# CYSE 270: Linux System for

# Cybersecurity Lab 6 – File Permission

**CYSE 270: Linux System for Cybersecurity**

You need to configure the system to allow three usersto perform the shared folder actions. Please submit the screenshot for all the steps in a word or pdf file

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

**Step 1.** Create three groups- **employee**, **payroll**, and **admin**. (You may refer to the slides under Module 2 –Group Management)

```
┌──(jahmire㉿kali)-[~]
└─$ sudo groupadd "employee"
[sudo] password for jahmire:
```

```
┌──(jahmire㉿kali)-[~]
└─$ sudo groupadd payroll| 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.**

```
┌──(jahmire㉿kali)-[~]
└─$ sudo useradd -m -d /home/Sophia Sophia | sudo useradd -m -d /home/Olivia Olivia | sudo useradd -m -d /home/Emma E
mma
```

```
┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -g employee Sophia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -g payroll Olivia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -g admin Emma
```

**1234 Sophia**

**12345 Olivia**

**123456 Emma**

```
┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -s /bin/bash Sophia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -s /bin/bash Olivia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -s /bin/bash 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.**

```
┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -aG Jwhit212 Sophia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -aG Jwhit212 Olivia

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -aG jwhit212 Emma
usermod: group 'jwhit212' does not exist

┌──(jahmire㉿kali)-[~]
└─$ sudo usermod -aG Jwhit212 Emma

┌──(jahmire㉿kali)-[~]
└─$ id Sophia
uid=1016(Sophia) gid=1015(employee) groups=1015(employee),1021(Jwhit212)

┌──(jahmire㉿kali)-[~]
└─$ id Olivia
uid=1015(Olivia) gid=1017(payroll) groups=1017(payroll),1021(Jwhit212)

┌──(jahmire㉿kali)-[~]
└─$ id Emma
uid=1017(Emma) gid=1016(admin) groups=1016(admin),1021(Jwhit212)
```

**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**.

```
┌──(jahmire㉿kali)-[~]
└─$ sudo mkdir /home/cyse_project
```

```
┌──(jahmire㉿kali)-[~]
└─$ sudo chgrp -R Jwhit212 /home/cyse_project
```

```
┌──(jahmire㉿kali)-[~]
└─$ ls -dl /home/cyse_project
drwxr-xr-x 2 root Jwhit212 4096 Oct 11 15:56 /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.**

```
┌──(jahmire㉿kali)-[~]
└─$ sudo chmod 770 /home/cyse_project
```

```
┌──(jahmire㉿kali)-[~]
└─$ sudo ls -dl /home/cyse_project
drwxrwx── 2 root Jwhit212 4096 Oct 11 15:56 /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㉿kali)-[~]
└─$ umask 137

┌──(Sophia㉿kali)-[~]
└─$ umask
0137
```

**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㉿kali)-[~]
└─$ touch Sophia_homework
```

```
└─$ touch Sophia_homework

┌──(Sophia㉿kali)-[~]
└─$ vi Sophia_homework
```

```
┌──(Sophia㉿kali)-[~]
└─$ cat Sophia_homework
Jahmire
```

```
┌──(Sophia㉿kali)-[~]
└─$ ls -l Sophia_homework
-rw-r----- 1 Sophia employee 8 Oct 11 16:13 Sophia_homework
```

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

```
┌──(Sophia㉿kali)-[~]
└─$ cp Sophia_homework /home/cyse_project
```

```
┌──(jahmire㉿kali)-[~]
└─$ sudo ls -l /home/cyse_project/Sophia_homework
-rw-r----- 1 Sophia employee 8 Oct 11 16:17 /home/cyse_project/Sophia_homework
```

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

```
└─$ cat /home/cyse_project/Sophia_homework
cat: /home/cyse_project/Sophia_homework: Permission denied
```

**Step 10.** Exit out of Emma’s account and Sophia’s account.

```
┌──(Emma㉿kali)-[~]
└─$ exit
logout
```

```
┌──(Sophia㉿kali)-[~]
└─$ exit
logout
```

## 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.

```
┌──(jahmire㉿kali)-[~]
└─$ 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_homework**2**".

```
┌──(Sophia㉿kali)-[~]
└─$ cp /home/cyse_project/Sophia_homework /home/cyse_project/Sophia_homework2
```

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

```
┌──(Emma㉿kali)-[~]
└─$ cat /home/cyse_project/Sophia_homework2
Jahmire
```

## 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.

```
┌──(jahmire㉿kali)-[~]
└─$ 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".

```
┌──(jahmire㉿kali)-[~]
└─$ su - Sophia
Password:
┌──(Sophia㉿kali)-[~]
└─$ cp /home/cyse_project/Sophia_homework /home/cyse_project/Sophia_homework3
```

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

```
┌──(Sophia㉿kali)-[~]
└─$ su - Olivia
Password:
```

```
┌──(Olivia㉿kali)-[~]
└─$ cd /home/cyse_project
```

```
┌──(Olivia㉿kali)-[/home/cyse_project]
└─$ cat Sophia_homework3
cat: Sophia_homework3: Permission denied
```



## Extra credit: Sticky Bit (10 points)

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

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

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