

1.Initially, log in as seed. Create a group called project1, and add seed to this group. You need to restart your system to ensure that the system recognizes your updated group membership. Verify the membership using command id.

create group named project1

-> sudo addgroup project1

add seed to project1 group

-> sudo usermod -a -G project1 seed

I restarted system to make sure my system recognizes the group and user.

I used id as command line

```
[09/01/23] seed@VM:~$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),1002(project1)
[09/01/23] seed@VM:~$ pwd
/home/seed
[09/01/23] seed@VM:~$ ls
Desktop    Downloads    Pictures    Templates
Documents  Music       Public      Videos
[09/01/23] seed@VM:~$ sudo addgroup project1
addgroup: The group `project1' already exists.
[09/01/23] seed@VM:~$ sudo usermod -a -G project1 seed
[09/01/23] seed@VM:~$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),1002(project1)
[09/01/23] seed@VM:~$
```

2.Create new user user1 and add it to project1 group too.

create new user 'user1'

-> sudo adduser user1

add user1 to project1

-> sudo usermod -a -G project1 user1

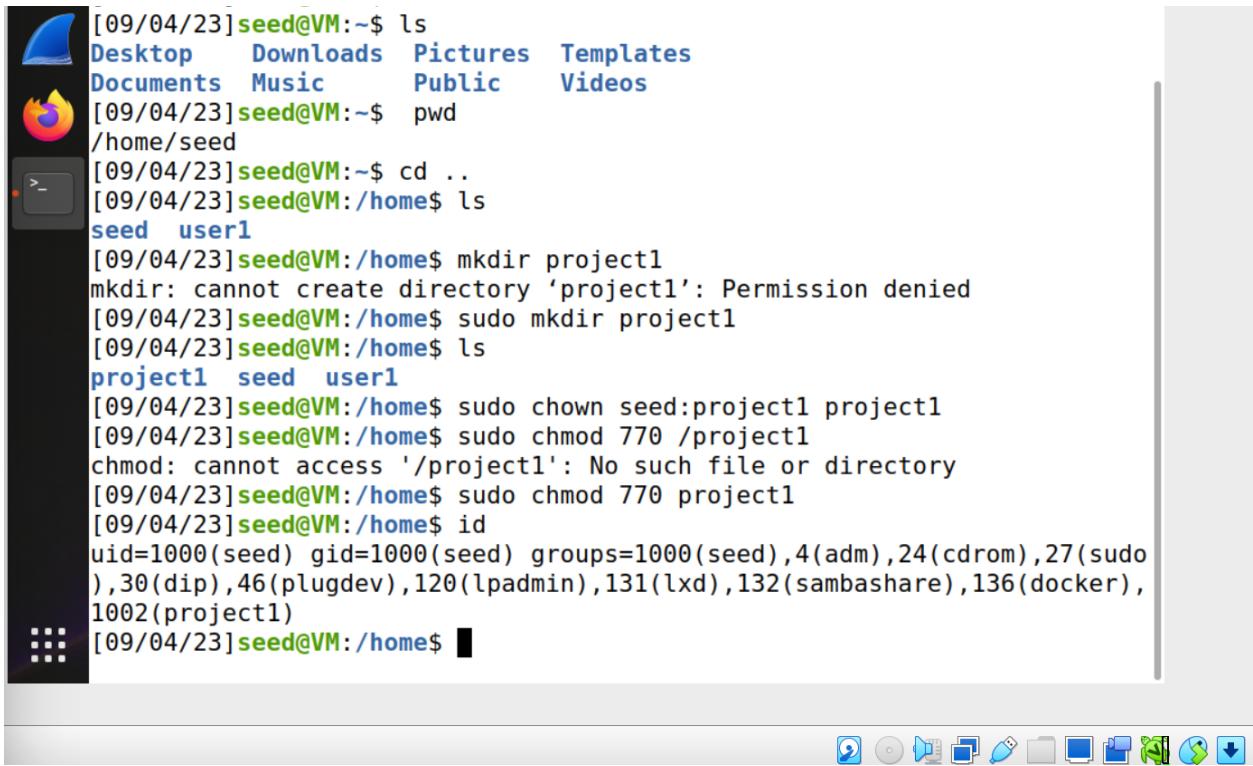
```
[09/01/23] seed@VM:~$ pwd  
/home/seed  
[09/01/23] seed@VM:~$ pwd  
/home/seed  
[09/01/23] seed@VM:~$ ls  
Desktop Downloads Pictures Templates  
Documents Music Public Videos  
[09/01/23] seed@VM:~$ sudo addgroup project1  
addgroup: The group `project1' already exists.  
[09/01/23] seed@VM:~$ sudo usermod -a -G project1 seed  
[09/01/23] seed@VM:~$ id  
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),2  
4(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(l  
xd),132(sambashare),136(docker),1002(project1)  
[09/01/23] seed@VM:~$ sudo adduser user1  
adduser: The user `user1' already exists.  
[09/01/23] seed@VM:~$  
[09/01/23] seed@VM:~$ sudo usermod -a -G project1 user1  
[09/01/23] seed@VM:~$ id  
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),2  
4(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(l  
xd),132(sambashare),136(docker),1002(project1)  
[09/01/23] seed@VM:~$
```

3.Create directory project1 under /home (i.e., /home/project1). Set its owner and group to seed and project1, respectively. Set its permission such that owner and group have full access (read/write/execute), and others have no access.

set owner and group permission to 770 so that owner and group have full access to this directory but others do not have read write execute access.

