

Task A: Get accounts and groups ready (70 points)

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

```
giancarlo@goble001:~$ sudo groupadd employee
[sudo] password for giancarlo:
giancarlo@goble001:~$ sudo groupadd payroll
[Thunderbird Mail] giancarlo@goble001:~$ sudo groupadd admin
```

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.

```
giancarlo@goble001:~$ sudo useradd -m Sophia
giancarlo@goble001:~$ sudo useradd -m Olivia
giancarlo@goble001:~$ sudo useradd -m Emma
```

```
giancarlo@goble001:~$ sudo usermod -g employee Sophia
giancarlo@goble001:~$ id Sophia
uid=1008(Sophia) gid=1008(employee) groups=1008(employee)
giancarlo@goble001:~$ sudo usermod -g payroll Emma
giancarlo@goble001:~$ sudo usermod -g admin Olivia
```

```
giancarlo@goble001:~$ sudo usermod -s /bin/bash Sophia
giancarlo@goble001:~$ sudo usermod -s /bin/bash Emma
giancarlo@goble001:~$ sudo usermod -s /bin/bash Olivia
```

```
giancarlo@goble001:~$ sudo passwd Sophia
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
giancarlo@goble001:~$ sudo passwd Emma
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
giancarlo@goble001:~$ sudo passwd Olivia
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
```

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.

```
giancarlo@goble001:~$ sudo groupadd goble001
giancarlo@goble001:~$ sudo usermod -aG goble001 Sophia
giancarlo@goble001:~$ sudo usermod -aG goble001 Emma
giancarlo@goble001:~$ sudo usermod -aG goble001 Olivia
giancarlo@goble001:~$ id Sophia
uid=1008(Sophia) gid=1008(employee) groups=1008(employee),1014(goble001)
giancarlo@goble001:~$ id Emma
uid=1010(Emma) gid=1009(payroll) groups=1009(payroll),1014(goble001)
giancarlo@goble001:~$ id Olivia
uid=1009(Olivia) gid=1010(admin) groups=1010(admin),1014(goble001)
```

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.

```
giancarlo@goble001:~$ sudo mkdir /home/cyse_project
giancarlo@goble001:~$ ls -ld /home/cyse_project/
drwxr-xr-x 2 root root 4096 Dec  4 23:22 /home/cyse_project/
giancarlo@goble001:~$ sudo chgrp goble001 /home/cyse_project
giancarlo@goble001:~$ ls -ld /home/cyse_project/
drwxr-xr-x 2 root goble001 4096 Dec  4 23:22 /home/cyse_project/
```

Step 5. Change the permissions of the /home/cyse_project directory to "rwxrwx--" 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.

```
giancarlo@goble001:~$ sudo chmod 770 /home/cyse_project/
giancarlo@goble001:~$ ls -ld /home/cyse_project/
drwxrwx--- 2 root goble001 4096 Dec  4 23:22 /home/cyse_project/
```

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.

```
Sophia@goble001:/home/giancarlo$ cd
Sophia@goble001:~$ umask 027
Sophia@goble001:~$ umask
0027
```

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)

```
Sophia@goble001:~$ nano Sophia_homework
Sophia@goble001:~$ cat Sophia_homework
giancarlo
Sophia@goble001:~$ ls -l Sophia_homework
-rw-r----- 1 Sophia employee 10 Dec  4 23:45 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.

```
Sophia@goble001:~$ cp Sophia_homework /home/cyse_project/
Sophia@goble001:~$ ls /home/cyse_project/
Sophia_homework
Sophia@goble001:~$ ls -l /home/cyse_project/
total 4
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
```

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

```
Sophia@goble001:~$ su Emma
Password:
Emma@goble001:/home/Sophia$ cd /home/cyse_project/
Emma@goble001:/home/cyse_project$ ls -l
total 4
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
Emma@goble001:/home/cyse_project$ cat Sophia_homework
cat: Sophia_homework: Permission denied
```

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

Command used: exit

Task B: Set SGID permission (15 points)

Step 1. Switch to root or the regular user's account. To allow group members to access the files shared in the shared directory, you need to fix the sharing issue by setting the correct SGID group values to /home/cyse_project directory.

```
giancarlo@goble001:~$ sudo chmod g+s /home/cyse_project
[sudo] password for giancarlo:
```

Step 2. Switch to Sophia's account. Copy "Sophia_homework" to the /home/cyse_project directory as "Sophia_homework2".

```
giancarlo@goble001:~$ su Sophia
Sophia@goble001:/home/giancarlo$ cp Sophia_homework /home/cyse_project/Sophia_homework
cp: cannot stat 'Sophia_homework': Permission denied
Sophia@goble001:/home/giancarlo$ cd
Sophia@goble001:~$ cp Sophia_homework /home/cyse_project/Sophia_homework2
Sophia@goble001:~$ ls -l /home/cyse_project/
total 8
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
-rw-r----- 1 Sophia_goble001 10 Dec  4 23:59 Sophia_homework2
```

Step 3. Switch to Emma's account. Try to read "Sophia_ homework2" in the /home/cyse_project directory.

```
Sophia@goble001:~$ su Emma
Password:
Emma@goble001:/home/Sophia$ cd /home/cyse_project/
Emma@goble001:/home/cyse_project$ ls -l
total 8
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
-rw-r----- 1 Sophia goble001 10 Dec  4 23:59 Sophia_homework2
Emma@goble001:/home/cyse_project$ cat Sophia_homework2
giancarlo
```

Task C: Unset SGID permissions (15 points)

Step 1. Switch to root the regular user's 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.

```
Emma@goble001:/home/cyse_project$ exit
exit
Sophia@goble001:~$ exit
exit
giancarlo@goble001:~$ sudo chmod g-s /home/cyse_project/
```

Step 2. Switch to Sophia's account. Copy "Sophia_homework" to the /home/cyse_project directory as "Sophia_homework3".

```
giancarlo@goble001:~$ su Sophia
Password:
Sophia@goble001:/home/giancarlo$ cd
Sophia@goble001:~$ cp Sophia_homework /home/cyse_project/Sophia_homework3
Sophia@goble001:~$ ls -l /home/cyse_project/
total 12
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
-rw-r----- 1 Sophia goble001 10 Dec  4 23:59 Sophia_homework2
-rw-r----- 1 Sophia employee 10 Dec  5 00:04 Sophia_homework3
```

Step 3. Switch to Olivia's account. Try to read "Sophia_home3" in the /home/cyse_project directory.

```
Sophia@goble001:~$ su Olivia
Password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

olivia@goble001:/home/Sophia$ cd /home/cyse_project/
olivia@goble001:/home/cyse_project$ ls -l
total 12
-rw-r----- 1 Sophia employee 10 Dec  4 23:48 Sophia_homework
-rw-r----- 1 Sophia goble001 10 Dec  4 23:59 Sophia_homework2
-rw-r----- 1 Sophia employee 10 Dec  5 00:04 Sophia_homework3
olivia@goble001:/home/cyse_project$ cat Sophia_homeowrk3
cat: Sophia_homeowrk3: No such file or directory
olivia@goble001:/home/cyse_project$ cat Sophia_homework3
cat: Sophia_homework3: Permission denied
```