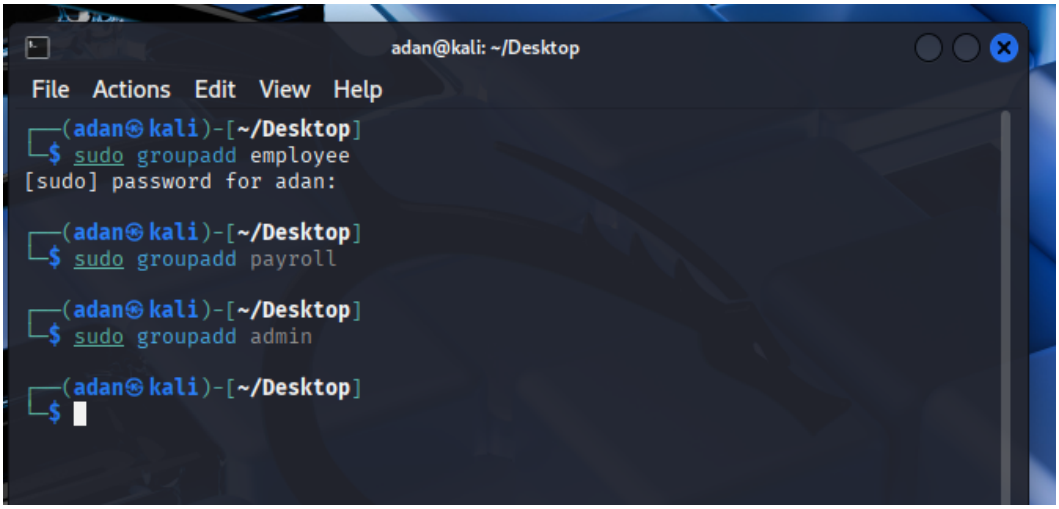
CYSE 270: Linux System for Cybersecurity

Lab 6 – File Permission

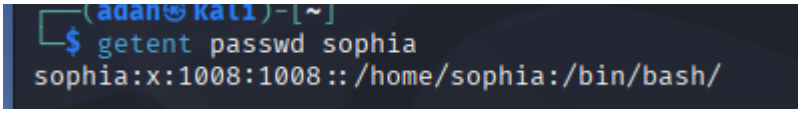
You need to configure the system to allow three users to perform the shared folder actions. Please submit the screenshot for all the steps in a word or pdf file

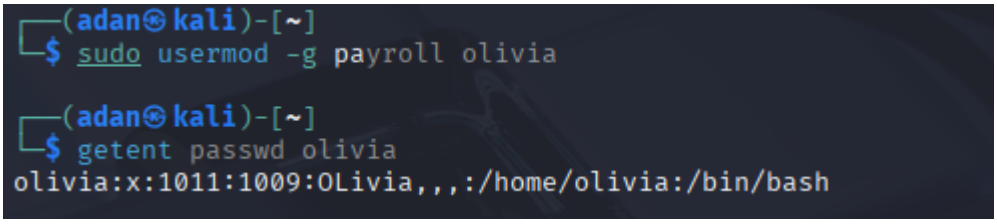
Task A: Get accounts and groups ready (70 points)

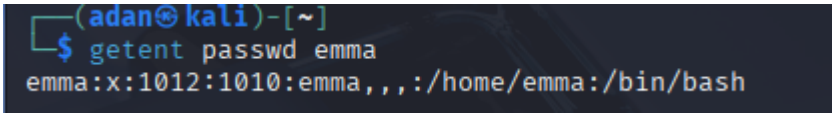
Step 1. Create three groups- **employee**, **payroll**, and **admin**. (You may refer to the slides under Module 2 – Group Management)



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.**







```
┌──(adan㉿kali)-[~]
└─$ sudo adduser emma
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for emma
Enter the new value, or press ENTER for the default
        Full Name []: emma
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y

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

Here is all three after I made them all

```
┌──(adan㉿kali)-[~]
└─$ id sophia olivia emma
uid=1008(sophia) gid=1008(employee) groups=1008(employee)
uid=1011(olivia) gid=1009(payroll) groups=1009(payroll),100(users)
uid=1012(emma) gid=1010(admin) groups=1010(admin),100(users)
```

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.**

