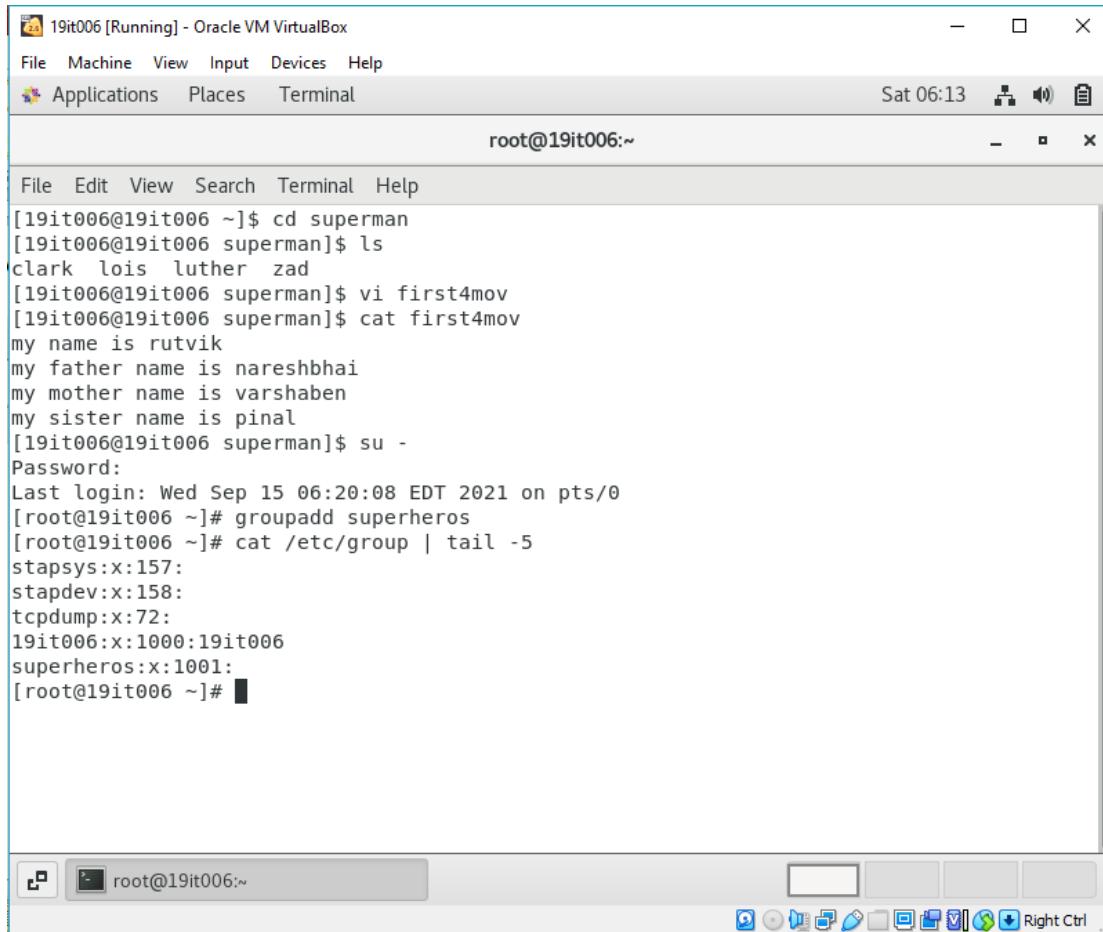
```
[19it006@19it006 ~]$ cd seinfeld
[19it006@19it006 seinfeld]$ wc -w seinfeld-character
34 seinfeld-character
[19it006@19it006 seinfeld]$
```

Practical 4

- Go to your home directory and then go to superman directory.
- Create a new file called "first4movies" using vi command.
- Write anything you know about all first 4 movies of superman. If you never watched superman then you can enter at least 20 names of your family members. This file should have 20 lines and each line should have 5-6 words.

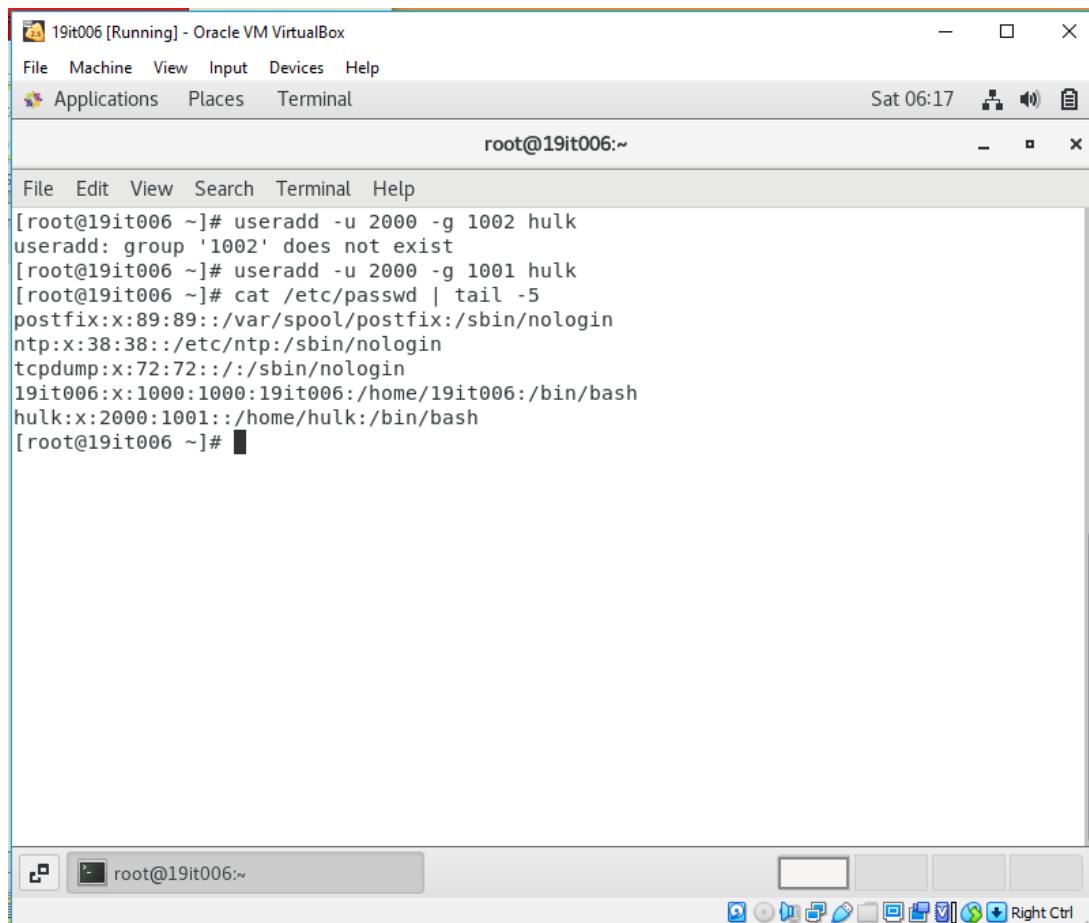
```
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ vi first4mov
[19it006@19it006 superman]$ cat first4mov
my name is rutvik
my father name is nareshbhai
my mother name is varshaben
my sister name is pinal
[19it006@19it006 superman]$
```

- Create a new group superheroes if you don't already have one



```
[19it006@19it006 ~]$ cd superman
[19it006@19it006 superman]$ ls
clark lois luther zad
[19it006@19it006 superman]$ vi first4mov
[19it006@19it006 superman]$ cat first4mov
my name is rutvik
my father name is nareshbhai
my mother name is varshaben
my sister name is pinal
[19it006@19it006 superman]$ su -
Password:
Last login: Wed Sep 15 06:20:08 EDT 2021 on pts/0
[root@19it006 ~]# groupadd superheros
[root@19it006 ~]# cat /etc/group | tail -5
stapsys:x:157:
stapdev:x:158:
tcpdump:x:72:
19it006:x:1000:19it006
superheros:x:1001:
[root@19it006 ~]#
```

- Create a new user hulk and make sure its group should be superheroes and its userid should be 2000.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the bottom shows "root@19it006:~" and the date and time "Sat 06:17". The terminal itself displays the following command-line session:

```
[root@19it006 ~]# useradd -u 2000 -g 1002 hulk
useradd: group '1002' does not exist
[root@19it006 ~]# useradd -u 2000 -g 1001 hulk
[root@19it006 ~]# cat /etc/passwd | tail -5
postfix:x:89:89::/var/spool/postfix:/sbin/nologin
ntp:x:38:38::/etc/ntp:/sbin/nologin
tcpdump:x:72:72::/sbin/nologin
19it006:x:1000:1000:19it006:/home/19it006:/bin/bash
hulk:x:2000:1001::/home/hulk:/bin/bash
[root@19it006 ~]#
```

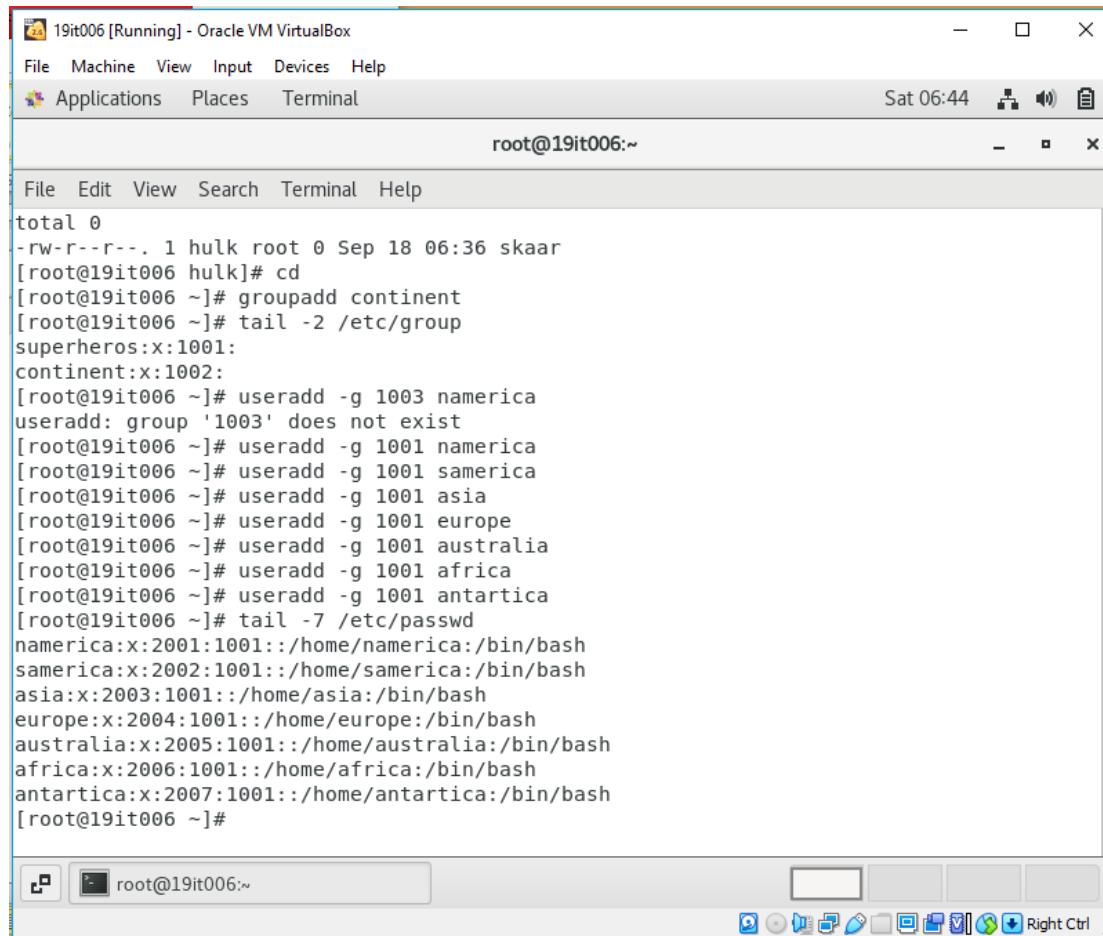
- Once the user hulk is created then change the password for hulk and then login as hulk

```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 06:18
hulk@19it006:/root
File Edit View Search Terminal Help
[root@19it006 ~]# useradd -u 2000 -g 1002 hulk
useradd: group '1002' does not exist
[root@19it006 ~]# useradd -u 2000 -g 1001 hulk
[root@19it006 ~]# cat /etc/passwd | tail -5
postfix:x:89:89::/var/spool/postfix:/sbin/nologin
ntp:x:38:38::/etc/ntp:/sbin/nologin
tcpdump:x:72:72::/sbin/nologin
19it006:x:1000:1000:19it006:/home/19it006:/bin/bash
hulk:x:2000:1001::/home/hulk:/bin/bash
[root@19it006 ~]# passwd hulk
Changing password for user hulk.
New password:
BAD PASSWORD: The password is shorter than 7 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# su hulk
[hulk@19it006 root]$
```

- Under hulk home directory create a file Skaar.
- Change group ownership of Skaar from superheros to root

```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 06:39
root@19it006:/home/hulk
File Edit View Search Terminal Help
total 0
-rw-r--r--. 1 hulk superheros 0 Sep 18 06:36 skaar
[hulk@19it006 ~]$ chgrp root skaar
chgrp: changing group of 'skaar': Operation not permitted
[hulk@19it006 ~]$ su -
Password:
Last login: Sat Sep 18 06:12:15 EDT 2021 on pts/0
[root@19it006 ~]# ls -l
total 16
-rw-----. 1 root root 1667 Jul 25 09:01 anaconda-ks.cfg
-rw-r--r--. 1 root root 1715 Jul 25 09:05 initial-setup-ks.cfg
-rw-r--r--. 1 root root 1116 Sep 15 06:53 mesg-h10
-rw-r--r--. 1 root root 1981 Sep 15 06:56 mesg-t20
[root@19it006 ~]# cd /home/hulk/
[root@19it006 hulk]# ls -l
total 0
-rw-r--r--. 1 hulk superheros 0 Sep 18 06:36 skaar
[root@19it006 hulk]# chgrp root skaar
bash: chgrp: command not found...
Similar command is: 'chgrpp'
[root@19it006 hulk]# chgrp root skaar
[root@19it006 hulk]# ls -l
total 0
-rw-r--r--. 1 hulk root 0 Sep 18 06:36 skaar
[root@19it006 hulk]#
```

- Then create a new group continents.
- Create a new users namerica, samerica, asia, europe, australia, africa and antartica.
- Make sure all these user's groups are continents.

