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CYSE270 - 18215
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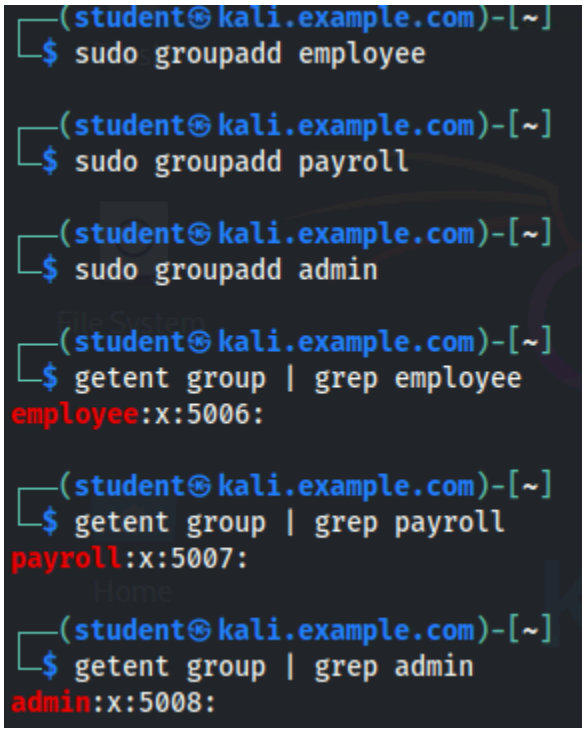
Lab 6 - File Permissions

Task A:

1. **Create three groups - employee, payroll, and admin**



2. **Create three user accounts with a specified home directory for Sophia, Olivia, and Emma. Set the primary group for Sophia, Oliva, and Emma to "employee", "payroll", "and "admin", respectively. And change their login shell to /bin/bash (set their passwords)**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo useradd -m -d /home/Sophia -g employee -s /bin/bash Sophia

┌──(student㉿kali.example.com)-[~]
└─$ sudo useradd -m -d /home/Olivia -g payroll -s /bin/bash Olivia

┌──(student㉿kali.example.com)-[~]
└─$ sudo useradd -m -d /home/Emma -g admin -s /bin/bash Emma

┌──(student㉿kali.example.com)-[~]
└─$ sudo passwd Sophia
New password:
Retype new password:
passwd: password updated successfully

┌──(student㉿kali.example.com)-[~]
└─$ sudo passwd Olivia
New password:
Retype new password:
passwd: password updated successfully

┌──(student㉿kali.example.com)-[~]
└─$ sudo passwd Emma
New password:
Retype new password:
passwd: password updated successfully
```

```
┌──(student㉿kali.example.com)-[~]
└─$ getent passwd | grep Sophia
Sophia:x:1015:5006::/home/Sophia:/bin/bash

┌──(student㉿kali.example.com)-[~]
└─$ getent passwd | grep Olivia
Olivia:x:1016:5007::/home/Olivia:/bin/bash

┌──(student㉿kali.example.com)-[~]
└─$ getent passwd | grep Emma
Emma:x:1017:5008::/home/Emma:/bin/bash
```

3. **Create a shared group called “your_midas” (replace with MIDAS ID) and set this shared group as the above accounts’ <u>secondary</u> group. After this step remember to check each user’s group profile**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo groupadd ihenr002

┌──(student㉿kali.example.com)-[~]
└─$ sudo usermod -aG ihenr002 Sophia

┌──(student㉿kali.example.com)-[~]
└─$ sudo usermod -aG ihenr002 Olivia

┌──(student㉿kali.example.com)-[~]
└─$ sudo usermod -aG ihenr002 Emma

┌──(student㉿kali.example.com)-[~]
└─$ id Sophia
uid=1015(Sophia) gid=5006(employee) groups=5006(employee),5009(ihenr002)

┌──(student㉿kali.example.com)-[~]
└─$ id Olivia
uid=1016(Olivia) gid=5007(payroll) groups=5007(payroll),5009(ihenr002)

┌──(student㉿kali.example.com)-[~]
└─$ id Emma
uid=1017(Emma) gid=5008(admin) groups=5008(admin),5009(ihenr002)
```

