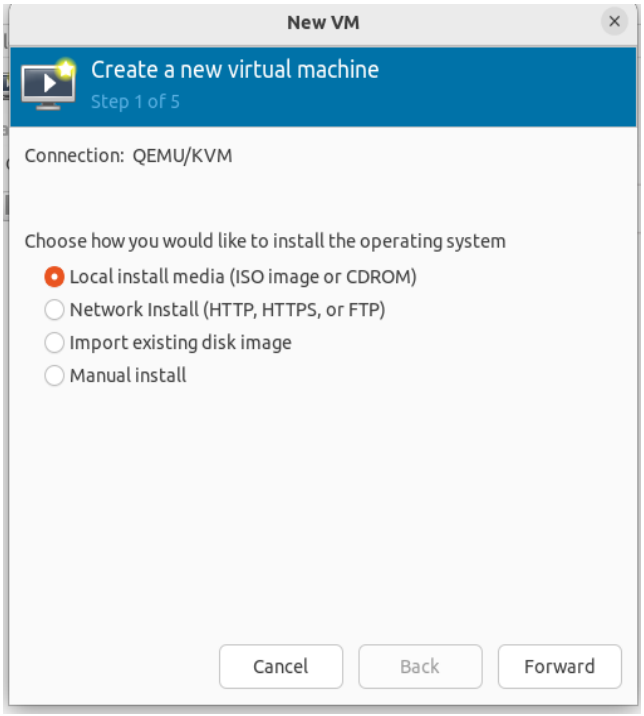
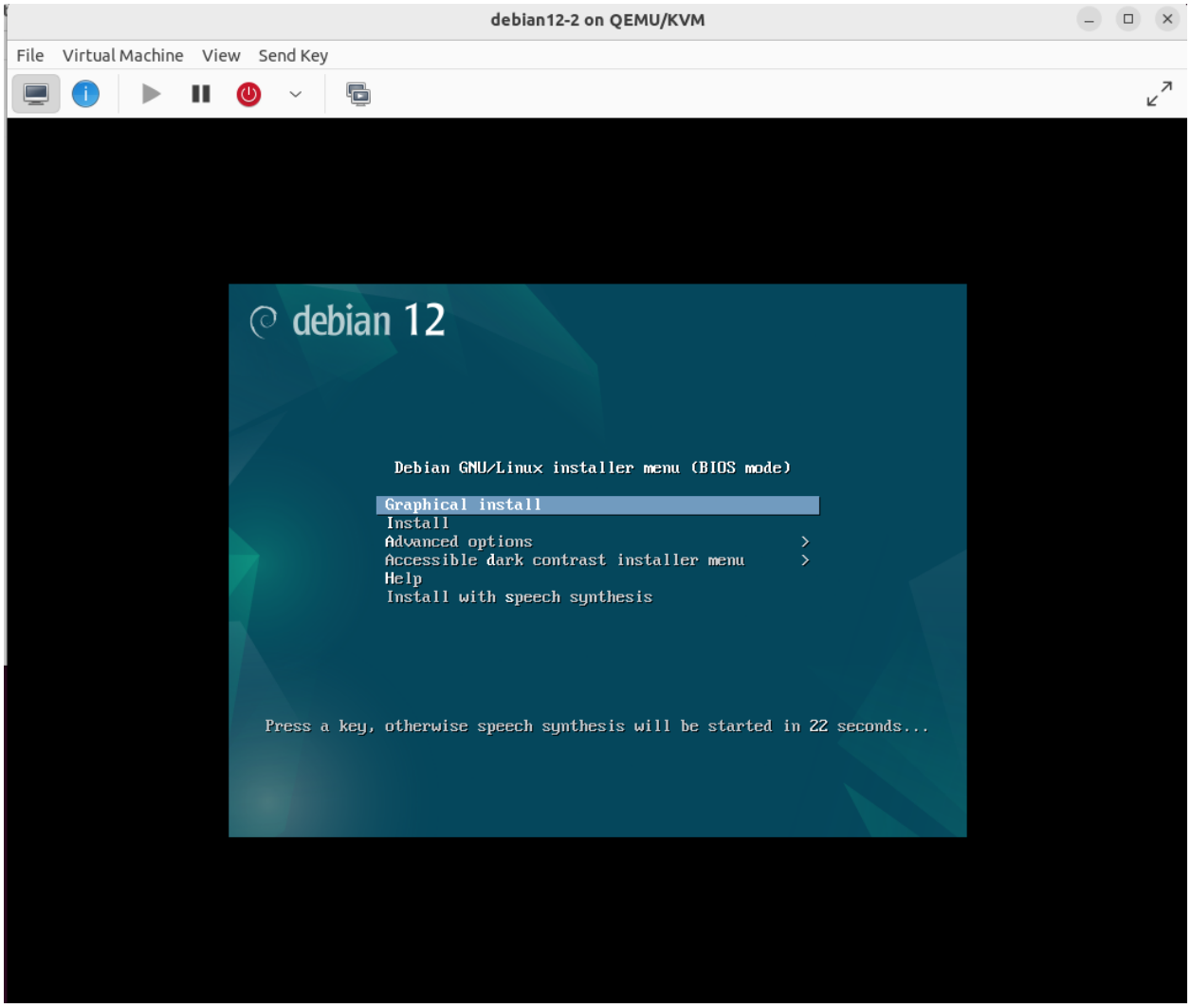
Andry Paez

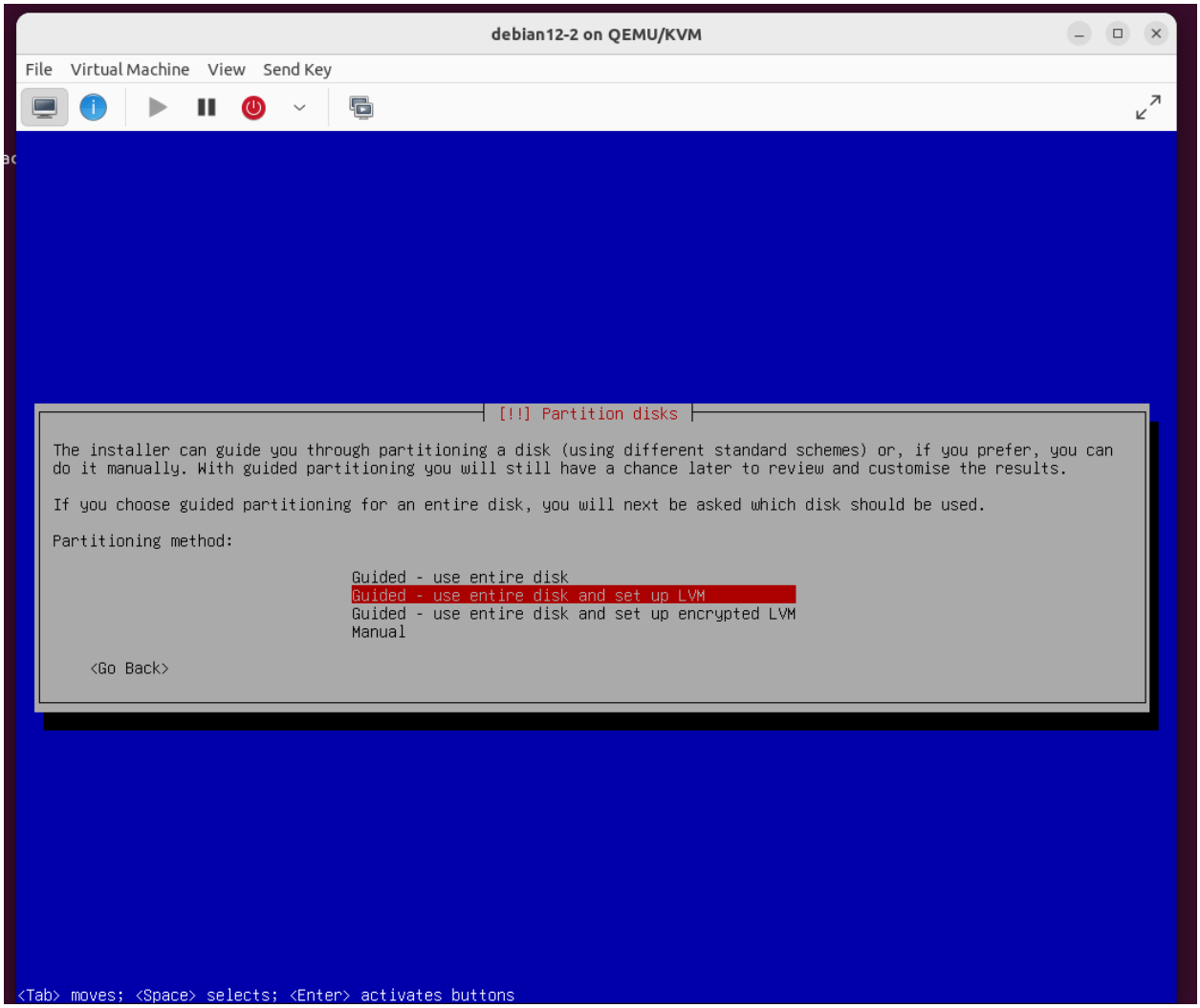
CSCI-201 Final Lab

For the final lab, we built a Debian VM using the kvm hypervisor. This document will be temporary and for submission only, this information will be reformatted and hosted via GitHub pages on my repository.

