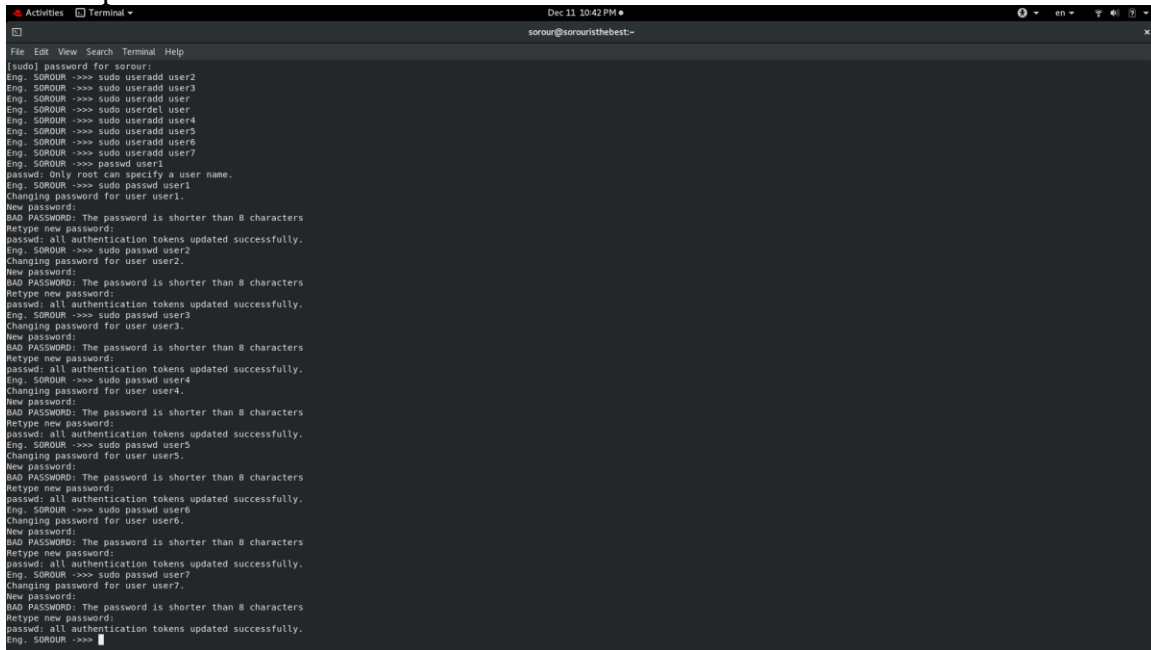


Lab 2

1. Using the useradd command, add accounts for the following users in your system: user1, user2, user3, user4, user5, user6 and user7. Remember to give each user a password.