Set project1 directory's owner as seed and group as project1.

-> sudo chown seed:project1 project1

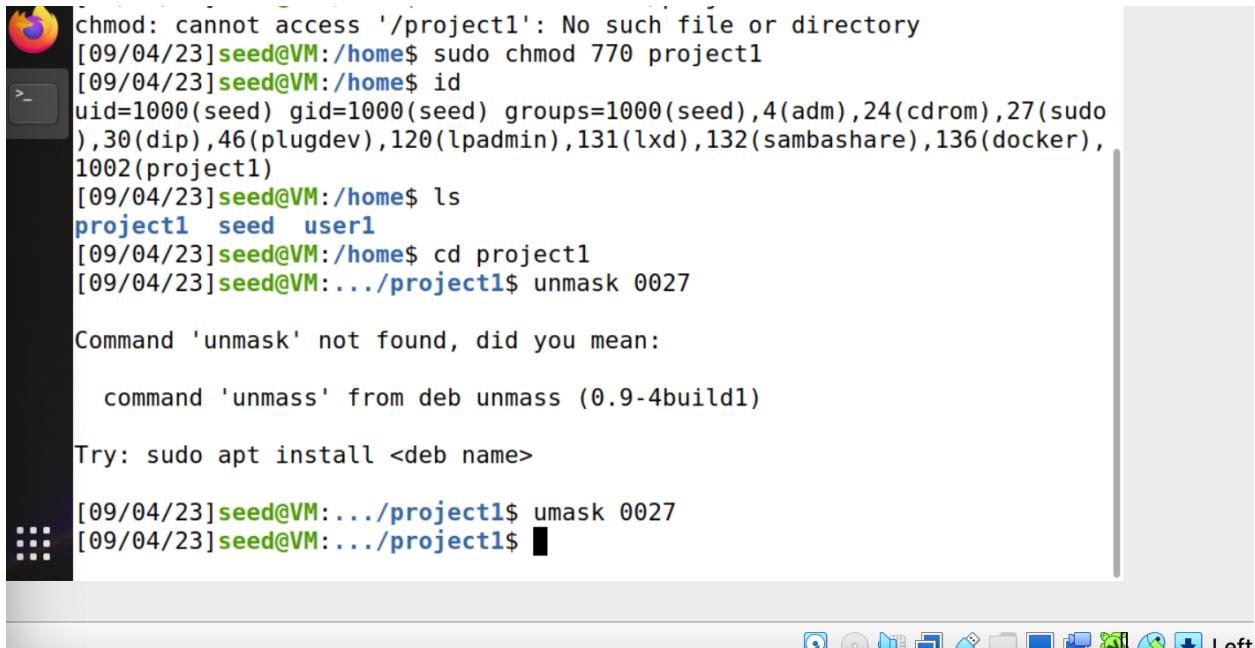


The screenshot shows a terminal window with a dark background and light-colored text. It displays the following command-line session:

```
[09/04/23]seed@VM:~$ ls
Desktop  Downloads  Pictures  Templates
Documents  Music    Public    Videos
[09/04/23]seed@VM:~$ pwd
/home/seed
[09/04/23]seed@VM:~$ cd ..
[09/04/23]seed@VM:/home$ ls
seed  user1
[09/04/23]seed@VM:/home$ mkdir project1
mkdir: cannot create directory 'project1': Permission denied
[09/04/23]seed@VM:/home$ sudo mkdir project1
[09/04/23]seed@VM:/home$ ls
project1  seed  user1
[09/04/23]seed@VM:/home$ sudo chown seed:project1 project1
[09/04/23]seed@VM:/home$ sudo chmod 770 /project1
chmod: cannot access '/project1': No such file or directory
[09/04/23]seed@VM:/home$ sudo chmod 770 project1
[09/04/23]seed@VM:/home$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),
,30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),
1002(project1)
[09/04/23]seed@VM:/home$
```

The terminal window has a dark theme with icons for file operations at the bottom. The command history shows the user attempting to create a directory 'project1' in their home directory, which fails due to permission denial. After using 'sudo' to run the command again, it succeeds. Then, the user changes the ownership of 'project1' to 'seed:project1' and sets its permissions to 770. Finally, they check their user ID and group information.

4. Set your umask to 0027. Explain what you expect this to achieve.



```
chmod: cannot access '/project1': No such file or directory
[09/04/23]seed@VM:/home$ sudo chmod 770 project1
[09/04/23]seed@VM:/home$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo)
,30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),
1002(project1)
[09/04/23]seed@VM:/home$ ls
project1 seed user1
[09/04/23]seed@VM:/home$ cd project1
[09/04/23]seed@VM:.../project1$ umask 0027

Command 'umask' not found, did you mean:

  command 'unmass' from deb unmass (0.9-4build1)

Try: sudo apt install <deb name>

[09/04/23]seed@VM:.../project1$ umask 0027
[09/04/23]seed@VM:.../project1$
```

I used umask 0027 to give file access permission to the owner as 0 ( unable to read/write/execute) group as 2( only able to write) and other as 7 ( read write execute available).

