

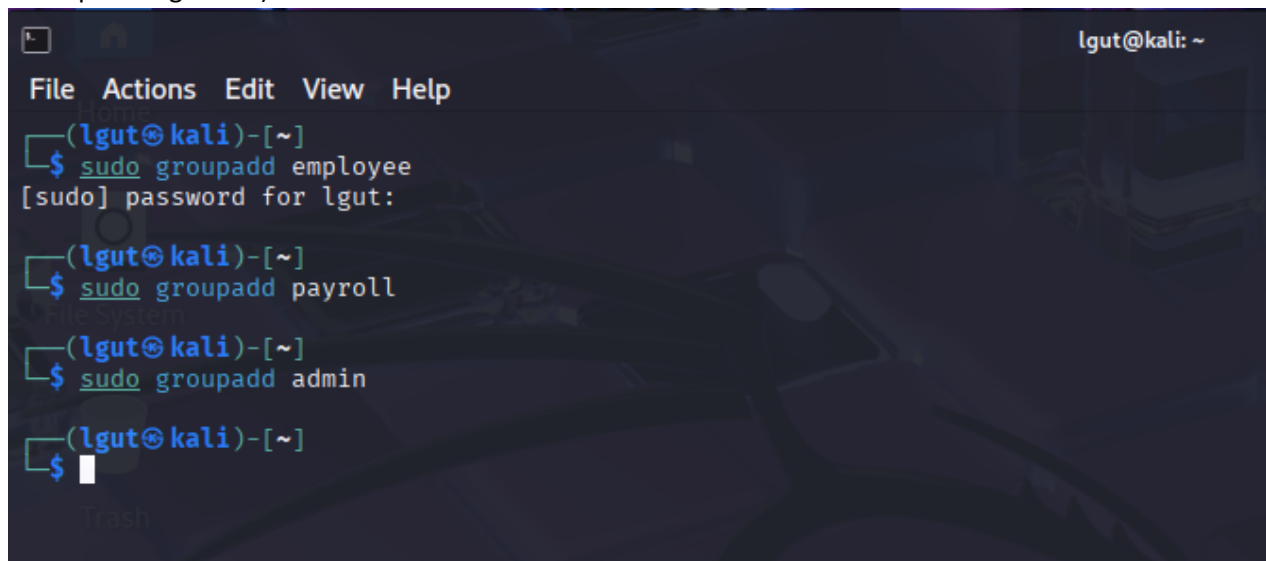
CYSE 270: Linux System for Cybersecurity Lab 6 – File Permission

CYSE 270: Linux System for Cybersecurity

You need to configure the system to allow three users to 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)



```
lgut@kali: ~  
File Actions Edit View Help  
(lgut@kali)-[~]  
└─$ sudo groupadd employee  
[sudo] password for lgut:  
(lgut@kali)-[~]  
└─$ sudo groupadd payroll  
(lgut@kali)-[~]  
└─$ sudo groupadd admin  
(lgut@kali)-[~]  
└─$
```

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.**

```
(lgut@kali)-[~]
└─$ sudo useradd -m -d /home/sophia sophia

(lgut@kali)-[~]
└─$ sudo useradd -m -d /home/olivia olivia

(lgut@kali)-[~]
└─$ sudo useradd -m -d /home/emma emma

(lgut@kali)-[~]
└─$ sudo usermod -g employee sophia

(lgut@kali)-[~]
└─$ sudo usermod -g payroll olivia

(lgut@kali)-[~]
└─$ sudo usermod -g admin emma

(lgut@kali)-[~]
└─$ sudo passwd sophia
New password:
Retype new password:
passwd: password updated successfully

(lgut@kali)-[~]
└─$ sudo passwd olivia
New password:
Retype new password:
passwd: password updated successfully

(lgut@kali)-[~]
└─$ sudo passwd emma
New password:
Retype new password:
passwd: password updated successfully
```

```

—(lgut@kali)-[~]
—$ sudo usermod -s /bin/bash sophia

—(lgut@kali)-[~]
—$ sudo usermod -s /bin/bash olvia
usermod: user 'olvia' does not exist

—(lgut@kali)-[~]
—$ sudo usermod -s /bin/bash olivia

—(lgut@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.

```

—(lgut@kali)-[~]
—$ sudo groupadd lguti005

—(lgut@kali)-[~]
—$ sudo usermod -aG lguti005 sophia

—(lgut@kali)-[~]
—$ sudo usermod -aG lguti005 olvia
usermod: user 'olvia' does not exist

—(lgut@kali)-[~]
—$ sudo usermod -aG lguti005 olivia

—(lgut@kali)-[~]
—$ sudo usermod -aG lguti005 emma

—(lgut@kali)-[~]
—$ id olivia sophia emma
uid=1015(olivia) gid=6003(payroll) groups=6003(payroll),6005(lguti005)
uid=1014(sophia) gid=6002(employee) groups=6002(employee),6005(lguti005)
uid=1016(emma) gid=6004(admin) groups=6004(admin),6005(lguti005)

```

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.