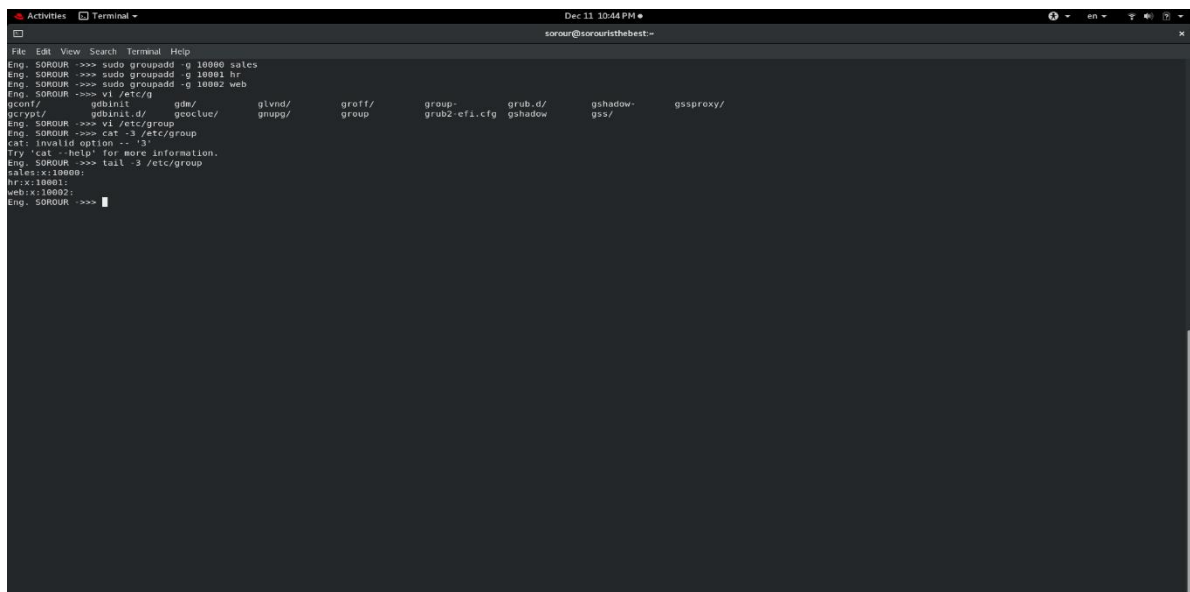


```
Eng. SOROUR ->>> sudo useradd user1
Eng. SOROUR ->>> sudo useradd user2
Eng. SOROUR ->>> sudo useradd user3
Eng. SOROUR ->>> sudo useradd user4
Eng. SOROUR ->>> sudo useradd user5
Eng. SOROUR ->>> sudo useradd user6
Eng. SOROUR ->>> sudo useradd user7
Eng. SOROUR ->>> passwd user1
passwd: only root can specify a user name.
Eng. SOROUR ->>> sudo passwd user1
Changing password for user user1.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user2
Changing password for user user2.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user3
Changing password for user user3.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user4
Changing password for user user4.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user5
Changing password for user user5.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user6
Changing password for user user6.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>> sudo passwd user7
Changing password for user user7.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
Eng. SOROUR ->>>
```

2. Using the groupadd command, add the following groups to your system.

Group	GID
sales	10000
hr	10001
web	10002

Why should you set GID in this manner instead of allowing the system to set the GID by default? → **to make sure GID is known to me and is not confusing by UID**



```
Eng. SOROUR ->>> sudo groupadd -g 10000 sales
Eng. SOROUR ->>> sudo groupadd -g 10001 hr
Eng. SOROUR ->>> sudo groupadd -g 10002 web
Eng. SOROUR ->>> vi /etc/group
gconf/      gdm/      glvnd/      groff/      group-      grub.d/      gshadow-      gssproxy/
gcrpys/     gdbinit.d/  gnupg/      group2     grub2.cf1.cfg  gshadow     gss/
Eng. SOROUR ->>> vi /etc/group
Eng. SOROUR ->>> cat -3 /etc/group
cat: invalid option -- '3'
Try 'cat --help' for more information.
Eng. SOROUR ->>> tail -3 /etc/group
sales:x:10000:
hr:x:10001:
web:x:10002:
Eng. SOROUR ->>>
```

- Using the usermod command to add user1 and user2 to the sales auxiliary group, user3 and user4 to the hr auxiliary group. User5 and user6 to web auxiliary group. And add user7 to all auxiliary groups

```
Eng. SOROUR ->>> tail -3 /etc/group
sales:x:10000:
hr:x:10001:
web:x:10002:
Eng. SOROUR ->>> sudo usermod -aG sales user1
Eng. SOROUR ->>> sudo usermod -aG sales user2
Eng. SOROUR ->>> sudo usermod -aG hr user3
Eng. SOROUR ->>> sudo usermod -aG hr user4
Eng. SOROUR ->>> sudo usermod -aG web user5
Eng. SOROUR ->>> sudo usermod -aG web user6
Eng. SOROUR ->>> sudo usermod -aG web user7
Eng. SOROUR ->>> sudo usermod -aG hr user7
Eng. SOROUR ->>> sudo usermod -aG sales user7
Eng. SOROUR ->>>
Eng. SOROUR ->>>
```