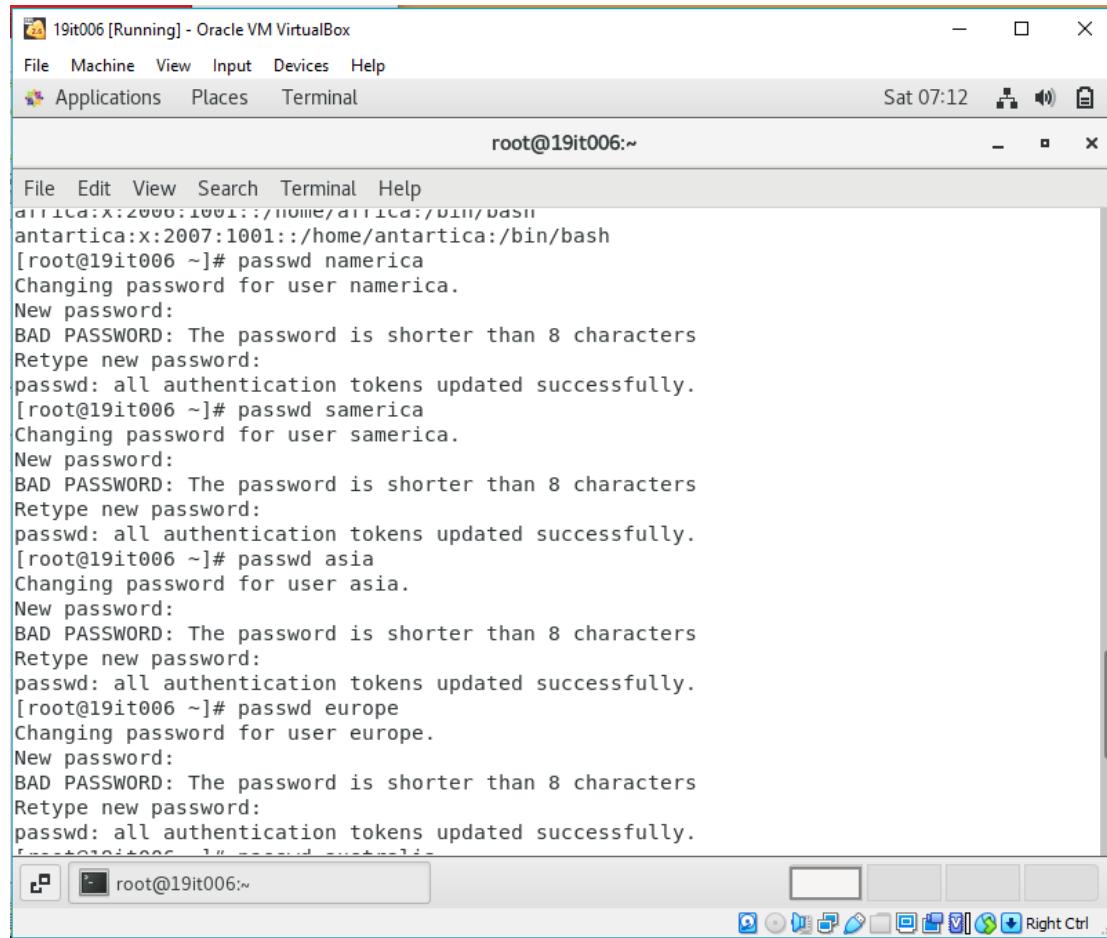


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "19it006 [Running] - Oracle VM VirtualBox". The terminal session starts with the command "groupadd continent", followed by "tail -2 /etc/group" to show the new group entry. Then, multiple "useradd -g 100x" commands are run for each continent, where x is the continent ID (1 for namerica, 2 for samerica, etc.). Finally, "tail -7 /etc/passwd" is run to show the updated password file entries for each user.

```
total 0
-rw-r--r--. 1 hulk root 0 Sep 18 06:36 skaar
[root@19it006 hulk]# cd
[root@19it006 ~]# groupadd continent
[root@19it006 ~]# tail -2 /etc/group
superheros:x:1001:
continent:x:1002:
[root@19it006 ~]# useradd -g 1003 namerica
useradd: group '1003' does not exist
[root@19it006 ~]# useradd -g 1001 namerica
[root@19it006 ~]# useradd -g 1001 samerica
[root@19it006 ~]# useradd -g 1001 asia
[root@19it006 ~]# useradd -g 1001 europe
[root@19it006 ~]# useradd -g 1001 australia
[root@19it006 ~]# useradd -g 1001 africa
[root@19it006 ~]# useradd -g 1001 antartica
[root@19it006 ~]# tail -7 /etc/passwd
namerica:x:2001:1001::/home/namerica:/bin/bash
samerica:x:2002:1001::/home/samerica:/bin/bash
asia:x:2003:1001::/home/asia:/bin/bash
europe:x:2004:1001::/home/europe:/bin/bash
australia:x:2005:1001::/home/australia:/bin/bash
africa:x:2006:1001::/home/africa:/bin/bash
antartica:x:2007:1001::/home/antartica:/bin/bash
[root@19it006 ~]#
```

- Change password for every user, then switch into each user one by one using su -username command and create one file in each user account (e.g., england file in europe, usa in namerica, japan in asia and so on)

- Changing password for each user



```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 07:12
root@19it006:~ - x
File Edit View Search Terminal Help
dhiraj:x:2000:1001::/home/dhiraj:/bin/bash
antartica:x:2007:1001::/home/antartica:/bin/bash
[root@19it006 ~]# passwd namerica
Changing password for user namerica.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd samerica
Changing password for user samerica.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd asia
Changing password for user asia.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd europe
Changing password for user europe.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
root@19it006:~
```

The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window title bar includes icons for minimize, maximize, and close, along with the application name and status bar showing "Sat 07:12". The menu bar has "File", "Machine", "View", "Input", "Devices", and "Help". Below the menu is a toolbar with "Applications", "Places", and "Terminal". The status bar at the bottom shows "root@19it006:~". The terminal window itself displays the following command-line session:

```
[root@19it006 ~]# passwd europe
Changing password for user europe.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd australia
Changing password for user australia.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd africa
Changing password for user africa.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]# passwd antartica
Changing password for user antartica.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@19it006 ~]#
```

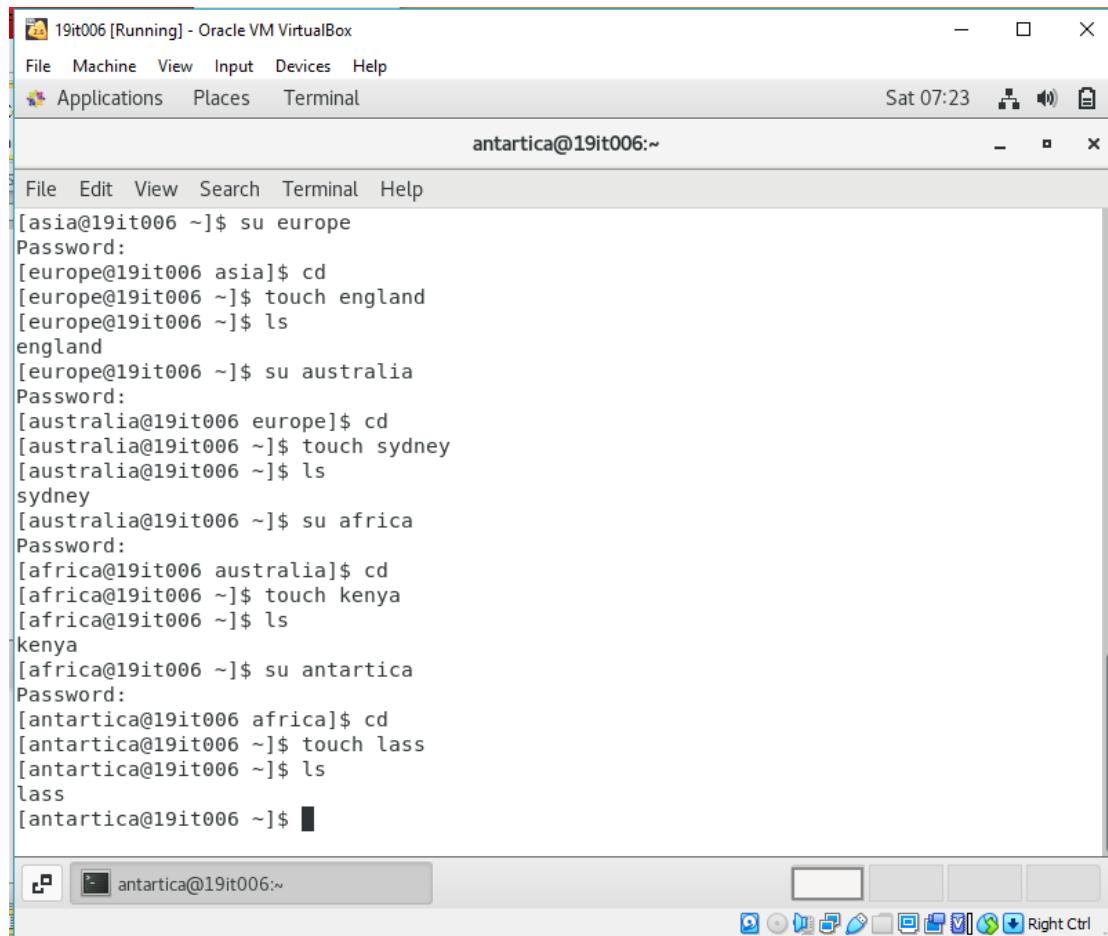
The terminal window has scroll bars on the right side. The bottom of the window shows a toolbar with icons for file operations like cut, copy, paste, and save, along with a "Right Ctrl" key indicator.

- Creating file in each user

The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, and Terminal. The status bar at the bottom shows "asia@19it006:~". The terminal session starts with:

```
[namerica@19it006 ~]$ la
bash: la: command not found...
[namerica@19it006 ~]$ ls
usa
[namerica@19it006 ~]$ su -samerica
Password:
su: failed to execute america: No such file or directory
[namerica@19it006 ~]$ su -samerica
Password:
su: Authentication failure
[namerica@19it006 ~]$ su -samerica
Password:
su: failed to execute america: No such file or directory
[namerica@19it006 ~]$ u -samerica
bash: u: command not found...
[namerica@19it006 ~]$ su -samerica
Password:
su: failed to execute america: No such file or directory
[namerica@19it006 ~]$ su asia
Password:
[asia@19it006 namerica]$ cd /home/asia/
[asia@19it006 ~]$ touch india
[asia@19it006 ~]$ ls
india
[asia@19it006 ~]$
```

The terminal window has a scroll bar on the right. The bottom of the window shows a toolbar with icons for copy, paste, cut, and other functions, along with a "Right Ctrl" key indicator.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window is part of a desktop environment with a menu bar (File, Machine, View, Input, Devices, Help) and a toolbar with icons for Applications, Places, and Terminal. The status bar at the bottom shows the date and time as "Sat 07:23". The terminal itself has a title bar "antartica@19it006:~". The session content is a multi-user session starting with user "asia" (password "europe"), followed by "europe" (password "asia"), "australia" (password "africa"), and finally "africa" (password "antartica"). Each user performs a series of commands: changing directory (cd), creating files (touch), and listing files (ls). The session ends with the "africa" user at the prompt "[africa@19it006 ~]\$".

```
[asia@19it006 ~]$ su europe
Password:
[europe@19it006 asia]$ cd
[europe@19it006 ~]$ touch england
[europe@19it006 ~]$ ls
england
[europe@19it006 ~]$ su australia
Password:
[australia@19it006 europe]$ cd
[australia@19it006 ~]$ touch sydney
[australia@19it006 ~]$ ls
sydney
[australia@19it006 ~]$ su africa
Password:
[africa@19it006 australia]$ cd
[africa@19it006 ~]$ touch kenya
[africa@19it006 ~]$ ls
kenya
[africa@19it006 ~]$ su antartica
Password:
[antartica@19it006 africa]$ cd
[antartica@19it006 ~]$ touch lass
[antartica@19it006 ~]$ ls
lass
[antartica@19it006 ~]$
```

- Also add user namerica to wheel group to allow it to run root commands as root and then test it.

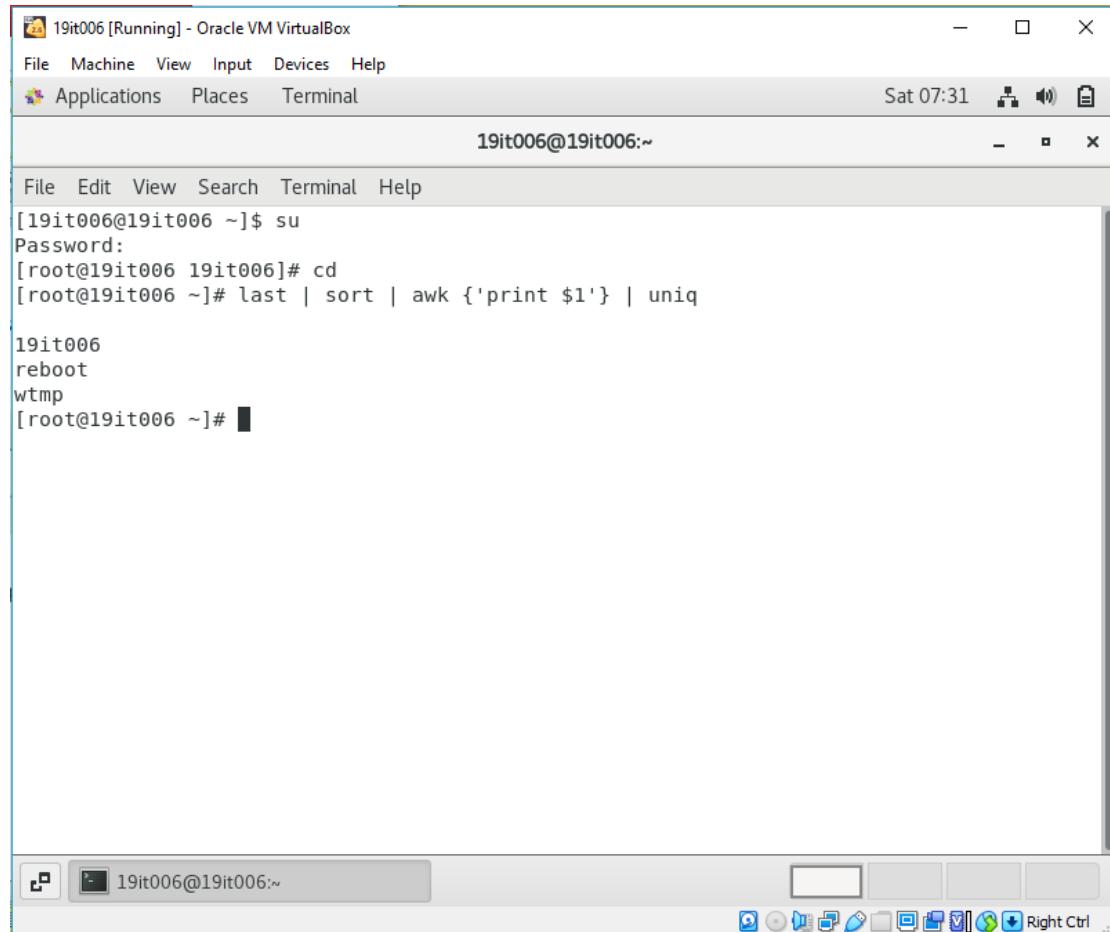
The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is '19it006 [Running] - Oracle VM VirtualBox'. The terminal content shows the following steps:

```
-G, --supp-group <group>           specify a supplemental group
-, -l, --login                      make the shell a login shell
-c, --command <command>             pass a single command to the shell with -c
--session-command <command>         pass a single command to the shell with -c
and do not create a new session
-f, --fast                           pass -f to the shell (for csh or tcsh)
-s, --shell <shell>                 run shell if /etc/shells allows it

-h, --help      display this help and exit
-V, --version   output version information and exit

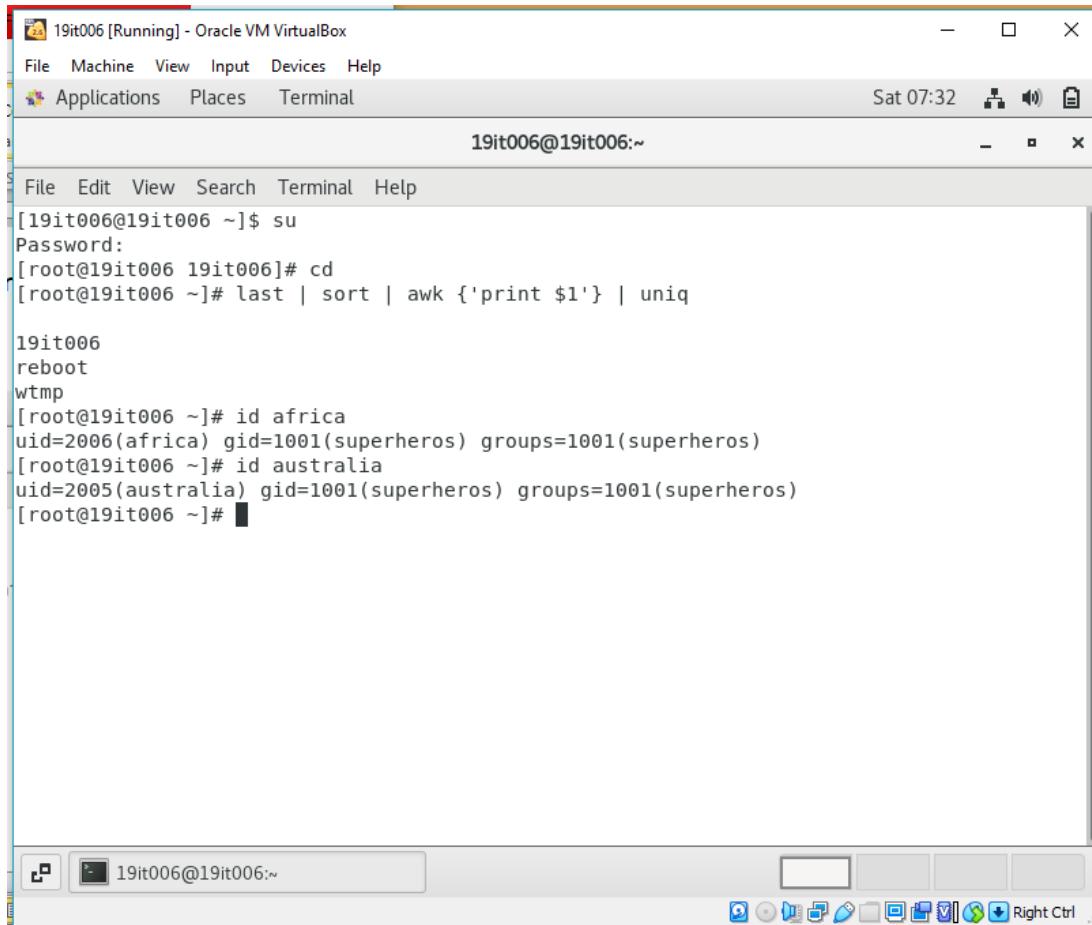
For more details see su(1).
[antartica@19it006 ~]$ su
Password:
[root@19it006 antartica]# usermod -aG wheel namerica
[root@19it006 antartica]# group namerica
bash: group: command not found...
[root@19it006 antartica]# groups namerica
namerica : superheros wheel
[root@19it006 antartica]# cd
[root@19it006 ~]# usermod -aG wheel namerica
[root@19it006 ~]# groups namerica
namerica : superheros wheel
[root@19it006 ~]# groups namerica
```

