

Mark A. Gela

Professor Alberto

CIS-106-ME1: Linux Fundamentals

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Building a File Server: SAMBA File Server

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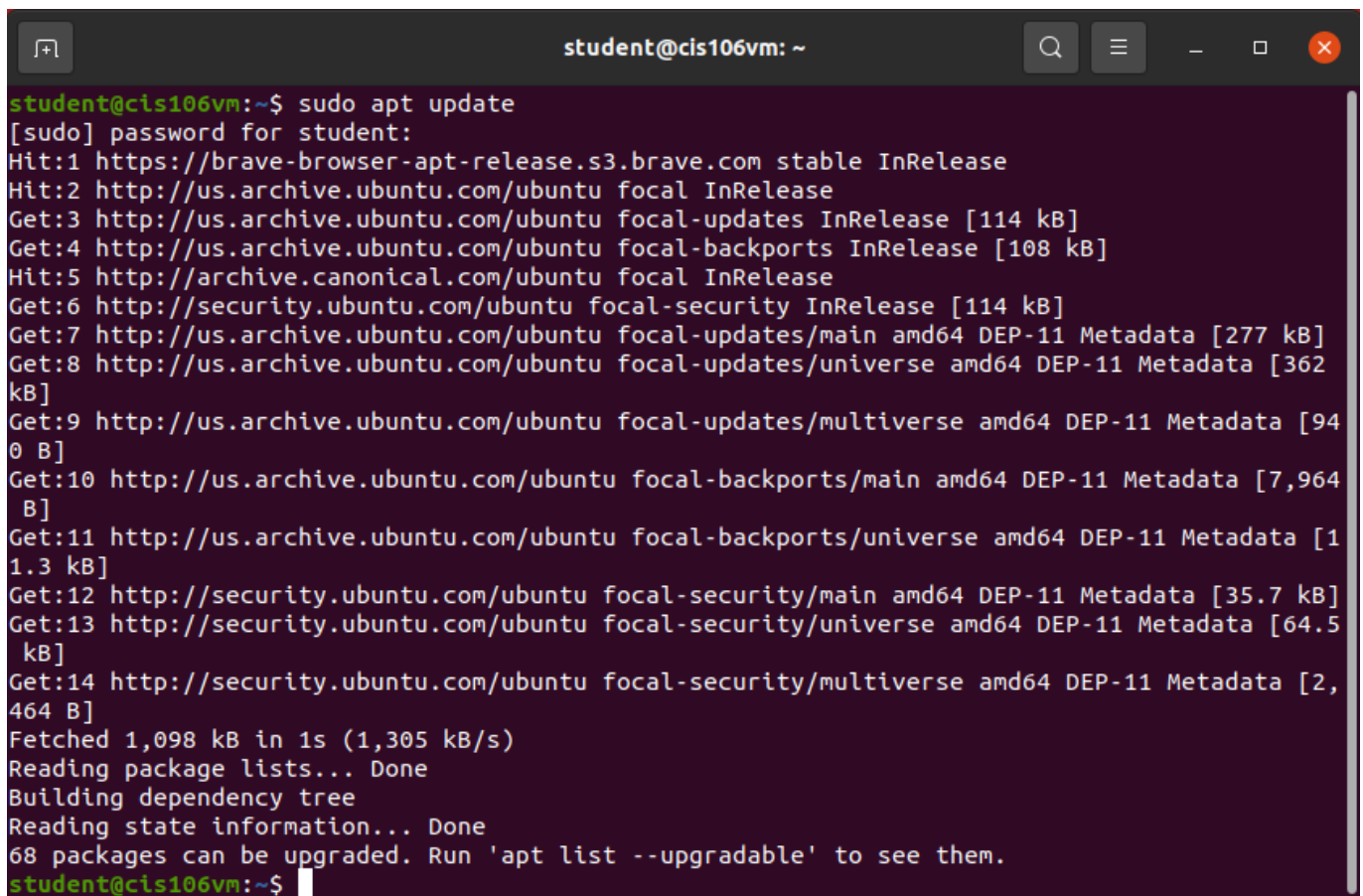
1. Installing SAMBA

1. Open your Linux terminal.
2. Enter

```
sudo apt update
```

This will update your repository to check for any changes.