5. Download the latest Pro Git book as your first document in the project folder via the following command:

```
wget -P /home/project1 --no-check-certificate
https://github.com/progit/progit2/releases/download/2.1.407/progit.pdf
```

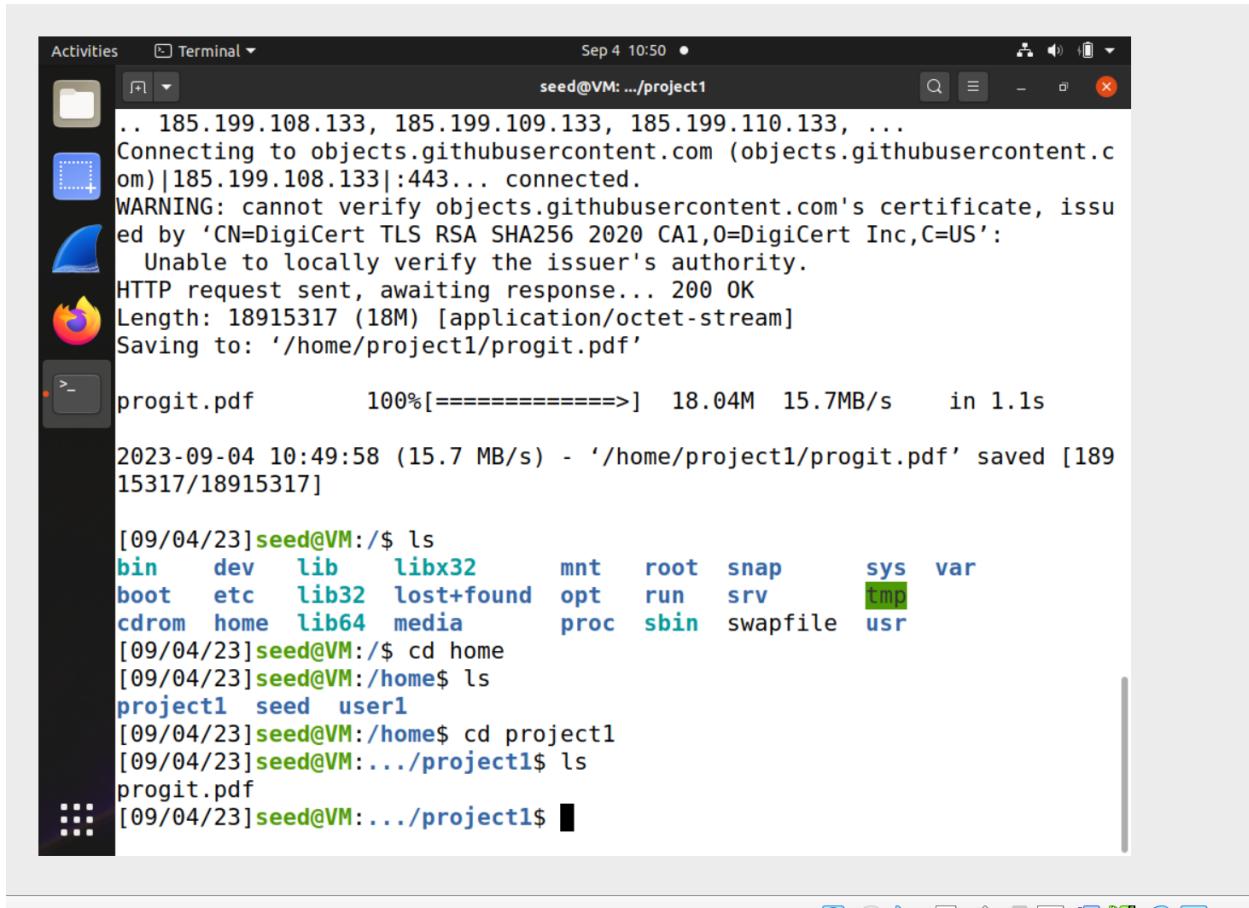
Downloaded Pro Git book in /home/project1

I used given command line to download progit.pdf file in project1 directory.

SEED-Ubuntu20.04 (lab2-1,2) [Running]

Activities Terminal Sep 4 10:50 seed@VM: .../project1

```
Try: sudo apt install <deb name>
[09/04/23]seed@VM:.../project1$ umask 0027
[09/04/23]seed@VM:.../project1$ cd ..
[09/04/23]seed@VM:/home$ ls
project1 seed user1
[09/04/23]seed@VM:/home$ pwd
/home
[09/04/23]seed@VM:/home$ cd ..
[09/04/23]seed@VM:/$ pwd
/
[09/04/23]seed@VM:/$ wget -P /home/project1 --no-check-certificate https://github.com/progit/progit2/releases/download/2.1.407/progit.pdf
--2023-09-04 10:49:36-- https://github.com/progit/progit2/releases/download/2.1.407/progit.pdf
Resolving github.com (github.com)... 140.82.112.3
Connecting to github.com (github.com)|140.82.112.3|:443... connected.
WARNING: cannot verify github.com's certificate, issued by 'CN=DigiCert TLS Hybrid ECC SHA384 2020 CA1, O=DigiCert Inc, C=US':
  Unable to locally verify the issuer's authority.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-releases-asset-2e65be/15400220/ca038c21-b96a-4841-9524-c0de3fbf8d24?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWNJYAX4CSVEH53A%2F20230904%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20230904T144952Z&X-Amz-Expires=300&X-Amz-Signature=c55edd1cc29690ee11502ad08a09883069c71cccdce7a914c51d
```