- Run last command and find out the number of users logged in.(Do not count duplicate users)



```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 07:31
19it006@19it006:~ - x
File Edit View Search Terminal Help
[19it006@19it006 ~]$ su
Password:
[root@19it006 19it006]# cd
[root@19it006 ~]# last | sort | awk {'print $1'} | uniq
19it006
reboot
wtmp
[root@19it006 ~]#
```

- Run id command on Africa and Australia users to verify their user id.

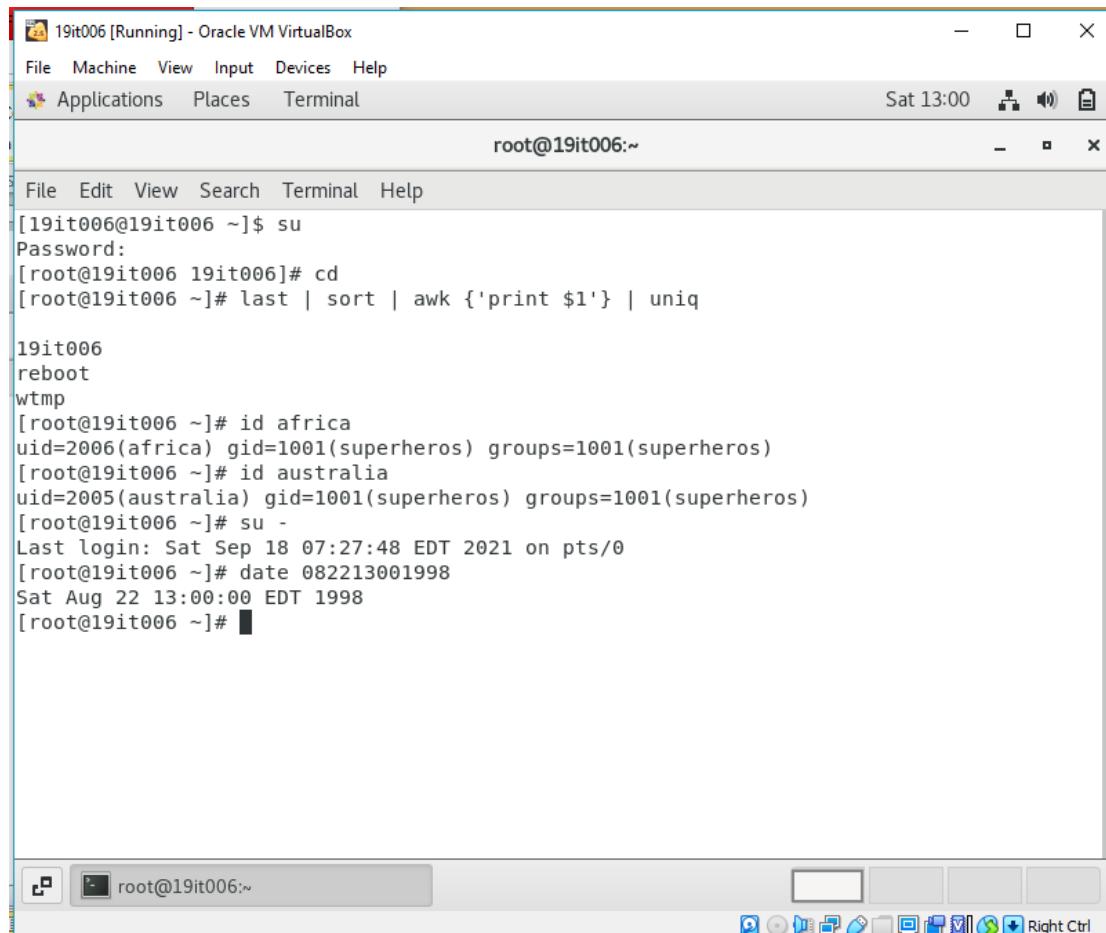


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "19it006 [Running] - Oracle VM VirtualBox". The terminal content shows the following commands and output:

```
[19it006@19it006 ~]$ su
Password:
[root@19it006 19it006]# cd
[root@19it006 ~]# last | sort | awk {'print $1'} | uniq

19it006
reboot
wtmp
[root@19it006 ~]# id africa
uid=2006(africa) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]# id australia
uid=2005(australia) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]#
```

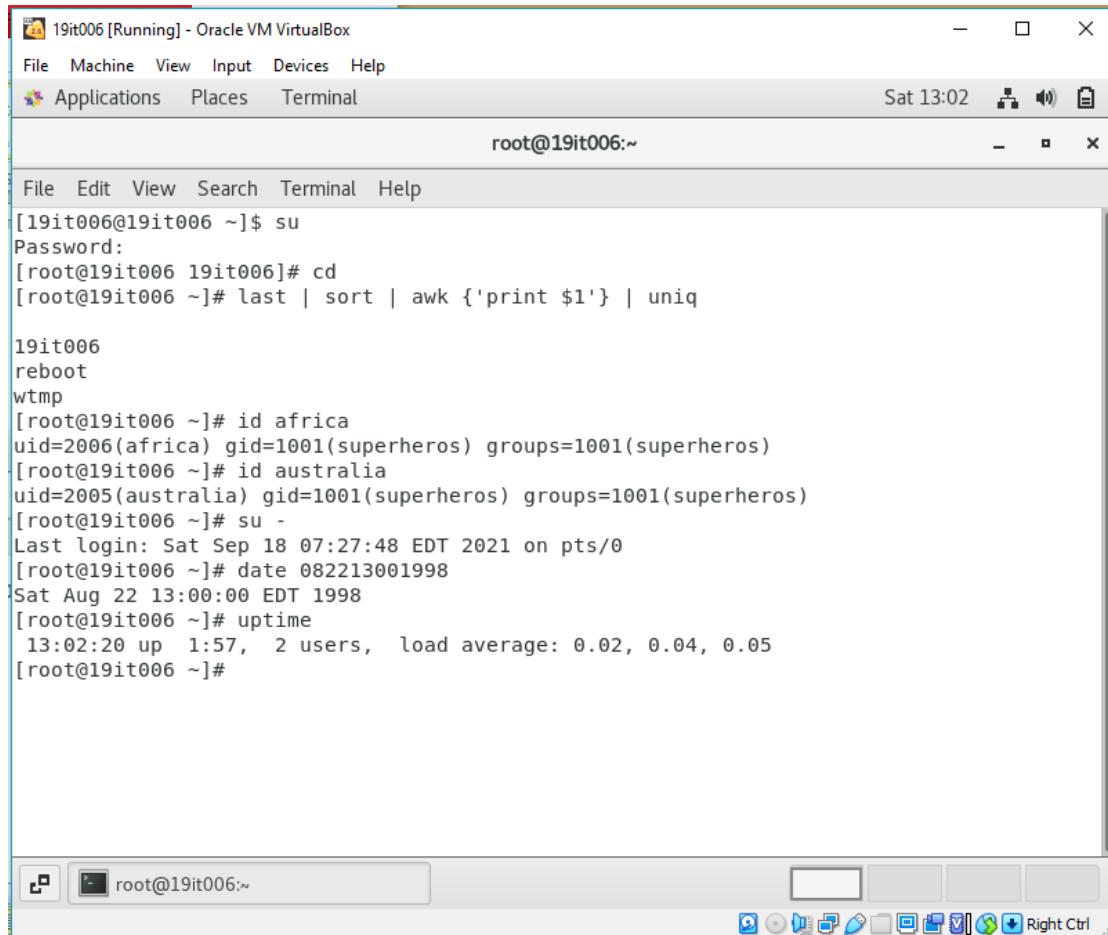
- Change the date of your system to Aug 22 1998 at 1pm and verify.



```
[19it006@19it006 ~]$ su
Password:
[root@19it006 19it006]# cd
[root@19it006 ~]# last | sort | awk {'print $1'} | uniq

19it006
reboot
wtmp
[root@19it006 ~]# id africa
uid=2006(africa) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]# id australia
uid=2005(australia) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]# su -
Last login: Sat Sep 18 07:27:48 EDT 2021 on pts/0
[root@19it006 ~]# date 082213001998
Sat Aug 22 13:00:00 EDT 1998
[root@19it006 ~]#
```

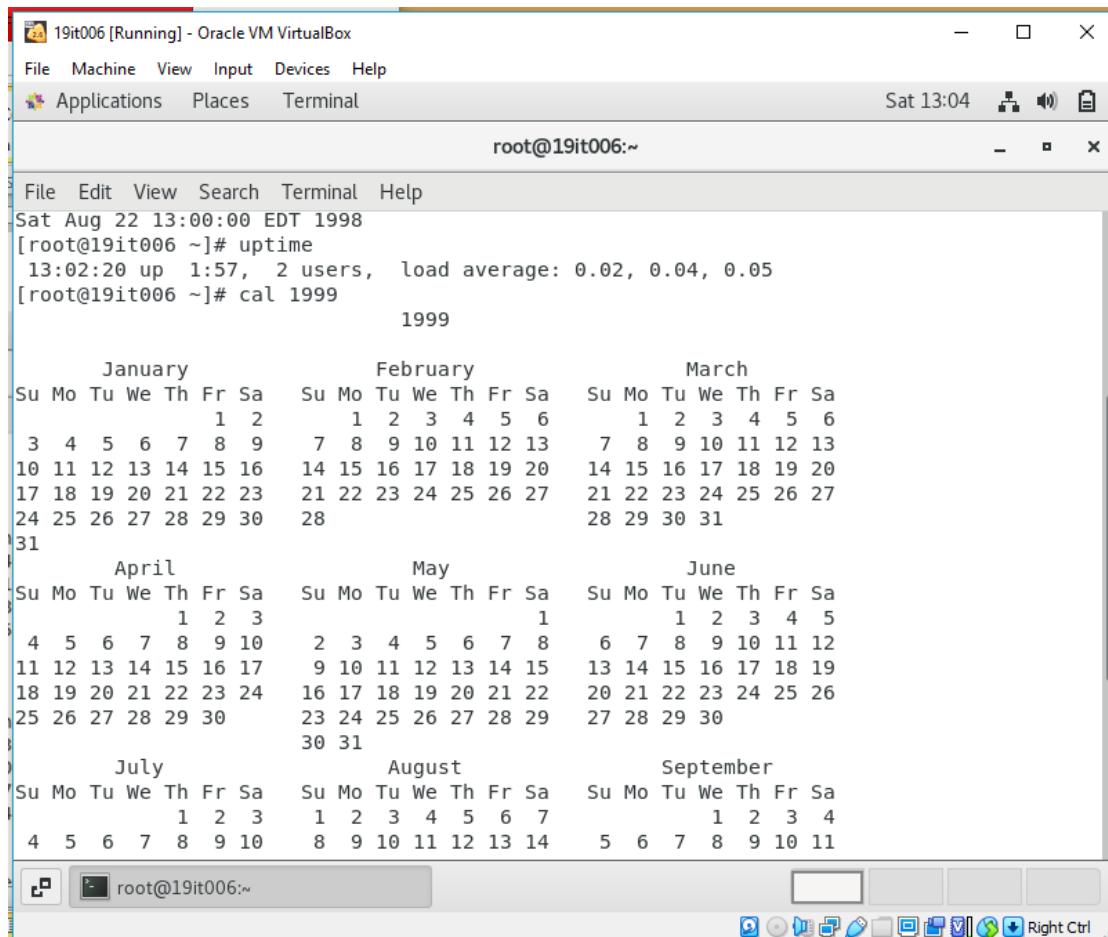
- Check system uptime



```
[19it006@19it006 ~]$ su
Password:
[root@19it006 19it006]# cd
[root@19it006 ~]# last | sort | awk {'print $1'} | uniq

19it006
reboot
wtmp
[root@19it006 ~]# id africa
uid=2006(africa) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]# id australia
uid=2005(australia) gid=1001(superheros) groups=1001(superheros)
[root@19it006 ~]# su -
Last login: Sat Sep 18 07:27:48 EDT 2021 on pts/0
[root@19it006 ~]# date 082213001998
Sat Aug 22 13:00:00 EDT 1998
[root@19it006 ~]# uptime
13:02:20 up 1:57, 2 users, load average: 0.02, 0.04, 0.05
[root@19it006 ~]#
```