sudo - super user do **apt** - task to install,remove,update software **update** - command for apt to update software

A terminal window titled 'student@cis106vm: ~' showing the output of the 'sudo apt update' command. The output lists various repositories and their metadata sizes, including brave-browser, ubuntu focal, focal-updates, focal-backports, focal-security, and focal-updates/main, universe, and multiverse. It also shows the total size of the fetched data (1,098 kB) and the time taken (1s). The terminal output is as follows:

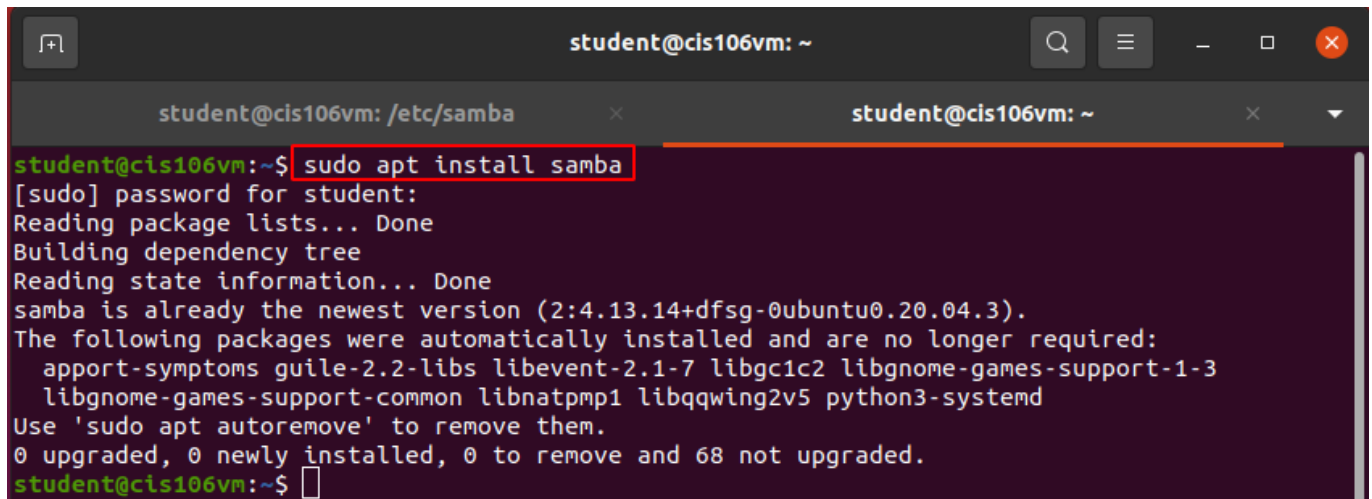
```
student@cis106vm:~$ sudo apt update
[sudo] password for student:
Hit:1 https://brave-browser-apt-release.s3.brave.com stable InRelease
Hit:2 http://us.archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Hit:5 http://archive.canonical.com/ubuntu focal InRelease
Get:6 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [277 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [362 kB]
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [940 B]
Get:10 http://us.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [7,964 B]
Get:11 http://us.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [11.3 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [35.7 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [64.5 kB]
Get:14 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Fetched 1,098 kB in 1s (1,305 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
68 packages can be upgraded. Run 'apt list --upgradable' to see them.
student@cis106vm:~$
```

3. Enter

```
sudo apt install samba
```

This will install the application samba.

install - command for apt to install software **samba** - installing SAMBA software from the repository



```
student@cis106vm: ~  
student@cis106vm: /etc/samba x student@cis106vm: ~ x  
student@cis106vm:~$ sudo apt install samba  
[sudo] password for student:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
samba is already the newest version (2:4.13.14+dfsg-0ubuntu0.20.04.3).  
The following packages were automatically installed and are no longer required:  
  apport-symptoms guile-2.2-libs libevent-2.1-7 libgc1c2 libgnome-games-support-1-3  
  libgnome-games-support-common libnatpmp1 libqqwing2v5 python3-systemd  
Use 'sudo apt autoremove' to remove them.  
0 upgraded, 0 newly installed, 0 to remove and 68 not upgraded.  
student@cis106vm:~$
```

SAMBA was preinstalled for me already.

