

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)

```
karan@karan-VirtualBox:~$ sudo groupadd employee
[sudo] password for karan:
karan@karan-VirtualBox:~$ sudo groupadd payroll
karan@karan-VirtualBox:~$ 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.

```
karan@karan-VirtualBox:~$ sudo groupadd admin
karan@karan-VirtualBox:~$ sudo useradd -g employee -s /bin/bash Sophia
karan@karan-VirtualBox:~$ sudo useradd -g payroll -s /bin/bash Olivia
karan@karan-VirtualBox:~$ sudo useradd -g admin -s /bin/bash Emma
karan@karan-VirtualBox:~$ sudo passwd Sophia
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a
nary word
Retype new password:
passwd: password updated successfully
karan@karan-VirtualBox:~$ sudo passwd Olivia
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a
nary word
Retype new password:
passwd: password updated successfully
karan@karan-VirtualBox:~$ sudo passwd Emma
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a
nary 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.

```
karan@karan-VirtualBox:~$ sudo groupadd kmuda002
karan@karan-VirtualBox:~$ sudo usermod -a -G kmuda002 Sophia
karan@karan-VirtualBox:~$ sudo usermod -a -G kmuda002 Olivia
karan@karan-VirtualBox:~$ sudo usermod -a -G kmuda002 Emma

karan@karan-VirtualBox:~$ groups Sophia
Sophia : employee kmuda002
karan@karan-VirtualBox:~$ groups Olivia
Olivia : payroll kmuda002
karan@karan-VirtualBox:~$ groups Emma
Emma : admin kmuda002
```

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.

```
karan@karan-VirtualBox:~$ sudo mkdir /home/cyse_project
karan@karan-VirtualBox:~$ sudo chgrp kmuda002 /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.

```
karan@karan-VirtualBox:~$ sudo chmod 770 /home/cyse_project
karan@karan-VirtualBox:~$ ls -ld /home/cyse_project
drwxrwx--- 2 root kmuda002 4096 Feb 21 20:33 /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@karan-VirtualBox:/$ umask 027
Sophia@karan-VirtualBox:/$ 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@karan-VirtualBox:/$ sudo touch Sophia_homework
Sophia@karan-VirtualBox:/$ ls -l Sophia_homework
-rw-r----- 1 Sophia root 6 Feb 21 22:37 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@karan-VirtualBox:/$ cp Sophia_homework /home/cyse_project
Sophia@karan-VirtualBox:/home/cyse_project$ ls -l
total 12
-rw-r----- 1 Sophia employee 6 Feb 21 22:51 Sophia_homework
```

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

```
Emma@karan-VirtualBox:/$ cat Sophia_homework
cat: Sophia_homework: Permission denied
```

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

```
Emma@karan-VirtualBox:/$ exit
exit
Sophia@karan-VirtualBox:/$ exit
exit
karan@karan-VirtualBox:~$
```

Task B: Set SGID permission (15 points)

Step 1. 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.

```
karan@karan-VirtualBox:~$ sudo chmod g+s /home/cyse_project
karan@karan-VirtualBox:~$ ls -ld /home/cyse_project/
drwxrws--- 2 root kmuda002 4096 Feb 21 22:51 /home/cyse_project/
```

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

```
Sophia@karan-VirtualBox:/home/karan$ sudo cp Sophia_homework /home/cyse_project
/Sophia_homework2
[sudo] password for Sophia:
```

Step 3. Switch to Emma's account. Try to read "Sophia_homework2" in the /home/cyse_project directory.

```
Emma@karan-VirtualBox:/home/cyse_project$ sudo cat Sophia_homework2
karan
```

Task C: Unset SGID permissions (15 points)

Step 1. 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.

```
karan@karan-VirtualBox:/$ sudo chmod g-s /home/cyse_project/
[sudo] password for karan:
karan@karan-VirtualBox:/$ ls -ld /home/cyse_project/
drwxrwx--- 2 root kmuda002 4096 Feb 22 20:44 /home/cyse_project/
```

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

```
Sophia@karan-VirtualBox:/$ sudo cp Sophia_homework Sophia_homework3
[sudo] password for Sophia:
```

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

```
Olivia@karan-VirtualBox:/home/cyse_project$ cat Sophia_homework3
cat: Sophia_homework3: Permission denied
```