- List 1999 calendar



19it006 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Applications Places Terminal Sat 13:04

root@19it006:~

```
Sat Aug 22 13:00:00 EDT 1998
[root@19it006 ~]# uptime
13:02:20 up 1:57, 2 users, load average: 0.02, 0.04, 0.05
[root@19it006 ~]# cal 1999
 1999

January          February          March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1  2    1  2  3  4  5  6    1  2  3  4  5  6  7    1  2  3  4  5  6  7
 3  4  5  6  7  8  9    7  8  9 10 11 12 13  8  9 10 11 12 13 14
10 11 12 13 14 15 16  14 15 16 17 18 19 20 15 16 17 18 19 20 21
17 18 19 20 21 22 23  21 22 23 24 25 26 27 22 23 24 25 26 27 28
24 25 26 27 28 29 30  28                           29 30 31
31

April            May              June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1  2  3    1  2  3  4  5  6  7    1  2  3  4  5  6  7
 4  5  6  7  8  9 10  2  3  4  5  6  7  8  6  7  8  9 10 11 12
11 12 13 14 15 16 17  9 10 11 12 13 14 15 13 14 15 16 17 18 19
18 19 20 21 22 23 24 16 17 18 19 20 21 22 20 21 22 23 24 25 26
25 26 27 28 29 30  23 24 25 26 27 28 29 27 28 29 30
30 31

July             August           September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1  2  3    1  2  3  4  5  6  7    1  2  3  4
 4  5  6  7  8  9 10  8  9 10 11 12 13 14  5  6  7  8  9 10 11
```

root@19it006:~

File Edit View Search Terminal Help

Sat Aug 22 13:00:00 EDT 1998

[root@19it006 ~]# uptime

13:02:20 up 1:57, 2 users, load average: 0.02, 0.04, 0.05

[root@19it006 ~]# cal 1999

1999

January February March

Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa

1 2 1 2 3 4 5 6 1 2 3 4 5 6 7 1 2 3 4 5 6 7

3 4 5 6 7 8 9 7 8 9 10 11 12 13 8 9 10 11 12 13 14

10 11 12 13 14 15 16 14 15 16 17 18 19 20 15 16 17 18 19 20 21

17 18 19 20 21 22 23 21 22 23 24 25 26 27 22 23 24 25 26 27 28

24 25 26 27 28 29 30 28 29 30 31

31

April May June

Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa

1 2 3 1 2 3 4 5 6 7 1 2 3 4 5 6 7

4 5 6 7 8 9 10 2 3 4 5 6 7 8 6 7 8 9 10 11 12

11 12 13 14 15 16 17 9 10 11 12 13 14 15 13 14 15 16 17 18 19

18 19 20 21 22 23 24 16 17 18 19 20 21 22 20 21 22 23 24 25 26

25 26 27 28 29 30 23 24 25 26 27 28 29 27 28 29 30

30 31

July August September

Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa

1 2 3 1 2 3 4 5 6 7 1 2 3 4

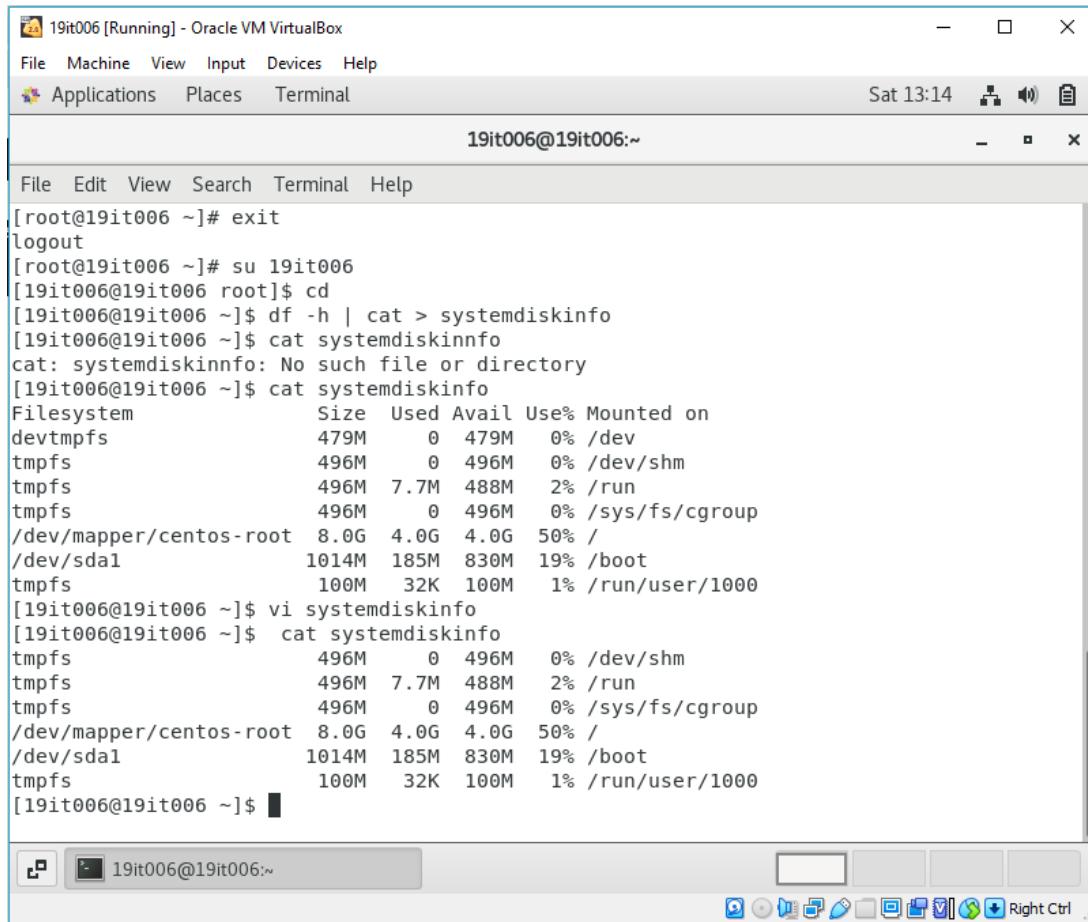
4 5 6 7 8 9 10 8 9 10 11 12 13 14 5 6 7 8 9 10 11

- Become yourself “your username”and run df –h command. Output the df – h command to another file name it systemdiskinfo.

```
19it006 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 13:10
19it006@19it006:~ - x
File Edit View Search Terminal Help
3 4 5 6 7 8 9 7 8 9 10 11 12 13 5 6 7 8 9 10 11
10 11 12 13 14 15 16 14 15 16 17 18 19 20 12 13 14 15 16 17 18
17 18 19 20 21 22 23 21 22 23 24 25 26 27 19 20 21 22 23 24 25
24 25 26 27 28 29 30 28 29 30 26 27 28 29 30 31
31

[root@19it006 ~]# xit
bash: xit: command not found...
[root@19it006 ~]# exit
logout
[root@19it006 ~]# su 19it006
[19it006@19it006 root]$ cd
[19it006@19it006 ~]$ df -h | cat > systemdiskinfo
[19it006@19it006 ~]$ cat systemdiskinfo
cat: systemdiskinfo: No such file or directory
[19it006@19it006 ~]$ cat systemdiskinfo
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        479M    0  479M   0% /dev
tmpfs          496M    0  496M   0% /dev/shm
tmpfs          496M  7.7M  488M   2% /run
tmpfs          496M    0  496M   0% /sys/fs/cgroup
/dev/mapper/centos-root  8.0G  4.0G  4.0G  50% /
/dev/sda1       1014M 185M  830M  19% /boot
tmpfs          100M   32K  100M   1% /run/user/1000
[19it006@19it006 ~]$
```

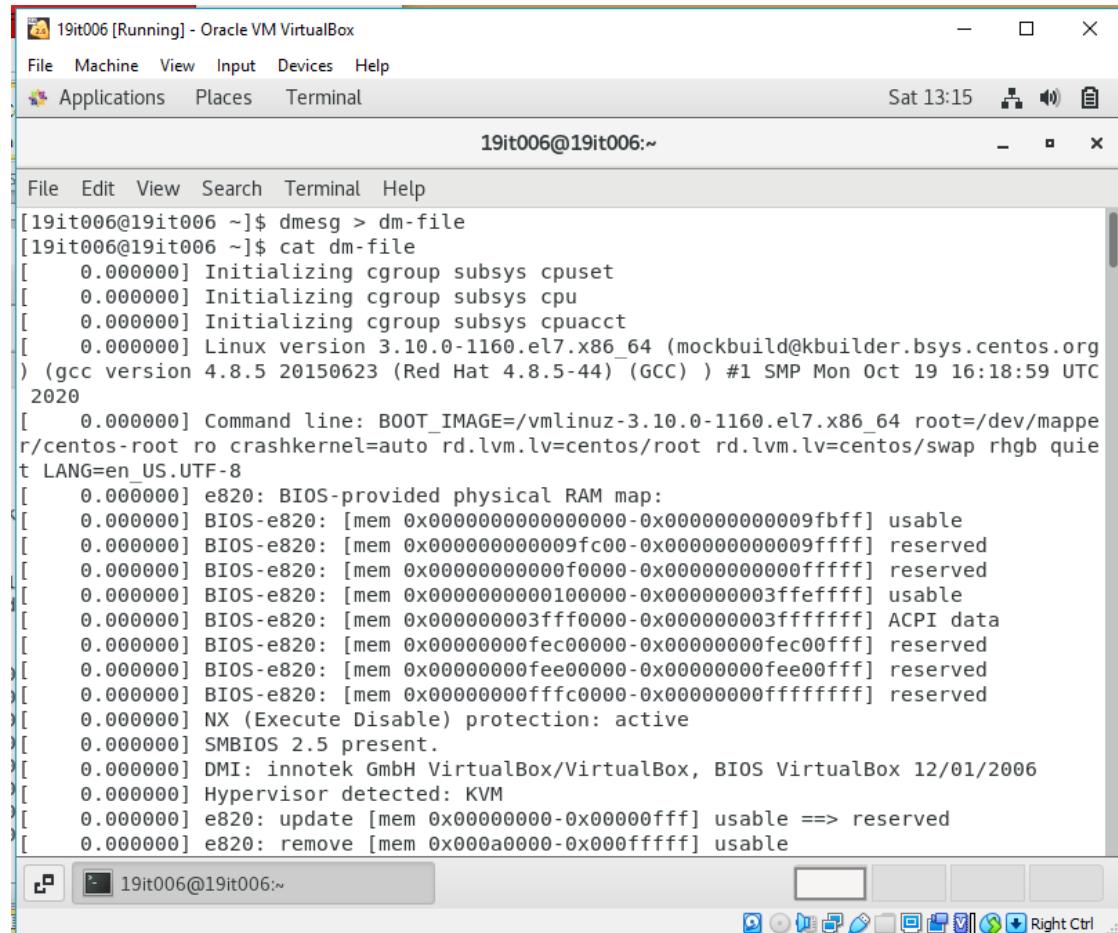
- Vi systemdiskinfo file and remove the first and second line and save the file.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window contains a terminal session with the following commands and output:

```
[root@19it006 ~]# exit
logout
[root@19it006 ~]# su 19it006
[19it006@19it006 root]$ cd
[19it006@19it006 ~]$ df -h | cat > systemdiskinfo
[19it006@19it006 ~]$ cat systemdiskinfo
cat: systemdiskinfo: No such file or directory
[19it006@19it006 ~]$ cat systemdiskinfo
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        479M    0  479M   0% /dev
tmpfs          496M    0  496M   0% /dev/shm
tmpfs          496M  7.7M 488M   2% /run
tmpfs          496M    0  496M   0% /sys/fs/cgroup
/dev/mapper/centos-root  8.0G  4.0G  4.0G  50% /
/dev/sda1        1014M 185M  830M  19% /boot
tmpfs           100M   32K  100M   1% /run/user/1000
[19it006@19it006 ~]$ vi systemdiskinfo
[19it006@19it006 ~]$ cat systemdiskinfo
tmpfs          496M    0  496M   0% /dev/shm
tmpfs          496M  7.7M 488M   2% /run
tmpfs          496M    0  496M   0% /sys/fs/cgroup
/dev/mapper/centos-root  8.0G  4.0G  4.0G  50% /
/dev/sda1        1014M 185M  830M  19% /boot
tmpfs           100M   32K  100M   1% /run/user/1000
[19it006@19it006 ~]$
```

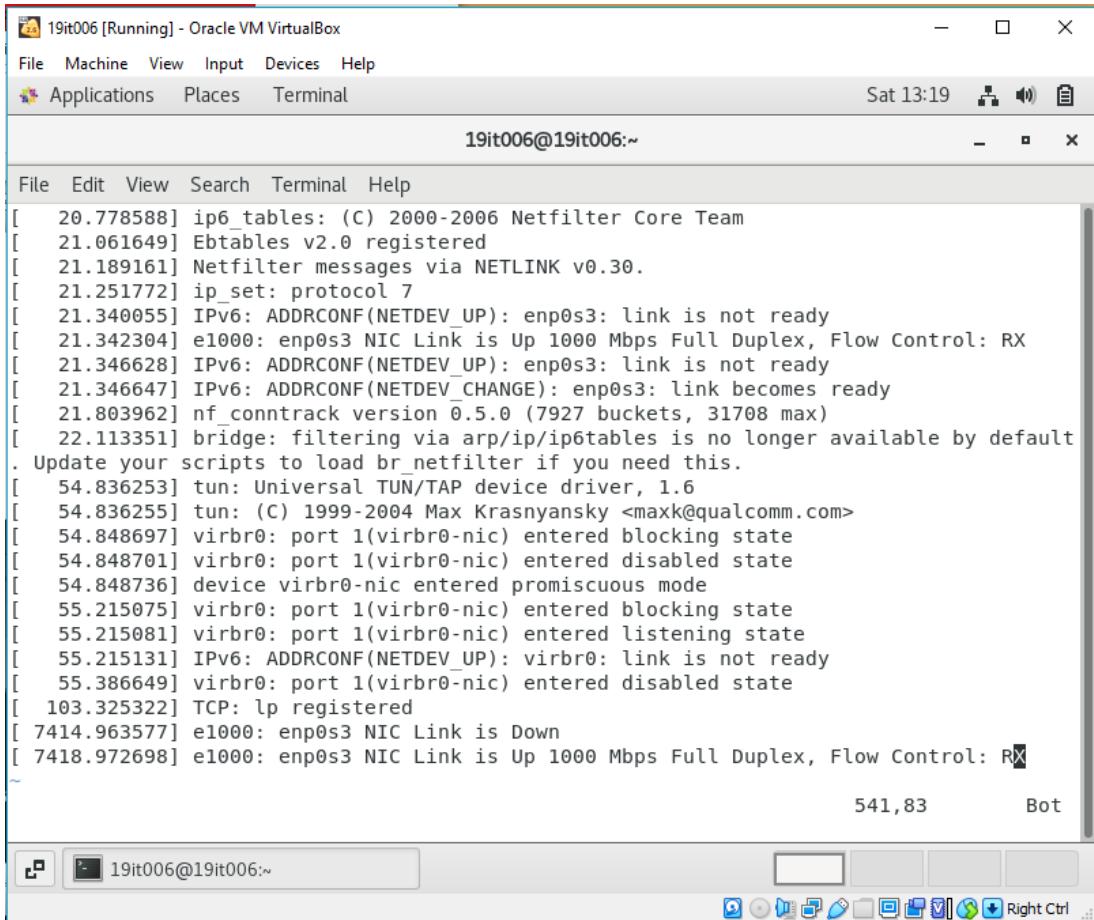
- Run dmesg command and output to dm-file.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window contains the following terminal session:

```
[19it006@19it006 ~]$ dmesg > dm-file
[19it006@19it006 ~]$ cat dm-file
[    0.000000] Initializing cgroup subsys cpuset
[    0.000000] Initializing cgroup subsys cpu
[    0.000000] Initializing cgroup subsys cpacct
[    0.000000] Linux version 3.10.0-1160.el7.x86_64 (mockbuild@kbuilder.bsys.centos.org
) (gcc version 4.8.5 20150623 (Red Hat 4.8.5-44) (GCC) ) #1 SMP Mon Oct 19 16:18:59 UTC
2020
[    0.000000] Command line: BOOT_IMAGE=/vmlinuz-3.10.0-1160.el7.x86_64 root=/dev/mappe
r/centos-root ro crashkernel=auto rd.lvm.lv=centos/root rd.lvm.lv=centos/swap rhgb quie
t LANG=en_US.UTF-8
[    0.000000] e820: BIOS-provided physical RAM map:
[    0.000000] BIOS-e820: [mem 0x0000000000000000-0x0000000000009fbff] usable
[    0.000000] BIOS-e820: [mem 0x00000000009fc00-0x0000000000009ffff] reserved
[    0.000000] BIOS-e820: [mem 0x0000000000f0000-0x0000000000ffff] reserved
[    0.000000] BIOS-e820: [mem 0x000000000100000-0x000000003ffff] usable
[    0.000000] BIOS-e820: [mem 0x000000003fff0000-0x000000003ffff] ACPI data
[    0.000000] BIOS-e820: [mem 0x00000000fec0000-0x00000000fec00fff] reserved
[    0.000000] BIOS-e820: [mem 0x00000000fee0000-0x00000000fee00fff] reserved
[    0.000000] BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffff] reserved
[    0.000000] NX (Execute Disable) protection: active
[    0.000000] SMBIOS 2.5 present.
[    0.000000] DMI: innotek GmbH VirtualBox/VirtualBox, BIOS VirtualBox 12/01/2006
[    0.000000] Hypervisor detected: KVM
[    0.000000] e820: update [mem 0x00000000-0x00000fff] usable ==> reserved
[    0.000000] e820: remove [mem 0x000a0000-0x000fffff] usable
```