2. Checking the status of SAMBA

1. Enter

```
sudo systemctl status smbd
```

This will check if your Samba server is active or running.

systemctl - command to control the system manager. **status** - show the runtime status of a unit
smbd - the software unit being selected.

```
student@cis106vm: ~  
student@cis106vm:~$ sudo systemctl status smbd  
● smbd.service - Samba SMB Daemon  
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)  
   Active: active (running) since Wed 2021-12-08 15:44:02 EST; 4 days ago  
     Docs: man:smbd(8)  
           man:samba(7)  
           man:smb.conf(5)  
  Main PID: 66156 (smbd)  
    Status: "smbd: ready to serve connections..."  
   Tasks: 4 (limit: 2312)  
  Memory: 6.6M  
   CGroup: /system.slice/smbd.service  
           └─66156 /usr/sbin/smbd --foreground --no-process-group  
             └─66158 /usr/sbin/smbd --foreground --no-process-group  
               └─66159 /usr/sbin/smbd --foreground --no-process-group  
                 └─66160 /usr/sbin/smbd --foreground --no-process-group  
  
Dec 08 15:44:02 cis106vm systemd[1]: Starting Samba SMB Daemon...  
Dec 08 15:44:02 cis106vm systemd[1]: Started Samba SMB Daemon.  
student@cis106vm:~$
```

2. Enter

```
sudo systemctl stop smbd
```

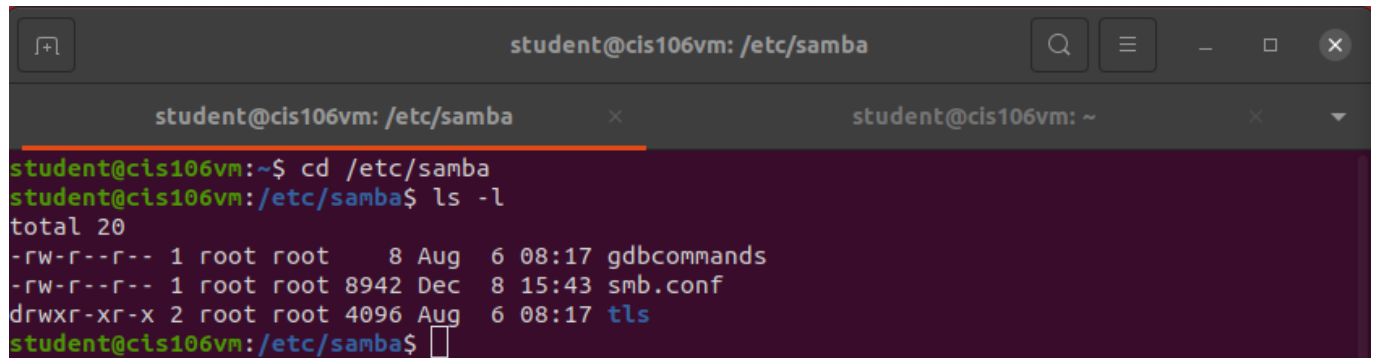
This will stop the Samba server. We will configure the Samba server while it is down then restart it once we are done.

stop - command to stop a piece of software **smbd** - the Samba SMB Daemon software

```
student@cis106vm: ~  
student@cis106vm:~$ sudo systemctl stop smbd  
student@cis106vm:~$ sudo systemctl status smbd  
● smbd.service - Samba SMB Daemon  
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)  
   Active: inactive (dead) since Mon 2021-12-13 00:04:27 EST; 4s ago  
     Docs: man:smbd(8)  
           man:samba(7)  
           man:smb.conf(5)  
  Process: 66156 ExecStart=/usr/sbin/smbd --foreground --no-process-group $SMBDOPTIONS (c  
 Main PID: 66156 (code=killed, signal=TERM)  
    Status: "smbd: ready to serve connections..."  
  
Dec 08 15:44:02 cis106vm systemd[1]: Starting Samba SMB Daemon...  
Dec 08 15:44:02 cis106vm systemd[1]: Started Samba SMB Daemon.  
Dec 13 00:04:27 cis106vm systemd[1]: Stopping Samba SMB Daemon...  
Dec 13 00:04:27 cis106vm systemd[1]: smbd.service: Succeeded.  
Dec 13 00:04:27 cis106vm systemd[1]: Stopped Samba SMB Daemon.  
lines 1-15/15 (END)
```

