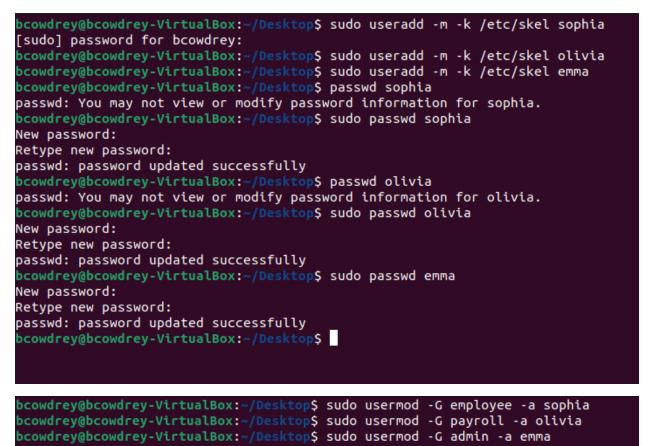# Assignment 7 File Permissions

TASK A

Step 1: Create three groups- employee, payroll, and admin. (You may refer to the slides for week-4 – Group Management)

```
root@bcowdrey-VirtualBox:~# groupadd employee
root@bcowdrey-VirtualBox:~# groupadd payroll
root@bcowdrey-VirtualBox:~# groupadd admin
root@bcowdrey-VirtualBox:~# more /etc/group
```

Step 2: Create three user accounts with a specified home directory for Sophia, Olivia, and Emma. Set the primary group for Sophia, Olivia, and Emma to "employee", "payroll", and "admin", respectively. And change their login shell to /bin/bash. Don't forget to set their passwords.

```
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo useradd -m -k /etc/skel sophia
[sudo] password for bcowdrey:
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo useradd -m -k /etc/skel olivia
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo useradd -m -k /etc/skel emma
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ passwd sophia
passwd: You may not view or modify password information for sophia.
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo passwd sophia
New password:
Retype new password:
passwd: password updated successfully
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ passwd olivia
passwd: You may not view or modify password information for olivia.
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo passwd olivia
New password:
Retype new password:
passwd: password updated successfully
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo passwd emma
New password:
Retype new password:
passwd: password updated successfully
bcowdrey@bcowdrey-VirtualBox:~/Desktop$
```

```
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo usermod -G employee -a sophia
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo usermod -G payroll -a olivia
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo usermod -G admin -a emma
```

Step 3: Create a shared group called "your_midas" (replace it with your MIDAS name) and set this shared group as the above accounts' secondary group. After this step, remember to check each user's group profile.

```
50   sudo usermod -G employee -a sophia
51   sudo usermod -G payroll -a olivia
52   sudo usermod -G admin -a emma
53   sudo groupadd bcowd001
54   sudo usermod -G bcowd001 -a sophia
55   sudo usermod -G bcowd001 -a olivia
56   sudo usermod -G bcowd001 -a emma
```

```
employee:x:1007:sophia
payroll:x:1008:olivia
admin:x:1009:emma
sophia:x:1010:
olivia:x:1011:
emma:x:1012:
bcowd001:x:1013:sophia,olivia,emma
```

Step 4: Create a directory named /home/cyse_project, which is to be owned by the "your_midas" group which is a shared group). After this step, remember to check the permission of this shared directory.

```
bcowdrey@bcowdrey-VirtualBox:~/Desktop$  sudo mkdir -p /home/cyse_project

bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo chgrp bcowd001 /home/cyse_project/
```