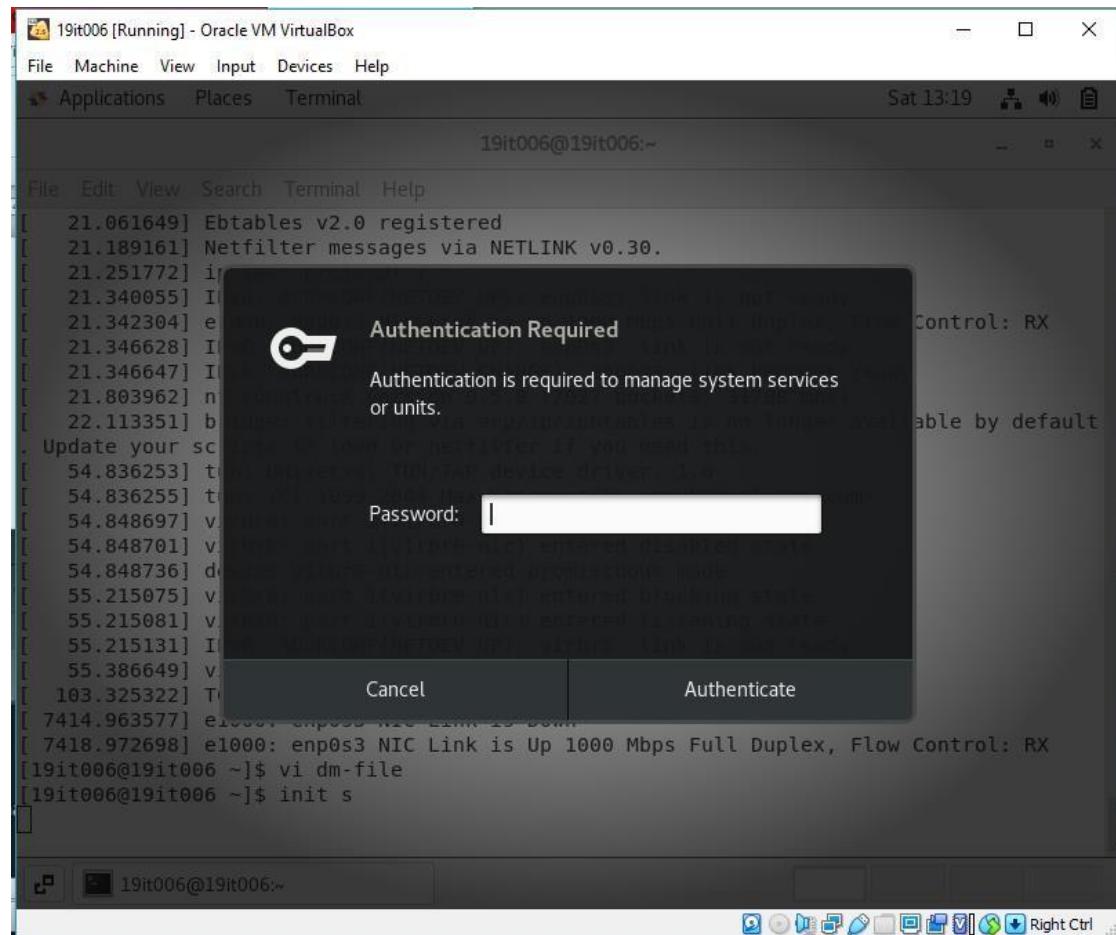
- Vi dm-file and remove the last 5-7 lines.
- Add text in the end of file dm-file using vi. Text= this is the end of file.
Then save the file.



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window contains a terminal session with the command "tail -f /var/log/dmesg" running. The output displays a continuous stream of kernel messages related to network interface card (NIC) activity, including logs for Ebttables, Netfilter, IPv6 ADDRCONF events, and various device state transitions (e.g., link up/down, blocking/listening states). The terminal window has a standard Linux-style interface with tabs for Applications, Places, and Terminal at the top, and a status bar showing the date and time (Sat 13:19).

```
[ 20.778588] ip6_tables: (C) 2000-2006 Netfilter Core Team
[ 21.061649] Ebtables v2.0 registered
[ 21.189161] Netfilter messages via NETLINK v0.30.
[ 21.251772] ip_set: protocol 7
[ 21.340055] IPv6: ADDRCONF(NETDEV_UP): enp0s3: link is not ready
[ 21.342304] e1000: enp0s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[ 21.346628] IPv6: ADDRCONF(NETDEV_UP): enp0s3: link is not ready
[ 21.346647] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s3: link becomes ready
[ 21.803962] nf_conntrack version 0.5.0 (7927 buckets, 31708 max)
[ 22.113351] bridge: filtering via arp/ip/ip6tables is no longer available by default
. Update your scripts to load br_netfilter if you need this.
[ 54.836253] tun: Universal TUN/TAP device driver, 1.6
[ 54.836255] tun: (C) 1999-2004 Max Krasnyansky <maxk@qualcomm.com>
[ 54.848697] virbr0: port 1(virbr0-nic) entered blocking state
[ 54.848701] virbr0: port 1(virbr0-nic) entered disabled state
[ 54.848736] device virbr0-nic entered promiscuous mode
[ 55.215075] virbr0: port 1(virbr0-nic) entered blocking state
[ 55.215081] virbr0: port 1(virbr0-nic) entered listening state
[ 55.215131] IPv6: ADDRCONF(NETDEV_UP): virbr0: link is not ready
[ 55.386649] virbr0: port 1(virbr0-nic) entered disabled state
[ 103.325322] TCP: lp registered
[ 7414.963577] e1000: enp0s3 NIC Link is Down
[ 7418.972698] e1000: enp0s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
~
```

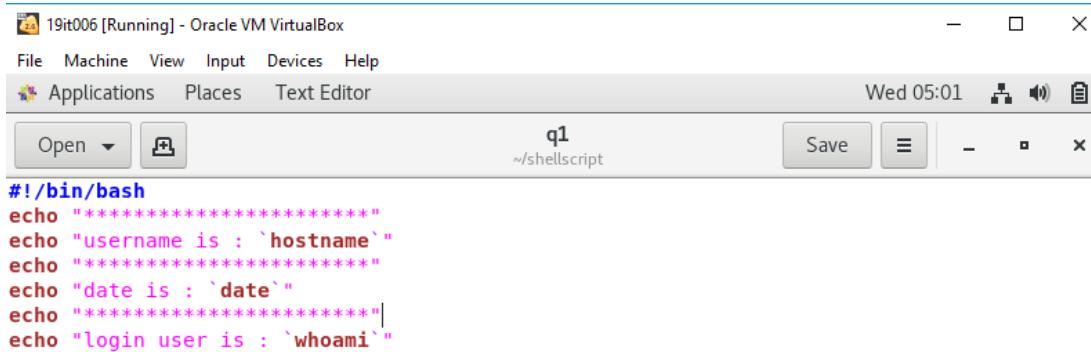
- Reboot the system using init command.



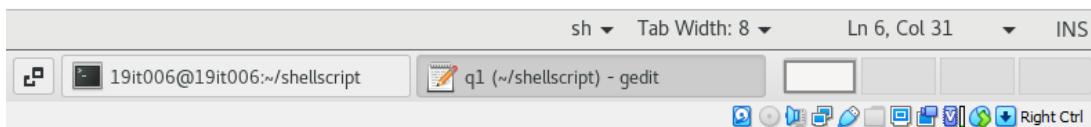
Practical 5

1. Write a script called hello which outputs the following:

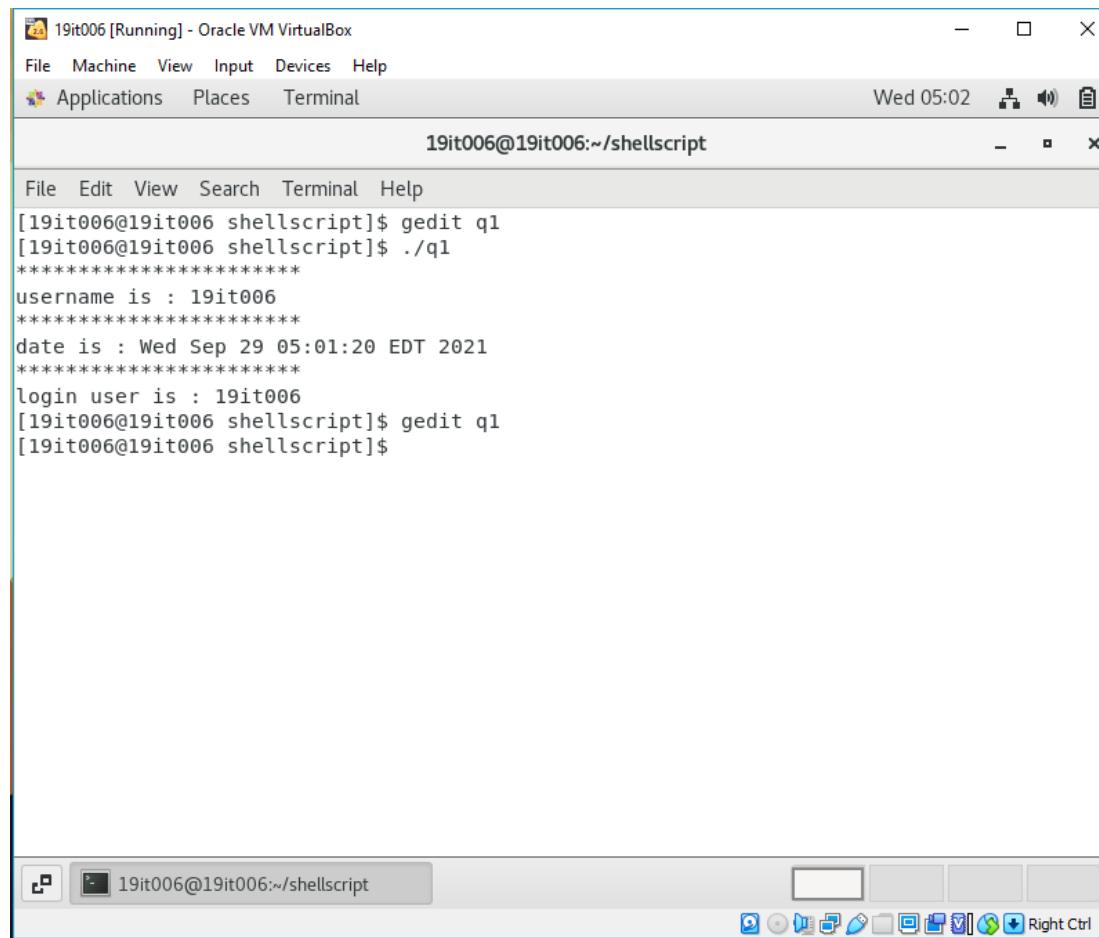
- Your username
- the time and date
- Who is logged on?
- Also output a line of asterisks (******) after each section.



```
#!/bin/bash
echo "*****"
echo "username is : `hostname`"
echo "*****"
echo "date is : `date`"
echo "*****"
echo "login user is : `whoami`"
```



Output:

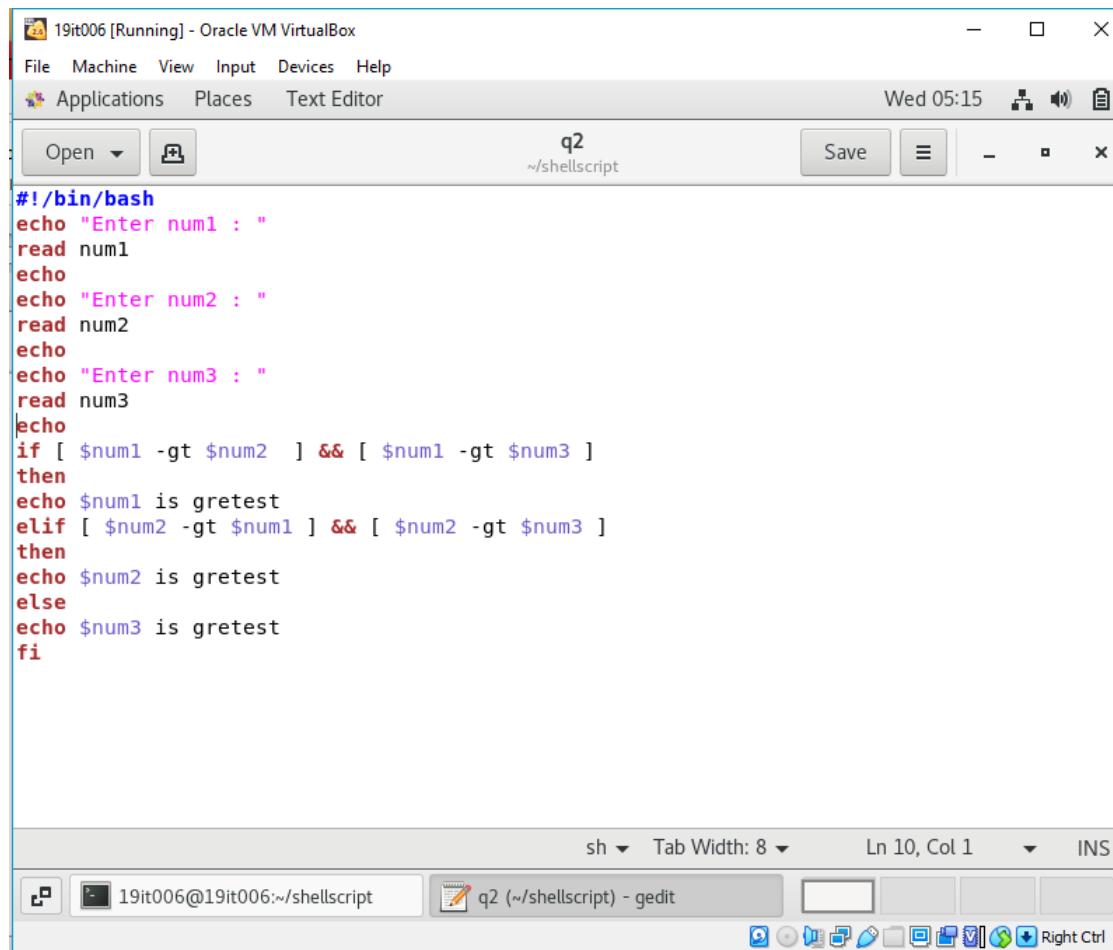


The screenshot shows a Linux desktop environment within a VirtualBox window. The terminal window title is '19it006 [Running] - Oracle VM VirtualBox'. The terminal content displays the following command-line session:

```
[19it006@19it006 shellscript]$ gedit q1
[19it006@19it006 shellscript]$ ./q1
*****
username is : 19it006
*****
date is : Wed Sep 29 05:01:20 EDT 2021
*****
login user is : 19it006
[19it006@19it006 shellscript]$ gedit q1
[19it006@19it006 shellscript]$
```