A screenshot of an Ubuntu desktop environment. A terminal window is open in the center, titled "Terminal". The title bar also shows the date and time: "Sep 4 10:50". The terminal window contains the following text:

```
Activities Terminal Sep 4 10:50 •
seed@VM: .../project1
... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199.108.133|:443... connected.
WARNING: cannot verify objects.githubusercontent.com's certificate, issued by 'CN=DigiCert TLS RSA SHA256 2020 CA1, O=DigiCert Inc, C=US':
    Unable to locally verify the issuer's authority.
HTTP request sent, awaiting response... 200 OK
Length: 18915317 (18M) [application/octet-stream]
Saving to: '/home/project1/progit.pdf'

progit.pdf      100%[=====] 18.04M 15.7MB/s   in 1.1s

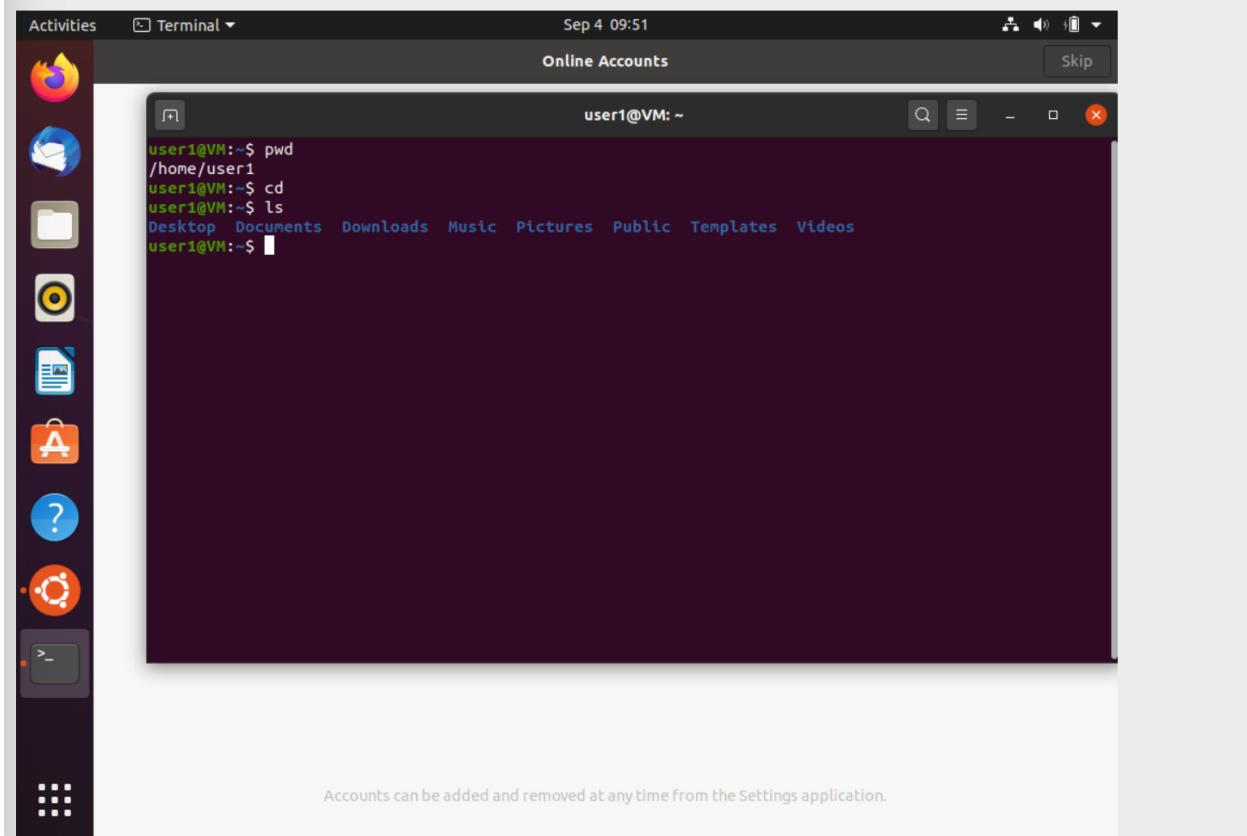
2023-09-04 10:49:58 (15.7 MB/s) - '/home/project1/progit.pdf' saved [18915317/18915317]

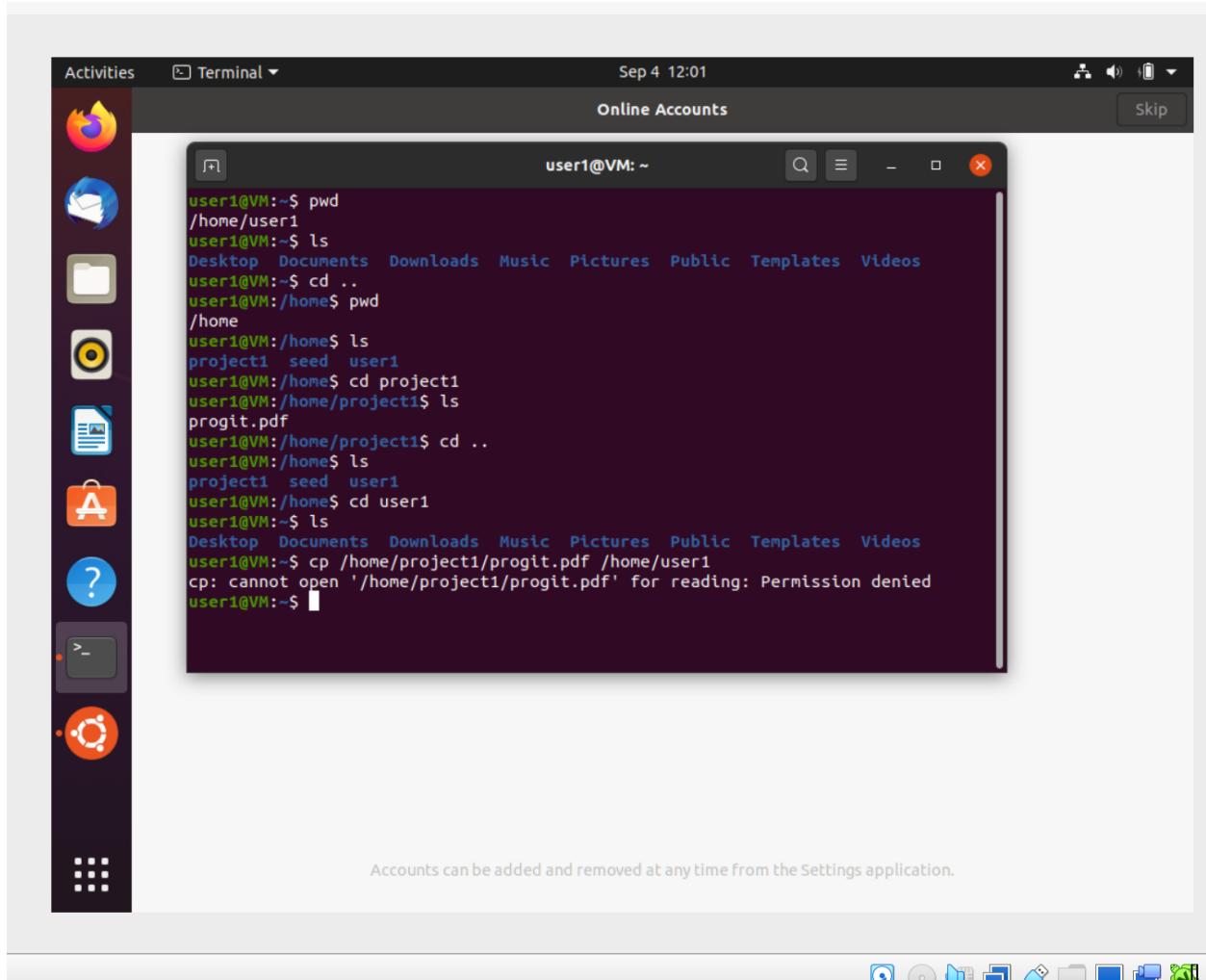
[09/04/23]seed@VM:/$ ls
bin  dev  lib  libx32  mnt  root  snap  sys  var
boot  etc  lib32  lost+found  opt  run  srv  tmp
cdrom  home  lib64  media  proc  sbin  swapfile  usr
[09/04/23]seed@VM:/$ cd home
[09/04/23]seed@VM:/home$ ls
project1  seed  user1
[09/04/23]seed@VM:/home$ cd project1
[09/04/23]seed@VM:.../project1$ ls
progit.pdf
[09/04/23]seed@VM:.../project1$
```