4. **Create a directory names /home/cyse_project directory 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**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo mkdir /home/cyse_project

┌──(student㉿kali.example.com)-[~]
└─$ sudo chown :ihenr002 /home/cyse_project
```

```
┌──(student㉿kali.example.com)-[~]
└─$ ls -ld /home/cyse_project
drwxr-xr-x 2 root ihenr002 4096 Oct 24 19:14 /home/cyse_project
```

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**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo chmod 770 /home/cyse_project

┌──(student㉿kali.example.com)-[~]
└─$ ls -ld /home/cyse_project
drwxrwx--- 2 root ihenr002 4096 Oct 24 19:14 /home/cyse_project
```

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**

```
┌──(student㉿kali.example.com)-[~]
└─$ su Sophia
Password:
┌──(Sophia㉿kali)-[/home/student]
└─$ umask 0027

┌──(Sophia㉿kali)-[/home/student]
└─$ umask
0027
```

7. **Create a new file called "Sophia_homework" in the home directory of Sophia and put your name in the file content. After this step, remember to check the content and the permission of the new file (ls -l Sophia_homework)**

```
┌──(Sophia㉿kali)-[/home/student]
└─$ echo > /home/Sophia/Sophia_Homework

┌──(Sophia㉿kali)-[/home/student]
└─$ ls -l /home/Sophia/Sophia_Homework
-rw-r----- 1 Sophia employee 1 Oct 24 19:48 /home/Sophia/Sophia_Homework
```

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)-[/home/student]
└─$ cp /home/Sophia/Sophia_Homework /home/cyse_project/

┌──(Sophia㉿kali)-[/home/student]
└─$ ls -l /home/cyse_project
total 8
-rw-r----- 1 Sophia employee 1 Oct 24 19:50 Sophia_Homework
```

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

```
┌──(student㉿kali.example.com)-[~]
└─$ su Emma
Password:
┌──(Emma㉿kali)-[/home/student]
└─$ cat /home/cyse_project/Sophia_Homework
cat: /home/cyse_project/Sophia_Homework: Permission denied
```

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

```
┌──(Emma㉿kali)-[/home/student]
└─$ exit
exit
```

```
┌──(Sophia㉿kali)-[/home/student]
└─$ exit
exit
```

Task B:

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**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo chmod g+s /home/cyse_project

┌──(student㉿kali.example.com)-[~]
└─$ ls -ld /home/cyse_project
drwxrws--- 2 root ihenr002 4096 Oct 24 19:50 /home/cyse_project
```

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

```
┌──(student㉿kali.example.com)-[~]
└─$ su Sophia
Password:
┌──(Sophia㉿kali)-[/home/student]
└─$ cp /home/Sophia/Sophia_Homework /home/cyse_project/Sophia_homework2

┌──(Sophia㉿kali)-[/home/student]
└─$ ls -l /home/cyse_project
total 12
-rw-r----- 1 Sophia employee 1 Oct 24 19:50 Sophia_Homework
-rw-r--r-- 1 Sophia employee 1 Oct 24 19:38 Sophia_homework
-rw-r----- 1 Sophia ihenr002 1 Oct 24 19:58 Sophia_homework2
```

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

```
┌──(student㉿kali.example.com)-[~]
└─$ su Emma
Password:
┌──(Emma㉿kali)-[/home/student]
└─$ cat /home/cyse_project/Sophia_homework2
```

Task C:

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**

```
┌──(student㉿kali.example.com)-[~]
└─$ sudo chmod g-s /home/cyse_project

┌──(student㉿kali.example.com)-[~]
└─$ ls -ld /home/cyse_project
drwxrwx--- 2 root ihenr002 4096 Oct 24 19:58 /home/cyse_project
```