Step 5: Change the permissions of the /home/cyse_project directory to "drwxrwx---" using the octal method so that only the project group members have access to this directory. After this step, remember to check the permission of this shared directory.

```
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ sudo chmod 770 /home/cyse_project/
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ ll
total 8
drwxr-xr-x  2 bcowdrey bcowdrey 4096 Aug 28 12:22 ./
drwxr-x--- 17 bcowdrey bcowdrey 4096 Oct 13 15:40 ../
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ ll /home
total 52
drwxr-xr-x 13 root     root     4096 Oct 31 14:18 ./
drwxr-xr-x 20 root     root     4096 Aug 28 12:13 ../
drwxr-x--- 17 bcowdrey bcowdrey 4096 Oct 13 15:40 bcowdrey/
drwxr-x---  2 bob      bob      4096 Oct  6 12:03 bob/
drwxrwx---  2 root     bcowd001 4096 Oct 31 14:18 cyse_project/
drwxr-x---  2 emma     emma     4096 Oct 31 13:56 emma/
drwxr-x---  2 gary     gary     4096 Oct  6 12:03 gary/
drwxr-x---  2 janedoe  janedoe  4096 Oct  6 12:02 janedoe/
drwxr-x---  2 johndoe  johndoe  4096 Oct  6 12:02 johndoe/
drwxr-x---  2 lily     lily     4096 Oct  6 12:04 lily/
drwxr-x---  2 olivia   olivia   4096 Oct 31 13:56 olivia/
drwxr-x---  2 poppy    poppy    4096 Oct  6 12:04 poppy/
drwxr-x---  2 sophia   sophia   4096 Oct 31 13:56 sophia/
bcowdrey@bcowdrey-VirtualBox:~/Desktop$
```
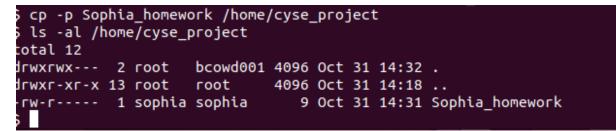
Step 6: Switch to Sophia's account. Change the default permissions using octal method with umask command, to "-rw-r-----" for Sophia when she creates a file or directory. Check the value of umask, and permission of a new file after this step.

```
bcowdrey@bcowdrey-VirtualBox:~/Desktop$ su sophia
Password:
$ umask 027
```

Step 7: Create a new file called "Sophia_homework" in the home directory of Sophia and put your name in the file as content. After this step, remember to check the content and the permission of the new file. (ls -l Sophia_homework)
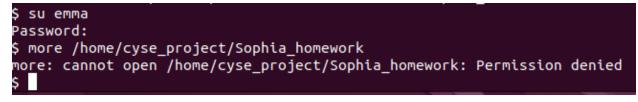
I used vi to put my name in file but should have used echo "cowdrey" > Sophia_homework

```
$ touch Sophia_homework
$ ls -al
total 20
drwxr-x---   2 sophia sophia 4096 Oct 31 14:28 .
drwxr-xr-x 13 root   root   4096 Oct 31 14:18 ..
-rw-r--r--   1 sophia sophia  220 Jan  6  2022 .bash_logout
-rw-r--r--   1 sophia sophia 3771 Jan  6  2022 .bashrc
-rw-r--r--   1 sophia sophia  807 Jan  6  2022 .profile
-rw-r-----   1 sophia sophia    0 Oct 31 14:28 Sophia_homework
$
```

```
$ vi Sophia_homework
$ ls -al
total 24
drwxr-x---   2 sophia sophia 4096 Oct 31 14:31 .
drwxr-xr-x 13 root   root   4096 Oct 31 14:18 ..
-rw-r--r--   1 sophia sophia  220 Jan  6  2022 .bash_logout
-rw-r--r--   1 sophia sophia 3771 Jan  6  2022 .bashrc
-rw-r--r--   1 sophia sophia  807 Jan  6  2022 .profile
-rw-r-----   1 sophia sophia    9 Oct 31 14:31 Sophia_homework
$
```

Step 8: Copy "Sophia_homework" to the /home/cyse_project directory. After this step, remember to check the permission of the file in the shared directory.

```
$ cp -p Sophia_homework /home/cyse_project
$ ls -al /home/cyse_project
total 12
drwxrwx---   2 root   bcowd001 4096 Oct 31 14:32 .
drwxr-xr-x 13 root   root     4096 Oct 31 14:18 ..
-rw-r-----   1 sophia sophia      9 Oct 31 14:31 Sophia_homework
$
```