```
┌──(adan㉿kali)-[~]
└─$ sudo groupadd arome017
```

```
┌──(adan㉿kali)-[~]
└─$ sudo usermod -aG arome017 sophia

┌──(adan㉿kali)-[~]
└─$ sudo usermod -aG arome017 olivia

┌──(adan㉿kali)-[~]
└─$ sudo usermod -aG arome017 emma
```

g

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
```

```
┌──(adan㉿kali)-[~]
└─$ ls -ld /home/cyse_project
drwxrwx--- 2 root arome017 4096 Oct 12 20:53 /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.**

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

```
┌──(adan㉿kali)-[~]
└─$ ls -ld /home/cyse_project
drwxrwx--- 2 root arome017 4096 Oct 12 20:53 /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.**

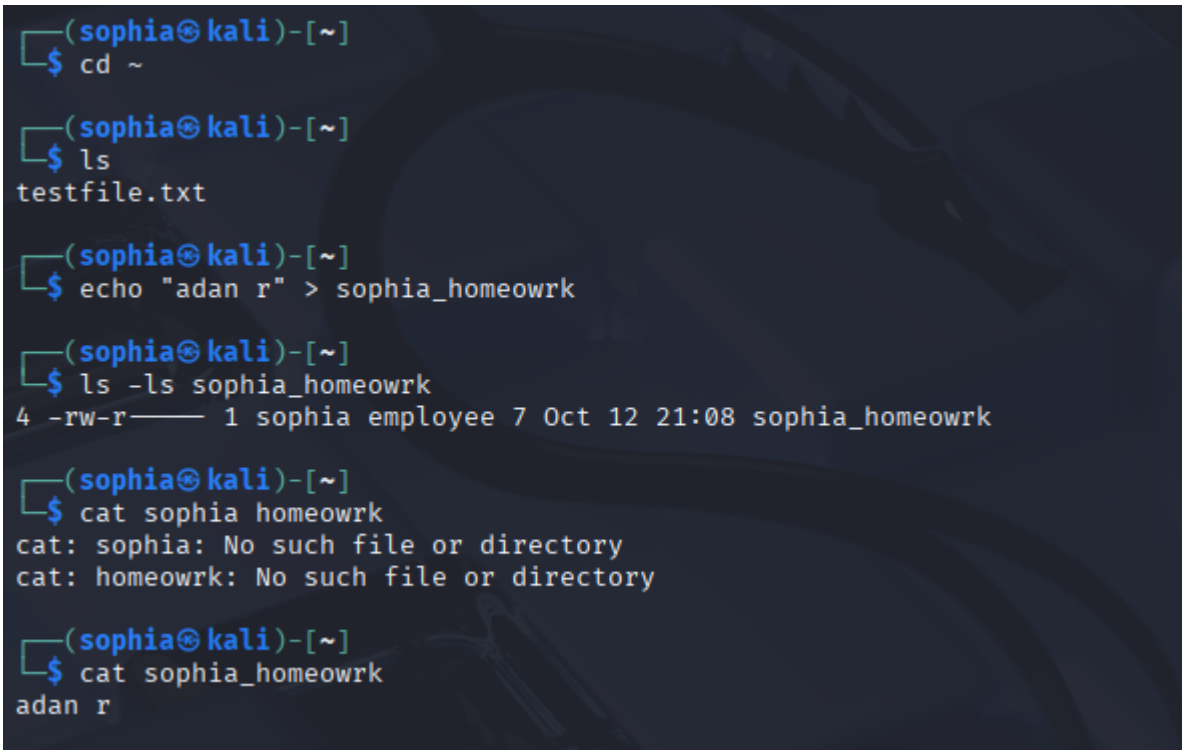
```
┌──(adan㉿kali)-[~]
└─$ su - sophia
Password:
┌──(sophia㉿kali)-[~]
└─$
```

```
┌──(sophia㉿kali)-[~]
└─$ umask
0026
```