- Login as each user and use id command to verify that they are in the appropriate groups. How else might you verify this information? → tail /etc/group

```
Eng. SOROUR ->>> tail /etc/group
user1:x:1001:
user2:x:1002:
user3:x:1003:
user4:x:1004:
user5:x:1005:
user6:x:1006:
user7:x:1007:
sales:x:10000:user1,user2,user7
hr:x:10001:user3,user4,user7
web:x:10002:user5,user6,user7
Eng. SOROUR ->>>
```

5. Create a directory called /depts with a sales, hr, and web directory within the /depts directory.

```
Eng. SOROUR ->>> whoami
sorour
Eng. SOROUR ->>> pwd
/home/sorour
Eng. SOROUR ->>> mkdir -p depts/sales
Eng. SOROUR ->>> mkdir depts/hr
Eng. SOROUR ->>> mkdir depts/web
Eng. SOROUR ->>> ls depts/
hr  sales  web
Eng. SOROUR ->>>
```

6. Using the chgrp command, set the group ownership of each directory to the group with the matching name

```
-rwxrwxr-x. 1 sorour sorour      1 Nov 24 14:45 mycv
dr-x--x--x. 2 sorour sorour      6 Nov 23 13:37 myteam
d--x--x--x. 2 sorour sorour      6 Nov 23 14:52 newdir
---x--x--x. 1 sorour sorour      0 Nov 23 14:52 newfile
drwxrwxr-x. 2 sorour sorour      6 Nov 22 12:48 nftsmount
-rwxr-x--x. 1 sorour sorour    2637 Nov 22 14:21 oldpasswd
drwxr-xr-x. 2 sorour sorour    8192 Dec 11 22:55 Pictures
drwxr-xr-x. 2 sorour sorour      6 Nov 21 15:21 Public
-rwxrwxr-x. 1 sorour sorour     22 Nov 22 14:46 README.md
drwx----- 8 sorour sorour    122 Nov 25 07:54 snap
drwxr-xr-x. 2 sorour sorour      6 Nov 21 15:21 Templates
drwxr-xr-x. 2 sorour sorour      6 Nov 21 15:21 Videos
Eng. SOROUR ->>> ls depts/
hr  sales  web
Eng. SOROUR ->>> man chgrp
Eng. SOROUR ->>> chgrp hr depts/hr/
chgrp: changing group of 'depts/hr/': Operation not permitted
Eng. SOROUR ->>> sudo chgrp hr depts/hr/
[sudo] password for sorour:
Eng. SOROUR ->>> sudo chgrp sales depts/sales/
Eng. SOROUR ->>> sudo chgrp web depts/web/
Eng. SOROUR ->>>
```

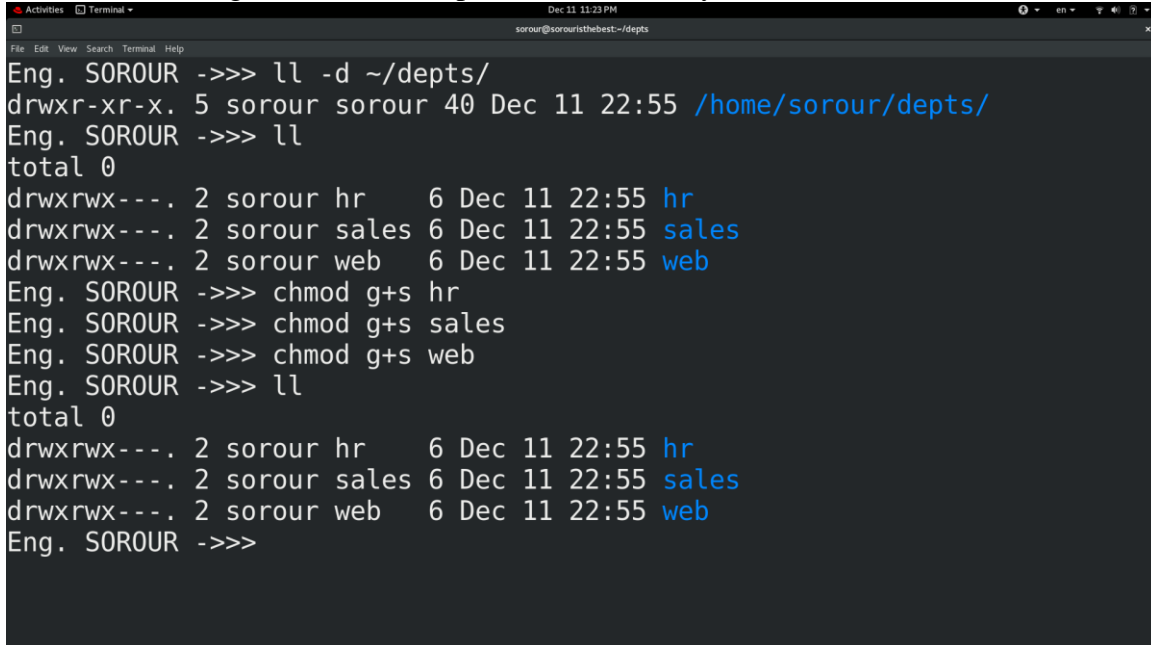
7. Set the permissions on the /depts directory to 755, and each subdirectory to 770