6. Switch user to (or log in as) user1. Try copying the downloaded file /home/project1/progit.pdf to /home/user1 and report the result. Discuss why.

I am unable to copy progit.pdf as user1. Because directory folder project1 is setted permission to owner and group to access this folder as read/write/execute. Other's permission is not allowed for read/write/execute. Therefore, user1 is unable to download the file or copy the file.

SEED-Ubuntu20.04 (lab2-1,2) [Running]





# As we can see above, access was denied because there was no permission for user1 to copy the progit.pdf file.

7.Switch back to user seed. Can you change the properties of the downloaded file so that it will be accessible to user1 too? Once done, verify it by retrying Step 5.

```
Access: (2770/drwxrws---)Uid: ( 1000/ seed) Gid: ( 1002/project1)
Access: 2023-09-05 15:45:04.845325930 -0400
Modify: 2023-09-04 10:49:57.676734264 -0400
Change: 2023-09-05 15:44:58.898037587 -0400
Birth: -
[09/05/23]seed@VM:/home$ sudo usermod -a -G project1 user1
[09/05/23]seed@VM:/home$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),
30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),
1002(project1)
[09/05/23]seed@VM:/home$ cd project1
[09/05/23]seed@VM:.../project1$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),
30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),
1002(project1)
[09/05/23]seed@VM:.../project1$
```

# instead of setting permission of project1 file to 777 permission, I added user1 into group project1. Since group project1 has full access to the project1 directory. This way user1 can access the project1 folder.