3. Configuring the SAMBA config file

SAMBA has made a new directory in the etc directory. Your SAMBA server should also be inactive or dead.



```
student@cis106vm: /etc/samba
student@cis106vm: /etc/samba$ ls -l
total 20
-rw-r--r-- 1 root root 8 Aug 6 08:17 gdbcommands
-rw-r--r-- 1 root root 8942 Dec 8 15:43 smb.conf
drwxr-xr-x 2 root root 4096 Aug 6 08:17 tls
student@cis106vm: /etc/samba$
```

1. Back Up the conf. file by entering this command while in the **etc/samba** directory.

```
sudo mv smb.conf smb.conf.bak
```

This will rename the extension of the smb.conf file to a smb.conf.bak file. **mv** - command to move files or directories. This can also rename files.

2. Create a new smb.conf file with this command

```
sudo nano smb.conf
```

This will make a new smb.conf file and it will be opened with the program nano. **nano** - text editor

3. Set up the smb.conf file in this way.

```
[global] server string = Samba Server workgroup = WORKGROUP security = user map to guest
= Bad User name resolve order = bcast host include = /etc/samba/shares.conf
```

[global] is the header section of config options. **server string** is the name of the server **workgroup** is the workgroup that can access it. WORKGROUP is default. **security** is who can access it. **map to guest** will let it not allow a user account to access the server. **name resolve order** will check the host

in a specific order. **include** will access other configuration files to implement. Useful for organization.

```

student@cis106vm: /etc/samba
GNU nano 4.8 smb.conf
[global]
server string = Samba Server
workgroup = WORKGROUP
security = user
map to guest = Bad User
name resolve order = bcast host
include = /etc/samba/shares.conf

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos
^X Exit          ^R Read File    ^\ Replace      ^U Paste Text   ^T To Spell     ^_ Go To Line
[ Read 7 lines ]
  
```

4. Create the directories that will be shared Enter

```
mkdir -p /home/student/Documents/SAMBA/{public,private}
```

mkdir will make a directory **p** argument will allow the creation the parent directories **{public,private}** will create two folders respectively in the SAMBA folder.

5. Create the shares.conf file This file will deal with what directories are accessible and what permission will be allowed. Enter

```
sudo nano shares.conf
```

In the file, the structure will be

```
[Public Files] path = /home/student/Documents/SAMBA/public force user = smbuser force
group = smbgroup create mask = 0664 force create mode = 0664 directory mask = 0775
```

