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

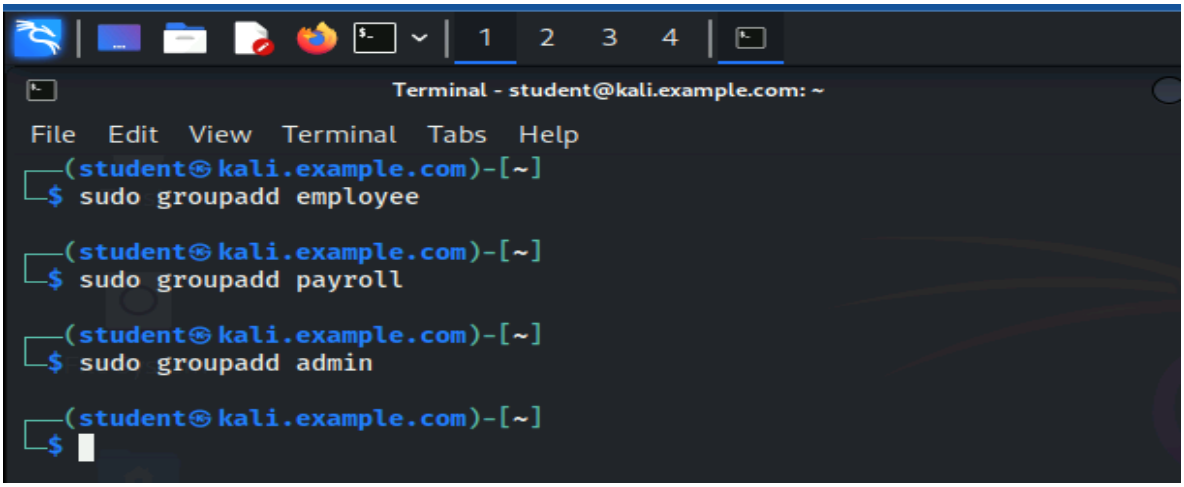
Task A: Get accounts and groups ready (70 points)

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

Command used: *sudo groupadd employee*

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.

Step 1: Created 3 user accounts with a specified home directory using the following commands for each user.

sudo useradd -m Sophia

sudo useradd -m Olivia

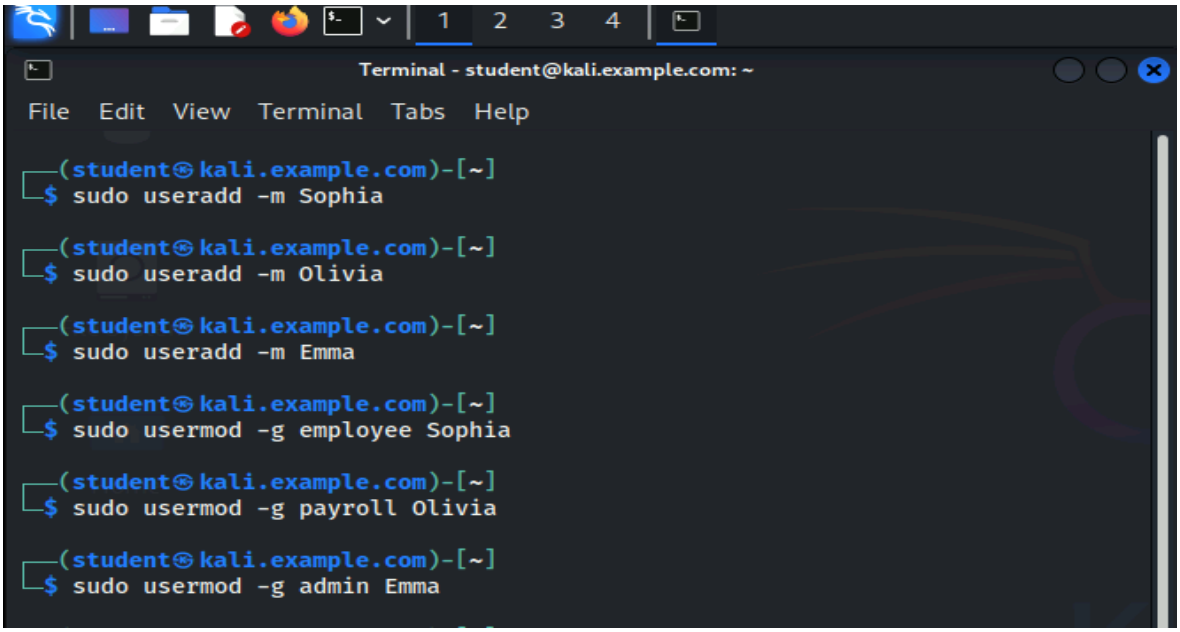
sudo useradd -m Emma

Step 2: Set the primary group for Sophia, Olivia and Emma to "employee", "payroll", and "admin", respectively. Command used:

sudo usermode -g employee Sophia

sudo usermode -g payroll Olivia

sudo usermode -g admin Emma



Step3: Changed their login shell to /bin/bash using the following commands:

sudo usermod -s /bin/bash Sophia

sudo usermod -s /bin/bash Olivia

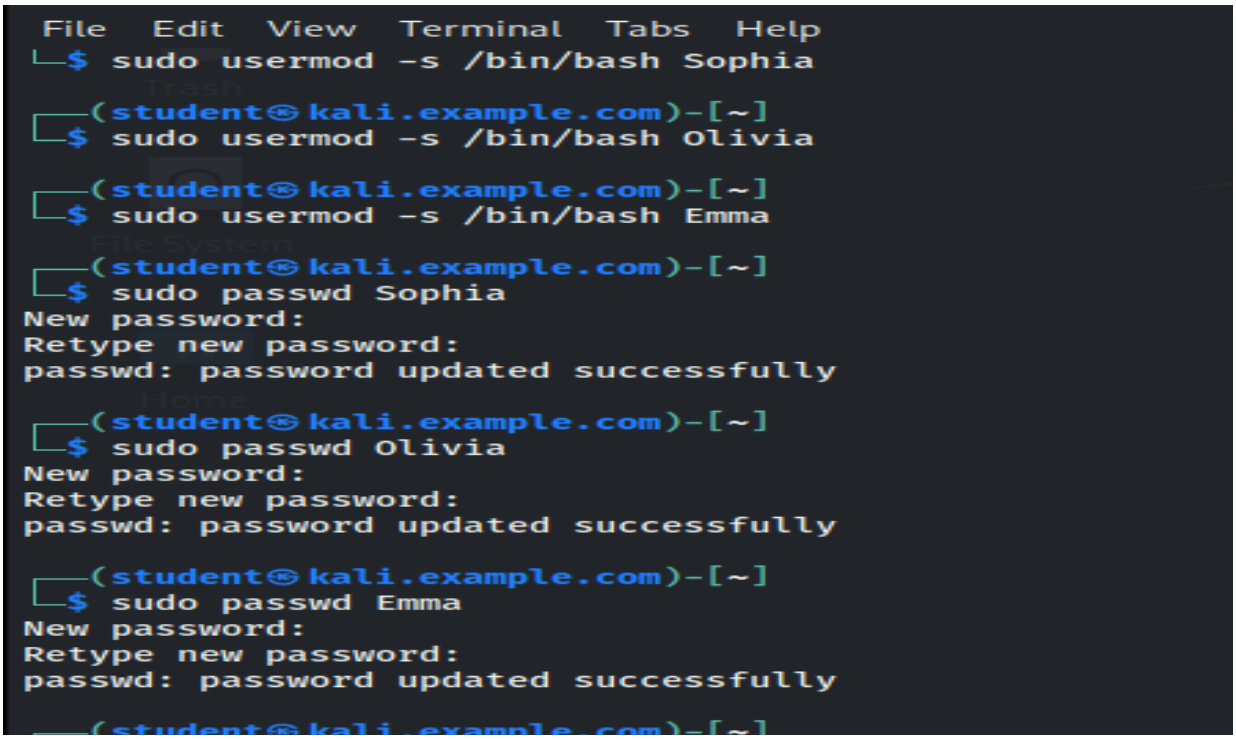
sudo usermod -s /bin/bash Emma

Step4: Set their passwords using the following commands:

sudo passwd Sophia

sudo passwd Olivia

sudo passwd 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.

Step1: Created a shared group named, rchak003 using command:

sudo groupadd rchak003

Step2: Added Sophia, Olivia and Emma in the shared group, rchak003 using the following command:

sudo usermod -aG rchak003 Sophia

sudo usermod -aG rchak003 Olivia

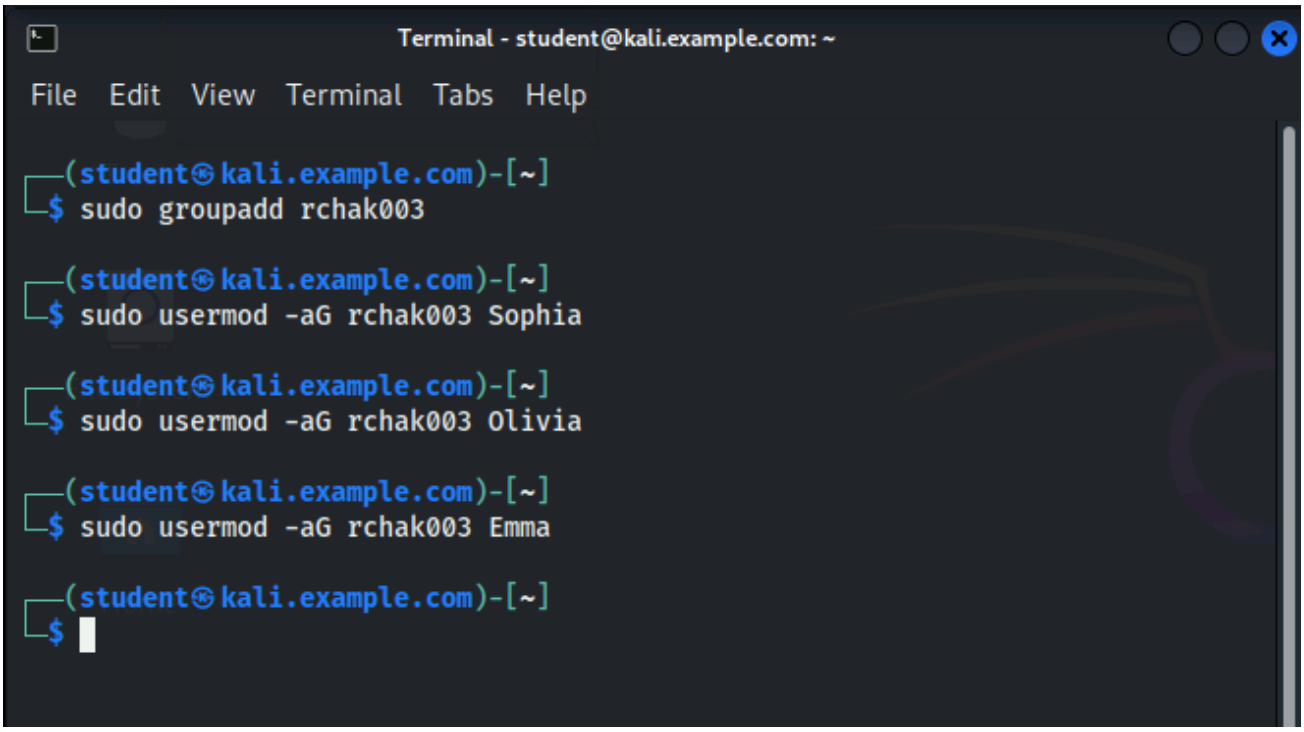
sudo usermod -aG rchak003 Emma

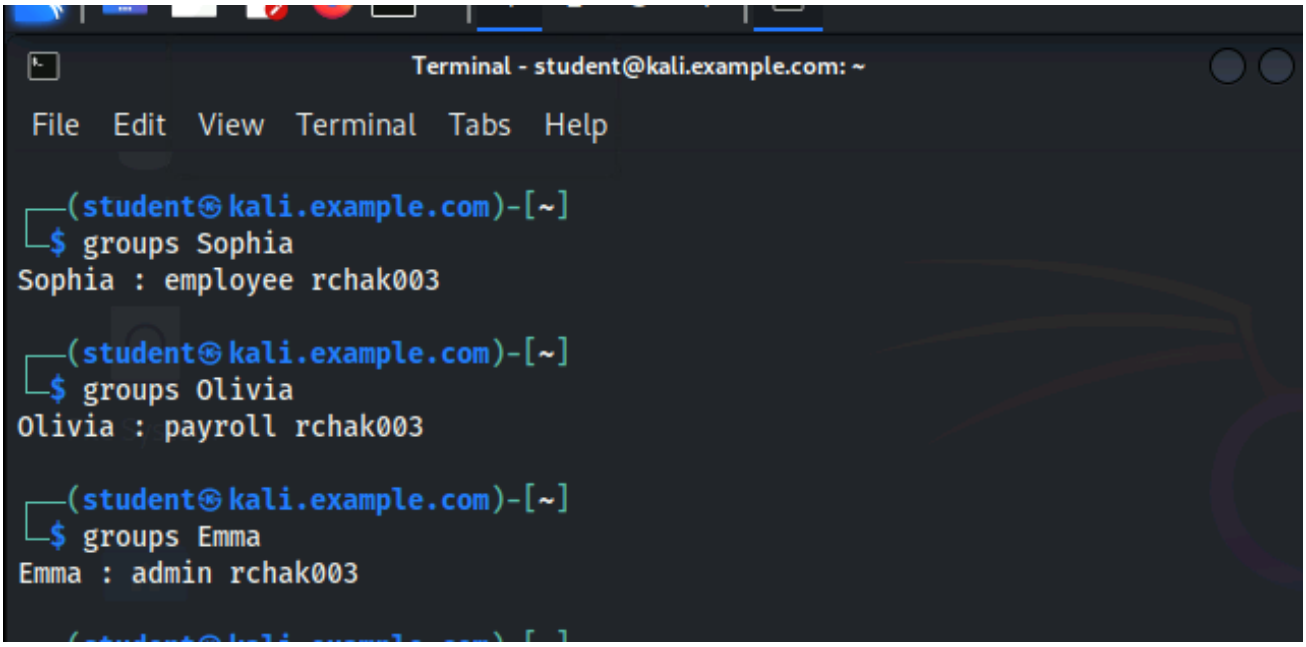
Step3: Checked each user's group profile using the following commands:

groups Sophia

groups Olivia

groups Emma


Terminal - student@kali.example.com: ~
File Edit View Terminal Tabs Help
(student㉿kali.example.com)-[~]
$ sudo groupadd rchak003
(student㉿kali.example.com)-[~]
$ sudo usermod -aG rchak003 Sophia
(student㉿kali.example.com)-[~]
$ sudo usermod -aG rchak003 Olivia
(student㉿kali.example.com)-[~]
$ sudo usermod -aG rchak003 Emma
(student㉿kali.example.com)-[~]
$


Terminal - student@kali.example.com: ~
File Edit View Terminal Tabs Help
(student㉿kali.example.com)-[~]
$ groups Sophia
Sophia : employee rchak003
(student㉿kali.example.com)-[~]
$ groups Olivia
Olivia : payroll rchak003
(student㉿kali.example.com)-[~]
$ groups Emma
Emma : admin rchak003

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.

Step1: Created a directory /home/cyse_project using the following command:

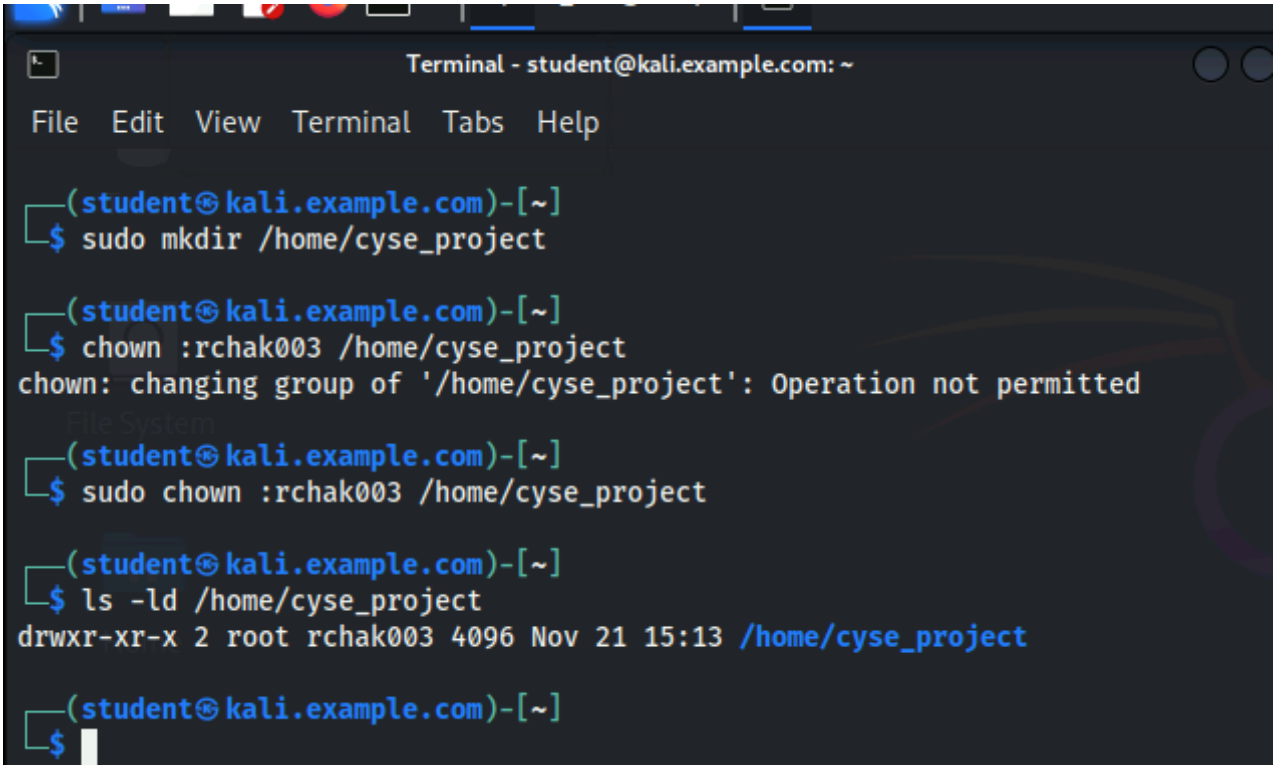
sudo mkdir /home/cyse_project

Step2: Changed the ownership of the directory to the shared group, rchak003 using the following command:

sudo chown :rchak003 /home/cyse_project

Step3: Checked the permission of the directory using the following command:

ls -ld /home/cyse_project



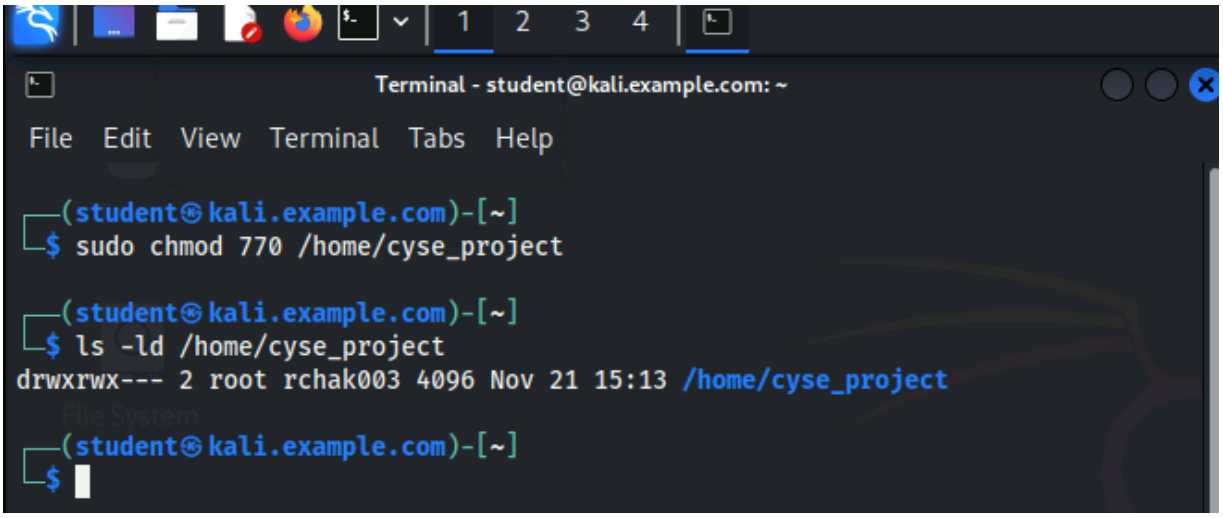
Step 5. Change the permissions of the /home/cyse_project directory to "rwxrwx---" using the octal method so that only the project group members have access to this directory. After this step, remember to check the permission of this shared directory.