Eng. SOROUR ->>> chmod 755 depts

Eng. SOROUR ->>> chmod 770 depts/hr

Eng. SOROUR ->>> chmod 770 depts/sales
Eng. SOROUR ->>> chmod 770 depts/web

8. Set the set-gid bit on each departmental directory



```
Eng. SOROUR ->>> ll -d ~/depts/  
drwxr-xr-x. 5 sorour sorour 40 Dec 11 22:55 /home/sorour/depts/  
Eng. SOROUR ->>> ll  
total 0  
drwxrwx---. 2 sorour hr      6 Dec 11 22:55 hr  
drwxrwx---. 2 sorour sales  6 Dec 11 22:55 sales  
drwxrwx---. 2 sorour web    6 Dec 11 22:55 web  
Eng. SOROUR ->>> chmod g+s hr  
Eng. SOROUR ->>> chmod g+s sales  
Eng. SOROUR ->>> chmod g+s web  
Eng. SOROUR ->>> ll  
total 0  
drwxrwx---. 2 sorour hr      6 Dec 11 22:55 hr  
drwxrwx---. 2 sorour sales  6 Dec 11 22:55 sales  
drwxrwx---. 2 sorour web    6 Dec 11 22:55 web  
Eng. SOROUR ->>>
```

9. Use the su command to switch to the user2 account and attempt the following commands:
- touch /depts/sales/user2.txt
 - touch /depts/hr/ user2.txt
 - touch /depts/web/ user2.txt
- Eng. SOROUR ->>> touch /home/sorour/depts/sales/user2.txt
Eng. SOROUR ->>> touch /home/sorour/depts/hr/user2.txt
touch: cannot touch '/home/sorour/depts/hr/user2.txt': Permission denied
Eng. SOROUR ->>> touch /home/sorour/depts/web/user2.txt
touch: cannot touch '/home/sorour/depts/web/user2.txt': Permission denied
- Which of these commands succeeded and which failed? What is the group ownership of the files that were created? → only touch /home/sorour/depts/sales/user2.txt because user2 have the same group as sales dir.
→ Group ownership of the files that were created is sales because we set SGID which makes child inhernebt parents group
10. Configure sudoers file to allow user3 and user4 to use /bin/mount and /bin/umount commands, while allowing user5 only to use fdisk command.

```
Dec 11 11:38 PM
sorour@sorouristhebest-
File Edit View Search Terminal Help
## systems).
## Syntax:
##
##      user      MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)        ALL
user3   ALL=(ALL)        NOPASSWD: /bin/mount, /bin/umount
user4   ALL=(ALL)        NOPASSWD: /bin/mount, /bin/umount
user5   ALL=(ALL)        NOPASSWD: /bin/fdisk

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, D
RIVERS

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)        ALL

-- INSERT --
```

11. Login by user3 and try to unmount /boot. → done but target is busy

```
Dec 11 11:45 PM
user3@sorouristhebest-
File Edit View Search Terminal Help
Eng. SOROUR ->>> sudo umount /boot
umount: /boot: target is busy.
Eng. SOROUR ->>>
```