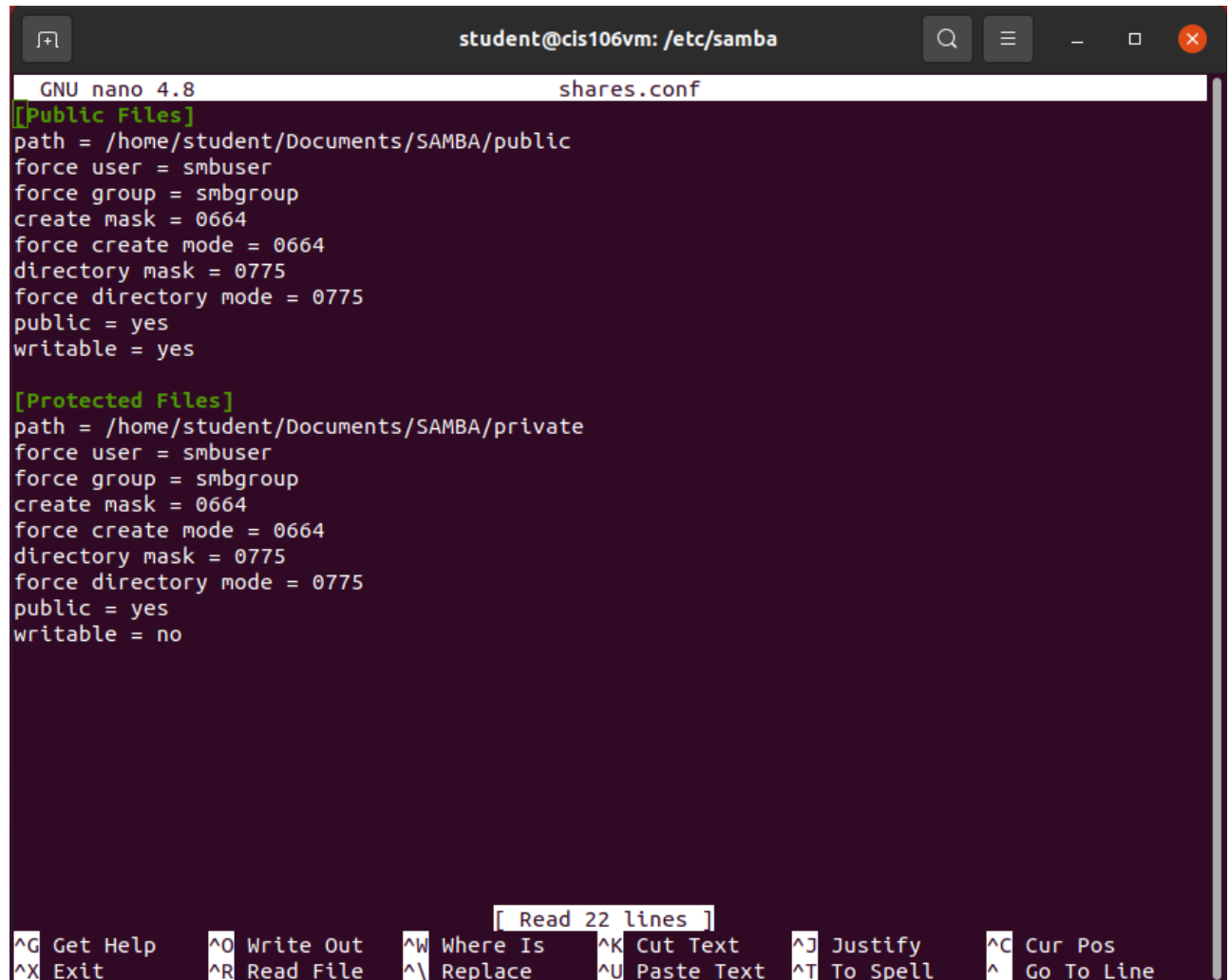
[Public Files] is the header section of the config options for publicly accessible files. **path** is the directory that will be accessed. **force user** is the user being used to access the server. **force group** is the group being used to access the server. **create mask** is the permissions of a file when it is created. -6-- user has rw- permissions --6- group has rw- permissions ---4 other has r-- permissions **force create mode** is the permissions required when creating a file. **directory mask** is the permissions of the directory when it is created. -7-- user has rwx permissions --7- group has rwx permissions ---5 other has r-x permissions. *Execute permission is to allow the user to go inside the directory* **force directory mode** forces the permissions of created directory **public** makes the directory public **writable** allows changes to be made

- Optional: Make another directory but for files that can be download files but not be able to change the files.

To this this, you can create a new section and type with the following changes.

```
[Protected Files] path = /home/student/Documents/SAMBA/private writable = no
```

path will be a different path for protected files **writable** will not allow users to change files and only download them



```
student@cis106vm: /etc/samba
GNU nano 4.8 shares.conf
[Public Files]
path = /home/student/Documents/SAMBA/public
force user = smbuser
force group = smbgroup
create mask = 0664
force create mode = 0664
directory mask = 0775
force directory mode = 0775
public = yes
writable = yes

[Protected Files]
path = /home/student/Documents/SAMBA/private
force user = smbuser
force group = smbgroup
create mask = 0664
force create mode = 0664
directory mask = 0775
force directory mode = 0775
public = yes
writable = no

[ Read 22 lines ]
^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos
^X Exit          ^R Read File    ^\ Replace      ^U Paste Text   ^T To Spell     ^_ Go To Line
```

4. Create the SAMBA user and group

1. Create the group by entering

```
sudo groupadd --system smbgroup
```

groupadd - create a new group. **--system** - within the system **smbgroup** - name of the group