And then Change file owner and/or group using chown command line so that group project1 can access downloaded file named as progit.pdf. Since user1 is in group project1. User1 can access to progit.pdf.

->Sudo chown :project1 project1/progit.pdf

SEED-Ubuntu20.04 (lab2-1,2) [Running]

A screenshot of an Ubuntu 20.04 desktop environment. A terminal window titled 'Terminal' is open, showing a command-line session. The session starts with 'cd project1' and ends with 'stat project1'. The terminal window has a dark background with light-colored text. The desktop interface includes a dock at the bottom with icons for various applications like Dash, Home, and File Manager.

```
Activities Terminal Sep 4 12:37 seed@VM: /home
[09/04/23]seed@VM:/home$ cd project1
[09/04/23]seed@VM:/home$ stat
stat: missing operand
Try 'stat --help' for more information.
[09/04/23]seed@VM:.../project1$ ls
progit.pdf
[09/04/23]seed@VM:.../project1$ cd progit.pdf
bash: cd: progit.pdf: Not a directory
[09/04/23]seed@VM:.../project1$ stat
stat: missing operand
Try 'stat --help' for more information.
[09/04/23]seed@VM:.../project1$ stat project1
stat: cannot stat 'project1': No such file or directory
[09/04/23]seed@VM:.../project1$ cd ..
[09/04/23]seed@VM:/home$ stat project1
  File: project1
  Size: 4096          Blocks: 8          IO Block: 4096   directory
Device: 805h/2053d      Inode: 1051698    Links: 2
Access: (0777/drwxrwxrwx) Uid: ( 1000/    seed)    Gid: ( 1002/project
Access: 2023-09-04 12:36:04.963845569 -0400
Modify: 2023-09-04 10:49:57.676734264 -0400
Change: 2023-09-04 12:34:01.808019534 -0400
 Birth: -
[09/04/23]seed@VM:/home$
```

```
## add user1 into group project1. So if there is a file that accessible as group project1 then user1 can also access to it.
```

SEED-Ubuntu20.04 (lab2-1,2) [Running]

```
Activities Terminal Sep 4 12:38 • seed@VM: .../project1
Try 'stat --help' for more information.
[09/04/23]seed@VM:.../project1$ stat project1
stat: cannot stat 'project1': No such file or directory
[09/04/23]seed@VM:.../project1$ cd ..
[09/04/23]seed@VM:/home$ stat project1
  File: project1
  Size: 4096          Blocks: 8          IO Block: 4096   directory
Device: 805h/2053d    Inode: 1051698    Links: 2
Access: (0777/drwxrwxrwx)  Uid: ( 1000/    seed)    Gid: ( 1002/project1)
Access: 2023-09-04 12:36:04.963845569 -0400
Modify: 2023-09-04 10:49:57.676734264 -0400
Change: 2023-09-04 12:34:01.808019534 -0400
 Birth: -
[09/04/23]seed@VM:/home$ sudo usermod -a -G project1 user1
sudo: username: command not found
[09/04/23]seed@VM:/home$ cd project1
[09/04/23]seed@VM:.../project1$ sudo usermod -a -G project1 user1
sudo: username: command not found
[09/04/23]seed@VM:.../project1$ sudo usermod -a -G project1 user1
[09/04/23]seed@VM:.../project1$ id
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),1002(project1)
[09/04/23]seed@VM:.../project1$ id user1
uid=1001(user1) gid=1001(user1) groups=1001(user1),1002(project1)
[09/04/23]seed@VM:.../project1$
```