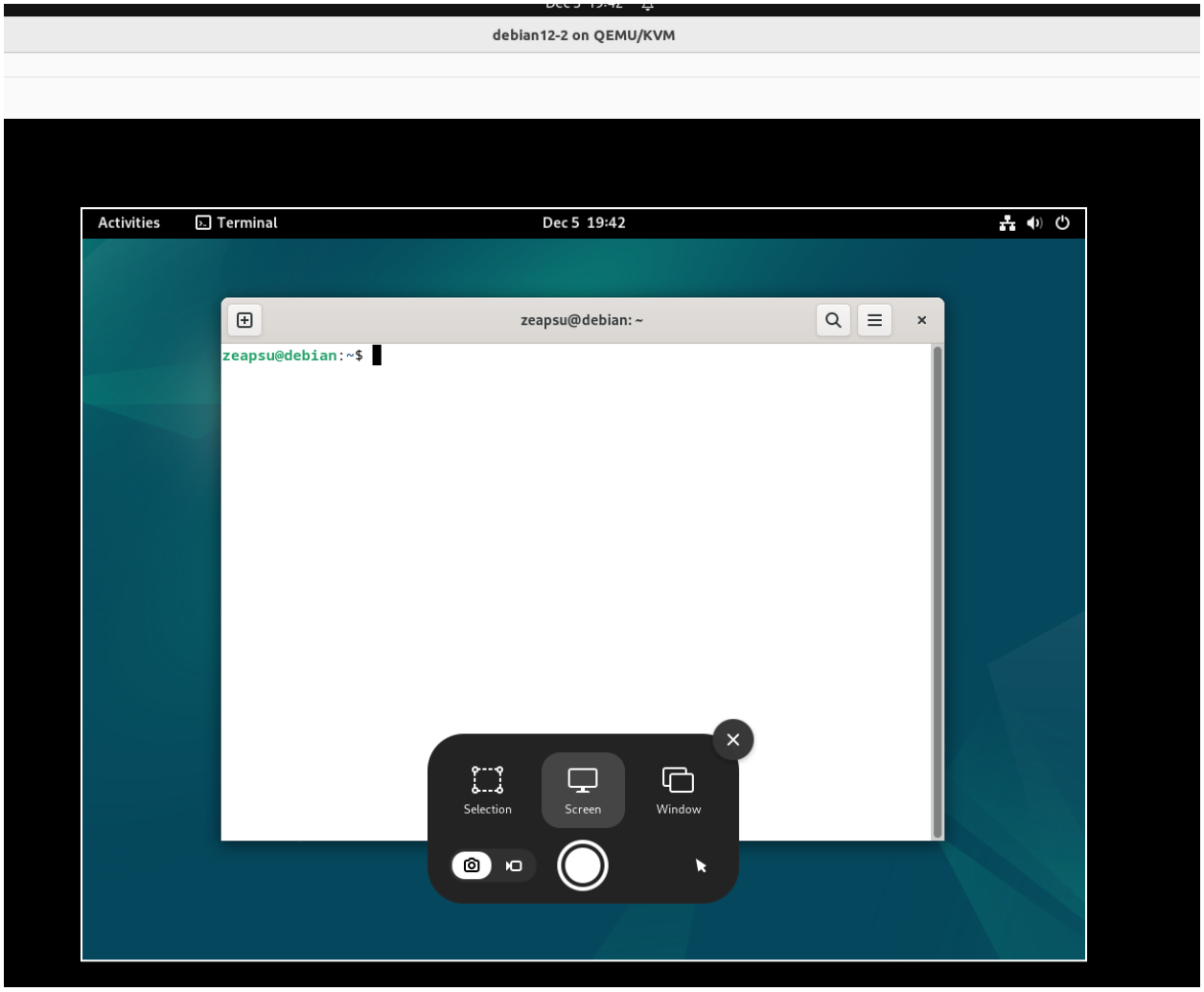
1. **Build the VM using virt-manager and the ISO provided on the local machine.**


New VM
Create a new virtual machine
Step 1 of 5
Connection: QEMU/KVM
Choose how you would like to install the operating system
Local install media (ISO image or CDROM)
Network Install (HTTP, HTTPS, or FTP)
Import existing disk image
Manual install
