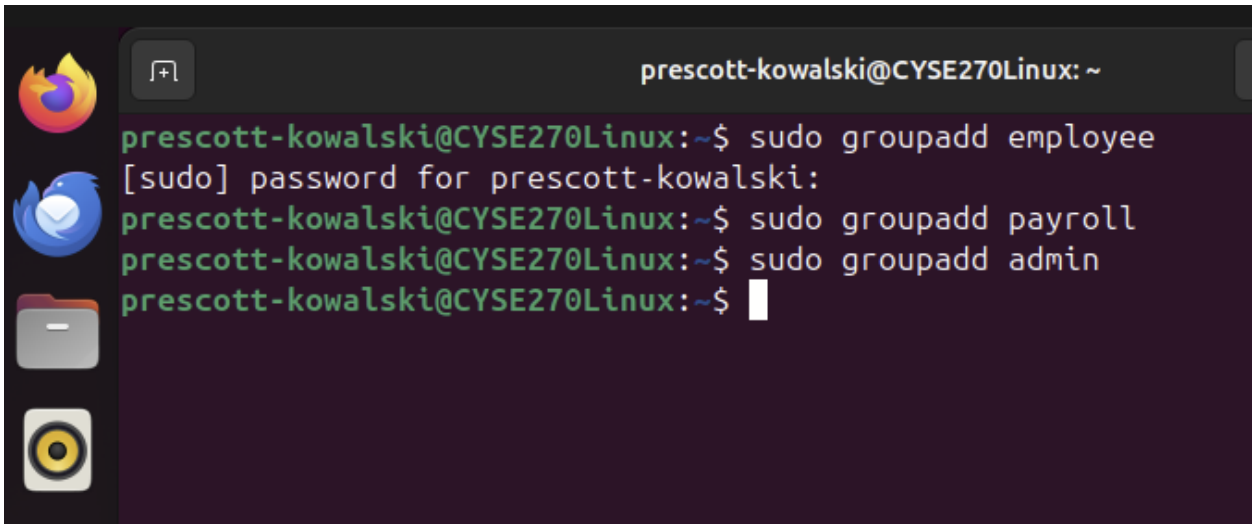
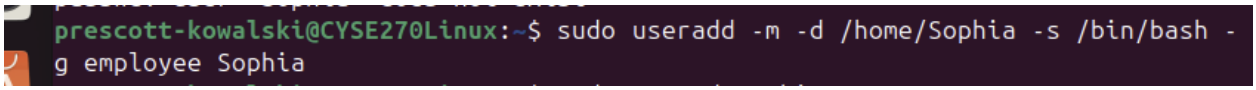
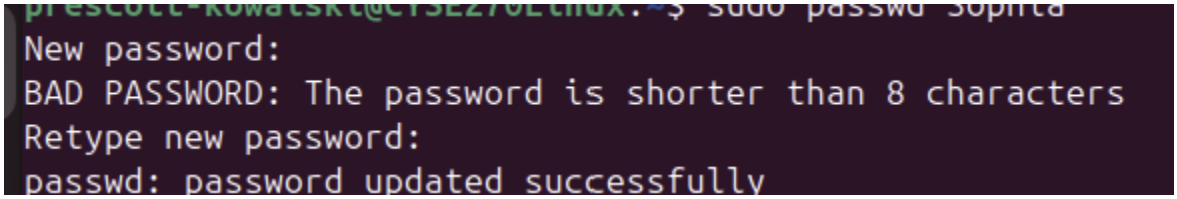
Prescott Kowalski
Lab 6 – File Permission
CYSE 270: Linux System for Cybersecurity
You need to configure the system to allow three users to perform the shared folder actions. Please
submit the screenshot for all the steps in a word or pdf file
Task A: Get accounts and groups ready (70 points)
Step 1. Create three groups- employee, payroll, and admin. (You may refer to the slides under Module
sudo groupadd employee
sudo groupadd payroll
sudo groupadd admin



2 – Group Management)
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.
sudo useradd -m -d /home/Sophia -s /bin/bash -g employee Sophia



sudo passwd Sophia



sudo useradd -m -d /home/Olivia -s /bin/bash -g payroll Olivia
sudo passwd Olivia

```
prescott-kowalski@CYSE270Linux:~$ sudo useradd -m -d /home/Olivia -s /bin/bash -
g payroll Olivia
prescott-kowalski@CYSE270Linux:~$ sudo passwd Olivia
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
```