2. Write a shell program to find the largest integer among the three integers given as arguments.

Program:



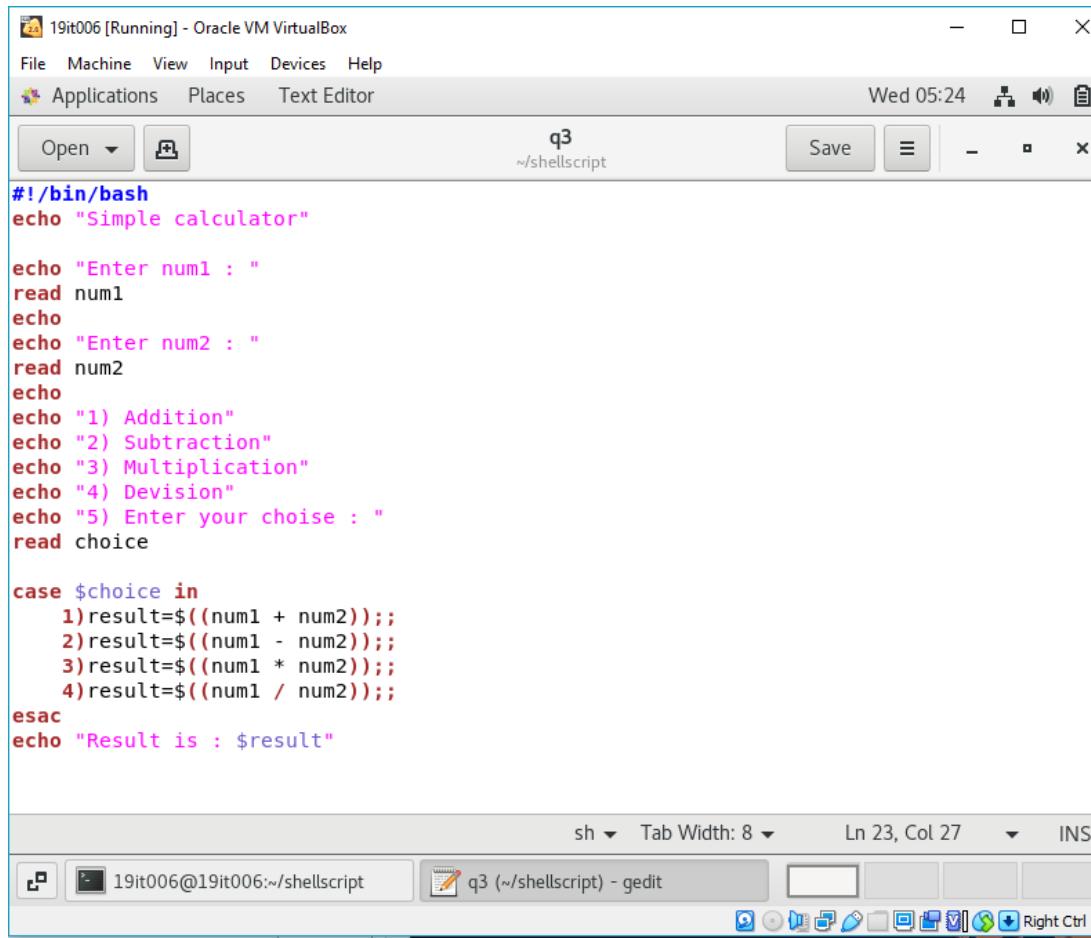
The screenshot shows a virtual machine window titled "19it006 [Running] - Oracle VM VirtualBox". Inside the window, a terminal session is running. The script "q2" is open in a text editor. The terminal command "sh" is entered, followed by the script file "q2 (~shellscript) - gedit". The script itself is a bash script that prompts the user to enter three numbers (num1, num2, num3), reads them, and then uses if-elif-else logic to determine and echo the greatest number.

```
#!/bin/bash
echo "Enter num1 : "
read num1
echo
echo "Enter num2 : "
read num2
echo
echo "Enter num3 : "
read num3
echo
if [ $num1 -gt $num2 ] && [ $num1 -gt $num3 ]
then
echo $num1 is gretest
elif [ $num2 -gt $num1 ] && [ $num2 -gt $num3 ]
then
echo $num2 is gretest
else
echo $num3 is gretest
fi
```

Output:

3. Write a shell script to simulate a simple calculator.

Program:

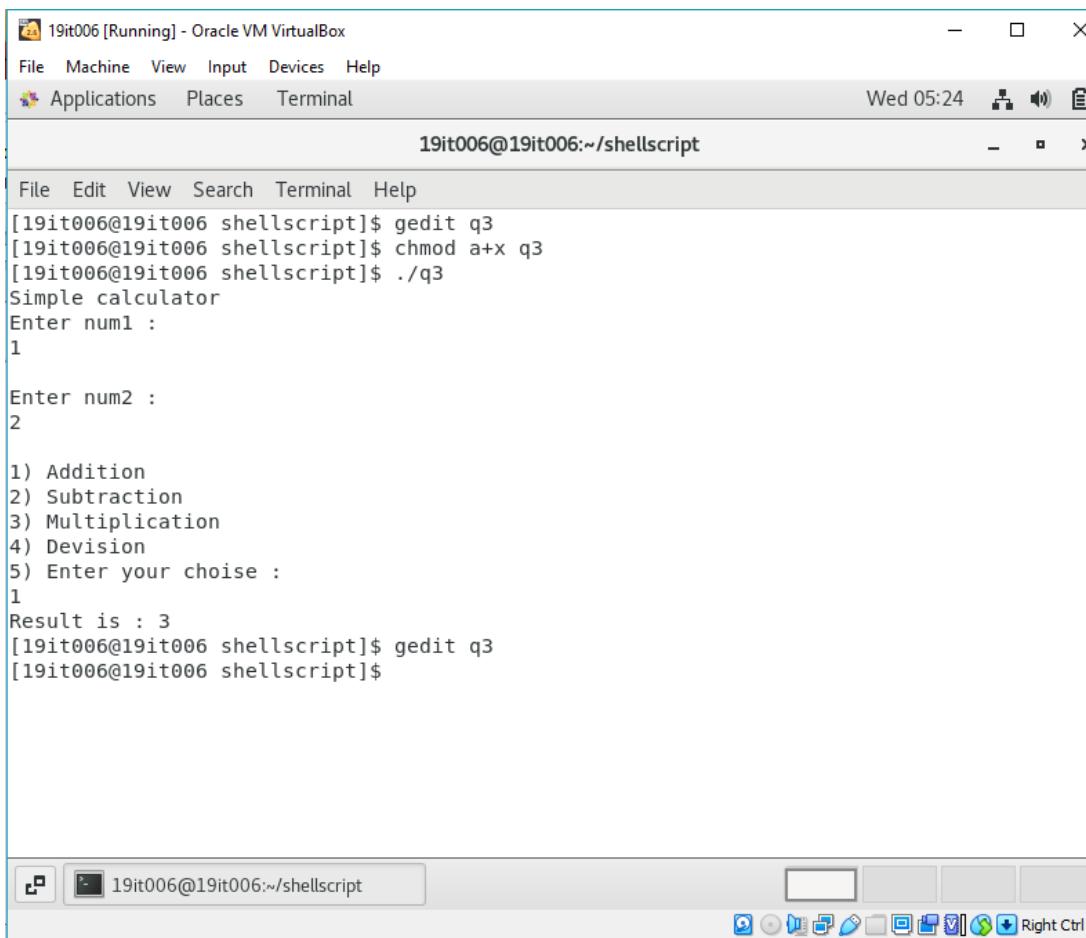


```
#!/bin/bash
echo "Simple calculator"

echo "Enter num1 : "
read num1
echo
echo "Enter num2 : "
read num2
echo
echo "1) Addition"
echo "2) Subtraction"
echo "3) Multiplication"
echo "4) Devision"
echo "5) Enter your choise : "
read choice

case $choice in
    1)result=$((num1 + num2));;
    2)result=$((num1 - num2));;
    3)result=$((num1 * num2));;
    4)result=$((num1 / num2));;
esac
echo "Result is : $result"
```

Output:



The screenshot shows a terminal window titled "19it006 [Running] - Oracle VM VirtualBox". The window has a menu bar with File, Machine, View, Input, Devices, Help, Applications, Places, Terminal, and a status bar showing "Wed 05:24". The terminal itself displays the following session:

```
[19it006@19it006 shellscript]$ gedit q3
[19it006@19it006 shellscript]$ chmod a+x q3
[19it006@19it006 shellscript]$ ./q3
Simple calculator
Enter num1 :
1

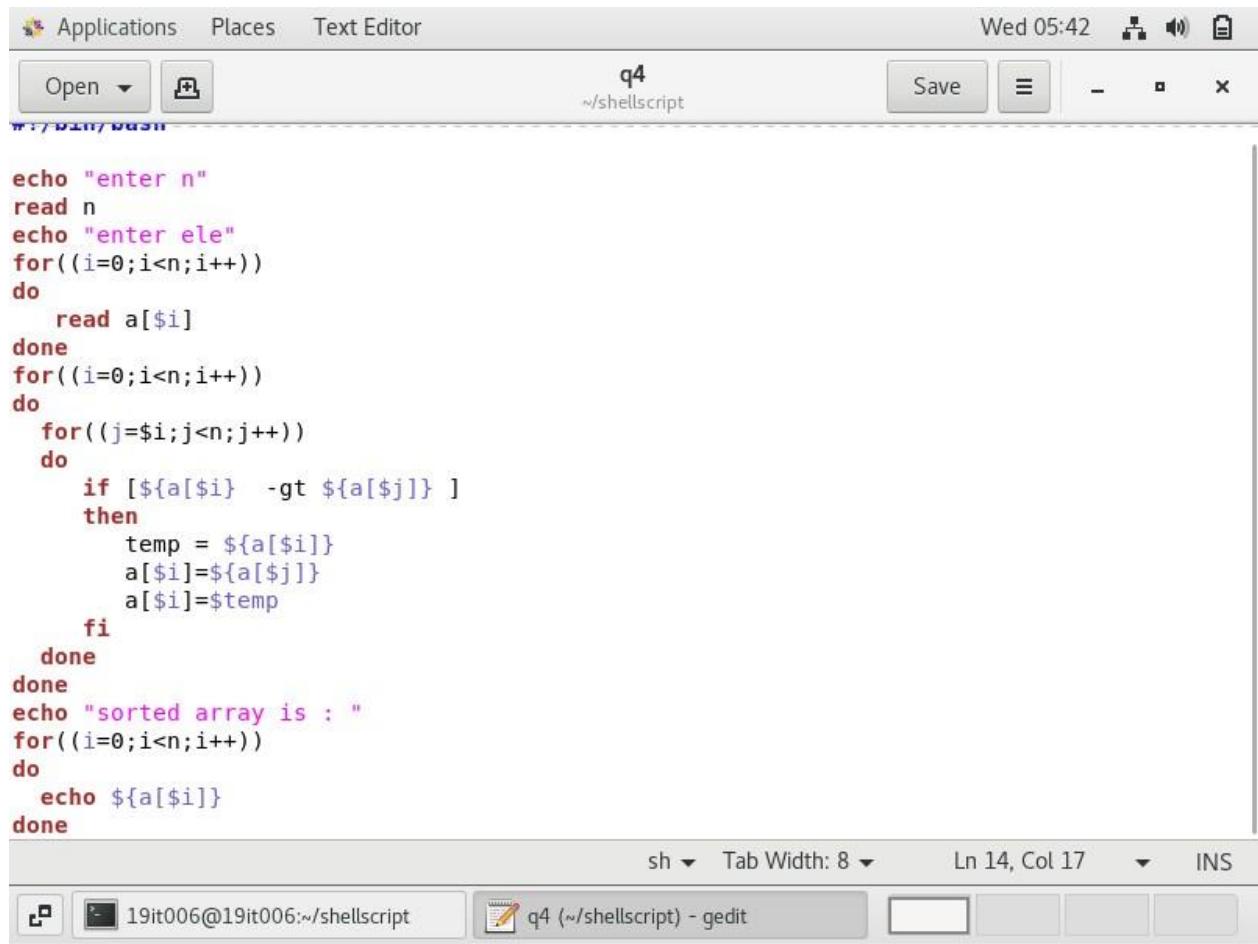
Enter num2 :
2

1) Addition
2) Subtraction
3) Multiplication
4) Devision
5) Enter your choise :
1
Result is : 3
[19it006@19it006 shellscript]$ gedit q3
[19it006@19it006 shellscript]$
```

The bottom of the window shows a toolbar with icons for copy, paste, cut, find, etc., and a "Right Ctrl" button.

4. Write a shell script to sort the number in ascending order and also calculate the shell script run time.(Using array).