Cancel
Back
Forward

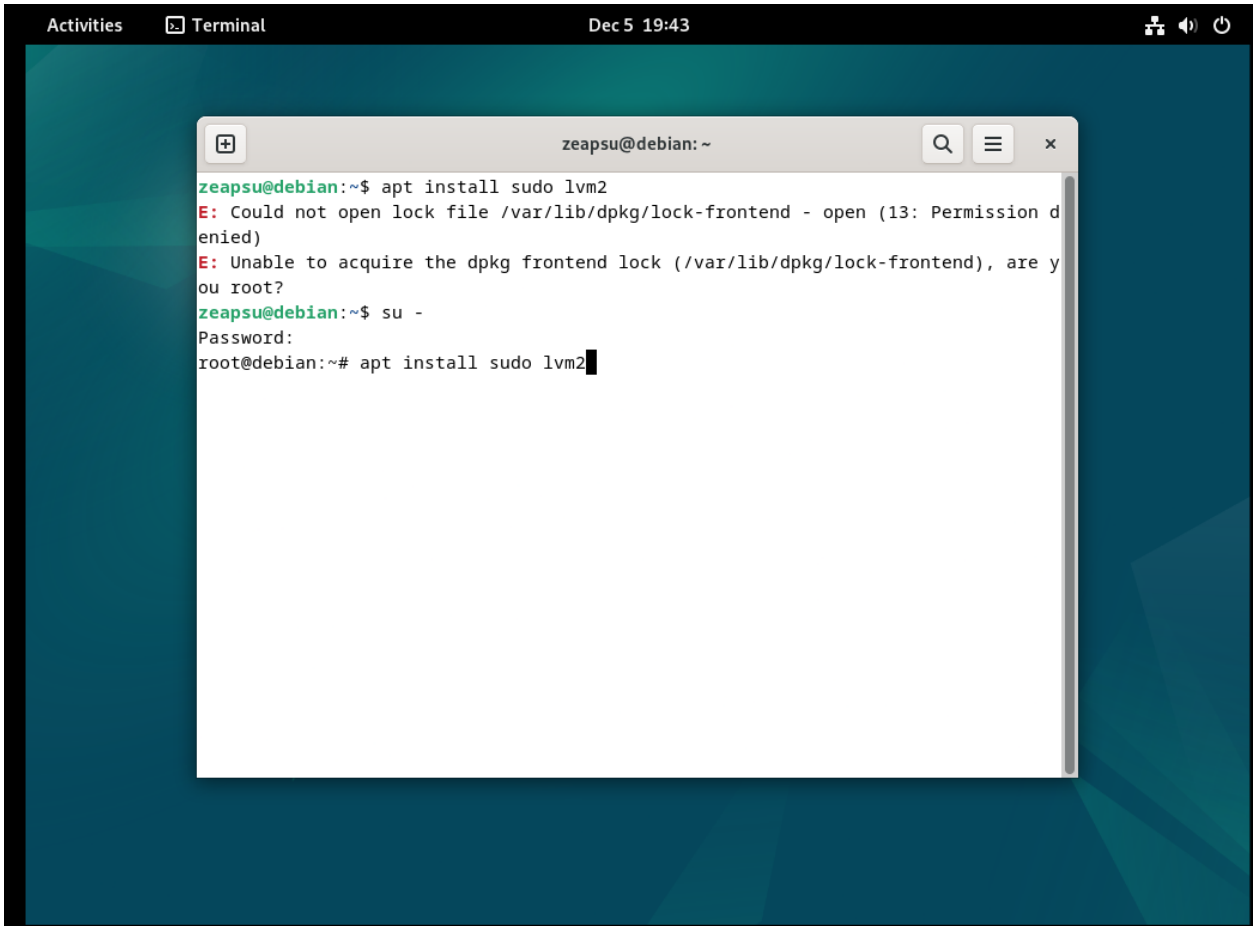

debian12-2 on QEMU/KVM
File
Virtual Machine
View
Send Key
debian 12
Debian GNU/Linux installer menu (BIOS mode)
Graphical install
Install
Advanced options
Accessible dark contrast installer menu
Help
Install with speech synthesis
Press a key, otherwise speech synthesis will be started in 22 seconds...