12. Login by user4 and remount /boot. Also try to view the partition table using fdisk.

```
Dec 11 11:47 PM
user4@sorouristhebest-
File Edit View Search Terminal Help
Eng. SOROUR ->>> whoami
user4
Eng. SOROUR ->>> sudo mount /boot
mount: /boot: /dev/nvme0n1p8 already mounted on /boot.
Eng. SOROUR ->>> fdisk -l
fdisk: cannot open /dev/nvme0n1: Permission denied
fdisk: cannot open /dev/mapper/rhel-root: Permission denied
fdisk: cannot open /dev/mapper/rhel-swap: Permission denied
fdisk: cannot open /dev/mapper/rhel-home: Permission denied
fdisk: cannot open /dev/loop0: Permission denied
fdisk: cannot open /dev/loop1: Permission denied
fdisk: cannot open /dev/loop2: Permission denied
fdisk: cannot open /dev/loop3: Permission denied
fdisk: cannot open /dev/loop4: Permission denied
fdisk: cannot open /dev/loop5: Permission denied
fdisk: cannot open /dev/loop6: Permission denied
fdisk: cannot open /dev/loop7: Permission denied
fdisk: cannot open /dev/loop8: Permission denied
fdisk: cannot open /dev/loop9: Permission denied
fdisk: cannot open /dev/loop10: Permission denied
fdisk: cannot open /dev/loop11: Permission denied
fdisk: cannot open /dev/loop12: Permission denied
fdisk: cannot open /dev/loop13: Permission denied
fdisk: cannot open /dev/loop14: Permission denied
fdisk: cannot open /dev/loop15: Permission denied
fdisk: cannot open /dev/loop16: Permission denied
fdisk: cannot open /dev/loop17: Permission denied
fdisk: cannot open /dev/loop18: Permission denied
fdisk: cannot open /dev/loop19: Permission denied
Eng. SOROUR ->>> sudo fdisk -l
We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for user4:
Sorry, user user4 is not allowed to execute '/sbin/fdisk -l' as root on sorouristhebest.
Eng. SOROUR ->>>
```

13. Create a directory with permissions `rw-rwx---`, grant a second group (sales) `r-x` permissions

```
Activities Terminal
Sun Dec 11 23:54:42 EET 2022
Eng. SOROUR ->>> cd
Eng. SOROUR ->>> mkdir q13dir
Eng. SOROUR ->>> chmod 770 q13dir/
Eng. SOROUR ->>> ll
total 14696
-rwxrwxr-x. 1 sorour sorour 2935 Nov 24 16:21 ***
drwxrwxr-x. 2 sorour sorour 6 Nov 28 11:02 5
-rwxrwxr-x. 1 sorour sorour 0 Nov 28 11:02 6
drwxrwxr-x. 3 sorour sorour 4096 Dec 10 20:13 BashShellScripts
drwxr-xr-x. 5 sorour sorour 40 Dec 11 22:55 depts
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Desktop
drwxrwxr-x. 2 sorour sorour 18 Nov 22 14:12 docs
drwxr-xr-x. 4 sorour sorour 4096 Dec 11 22:23 Documents
drwxr-xr-x. 2 sorour sorour 4096 Dec 11 21:02 Downloads
-rwxrwxr-x. 1 sorour sorour 144566 Nov 28 12:11 ERROR
-rwxrwxr-x. 1 sorour sorour 51 Nov 28 12:07 file1
-rwxrwxr-x. 1 sorour sorour 14823748 Nov 28 12:11 file6
-rwxrwxr-x. 1 sorour sorour 189 Dec 10 18:20 iteams
-rw-rw-r--. 1 sorour sorour 17385 Dec 11 20:52 'Lab 3.odt'
-rwxrwxr-x. 1 sorour sorour 89 Nov 28 10:56 logins
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Music
-rwxrwxr-x. 1 sorour sorour 1 Nov 24 14:45 mycv
dr-x--x--x. 2 sorour sorour 6 Nov 23 13:37 myteam
d--x--x--x. 2 sorour sorour 6 Nov 23 14:52 newdir
---x--x--x. 1 sorour sorour 0 Nov 23 14:52 newfile
drwxrwxr-x. 2 sorour sorour 6 Nov 22 12:48 nftsmount
-rwxr-xr-x. 1 sorour sorour 2637 Nov 22 14:21 oldpasswd
drwxr-xr-x. 2 sorour sorour 8192 Dec 11 23:47 Pictures
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Public
drwxrwx---. 2 sorour sorour 6 Dec 11 23:54 q13dir
-rwxrwxr-x. 1 sorour sorour 22 Nov 22 14:46 README.md
drwx-----. 8 sorour sorour 122 Nov 25 07:54 snap
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Templates
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Videos
Eng. SOROUR ->>> setfacl -m g:sales:rx q13dir/
Eng. SOROUR ->>> ll -d q13dir/
drwxrwx---. 2 sorour sorour 6 Dec 11 23:54 q13dir/
Eng. SOROUR ->>>
```