Program:



```
echo "enter n"
read n
echo "enter ele"
for((i=0;i<n;i++))
do
    read a[$i]
done
for((i=0;i<n;i++))
do
    for((j=$i;j<n;j++))
    do
        if [ ${a[$i]} -gt ${a[$j]} ]
        then
            temp = ${a[$i]}
            a[$i]=${a[$j]}
            a[$i]=$temp
        fi
    done
done
echo "sorted array is : "
for((i=0;i<n;i++))
do
    echo ${a[$i]}
done
```

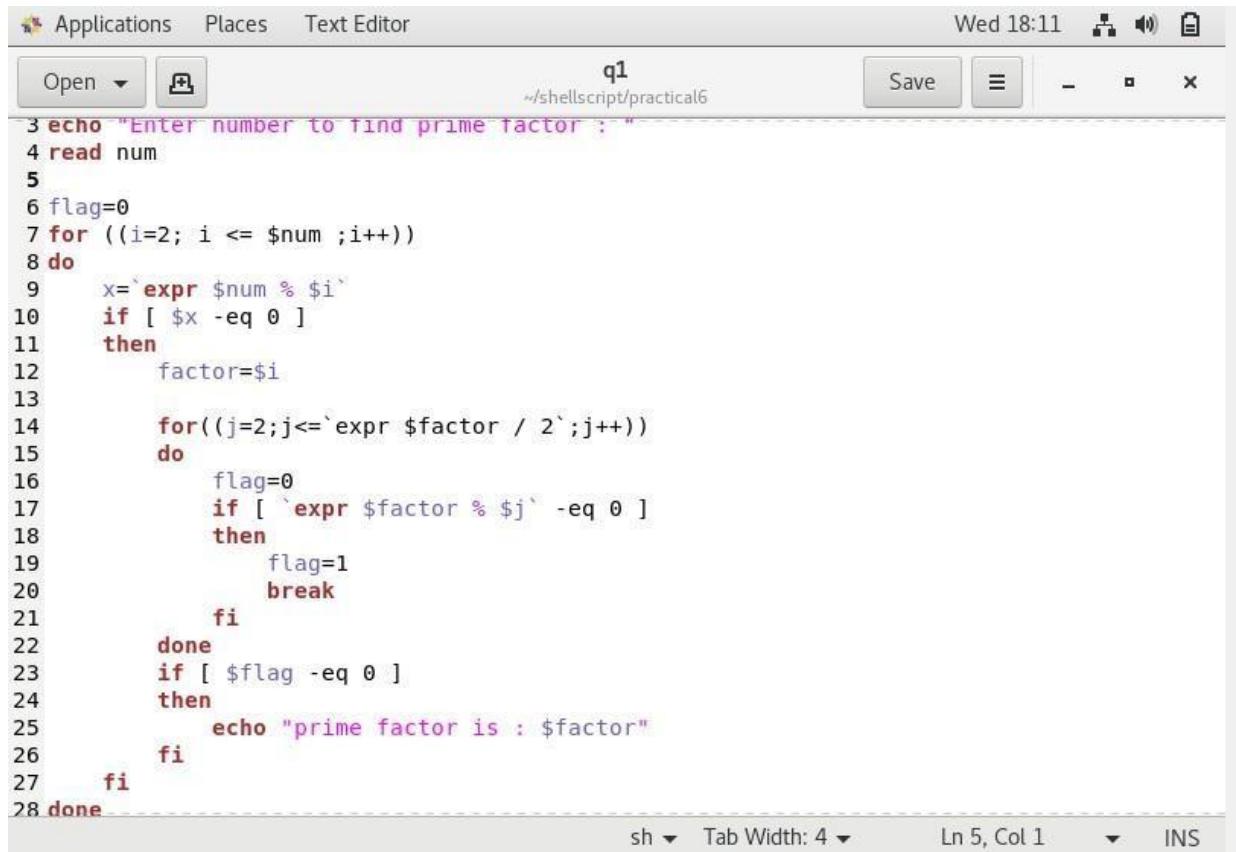
Output:

```
Enter number of elements in array :  
7  
  
Enter elements into array  
6  
2  
7  
1  
5  
3  
4  
Array after sorting  
1  
2  
3  
4  
5  
6  
7
```

Practical 6

1. Write a shell script, which finds the prime factors of a given number.

Program:



```
3 echo "Enter number to find prime factor : "
4 read num
5
6 flag=0
7 for ((i=2; i <= $num ;i++))
8 do
9     x=`expr $num % $i`
10    if [ $x -eq 0 ]
11    then
12        factor=$i
13
14        for((j=2;j<=`expr $factor / 2`;j++))
15        do
16            flag=0
17            if [ `expr $factor % $j` -eq 0 ]
18            then
19                flag=1
20                break
21            fi
22        done
23        if [ $flag -eq 0 ]
24        then
25            echo "prime factor is : $factor"
26        fi
27    fi
28 done
```

Output:



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window has a title bar with the text "19it006@19it006:~/p6". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal displays the following command-line session:

```
[19it006@mylinuxvm practical6]$ gedit q1
[19it006@mylinuxvm practical6]$ sh q1
Enter number to find prime factor :
12
prime factor is : 2
prime factor is : 3
[19it006@mylinuxvm practical6]$ █
```

2. Write a shell script that accepts a positive integer value from the user, say 34, and prints out all the divisors of 34 as a list:Enter a positive integer:34The divisors of 34 are: 1, 2, 17, and 34.

Program:

The screenshot shows a desktop environment with a terminal window open. The terminal window has a title bar labeled 'q1' and a path '("~/shellscrip/practical6)". The script content is as follows:

```
#!/bin/bash

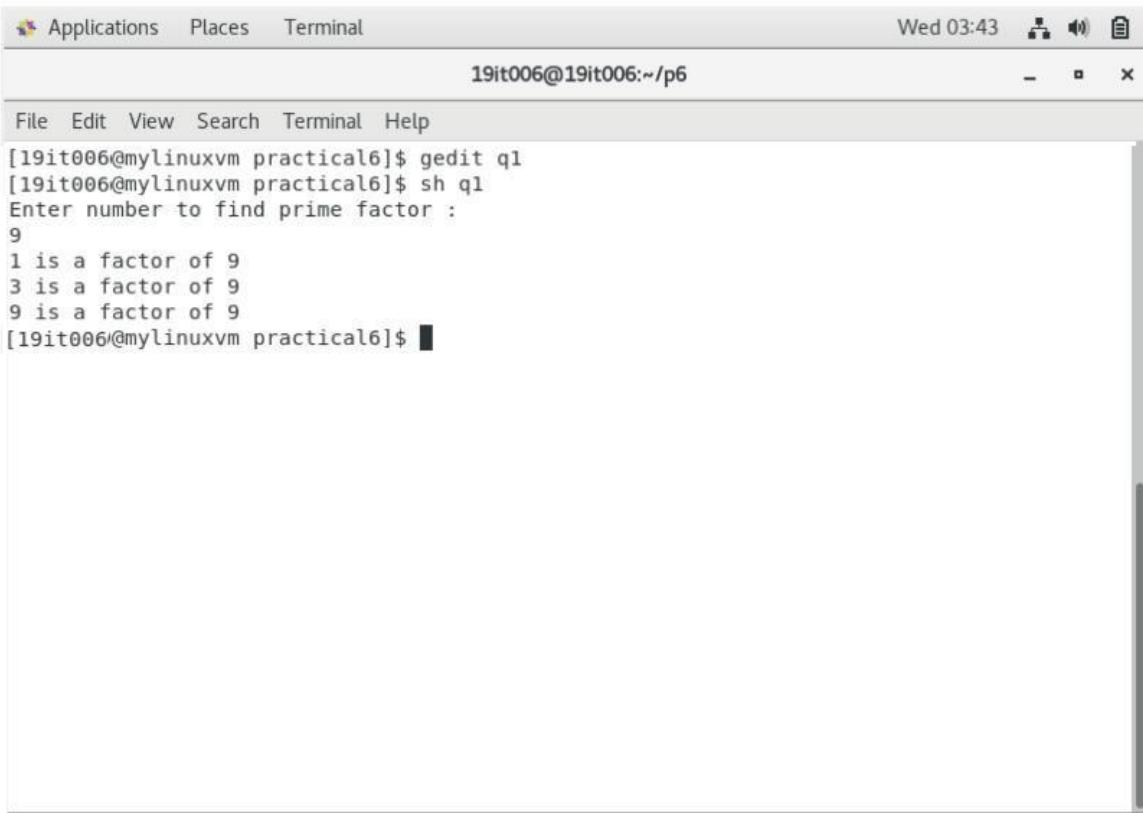
echo "Enter number to find prime factor : "
read num

j=1
for ((i=1; i <= $num ;i++))
do
    x=`expr $num % $i`

    if [ $x -eq 0 ]
    then
        echo "$i is a factor of $num"
    fi
done
```

The terminal window also displays status information at the bottom: 'sh ▾ Tab Width: 8 ▾ Ln 7, Col 16 ▾ INS'.

Output:



The screenshot shows a terminal window titled '19it006@19it006:~/p6'. The window includes a menu bar with File, Edit, View, Search, Terminal, and Help. The terminal content displays a shell script named 'q1' that prompts the user for a number and prints its prime factors. The output for the number 9 is shown.

```
[19it006@mylinuxvm practical6]$ gedit q1
[19it006@mylinuxvm practical6]$ sh q1
Enter number to find prime factor :
9
1 is a factor of 9
3 is a factor of 9
9 is a factor of 9
[19it006@mylinuxvm practical6]$ █
```

- 3. Check whether a given file is readable or not. If it is readable, then display the file contents.**

Program:

A screenshot of a Gnome desktop environment. At the top, there is a menu bar with "Applications", "Places", and "Text Editor". The system tray shows the date and time as "Wed 18:52". Below the menu bar is a terminal window titled "q3" with the path "/shellscrip/practical6". The terminal contains the following shell script:

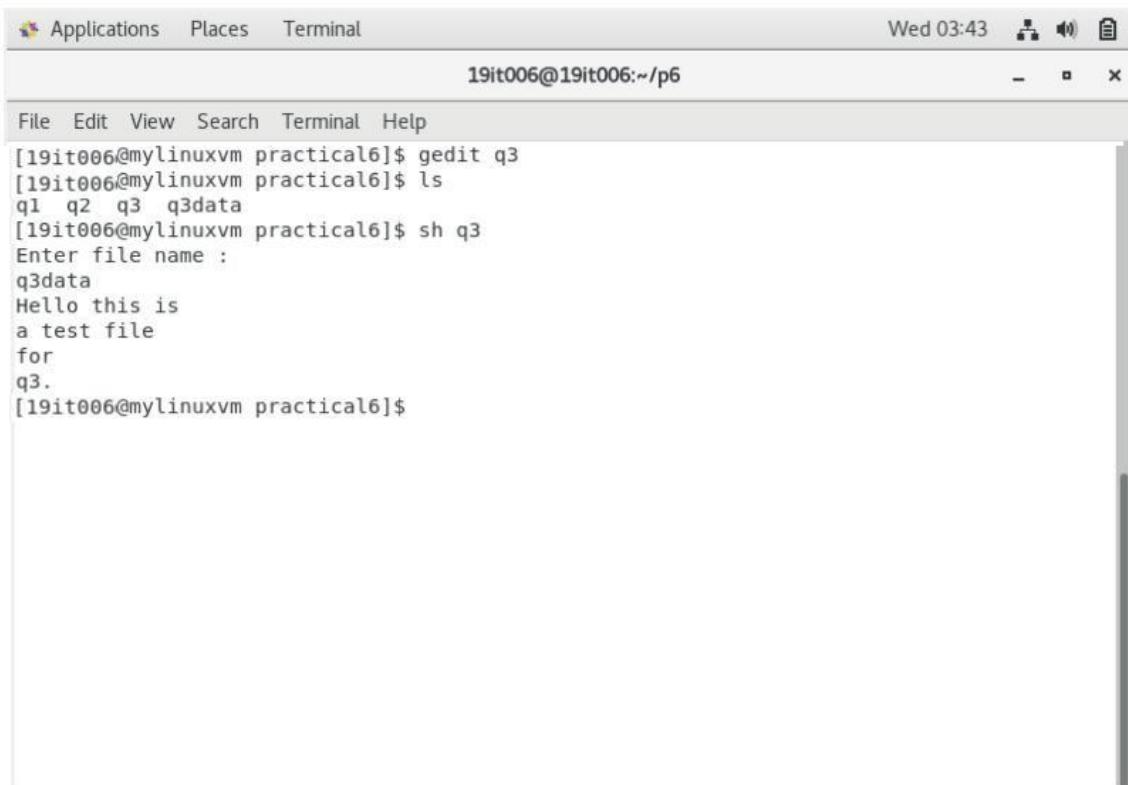
```
#!/bin/bash

echo "Enter file name : "
read fname

if [ -r $fname ]
then
    cat $fname
else
    echo "File not exists or not readable"
fi
```

The terminal window has standard Gnome window controls (minimize, maximize, close) at the top right. At the bottom of the terminal window, there are status indicators: "sh", "Tab Width: 8", "Ln 13, Col 1", and "INS".

Output:

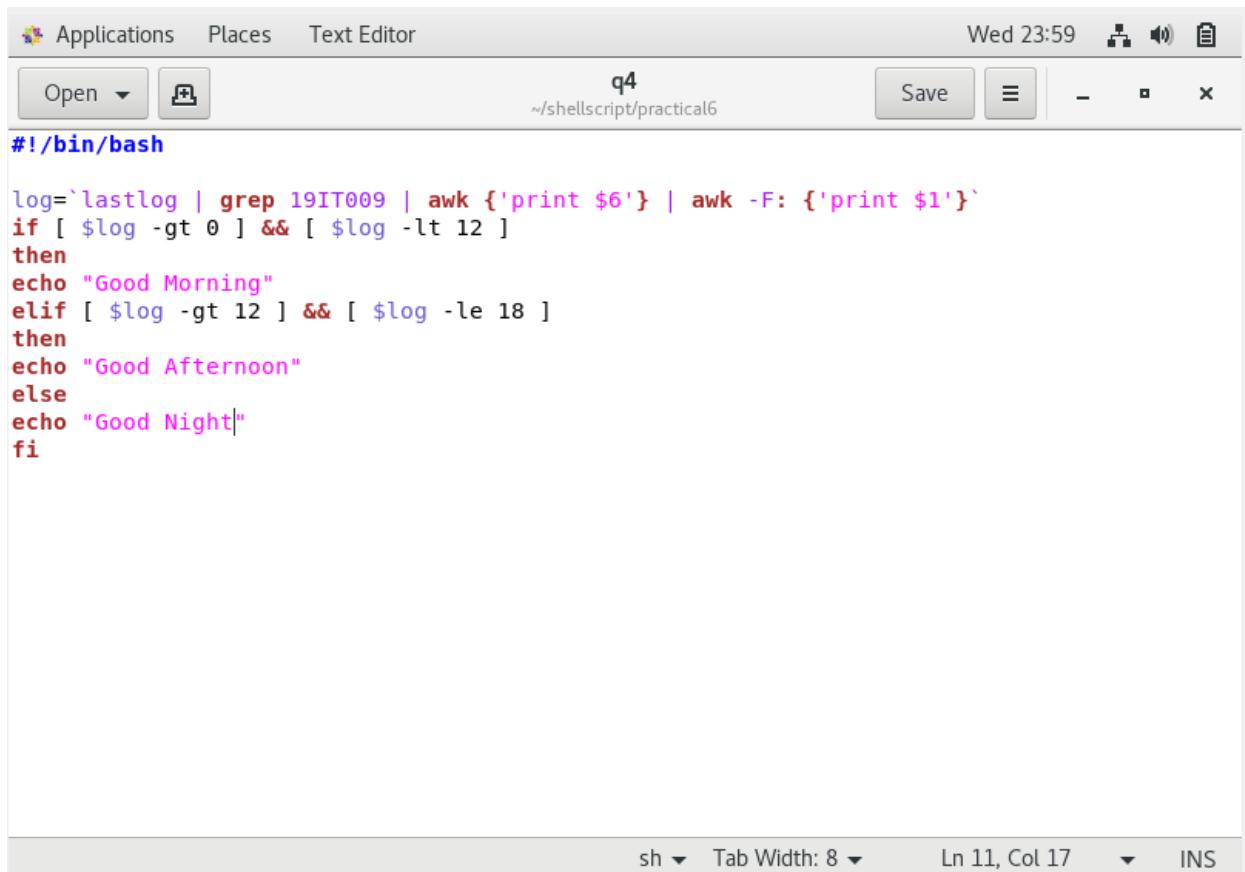


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window has a title bar with the text "19it006@19it006:~/p6". The window contains a command-line session:

```
File Edit View Search Terminal Help
[19it006@mylinuxvm practical6]$ gedit q3
[19it006@mylinuxvm practical6]$ ls
q1 q2 q3 q3data
[19it006@mylinuxvm practical6]$ sh q3
Enter file name :
q3data
Hello this is
a test file
for
q3.
[19it006@mylinuxvm practical6]$
```