Step1: Changed the permission of the /home/cyse_project directory to “rwxrwx---” using the octal method. Command used:

sudo chmod 770 /home/cyse_project

Step2: Checked the permission of the shared directory using the following command:

ls -ld /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.

Step1: Switched to Sophia’s account using the following command:

su Sophia

Step2: Changed the default permission to “rw-r-----” using octal method with the following umask command:

umask 0027

Step3: Created a new file named, testFile.txt using the following command:

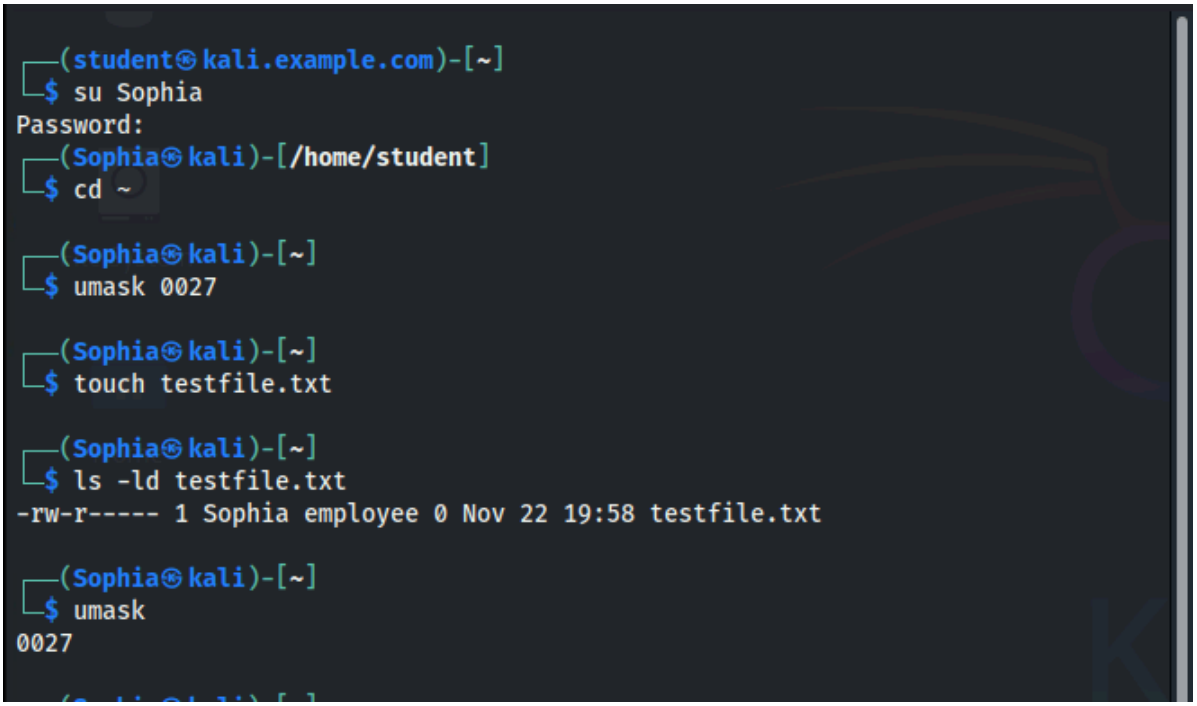
touch testfile.txt

Step4: Checked the permission of the new file using the following command:

ls -ld testfile.txt

Step5: Checked the value of umask using the following command:

umask



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)

Step1: Created a new file, “Sophia_homework” in the home directory of Sophia using the following command:

touch Sophia_homework

Step2: Put my name in the file as content using VI editor

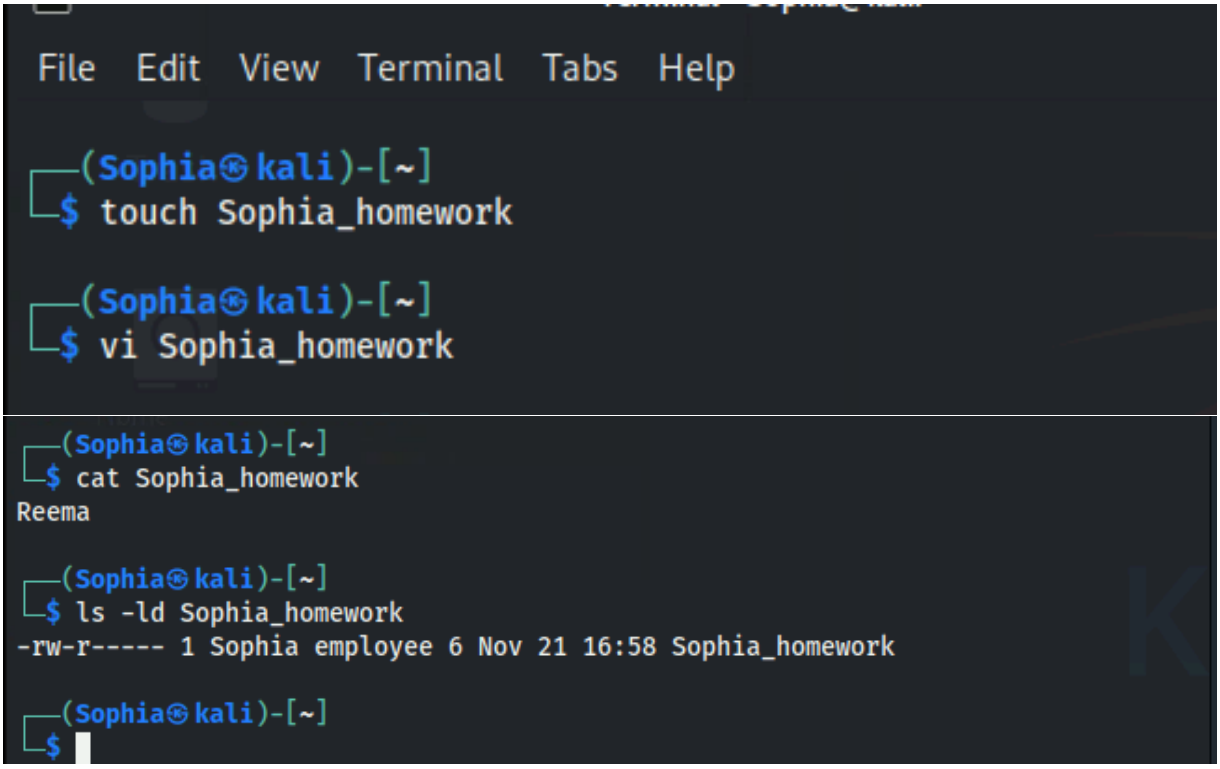
vi Sophia_homework

Step3: Checked the content of the file using the following command:

cat Sophia_homework

Step4: Checked the permission of the file using the following command:

ls -ld 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.

Step1: Copied “Sophia_homwork” to the /home/cyse_project directory using the following command:

cp Sophia_homework /home/cyse_project

Step2: Changed directory to /home/cyse_project directory using the following command:

cd /home/cyse_project

Step3: Checked the permission of the file Sophia_homework using the following command:

ls -ld Sophia_homework

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

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

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

┌──(Sophia㉿kali)-[/home/cyse_project]
└─$ ls -ld Sophia_homework
-rw-r----- 1 Sophia employee 6 Nov 21 17:16 Sophia_homework
```

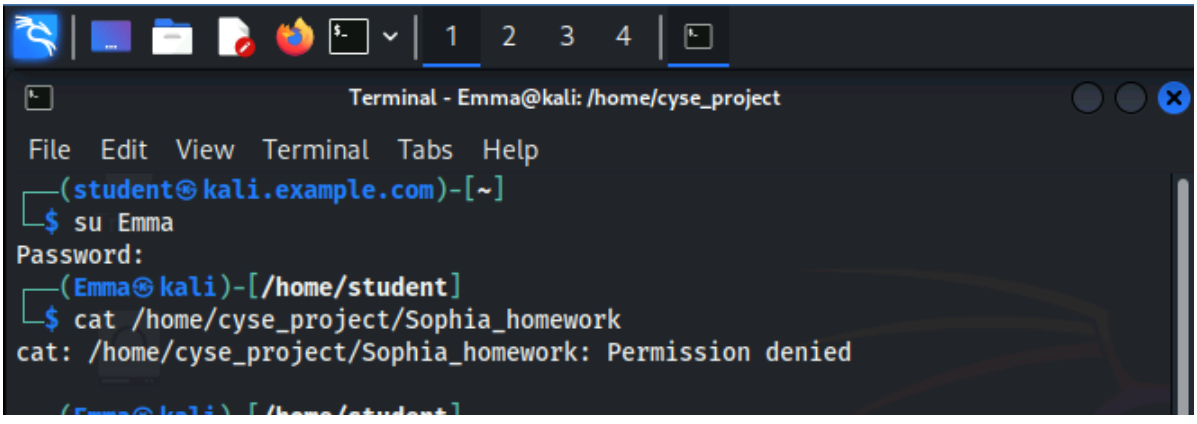
Step 9. Switch to Emma's account. Try to read "Sophia_homework" in the /home/cyse_project Directory.

Step1: Switched to Emma's account using the following command:

su Emma

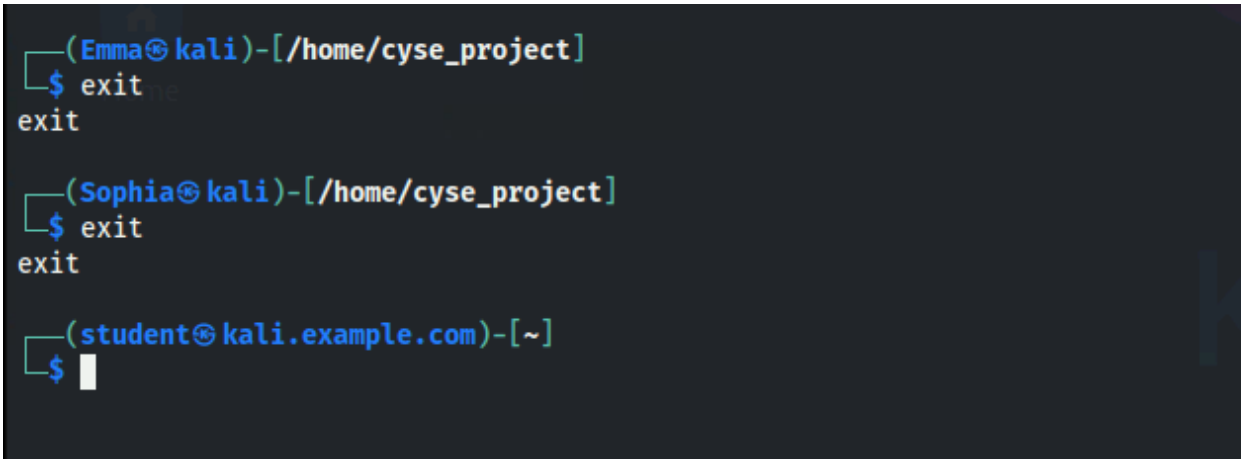
Step2: Tried to read the file "Sophia_homework" in the /home/cyse_project directory using the following command:

cat Sophia_homework