# check whether user1 is added to group named project1

# log in as user1 and see

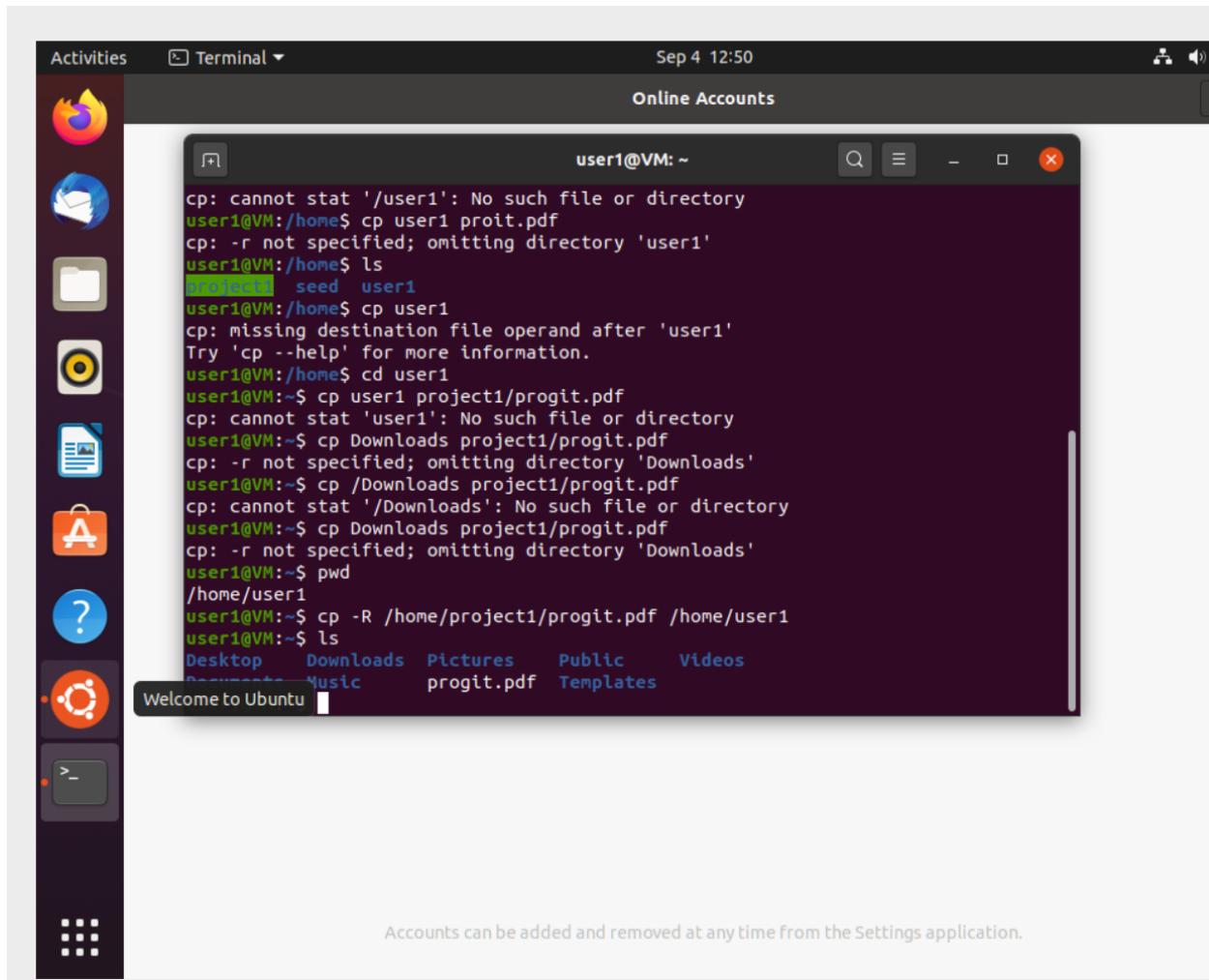
SEED-Ubuntu20.04 (lab2-1,2) [Running]

Activities Terminal Sep 1 18:48

```
[09/01/23] seed@VM:~$ pwd
/home/seed
[09/01/23] seed@VM:~$ ls
Desktop Downloads Pictures Public Videos
Documents Music project1 Templates
[09/01/23] seed@VM:~$ cd project1
[09/01/23] seed@VM:~/project1$ ls
progit.pdf
[09/01/23] seed@VM:~/project1$ cp progit.pdf project1
[09/01/23] seed@VM:~/project1$ ls
progit.pdf project1
[09/01/23] seed@VM:~/project1$
```

Settings

Left ☰



# Download progit.pdf on user1

8.Research how you can ensure that future files created in /home/project1 will be available to project1 members (not everyone) without needing to change ownership explicitly for every downloaded file. Implement it and verify the result by deleting and re-downloading the book above.

Hint: You need to set a special permission for the directory.

I will delete the download progit.pdf file from part 6.

The screenshot shows a terminal window titled "user1@VM: ~". The user is navigating through their home directory and attempting to copy files. They first list the contents of their home directory, then try to copy a file named "user1" but receive an error message about missing a destination operand. They then change into the "user1" directory and attempt to copy a file named "progit.pdf" to "Downloads", but receive an error message about "-r not specified; omitting directory 'Downloads'". They then try to copy from "Downloads" to the current directory, but receive an error message about "/Downloads" not being a file or directory. Finally, they copy "progit.pdf" from the current directory to their home directory, and then list the contents again to show the file has been moved.

```
user1@VM:/home$ ls
project1 seed user1
user1@VM:/home$ cp user1
cp: missing destination file operand after 'user1'
Try 'cp --help' for more information.
user1@VM:/home$ cd user1
user1@VM:~/user1$ cp user1 project1/progit.pdf
cp: cannot stat 'user1': No such file or directory
user1@VM:~/user1$ cp Downloads project1/progit.pdf
cp: -r not specified; omitting directory 'Downloads'
user1@VM:~/user1$ cp /Downloads project1/progit.pdf
cp: cannot stat '/Downloads': No such file or directory
user1@VM:~/user1$ cp Downloads project1/progit.pdf
cp: -r not specified; omitting directory 'Downloads'
user1@VM:~/user1$ pwd
/home/user1
user1@VM:~/user1$ cp -R /home/project1/progit.pdf /home/user1
user1@VM:~/user1$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
user1@VM:~/user1$ rm progit.pdf
user1@VM:~/user1$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
user1@VM:~/user1$
```

-> log out as user1 and log in as seed to change permission for directory project1  
-> umask 002 # this will allow group to able to write