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

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

┌──(Sophia㉿kali)-[/home/student]
└─$ ls -l /home/cyse_project
total 16
-rw-r----- 1 Sophia employee 1 Oct 24 19:50 Sophia_Homework
-rw-r--r-- 1 Sophia employee 1 Oct 24 19:38 Sophia_homework
-rw-r----- 1 Sophia ihenr002 1 Oct 24 19:58 Sophia_homework2
-rw-r--r-- 1 Sophia employee 1 Oct 24 20:06 Sophia_homework3
```

3. **Switch to Olivia's account. Try to delete "Sophia_homework3" in the /home/cyse_project directory**

```
┌──(Olivia㉿kali)-[/home/student]
└─$ rm /home/cyse_project/Sophia_homework3
rm: remove write-protected regular file '/home/cyse_project/Sophia_homework3'?
y

┌──(Olivia㉿kali)-[/home/student]
└─$ ls -l /home/cyse_project
total 12
-rw-r----- 1 Sophia employee 1 Oct 24 19:50 Sophia_Homework
-rw-r--r-- 1 Sophia employee 1 Oct 24 19:38 Sophia_homework
-rw-r----- 1 Sophia ihenr002 1 Oct 24 19:58 Sophia_homework2
```

Olivia could remove Sophia's homework because she had the permissions to read, write, and execute within the directory.

Extra Credit

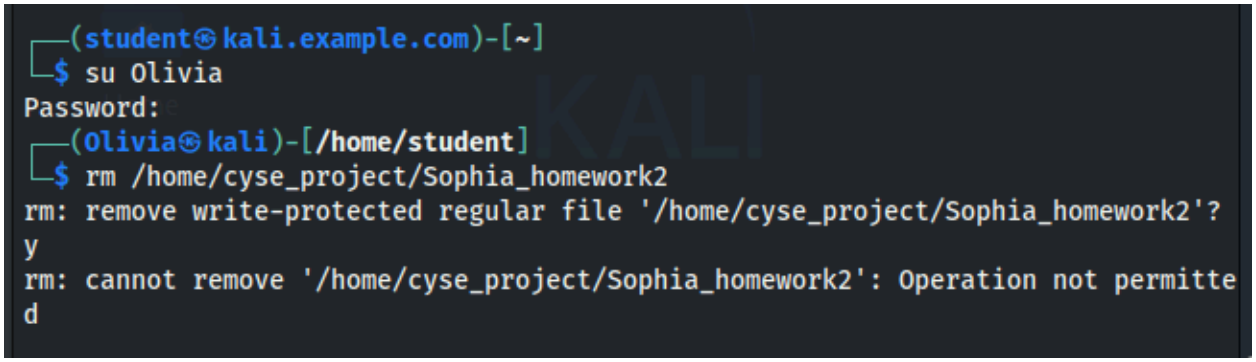
1. **Switch to Olivia's account and delete "Sophia_homework" in the /home/cyse_project directory**

```
┌──(student㉿kali.example.com)-[~]
└─$ su Olivia
Password:
┌──(Olivia㉿kali)-[/home/student]
└─$ rm /home/cyse_project/Sophia_homework
rm: remove write-protected regular file '/home/cyse_project/Sophia_homework'? y

┌──(Olivia㉿kali)-[/home/student]
└─$ ls -l /home/cyse_project
total 8
-rw-r----- 1 Sophia employee 1 Oct 24 19:50 Sophia_Homework
-rw-r----- 1 Sophia ihenr002 1 Oct 24 19:58 Sophia_homework2
```

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

```
┌──(Olivia㉿kali)-[/home/student]
└─$ exit
exit

┌──(student㉿kali.example.com)-[~]
└─$ sudo chmod +t /home/cyse_project
```

3. **Switch to Olivia's account. Try to delete "Sophia_homework2" in the /home/cyse_project directory. Can you delete it this time? Why?**



Olivia could not delete the file this time because when the sticky bit permission was enabled, it prevents anyone besides the owner of the file from deleting a file. Because Olivia did not own the file, she was not able to delete it.