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

Exited from both Emma's account and Sophia's account with *exit* command.



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.

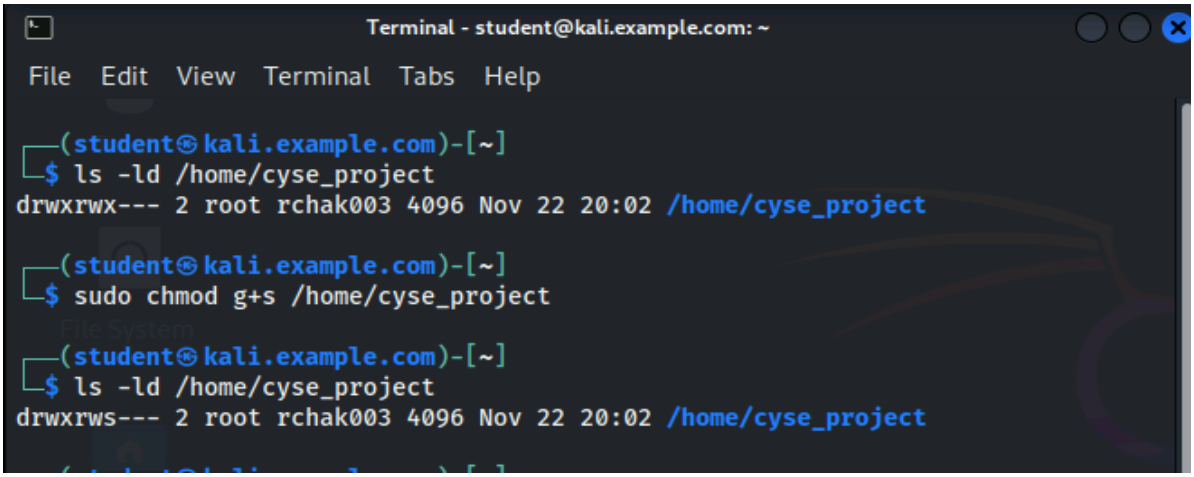
Step1: Switched to the root account by exiting out from both accounts.

Step2: Allowed group members to access the files shared in the shared directory by using the following command:

sudo chmod g+s /home/cyse_project

Step3: Verified permission by using command:

ls -ld



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

Step1: Switched to Sophia's account using the following command:

su Sophia

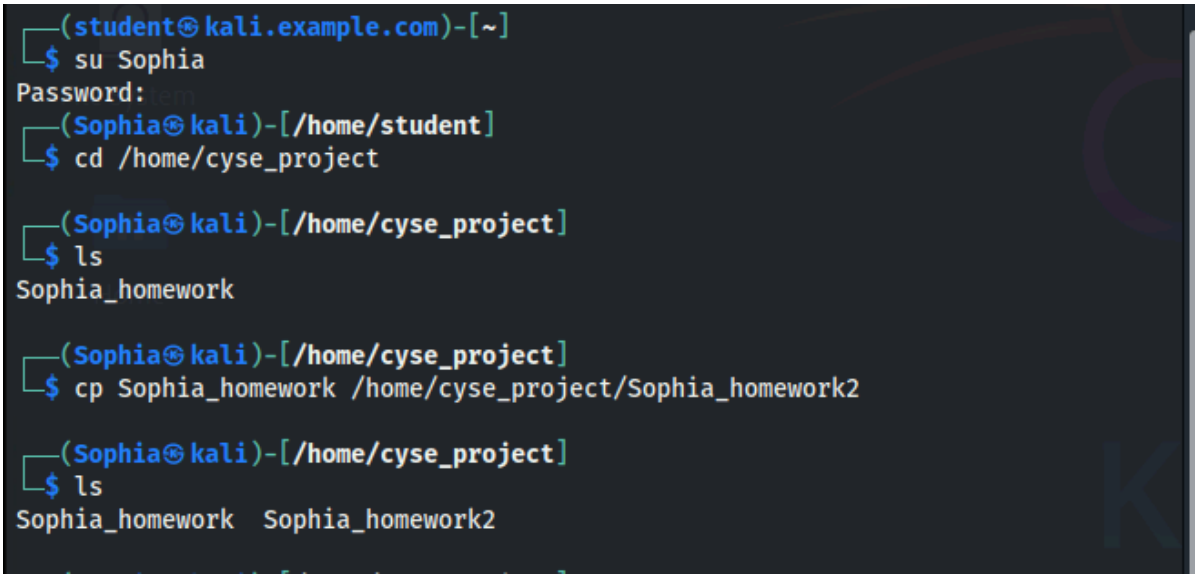
Step2: Copied the "Sophia_homework" to the /home/cyse_project directory as "Sophia_homework2 using the following command:

cd /home/cyse_project

cp Sophia_homework /home/cyse_project/Sophia_homework2

Step3: Verified the same using the following commands:

ls



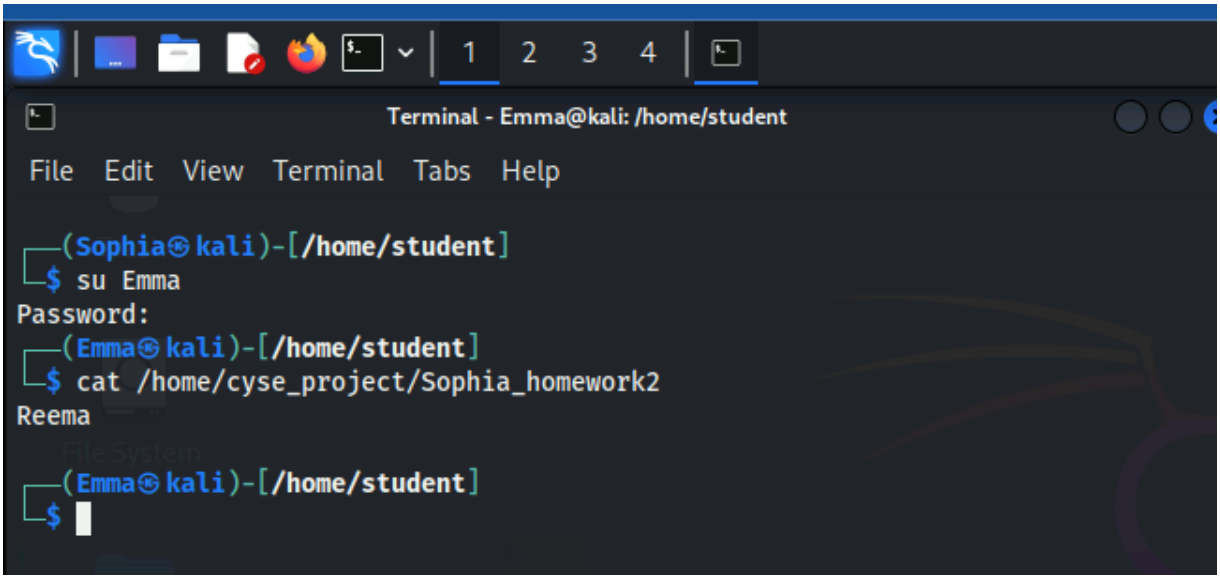
Step 3. Switch to Emma's account. Try to read "Sophia_ homework2" in the /home/cyse_project directory.

Step1: Switched to Emma's account using the following command:

su Emma

Step2: Tried to read "Sophia_ homework2" in the /home/cyse_project directory using the following command:

cat /home/cyse_project/Sophia_homework2



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.

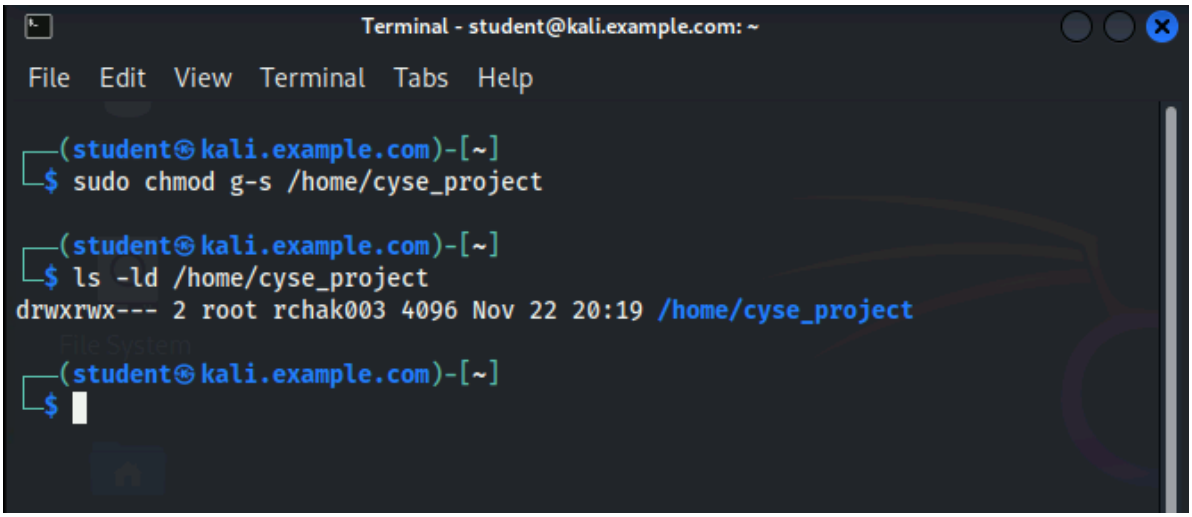
Step1: Switched to regular user's account using exit command.

Step2: Disallowed the group members to access the files in the shared folder using the following command:

sudo chmod g-s /home/cyse_project

Step3: Verified the permission using the command:

ls -ld /home/cyse_project



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

Step1: Switched to Sophia's account using the command:

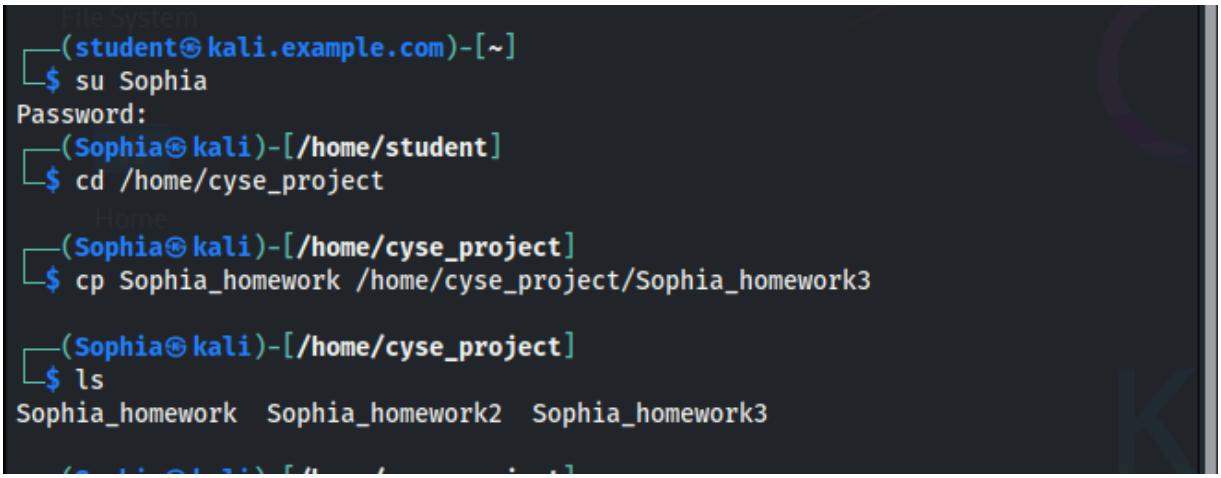
su Sophia

Step2: Changed directory to /home/cyse_project using the command:

cd /home/cyse_project

Step3: Copied "Sophia_homework" as "Sophia_homework3 in the current directory using the command:

cp Sophia_homework /home/cyse_project/Sophia_homework3



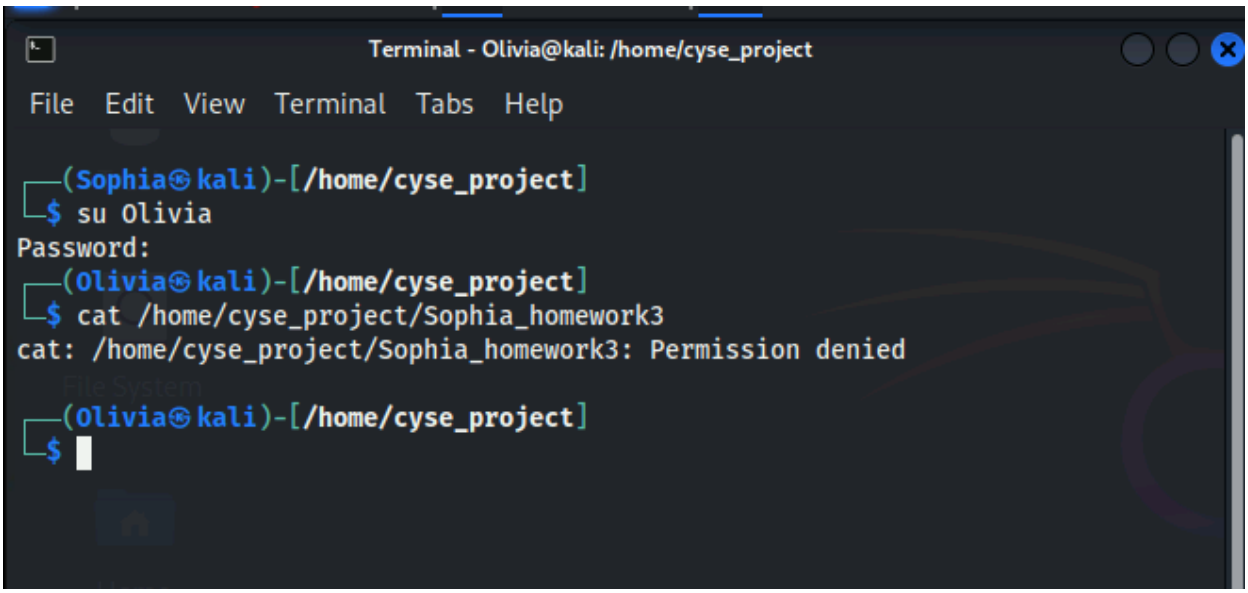
Step 3. Switch to Olivia's account. Try to read "Sophia_homework3" in the /home/cyse_project directory.

Step1: Switched to Olivia's account using the command:

su Olivia

Step2: Tried to read "Sophia_homework3" in the /home/cyse_project directory using the command:

cat /home/cyse_project/Sophia_homework3



Extra credit: Sticky Bit (10 points)