Step 9: Switch to Emma's account. Try to read "Sophia_homework" in the /home/cyse_project Directory.

```
$ su emma
Password:
$ more /home/cyse_project/Sophia_homework
more: cannot open /home/cyse_project/Sophia_homework: Permission denied
$ █
```

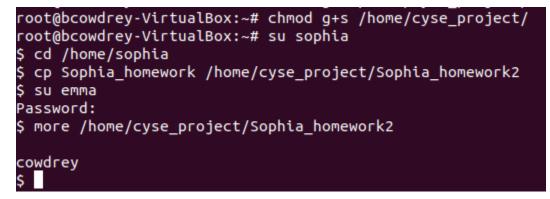Step 10: Exit out of Emma's account and Sophia's account.

I typed in exit twice to get out of the accounts.

Task B

Step 1-3: Switch to root account. To allow group members to access this file, you need to fix the sharing issue by setting the correct SGID group values to /home/cyse_project directory, to give the group users read permission.

Switch to Sophia's account. Copy "Sophia_homework" to the /home/cyse_project directory as "Sophia_homework2".

Switch to Emma's account. Try to read "Sophia_ homework2" in the /home/cyse_project directory.

```
root@bcowdrey-VirtualBox:~# chmod g+s /home/cyse_project/
root@bcowdrey-VirtualBox:~# su sophia
$ cd /home/sophia
$ cp Sophia_homework /home/cyse_project/Sophia_homework2
$ su emma
Password:
$ more /home/cyse_project/Sophia_homework2

cowdrey
$ █
```

Task C

Step 1-3: Switch to root account. To disallow group members to access the files in the shared folder, you need to fix the sharing issue by setting the correct SGID group values to /home/cyse_project directory to remove the group user read permission.

Switch to Sophia's account. Copy "Sophia_homework" to the /home/cyse_project directory as "Sophia_homework3".
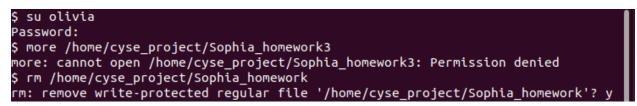
Switch to Olivia's account. Try to read "Sophia_home3" in the /home/cyse_project directory.

```
root@bcowdrey-VirtualBox:~# chmod g-s /home/cyse_project/
root@bcowdrey-VirtualBox:~# su sophia
$ cd /home/sophia
$ cp Sophia_homework /home/cyse_project/Sophia_homework3
```

```
$ su olivia
Password:
$ more /home/cyse_project/Sophia_homework3
more: cannot open /home/cyse_project/Sophia_homework3: Permission denied
$
```

Extra Credit:

Step 1: Switch to Olivia' account. Delete "Sophia_ homework" in the /home/cyse_project directory.

```
$ su olivia
Password:
$ more /home/cyse_project/Sophia_homework3
more: cannot open /home/cyse_project/Sophia_homework3: Permission denied
$ rm /home/cyse_project/Sophia_homework
rm: remove write-protected regular file '/home/cyse_project/Sophia_homework'? y
```

Step 2: Switch to root account. Set the sticky bit permission, to make files can only be removed by the owner of the file.

```
$ exit
root@bcowdrey-VirtualBox:~# chmod o+t /home/cyse_project/
```

Step 3: Switch to Olivia' account. Try to delete "Sophia_ homework3" in the /home/cyse_project directory. Can you delete it this time? Why?

It did not allow me to remove the file because Sticky bit being on will make it so only the owner can remove the file from the directory.

```
root@bcowdrey-VirtualBox:~# su olivia
$ rm /home/cyse_project/Sophia_homework3
rm: remove write-protected regular file '/home/cyse_project/Sophia_homework3'? y
rm: cannot remove '/home/cyse_project/Sophia_homework3': Operation not permitted
$
```