```
lgut@kali: ~  
File Actions Edit View Help  
(lgut@kali)-[~]  
└─$ sudo mkdir /home/cyse_project  
[sudo] password for lgut:  
(lgut@kali)-[~]  
└─$ sudo chown :lguti005 /home/cyse_project  
(lgut@kali)-[~]  
└─$ ls -ld /home/cyse_project  
drwxr-xr-x 2 root lguti005 4096 Oct 12 20:45 /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.**

```
(lgut@kali)-[~]  
└─$ sudo chmod 770 /home/cyse_project  
(lgut@kali)-[~]  
└─$ ls -ld /home/cyse_project  
drwxrwx--- 2 root lguti005 4096 Oct 12 20:45 /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)-[/home/lgut]
└─$ cd /home/sophia

(sophia@kali)-[~]
└─$ umask
0026

(sophia@kali)-[~]
└─$ touch testfile.txt

(sophia@kali)-[~]
└─$ ls -l testfile.txt
-rw-r----- 1 sophia employee 0 Oct 12 20:53 testfile.txt
```

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

(sophia@kali)-[~]
└─$ echo "logan gutierrez" > sophia_homework

(sophia@kali)-[~]
└─$ cat sophia_homework
logan gutierrez

(sophia@kali)-[~]
└─$ ls -l sophia_homework
-rw-r----- 1 sophia employee 16 Oct 12 20:56 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@kali)-[~]
└─$ touch sophia_homework

(sophia@kali)-[~]
└─$ echo "logan gutierrez" > sophia_homework

(sophia@kali)-[~]
└─$ cat sophia_homework
logan gutierrez

(sophia@kali)-[~]
└─$ ls -l sophia_homework
-rw-r----- 1 sophia employee 16 Oct 12 20:56 sophia_homework

(sophia@kali)-[~]
└─$ cp /home/sophia/sophia_homework /home/cyse_project/

(sophia@kali)-[~]
└─$ ls -l /home/cyse_project/sophia_homework
-rw-r----- 1 sophia employee 16 Oct 12 20:58 /home/cyse_project/sophia_homework
```

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

```
(emma@kali)-[~/home/sophia]
└─$ cd /home/emma/

(emma@kali)-[~]
└─$ cd /home/cyse_project/

(emma@kali)-[~/home/cyse_project]
└─$ cat sophia_homework
cat: sophia_homework: Permission denied
```

Directory.

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

```
(emma@kali)-[~/home/cyse_project]
└─$ exit

(sophia@kali)-[~]
└─$ 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.

```
(lgut@kali)-[~]
└─$ sudo chmod g+s /home/cyse_project
[sudo] password for lgut:

(lgut@kali)-[~]
└─$ ls -ld /home/cyse_project
drwxrws— 2 root lguti005 4096 Oct 12 20:58 /home/cyse_project
```

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

```
(lgut@kali)-[~]
└─$ su sophia
Password:
(sophia@kali)-[/home/lgut]
└─$ cd /home/sophia

(sophia@kali)-[~]
└─$ cp /home/sophia/sophia_homework /home/cyse_project/sophia_homework2
```

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

```
(sophia@kali)-[~]
└─$ su emma
Password:
(emma@kali)-[/home/sophia]
└─$ cd /home/cyse_project/

(emma@kali)-[/home/cyse_project]
└─$ cat sophia_homework2
logan gutierrez
```

directory.

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.

```
(lgut@kali)-[~]
└─$ sudo chmod g-s /home/cyse_project

(lgut@kali)-[~]
└─$
```

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

```
(lgut@kali)-[~]
└─$ su sophia
Password:
(sophia@kali)-[/home/lgut]
└─$ cd /home/cyse_project/

(sophia@kali)-[/home/cyse_project]
└─$ cd /home/sophia/

(sophia@kali)-[~]
└─$ cp /home/sophia/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)-[/home/sophia]
└─$ cd /home/cyse_project/

(olivia@kali)-[/home/cyse_project]
└─$ cat sophia_homework
cat: sophia_homework: Permission denied

(olivia@kali)-[/home/cyse_project]
└─$ cat sophia_homework3
cat: sophia_homework3: Permission denied
```

Extra credit: Sticky Bit (10 points)**CYSE 270: Linux System for Cybersecurity**

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

```
(lgut@kali)-[~]
└─$ su olivia
Password:
└─(olivia@kali)-[/home/lgut]
└─$ cd /home/cyse_project/

└─(olivia@kali)-[/home/cyse_project]
└─$ rm sophia_homework
rm: remove write-protected regular file 'sophia_homework'? y

└─(olivia@kali)-[/home/cyse_project]
└─$
exit
```

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?

```
—(lgut@kali)-[~]
_-$ sudo chmod o+t /home/cyse_project

—(lgut@kali)-[~]
_-$ su olivia
password:
—(olivia@kali)-[/home/lgut]
_-$ cd /home/cyse_project/

—(olivia@kali)-[/home/cyse_project]
_-$ rm -r sophia_homework3
m: remove write-protected regular file 'sophia_homework3'? y
m: cannot remove 'sophia_homework3': Operation not permitted
```

I cannot delete the file because olivia is not owner of the file.