

Assignment 1

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1 Introduction

The purpose of this assignment is to familiarize the student with user management and file permissions in Linux. The student should add two new users (Alice and Bob) to the student server - Alice is a friend and Bob is a "frenemy". The student should enable the sharing of sensitive files with Alice and make sure that Bob is not able to access these files.

2 Solution

The first step of the solution is for the student to add Alice and Bob as users on the student server. Then the student creates a new group (secrete_group) and adds Alice and (him/her)self as members. Next, the student creates a new folder (shared_folder) in his/her home directory and makes secrete_group the owner. Finally, the student changes the permissions of secrete_folder so that only members of secrete_group can access the content.

3 Implementation

3.1 Step 1

Student adds Alice and Bob as users on the student server.

```
student@ubuntu-2004:~$ sudo useradd --shell /bin/bash --create-home alice
student@ubuntu-2004:~$ sudo useradd --shell /bin/bash --create-home bob
student@ubuntu-2004:~$ sudo passwd alice
New password:
Retype new password:
passwd: password updated successfully
student@ubuntu-2004:~$ sudo passwd bob
New password:
Retype new password:
passwd: password updated successfully
```

3.2 Step 2

Student creates a group and adds Alice and student as members.

```
student@ubuntu-2004:~$ sudo groupadd secrete_group
student@ubuntu-2004:~$ sudo gpasswd -a alice secrete_group
Adding user alice to group secrete_group
```

```
student@ubuntu-2004:~$ sudo gpasswd -a student secrete_group
Adding user student to group secrete_group
```

3.3 Step 3

Student creates a folder in his/her home directory and makes secrete_group the owner.

```
student@ubuntu-2004:~$ mkdir shared_folder
student@ubuntu-2004:~$ sudo chown :secrete_group shared_folder
```

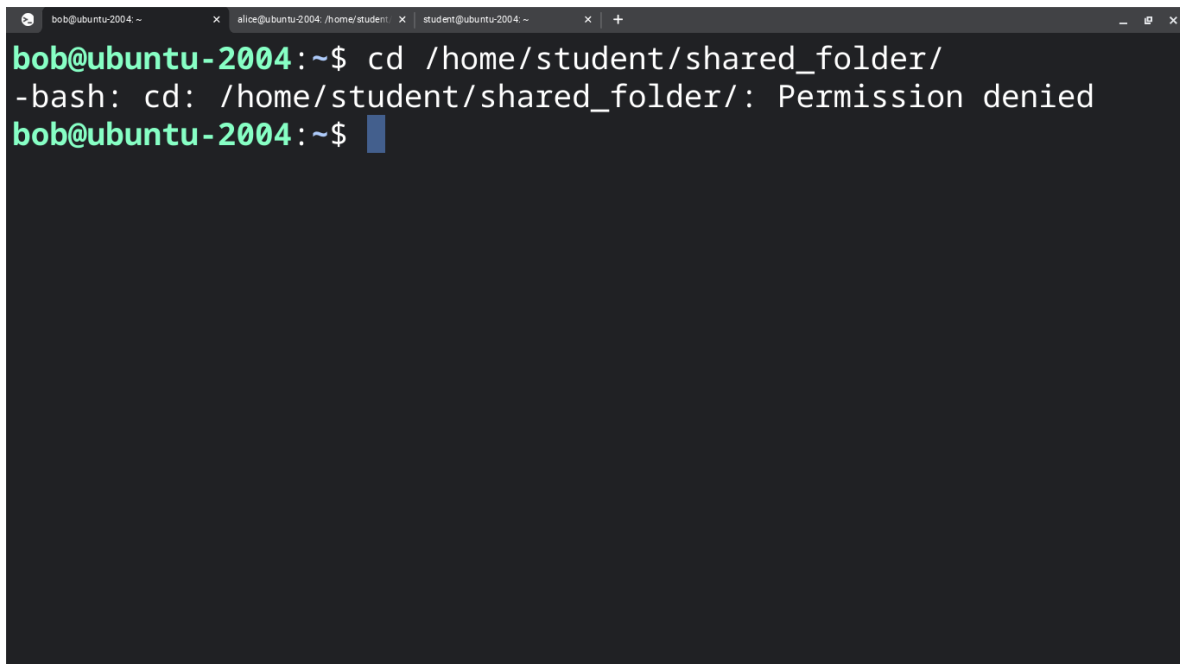
3.4 Step 4

Student changes the permissions of shared_folder so that only members of secrete_group can access the content.

```
student@ubuntu-2004:~$ sudo chmod 770 ./shared_folder
```