14. create a file on that directory and grant read and write to a second group (sales)

```
Activities Terminal
Dec 12 12:00 AM
sorour@sorouristhebest:~
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Templates
drwxr-xr-x. 2 sorour sorour 6 Nov 21 15:21 Videos
Eng. SOROUR ->>> setfacl -m g:sales:rx q13dir/
Eng. SOROUR ->>> ll -d q13dir/
drwxrwx---+ 2 sorour sorour 6 Dec 11 23:54 q13dir/
Eng. SOROUR ->>> touch myfile q13dir/
Eng. SOROUR ->>> setfacl -m g:sales:rw q13dir/myfile
setfacl: q13dir/myfile: No such file or directory
Eng. SOROUR ->>> touch q13dir/myfile
Eng. SOROUR ->>> setfacl -m g:sales:rw q13dir/myfile
Eng. SOROUR ->>> ll q13dir/myfile
-rw-rw-r--+ 1 sorour sorour 0 Dec 11 23:59 q13dir/myfile
Eng. SOROUR ->>> getfacl
Usage: getfacl [-aceEsRLPtpndvh] file ...
Try 'getfacl --help' for more information.
Eng. SOROUR ->>> getfacl q13dir/myfile
# file: q13dir/myfile
# owner: sorour
# group: sorour
user::rw-
group::rw-
group:sales:rw-
mask::rw-
other::r--
Eng. SOROUR ->>>
```

15. set the the owning group as the owning group of any newly created file in that directory.

Eng. SOROUR ->>> chmod g+s q13dir/

```
Activities Terminal Dec 12 12:02 AM
sorour@sorouristhebest:~
Try `getfacl --help' for more information.
Eng. SOROUR ->>> getfacl q13dir/myfile
# file: q13dir/myfile
# owner: sorour
# group: sorour
user::rw-
group::rw-
group:sales:rw-
mask::rw-
other::r--

Eng. SOROUR ->>> chmod g+s q13dir/
Eng. SOROUR ->>> ll -d q13dir/
drwxrws---+ 2 sorour sorour 20 Dec 11 23:59 q13dir/
Eng. SOROUR ->>>
```

16. Grant your colleagues a collective directory called /opt/research, where they can store generated research results. Only members of group profs and grads should be able to create new files in the directory, and new file should have the following properties:

- `setfacl -m g:profs:wx ~/opt/research/`
- `setfacl -m g:grads:wx ~/opt/research/`
- the directory should be owned by root
`sudo chown root:grads ~/opt/research/`
- new files should be group owned by group grads
`sudo chmod g+s ~/opt/research/`
- group profs should automatically have read/write access to new files
done by default
- group interns should automatically have read only access to new files
`sudo setfacl -m d:g:interns:r ~/opt/research/`
- other users should not be able to access the directory and its contents at all.
`sudo setfacl -m o:--- ~/opt/research/`

```
getfacl: Removing leading '/' from absolute path names
# file: home/sorour/opt/research
# owner: root
# group: grads
# flags: -s-
user::rwx
group::rwx
group:profs:-wx
group:grads:-wx
mask::rwx
other:---
default:user::rwx
default:group::rwx
default:group:interns:r--
default:mask::rwx
default:other::r-x
```