sudo useradd -m -d /home/Emma -s /bin/bash -g admin Emma
sudo passwd Emma

```
prescott-kowalski@CYSE270Linux:~$ sudo useradd -m -d /home/Emma -s /bin/bash -g
admin Emma
prescott-kowalski@CYSE270Linux:~$ sudo passwd Emma
New password:
BAD PASSWORD: The password is shorter than 8 characters
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.

sudo groupadd pkowa002
sudo usermod -aG pkowa002 Sophia
sudo usermod -aG pkowa002 Olivia
sudo usermod -aG pkowa002 Emma

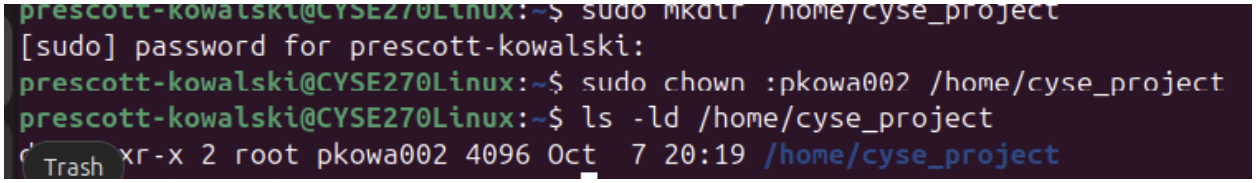
```
prescott-kowalski@CYSE270Linux:~$ sudo groupadd pkowa002
[sudo] password for prescott-kowalski:
prescott-kowalski@CYSE270Linux:~$ sudo usermod -aG pkowa002 Sophia
prescott-kowalski@CYSE270Linux:~$ sudo usermod -aG pkowa002 Olivia
prescott-kowalski@CYSE270Linux:~$ sudo usermod -aG pkowa002 Emma
```

groups Sophia
groups Olivia
groups Emma

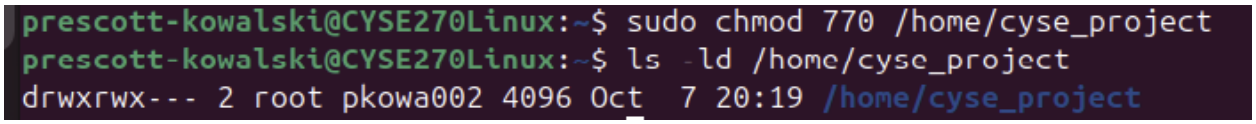
```
prescott-kowalski@CYSE270Linux:~$ groups Sophia
Sophia : employee pkowa002
prescott-kowalski@CYSE270Linux:~$ groups Olivia
Olivia : payroll pkowa002
prescott-kowalski@CYSE270Linux:~$ groups Emma
Emma : admin pkowa002
```

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.

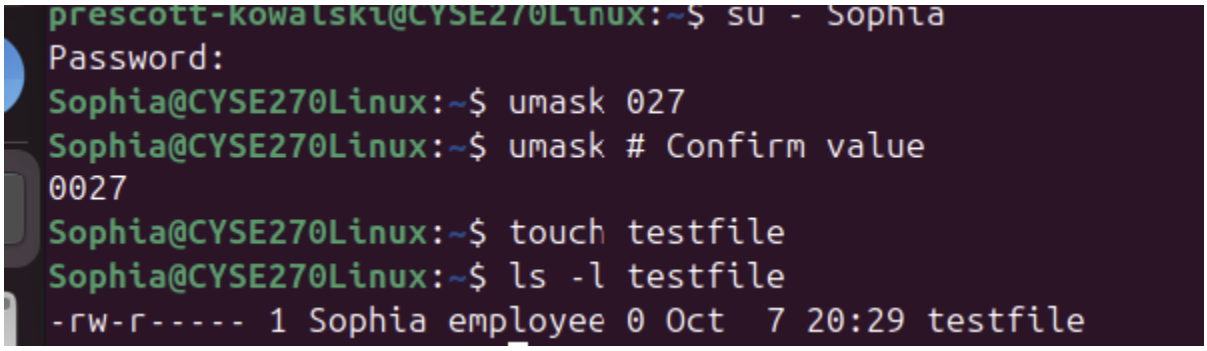
sudo mkdir /home/cyse_project
sudo chown :pkowa002 /home/cyse_project
ls -ld /home/cyse_project



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, rememberto check the permission of this shared directory.
sudo chmod 770 /home/cyse_project
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, andbpermission of a new file after this step.
su - Sophia
umask 027
umask # Confirm value
touch testfile
ls -l testfile



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)

echo "Prescott Kowalski" > ~/Sophia_homework
ls -l ~/Sophia_homework
cat ~/Sophia_homework

```
Sophia@CYSE270Linux:~$ echo "prescott Kowalski" > ~/Sophia_homework
Sophia@CYSE270Linux:~$ ls -l ~/Sophia_homework
-rw-r----- 1 Sophia employee 18 Oct  7 20:32 /home/Sophia/Sophia_homework
Sophia@CYSE270Linux:~$ cat ~/Sophia_homework
prescott Kowalski
```

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.
cp ~/Sophia_homework /home/cyse_project/
ls -l /home/cyse_project/Sophia_homework

```
Sophia@CYSE270Linux:~$ cp ~/Sophia_homework /home/cyse_project/
Sophia@CYSE270Linux:~$ ls -l /home/cyse_project/Sophia_homework
-rw-r----- 1 Sophia employee 18 Oct  7 20:33 /home/cyse_project/Sophia_homework
```

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