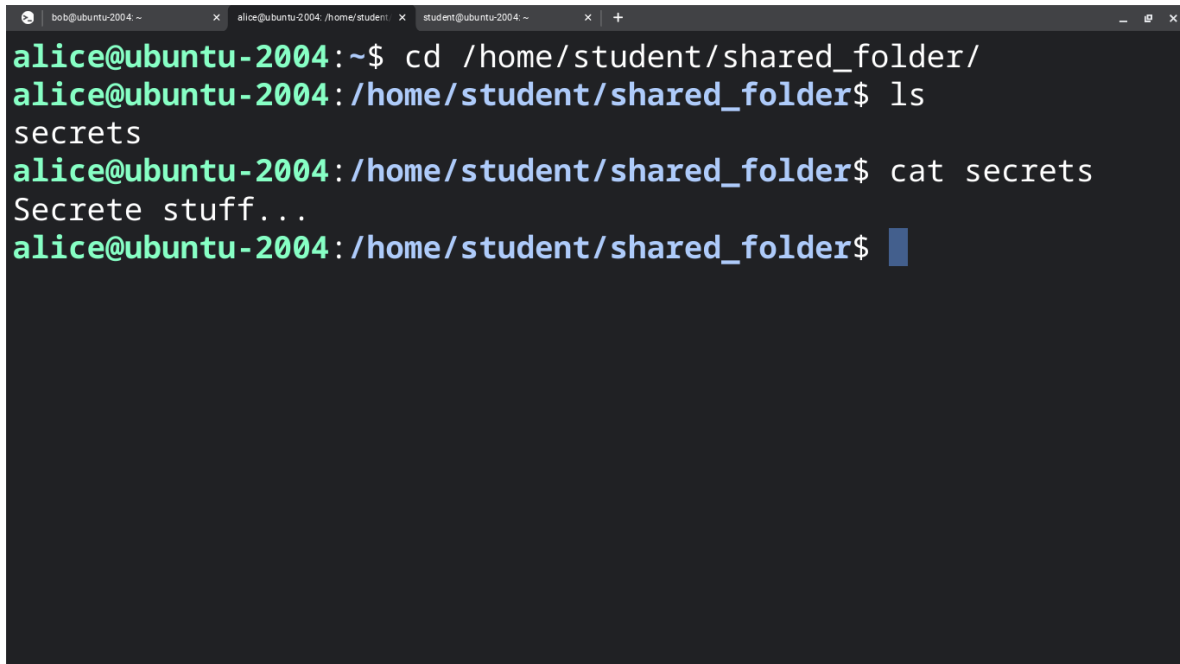
4 Test

Lets test...

A terminal window with three tabs: 'bob@ubuntu-2004 ~', 'alice@ubuntu-2004 /home/student', and 'student@ubuntu-2004 ~'. The active tab is 'bob@ubuntu-2004 ~'. The prompt is 'bob@ubuntu-2004:~\$'. The user enters 'cd /home/student/shared_folder/'. The terminal output is '-bash: cd: /home/student/shared_folder/: Permission denied'. The prompt returns to 'bob@ubuntu-2004:~\$' with a blue cursor. The terminal background is dark gray with green text for the prompt and white for the output.

```
bob@ubuntu-2004:~$ cd /home/student/shared_folder/
-bash: cd: /home/student/shared_folder/: Permission denied
bob@ubuntu-2004:~$
```

Figure 1: Bob is denied access to shared_folder.

A terminal window with three tabs: 'bob@ubuntu-2004: ~', 'alice@ubuntu-2004: /home/student', and 'student@ubuntu-2004: ~'. The active tab is 'alice@ubuntu-2004: /home/student'. The terminal shows the following commands and output:

```
alice@ubuntu-2004:~$ cd /home/student/shared_folder/
alice@ubuntu-2004:/home/student/shared_folder$ ls
secrets
alice@ubuntu-2004:/home/student/shared_folder$ cat secrets
Secrete stuff...
alice@ubuntu-2004:/home/student/shared_folder$
```

Figure 2: Alice is granted access to the content of shared_folder.

5 Explanation for Question 5

The permissions for the /tmp folder are drwxrwxrwt. This means that owner, group and the world have read, write and execution privileges. Accordingly, Bob (being part of the world) would have had access to the content of the secrete file, if it had been placed in /tmp.

```
student@ubuntu-2004:~$ ll / | grep tmp
drwxrwxrwt  14 root root      4096 Sep 15 15:33 tmp/
```

The permissions of shared_folder are drwxrwx—. This means that only owner (student) and group members (student and Alice) are allowed to read, write and execute its content.

```
student@ubuntu-2004:~$ ll ~ | grep shared_folder
drwxrwx---  2 student secrete_group 4096 Sep 15 13:33 shared_folder/
```