4. Display a message “Good Morning” or “Good Afternoon” according to the user login time.

Program:



```
#!/bin/bash

log=`lastlog | grep 19IT009 | awk {'print $6'} | awk -F: {'print $1'}`

if [ $log -gt 0 ] && [ $log -lt 12 ]
then
echo "Good Morning"
elif [ $log -gt 12 ] && [ $log -le 18 ]
then
echo "Good Afternoon"
else
echo "Good Night"
fi
```

Output:

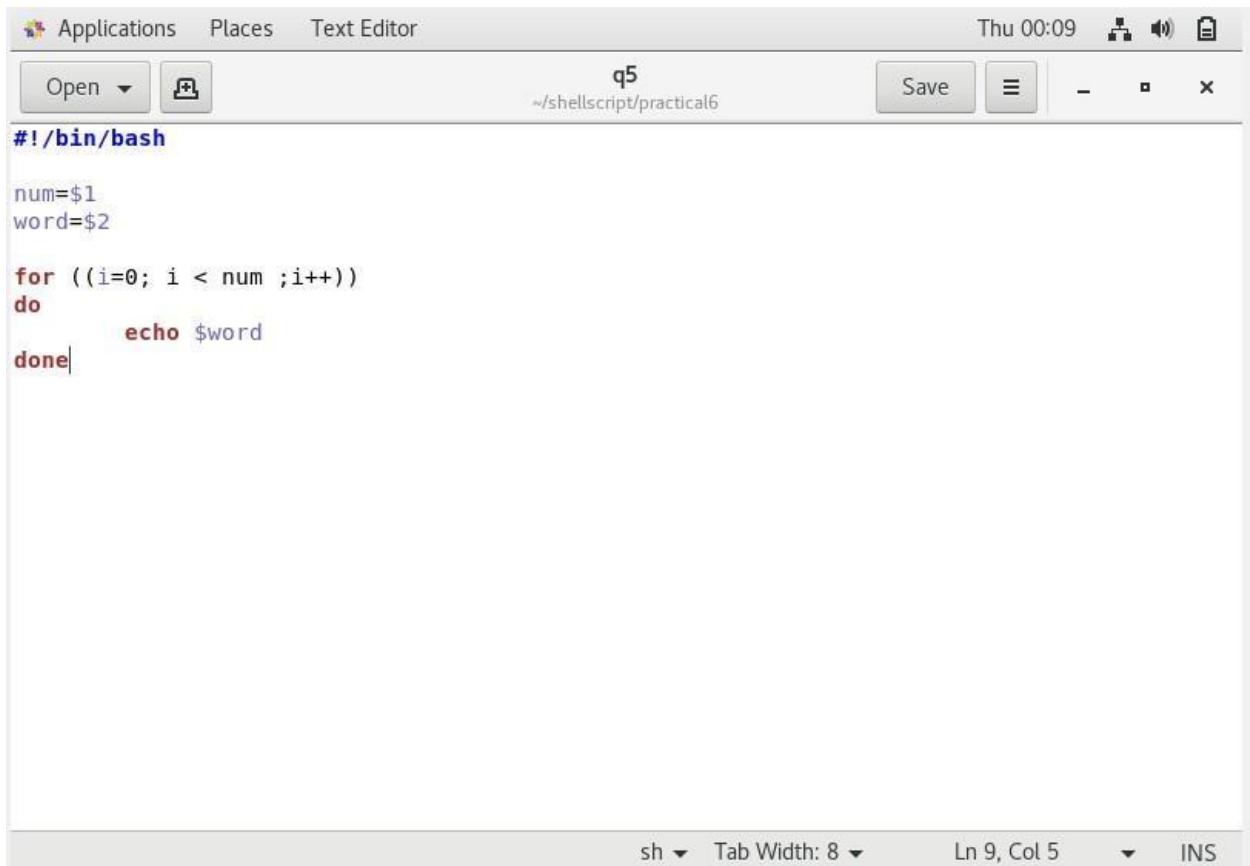


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window has a title bar with the text "19it006@19it006:~/p6". The window contains a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal shows the following command-line session:

```
[19it006@mylinuxvm practical6]$ gedit q4
[19it006@mylinuxvm practical6]$ sh q4
Good Night
[19it006@mylinuxvm practical6]$
```

- 5. A shell script, which takes as command line input a number n, and a word. It then prints the word n times, once on each line.**

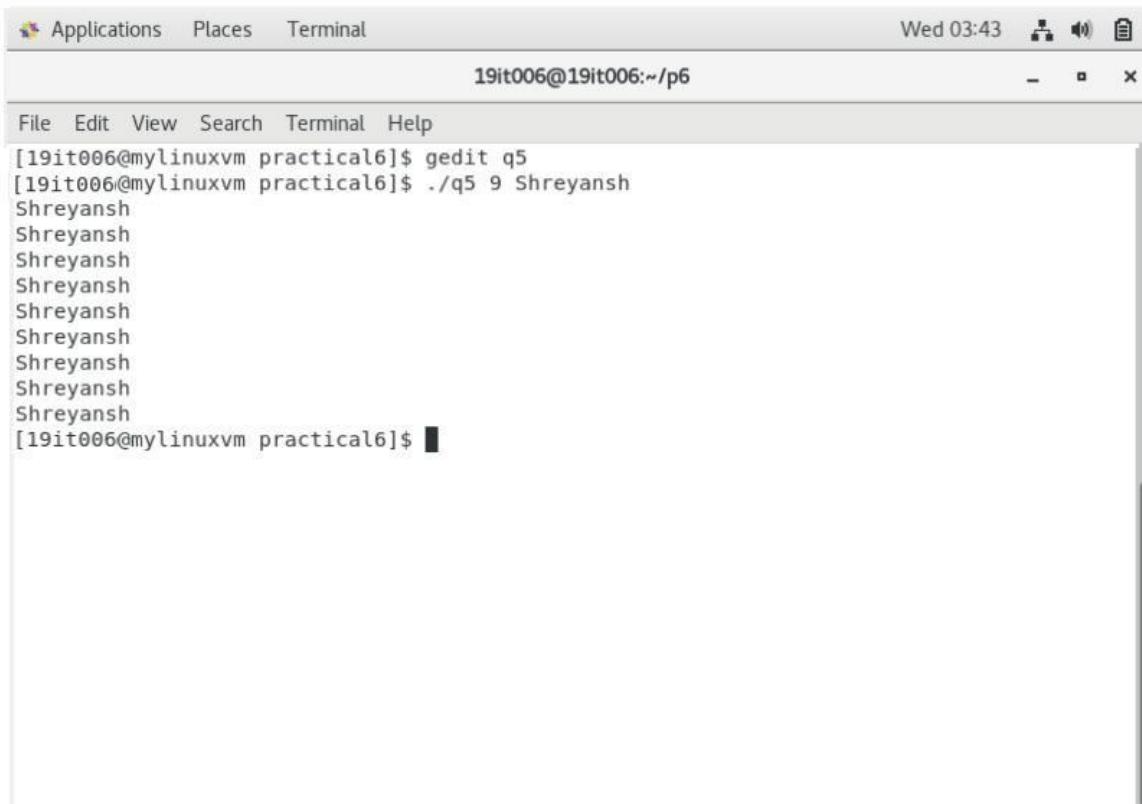
Program:



```
#!/bin/bash
num=$1
word=$2
for ((i=0; i < num ;i++))
do
    echo $word
done
```

sh ▾ Tab Width: 8 ▾ Ln 9, Col 5 ▾ INS

Output:



The screenshot shows a terminal window with the following details:

- Top bar: Applications, Places, Terminal, Date (Wed 03:43), and icons for volume, brightness, and window control.
- Title bar: 19it006@19it006:~/p6
- Menu bar: File, Edit, View, Search, Terminal, Help
- Terminal content:

```
[19it006@mylinuxvm practical6]$ gedit q5
[19it006@mylinuxvm practical6]$ ./q5 9 Shreyansh
[19it006@mylinuxvm practical6]$ █
```

- 6. A shell script, which reports the names and sizes of all the files in a directory whose size exceeds 1000 bytes, in descending order of their sizes and the total number of such files.**

Program:

The screenshot shows a desktop environment with a terminal window open. The terminal window has a title bar with 'Applications', 'Places', 'Text Editor', 'Tue 12:54', and standard window controls. The file path 'q6' is shown in the title bar. The terminal content is a bash script:

```
#!/bin/bash

read -p "Enter Path : " -r filep
echo "file path - size"
for i in $(find "$filep" -depth);
do
size=$(stat -c%s "$i")
if [ $size -gt 100 ]
then
echo $i " - " $size
fi
done|
```

At the bottom of the terminal window, there are status indicators: 'sh', 'Tab Width: 8', 'In 12, Col 5', and 'INS'.

7. Write a script that will search for a specific word in all the files in the current directory and then prompt with the file name in which word is found.

Program:

A screenshot of a Linux desktop environment. At the top, there is a menu bar with "Applications", "Places", and "Text Editor". The title bar of the active window shows "q7" and the path "~/shellscrip/practical6". The window contains a terminal-like interface with a shell script source code. The script is as follows:

```
1 #!/bin/bash
2
3 echo "Enter word to search : "
4 read word
5 echo
6 for i in *
7 do
8     if [ -f $i ]
9     then
10        if [ `grep -ic $word $i` -gt 0 ]
11        then
12            echo $i
13        fi
14    fi
15 done
16
```

The bottom of the window shows status information: "sh" dropdown, "Tab Width: 4" dropdown, "Ln 16, Col 1" text, and "INS" indicator.

Output:



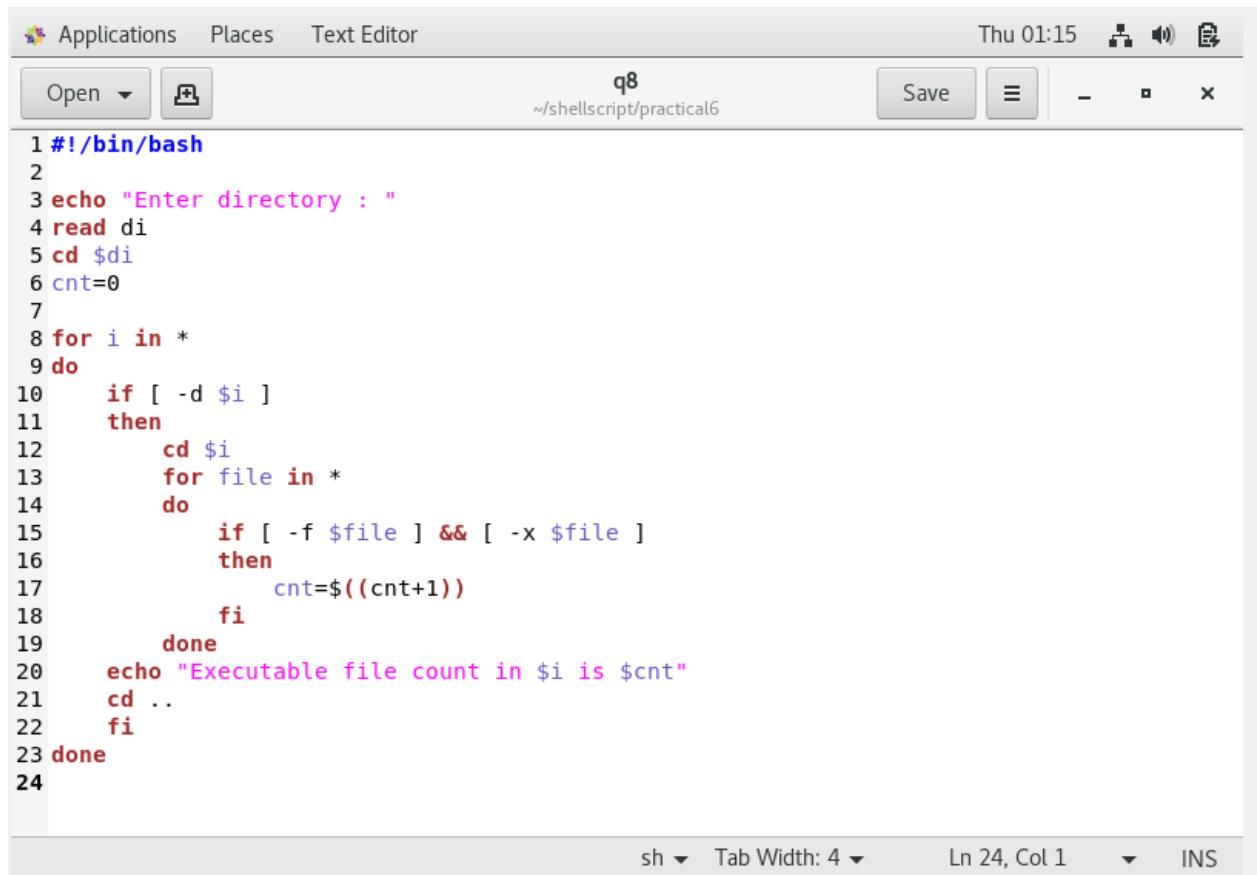
The screenshot shows a terminal window with the following content:

```
Applications Places Terminal Wed 03:43
19it006@19it006:~/p6
File Edit View Search Terminal Help
[19it006@mylinuxvm practical6]$ gedit q7
[19it006@mylinuxvm practical6]$ sh q7
Enter word to search :
hello

q3data
[19it006@mylinuxvm practical6]$ cat q3data
Hello this is
a test file
for
q3.
[19it006@mylinuxvm practical6]$ █
```

- 8. Write a script to print only the number of executable files in each sub-dir of the argument directory specified.**

Program:



```
1 #!/bin/bash
2
3 echo "Enter directory : "
4 read di
5 cd $di
6 cnt=0
7
8 for i in *
9 do
10    if [ -d $i ]
11    then
12      cd $i
13      for file in *
14      do
15        if [ -f $file ] && [ -x $file ]
16        then
17          cnt=$((cnt+1))
18        fi
19      done
20      echo "Executable file count in $i is $cnt"
21      cd ..
22    fi
23 done
24
```

sh ▾ Tab Width: 4 ▾ Ln 24, Col 1 ▾ INS

Output:



The screenshot shows a terminal window with the following session:

```
[19it006@mylinuxvm practical6]$ gedit q8
[19it006@mylinuxvm practical6]$ ls
: q1 q2 q3 q3data q4 q8 q8testing
[19it006@mylinuxvm practical6]$ ./q8
Enter directory :
q8testing
Executable file count in testing is 2
[19it006@mylinuxvm practical6]$ █
```

10 Write a shell script which will take file name as argument and check whether the file name is a dir or not and then proceed further only if it is a dir, else give usage message. The script should then print in the tabular format, name of each sub-dir (within the argument dir) and a count of the number of top-level files in that sub-dir.

Program:

The screenshot shows a desktop environment with a terminal window open. The terminal window has a title bar with 'Applications', 'Places', and 'Text Editor'. The status bar at the top right shows 'Tue 12:47' and icons for volume, battery, and network. The terminal window itself has tabs 'Open' and 'q10 ~/pr6'. The main area contains a bash script:

```
#!/bin/bash

echo "Enter Directory Name : "
read n
if [ -d "$n" ]
then find $n -maxdepth 1 -type d | while read -r dir
do printf "%s:\t" "$dir"; find "$dir" -type f | wc -l; done
else [ -f "$n" ]
echo "$n is file , You should have to enter directory name."
exit 1
fi
```