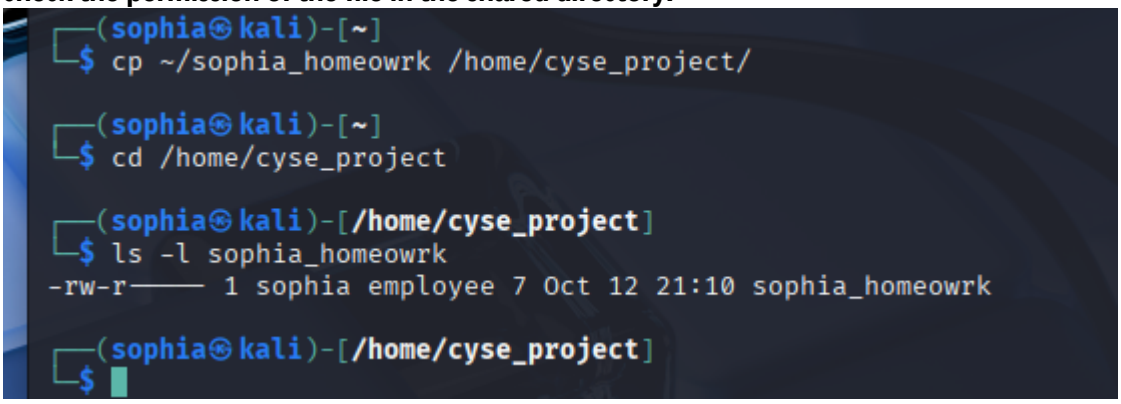
This is checking the file after setup

```
┌──(sophia㉿kali)-[~]
└─$ ls -l testfile.txt
-rw-r----- 1 sophia employee 0 Oct 12 21:04 testfile.txt
```

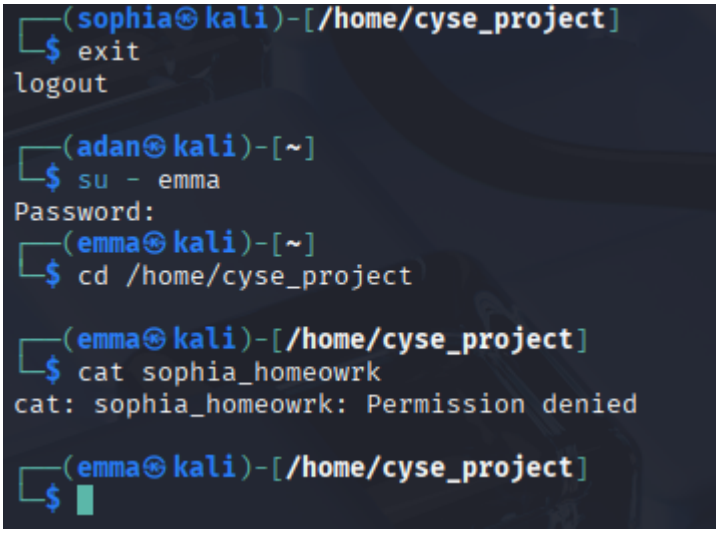
Step 7. Create a new file called "Sophia_homework" in the home directory of Sophia and put your name in the file as content. **After this step, remember to check the content and the permission of the new file. (ls -l Sophia_homework)**



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.**



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



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

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.

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

┌──(adan㉿kali)-[~]
└─$ ls -ld /home/cyse_project
drwxrws--- 2 root arome017 4096 Oct 12 21:10 /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 ~/sophia_homeowrk /home/cyse_project/sophia_homework2

┌──(sophia㉿kali)-[~]
└─$ ls -l /home/cyse_project/sophia_homework2
-rw-r----- 1 sophia arome017 7 Oct 12 21:18 /home/cyse_project/sophia_homewor
k2
```

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

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

┌──(emma㉿kali)-[/home/cyse_project]
└─$ ls
sophia_homeowrk  sophia_homework2

┌──(emma㉿kali)-[/home/cyse_project]
└─$ cat sophia_homework2
adan r

┌──(emma㉿kali)-[/home/cyse_project]
└─$
```

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.

```
┌──(adan㉿kali)-[~]
└─$ sudo chmod 700 /home/cyse_project

┌──(adan㉿kali)-[~]
└─$ sudo chmod g-s /home/cyse_project

┌──(adan㉿kali)-[~]
└─$ ls -ld /home/cyse_project
drwx------ 2 root arome017 4096 Oct 12 21:18 /home/cyse_project
```

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

It wont let you now.

```
┌──(sophia㉿kali)-[~]
└─$ cp ~/sophia_homeowrk /home/cyse_project/sophia_homeowrk3
cp: cannot stat '/home/cyse_project/sophia_homeowrk3': Permission denied
```

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

```
┌──(olivia㉿kali)-[~]
└─$ cd /home/cyse_project
-bash: cd: /home/cyse_project: Permission denied
```

.

```
┌──(olivia㉿kali)-[~]
└─$ cat sophia_homework3
cat: sophia_homework3: No such file or directory
```

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?