-> chgrp project1 project1 # this will set project1 directory to group project1

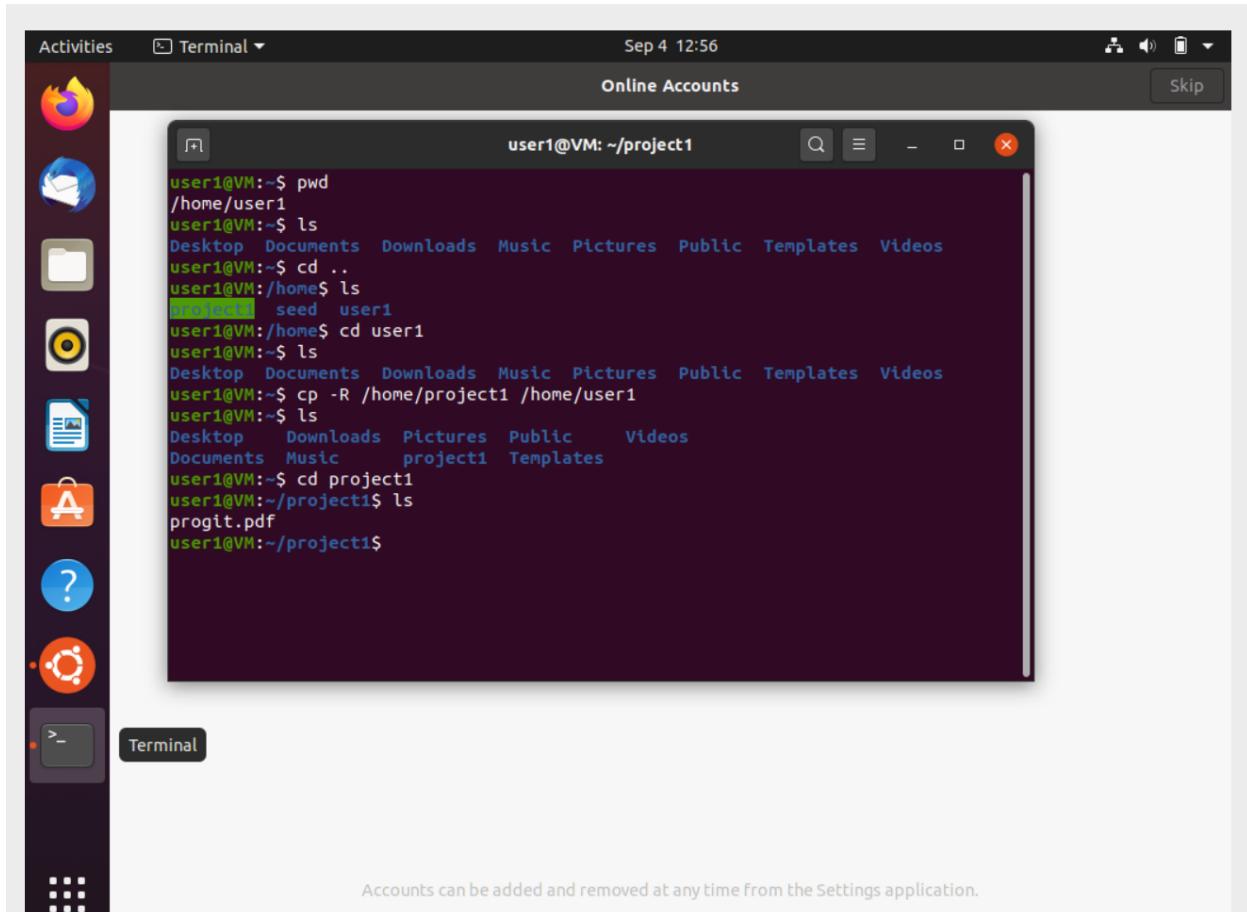
-> chmod g+s project1 # directory project1 will be with group named as project1

So all project1 groups can access.

A screenshot of a Linux desktop environment, likely elementary OS, showing a terminal window titled "Terminal". The terminal window has a dark theme and displays a command-line session. The session starts with the user "seed" at a VM, navigating to their home directory, setting umask to 0002, and listing files. The user then changes into the "project1" directory, sets umask to 0002 again, and attempts to change group ownership using "chgrp" but receives an error message about not being able to access the directory. The user then changes back to the parent directory and successfully changes group ownership using "chgrp project1 project1". Finally, the user checks their ID and changes permissions using "chmod g+s project1". The terminal window is located in the top panel of the desktop environment.

```
[09/04/23] seed@VM:~$ pwd  
/home/seed  
[09/04/23] seed@VM:~$ umask  
0002  
[09/04/23] seed@VM:~$ cd ..  
[09/04/23] seed@VM:/home$ ls  
project1  seed  user1  
[09/04/23] seed@VM:/home$ cd project1  
[09/04/23] seed@VM:.../project1$ umask  
0002  
[09/04/23] seed@VM:.../project1$  
[09/04/23] seed@VM:.../project1$ chgrp project1 project1  
chgrp: cannot access 'project1': No such file or directory  
[09/04/23] seed@VM:.../project1$ cd ..  
[09/04/23] seed@VM:/home$ chgrp project1 project1  
[09/04/23] seed@VM:/home$ id  
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),1002(project1)  
[09/04/23] seed@VM:/home$ chmod g+s project1  
[09/04/23] seed@VM:/home$ id  
uid=1000(seed) gid=1000(seed) groups=1000(seed),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),120(lpadmin),131(lxd),132(sambashare),136(docker),1002(project1)  
[09/04/23] seed@VM:/home$
```

```
# download progit.pdf as user1 again.
```



# The above terminal shows that I could download the project1 directory to user1 and I was still able to access the copy progit.pdf file.