

Steps 1-2:

```
john@john-VirtualBox:~$ sudo groupadd employee
[sudo] password for john:
john@john-VirtualBox:~$ sudo groupadd payroll
john@john-VirtualBox:~$ sudo groupadd admin
john@john-VirtualBox:~$ getent group employee payroll admin
employee:x:1008:
payroll:x:1009:
admin:x:1010:
john@john-VirtualBox:~$ sudo useradd -m -g employee -s /bin/bash Sophia
john@john-VirtualBox:~$ sudo passwd Sophia
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
john@john-VirtualBox:~$ sudo passwd Sophia
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$ sudo useradd -m -g payroll -s /bin/bash Olivia
john@john-VirtualBox:~$ sudo passwd Olivia
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$ sudo useradd -m -g admin -s /bin/bash Emma
john@john-VirtualBox:~$ sudo passwd Emma
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$
```

Steps 3-5:

```
john@john-VirtualBox:~$ sudo passwd Sophia
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
john@john-VirtualBox:~$ sudo passwd Sophia
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$ sudo useradd -m -g payroll -s /bin/bash Olivia
john@john-VirtualBox:~$ sudo passwd Olivia
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$ sudo useradd -m -g admin -s /bin/bash Emma
john@john-VirtualBox:~$ sudo passwd Emma
New password:
Retype new password:
passwd: password updated successfully
john@john-VirtualBox:~$ sudo groupadd jam86851
john@john-VirtualBox:~$ sudo usermod -aG jam86851 Sophia
john@john-VirtualBox:~$ sudo usermod -aG jam86851 Olivia
john@john-VirtualBox:~$ sudo usermod -aG jam86851 Emma
john@john-VirtualBox:~$ groups Sophia
Sophia : employee jam86851
john@john-VirtualBox:~$ sudo mkdir /home/cyse_project
john@john-VirtualBox:~$ sudo chown :jam86851 /home/cyse_project
john@john-VirtualBox:~$ ls -ld /home/cyse_project
drwxr-xr-x 2 root jam86851 4096 Oct 12 17:28 /home/cyse_project
john@john-VirtualBox:~$ sudo chmod 770 /home/cyse_project
john@john-VirtualBox:~$ ls -ld /home/cyse_project
drwxrwx--- 2 root jam86851 4096 Oct 12 17:28 /home/cyse_project
john@john-VirtualBox:~$
```

Steps 6-8:

```
john@john-VirtualBox:~$ sudo su - Sophia
Sophia@john-VirtualBox:~$ umask 027
Sophia@john-VirtualBox:~$ umask
0027
Sophia@john-VirtualBox:~$ touch testfile
Sophia@john-VirtualBox:~$ ls -l testfile
-rw-r----- 1 Sophia employee 0 Oct 12 17:38 testfile
Sophia@john-VirtualBox:~$ echo "John" > ~/Sophia_homework
Sophia@john-VirtualBox:~$ ls -l ~/Sophia_homework
-rw-r----- 1 Sophia employee 5 Oct 12 17:39 /home/Sophia/Sophia_homework
Sophia@john-VirtualBox:~$ cat ~/Sophia_homework
John
Sophia@john-VirtualBox:~$ cp ~/Sophia_homework /home/cyse_project/
Sophia@john-VirtualBox:~$ ls -l /home/cyse_project/
total 4
-rw-r----- 1 Sophia employee 5 Oct 12 17:39 Sophia_homework
Sophia@john-VirtualBox:~$
```

Steps 9-10:

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

Emma@john-VirtualBox:~$ cd ..
Emma@john-VirtualBox:/home$ ls
cyse_project  Emma  john  Olivia  Sophia  user1  user2  user3  user4  user5  user6  xxxxxx
Emma@john-VirtualBox:/home$ sudo su - Emma
[sudo] password for Emma:
Emma@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework
cat: /home/cyse_project/Sophia_homework: Permission denied
Emma@john-VirtualBox:~$ exit
logout
Emma@john-VirtualBox:/home$
```

TASK B: Steps 1-3

```
Oct 12 17:46
Emma@john-VirtualBox: ~
Sophia@john-VirtualBox:~$ exit
logout
john@john-VirtualBox:~$ sudo su - Emma
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
Emma@john-VirtualBox:~$ cd ..
Emma@john-VirtualBox:/home$ ls
cyse_project Emma john Olivia Sophia user1 user2 user3 user4 user5 user6 xxxxx
Emma@john-VirtualBox:/home$ sudo su - Emma
[sudo] password for Emma:
Emma@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework
cat: /home/cyse_project/Sophia_homework: Permission denied
Emma@john-VirtualBox:~$ exit
logout
Emma@john-VirtualBox:/home$ sudo chmod g+s /home/cyse_project/
Emma@john-VirtualBox:/home$ ls -ld /home/cyse_project/
drwxrws--- 2 root jam86851 4096 Oct 12 17:39 /home/cyse_project/
Emma@john-VirtualBox:/home$ sudo su - Sophia
Sophia@john-VirtualBox:~$ cp ~/Sophia_homework /home/cyse_project/Sophia_homework2
Sophia@john-VirtualBox:~$ ls -l /home/cyse_project/
total 8
-rw-r----- 1 Sophia employee 5 Oct 12 17:39 Sophia_homework
-rw-r----- 1 Sophia jam86851 5 Oct 12 17:44 Sophia_homework2
Sophia@john-VirtualBox:~$ exit
logout
Emma@john-VirtualBox:/home$ sudo su - Emma
Emma@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework
cat: /home/cyse_project/Sophia_homework: Permission denied
Emma@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework2
John
Emma@john-VirtualBox:~$
```

TASK C steps 1-3:

```
Oct 12 18:06
Olivia@john-VirtualBox: ~
Sophia@john-VirtualBox:~$ cd ..
Sophia@john-VirtualBox:/home$ cd ..
Sophia@john-VirtualBox:/$ ls
bin cdrom etc lib lost+found mnt proc run snap swap.img tmp var
boot dev home lib64 media opt root sbin srv sys usr
Sophia@john-VirtualBox:/$ cd home
Sophia@john-VirtualBox:/home$ ls
cyse_project Emma john Olivia Sophia user1 user2 user3 user4 user5 user6 xxxxx
Sophia@john-VirtualBox:/home$ sudo chmod 750 /home/cyse_project/
[sudo] password for Sophia:
Sophia is not in the sudoers file.
Sophia@john-VirtualBox:/home$ exit
logout
root@john-VirtualBox:~# sudo su - Emma
Emma@john-VirtualBox:~$ ls
snap
Emma@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework2
John
Emma@john-VirtualBox:~$ exit
logout
root@john-VirtualBox:~# sudo chmod 750 /home/cyse_project
root@john-VirtualBox:~# ls -ld /home/cyse_project/
drwxr-s--- 2 root jam86851 4096 Oct 12 17:44 /home/cyse_project/
root@john-VirtualBox:~# sudo su - Sophia
Sophia@john-VirtualBox:~$ cp ~/Sophia_homework /home/cyse_project//Sophia_homework3
cp: cannot create regular file '/home/cyse_project//Sophia_homework3': Permission denied
Sophia@john-VirtualBox:~$ exit
logout
root@john-VirtualBox:~# sudo su - Olivia
Olivia@john-VirtualBox:~$ cat /home/cyse_project/Sophia_homework3
cat: /home/cyse_project/Sophia_homework3: No such file or directory
Olivia@john-VirtualBox:~$
```