```
Sophia@CYSE270Linux:~$ su - Emma
Password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Emma@CYSE270Linux:~$ 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.
exit # From Emma
exit # From Sophia

```
Emma@CYSE270Linux:~$ exit # From Emma
logout
Sophia@CYSE270Linux:~$ exit # From Sophia
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.
sudo chmod g+s /home/cyse_project
ls -ld /home/cyse_project # Look for 'rwxrws---'

```
prescott-kowalski@CYSE270Linux:~$ sudo chmod g+s /home/cyse_project
prescott-kowalski@CYSE270Linux:~$ ls -ld /home/cyse_project # Look for 'rwxrws--
-'
drwxrws--- 2 root pkowa002 4096 Oct  7 20:33 /home/cyse_project
prescott-kowalski@CYSE270Linux:~$
```

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

```
prescott-kowalski@CYSE270Linux:~$ su - Sophia
Password:
```

cp ~/Sophia_homework /home/cyse_project/Sophia_homework2
ls -l /home/cyse_project/Sophia_homework2
exit

```
Sophia@CYSE270Linux:~$ cp ~/Sophia_homework /home/cyse_project/Sophia_homework2
Sophia@CYSE270Linux:~$ ls -l /home/cyse_project/Sophia_homework2
-rw-r----- 1 Sophia pkowa002 18 Oct  7 20:39 /home/cyse_project/Sophia_homework2
Sophia@CYSE270Linux:~$ exit
logout
```

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

su - Emma
cat /home/cyse_project/Sophia_homework2
exit

```
prescott-kowalski@CYSE270Linux:~$ su - Emma
Password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Emma@CYSE270Linux:~$ cat /home/cyse_project/Sophia_homework2
prescott Kowalski
Emma@CYSE270Linux:~$ exit
logout
```

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.
sudo chmod g-s /home/cyse_project
sudo chmod 760 /home/cyse_project
ls -ld /home/cyse_project

```
prescott-kowalski@CYSE270Linux:~$ sudo chmod g-s /home/cyse_project
prescott-kowalski@CYSE270Linux:~$ sudo chmod 760 /home/cyse_project
prescott-kowalski@CYSE270Linux:~$ ls -ld /home/cyse_project
drwxrw---- 2 root pkowa002 4096 Oct  7 20:39 /home/cyse_project
```

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

```
prescott-kowalski@CYSE270Linux:~$ su - Sophia
Password:
Sophia@CYSE270Linux:~$ cp ~/Sophia_homework /home/cyse_project/Sophia_homework3
cp: cannot stat '/home/cyse_project/Sophia_homework3': Permission denied
```

exit

```
Sophia@CYSE270Linux:~$ exit
logout
```

Step 3. Switch to Olivia's account. Try to read "Sophia_home3" in the /home/cyse_project directory.
su - Olivia
cat /home/cyse_project/Sophia_homework3
exit

```
prescott-kowalski@CYSE270Linux:~$ su - Olivia
Password:
Olivia@CYSE270Linux:~$ cat /home/cyse_project/Sophia_homework3
cat: /home/cyse_project/Sophia_homework3: Permission denied
Olivia@CYSE270Linux:~$ exit
logout
```

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.
su - Olivia
rm /home/cyse_project/Sophia_homework
exit

```
prescott-kowalski@CYSE270Linux:~$ su - Olivia
Password:
Olivia@CYSE270Linux:~$ rm /home/cyse_project/Sophia_homework
rm: cannot remove '/home/cyse_project/Sophia_homework': Permission denied
Olivia@CYSE270Linux:~$ exit
logout
```

Step 2. Switch to root account. Set the sticky bit permission, to make files can only be removed by the
owner of the file.
sudo chmod +t /home/cyse_project
ls -ld /home/cyse_project # Look for 'rwxrwx--T'

```
logout
prescott-kowalski@CYSE270Linux:~$ sudo chmod +t /home/cyse_project
prescott-kowalski@CYSE270Linux:~$ ls -ld /home/cyse_project # Look for 'rwxrws--
T'
drwxrw---T 2 root pkowa002 4096 Oct  7 20:39 /home/cyse_project
prescott-kowalski@CYSE270Linux:~$
```

Step 3. Switch to Olivia' account. Try to delete "Sophia_ homework3" in the /home/cyse_project directory. Can you delete it this time? Why?
su - olivia
rm /home/cyse_project/Sophia_homework3
 # Expected: Permission denied
exit
No, I can not delete it as sticky bit is activated and only the owner of the file can delete it.

```
prescott-kowalski@CYSE270Linux:~$ su - Olivia
Password:
Olivia@CYSE270Linux:~$ rm /home/cyse_project/Sophia_homework3
rm: cannot remove '/home/cyse_project/Sophia_homework3': Permission denied
Olivia@CYSE270Linux:~$ # Expected: Permission denied
Olivia@CYSE270Linux:~$ exit
logout
```