You can check if the group was recently made with

```
tail -1 /etc/group
```

tail will list the last 5 lines of a file **-1** argument for tail that will list the last line of the file

2. Create the user by entering

```
sudo useradd --system --no-create-home --group smbgroup -s /bin/false smbuser
```

useradd - create a new user. **--no-create-home** - will not create a home directory for user **--group smbgroup** sets the group to smbgroup **-s /bin/false** prevent user as a log in user. **smbuser** is the name of the user

You can check if the user was recently made with

```
tail -1 /etc/passwd
```

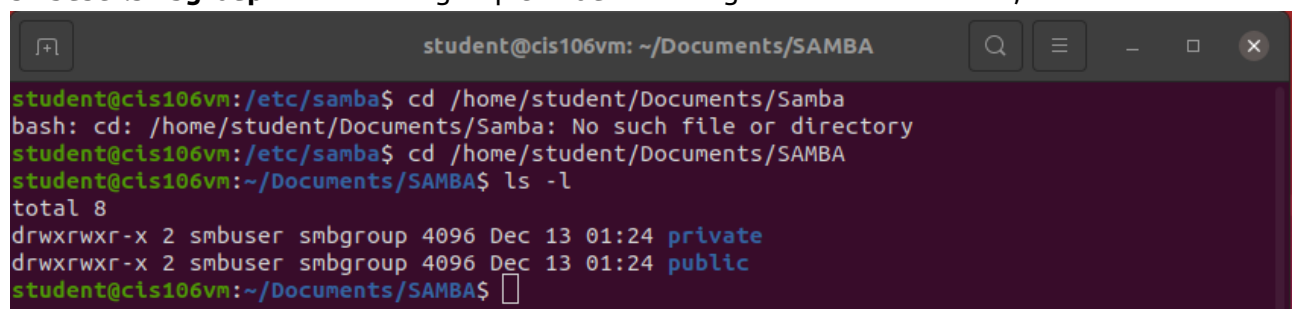
5. Set up the folder permissions

1. Change the ownership of the directory with the command:

```
sudo chown -R smbuser:smbgroup /home/student/Documents/SAMBA
```

```
sudo chmod -R g+w /home/student/Documents/SAMBA
```

chown will change the user/group ownership **-R** recursively give the change in file ownership **smbuser:smbgroup** the user and group **chmod** will change who can access files,directories.



```
student@cis106vm: ~/Documents/SAMBA
student@cis106vm:/etc/samba$ cd /home/student/Documents/Samba
bash: cd: /home/student/Documents/Samba: No such file or directory
student@cis106vm:/etc/samba$ cd /home/student/Documents/SAMBA
student@cis106vm:~/Documents/SAMBA$ ls -l
total 8
drwxrwxr-x 2 smbuser smbgroup 4096 Dec 13 01:24 private
drwxrwxr-x 2 smbuser smbgroup 4096 Dec 13 01:24 public
student@cis106vm:~/Documents/SAMBA$
```