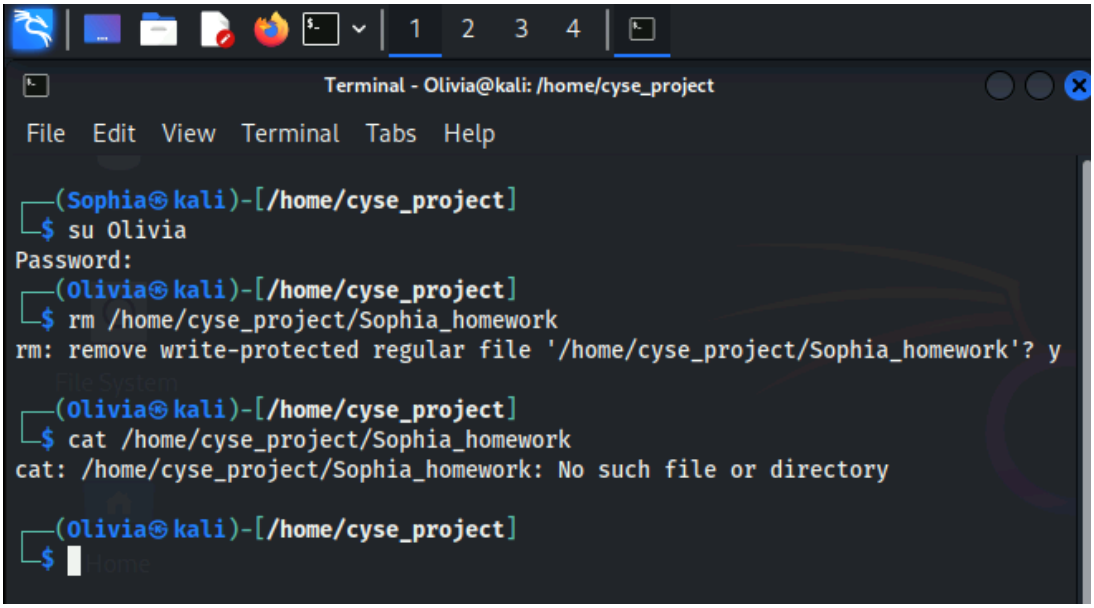
Step 1. Switch to Olivia' account. Delete "Sophia_ homework" in the /home/cyse_project directory.

Step1: Switched to Olivia's account using the command:

su Olivia

Step2: Deleted the "Sophia_ homework" in the /home/cyse_project directory using the command:

r*m /home/cyse_project/Sophia_homework*

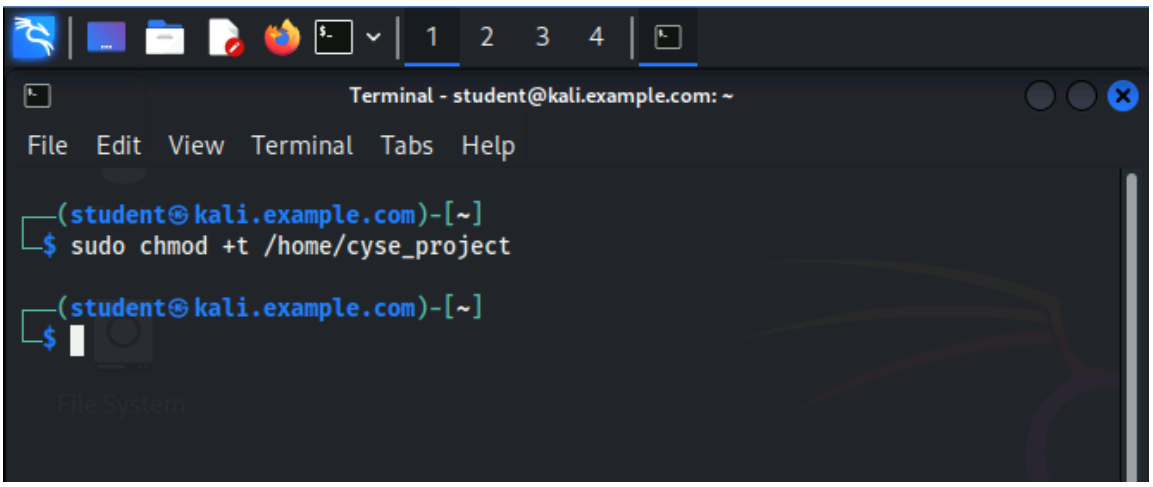


Step 2. Switch to root account. Set the sticky bit permission, to make files can only be removed by the owner of the file.

Step1: Switched to root account using exit command.

Step2: Set the sticky bit permission to make files can only be removed by the owner of the file. Command used:

sudo chmod +t /home/cyse_project

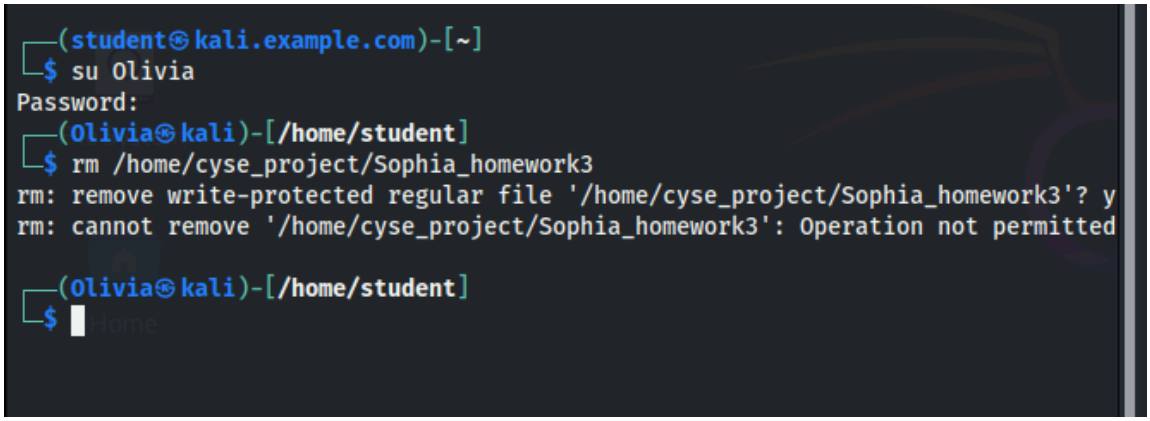


Step 3. Switch to Olivia' account. Try to delete "Sophia_ homework3" in the /home/cyse_project directory. Can you delete it this time? Why?

Step1: Switched to Olivia's account using the command:

su Olivia

Step2: Tried to delete "Sophia_ homework3" in the /home/cyse_project directory.



Note: No, I was not able to delete this time because in the previous step, I set the sticky bit permission which allows only the owner of the file to delete or remove.