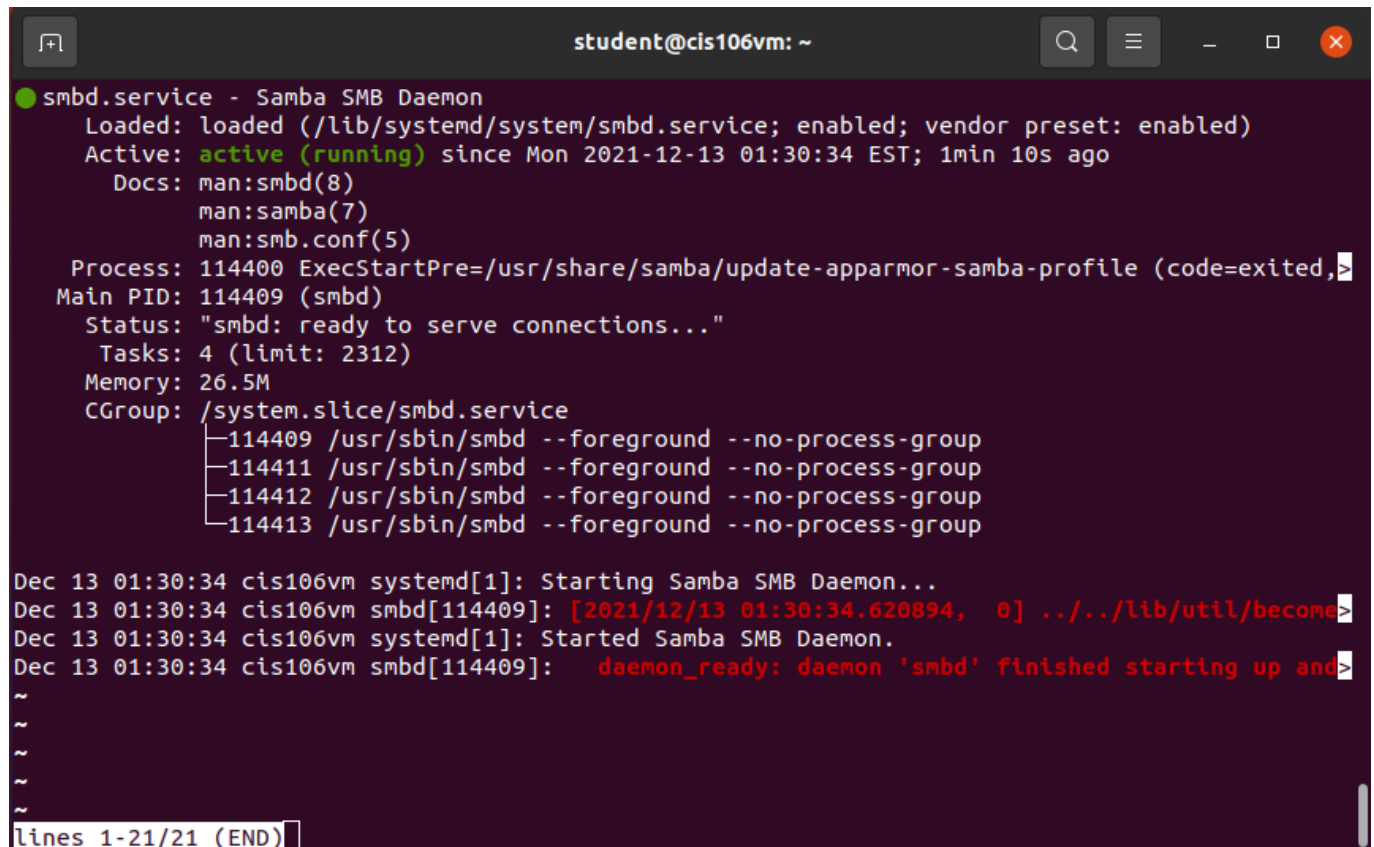

6. Starting/Restarting SAMBA

1. Now you can start/restart SAMBA with this command

```
sudo systemctl start smbd
```

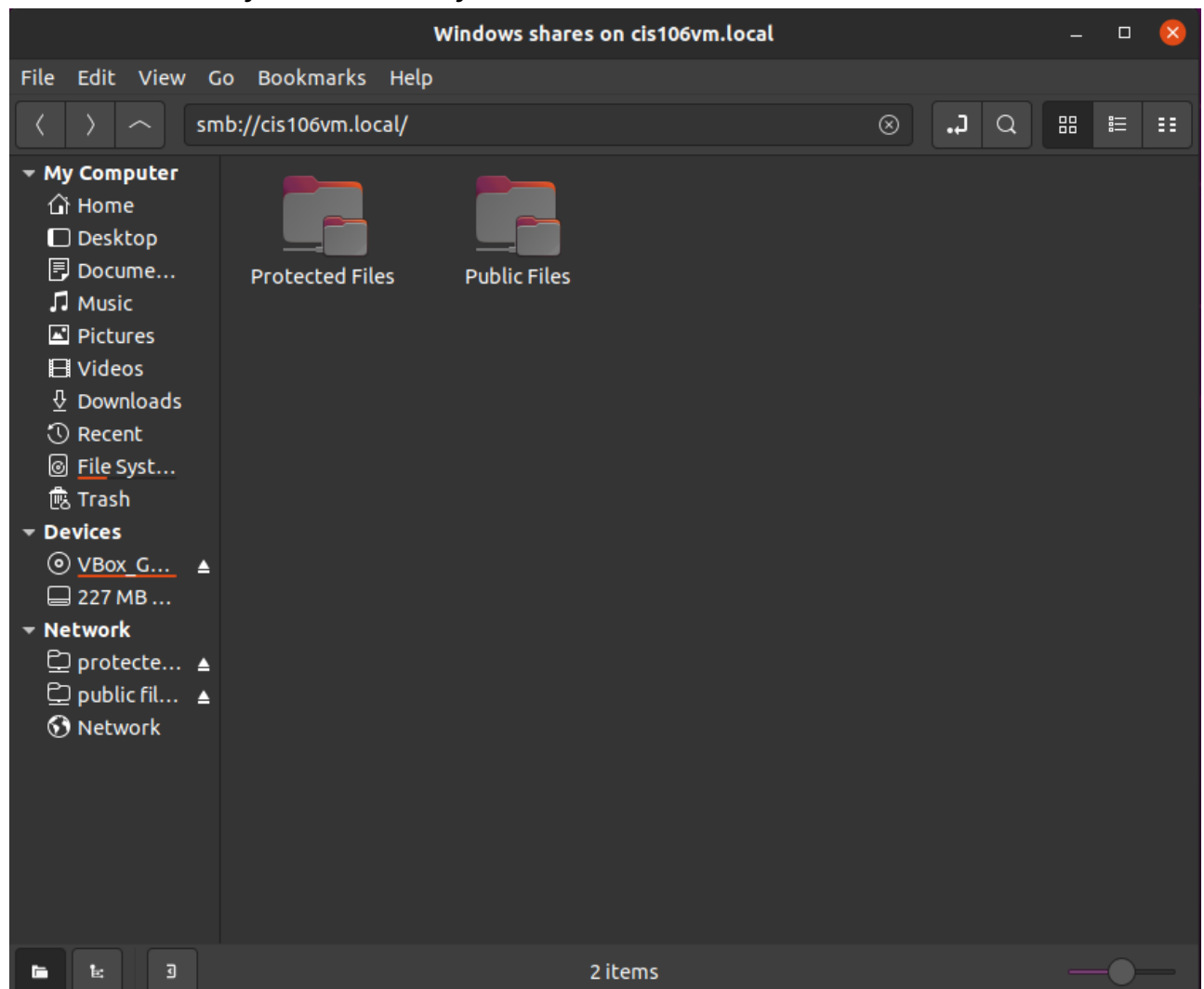
```
sudo systemctl restart smbd
```

restart will restart smbd.



```
student@cis106vm: ~  
● smbd.service - Samba SMB Daemon  
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)  
   Active: active (running) since Mon 2021-12-13 01:30:34 EST; 1min 10s ago  
     Docs: man:smbd(8)  
           man:samba(7)  
           man:smb.conf(5)  
  Process: 114400 ExecStartPre=/usr/share/samba/update-apparmor-samba-profile (code=exited, >  
 Main PID: 114409 (smbd)  
   Status: "smbd: ready to serve connections..."  
    Tasks: 4 (limit: 2312)  
  Memory: 26.5M  
   CGroup: /system.slice/smbd.service  
           └─114409 /usr/sbin/smbd --foreground --no-process-group  
             └─114411 /usr/sbin/smbd --foreground --no-process-group  
               └─114412 /usr/sbin/smbd --foreground --no-process-group  
                 └─114413 /usr/sbin/smbd --foreground --no-process-group  
  
Dec 13 01:30:34 cis106vm systemd[1]: Starting Samba SMB Daemon...  
Dec 13 01:30:34 cis106vm smbd[114409]: [2021/12/13 01:30:34.620894, 0] ../../lib/util/become>  
Dec 13 01:30:34 cis106vm systemd[1]: Started Samba SMB Daemon.  
Dec 13 01:30:34 cis106vm smbd[114409]:  daemon_ready: daemon 'smbd' finished starting up and>  
~  
~  
~  
~  
lines 1-21/21 (END)
```

2. You can now access your file server in your Network of Linux.



Work Cited

Setting up Simple Samba File Shares - Youtube. <https://www.youtube.com/watch?v=7Q0mnAT1MRg>.

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