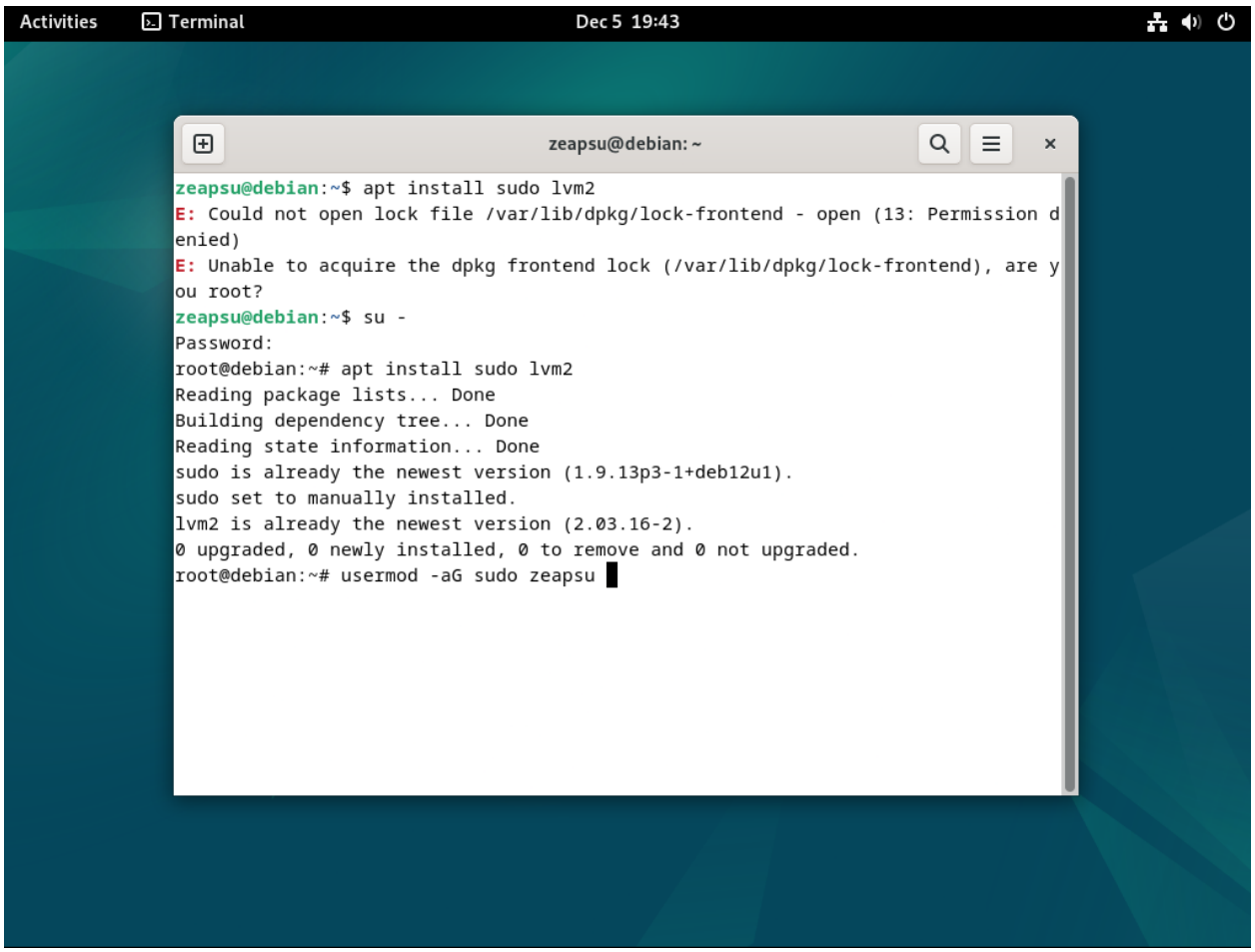
2. **Completed VM is displayed below equipped with the GNOME Desktop environment.**



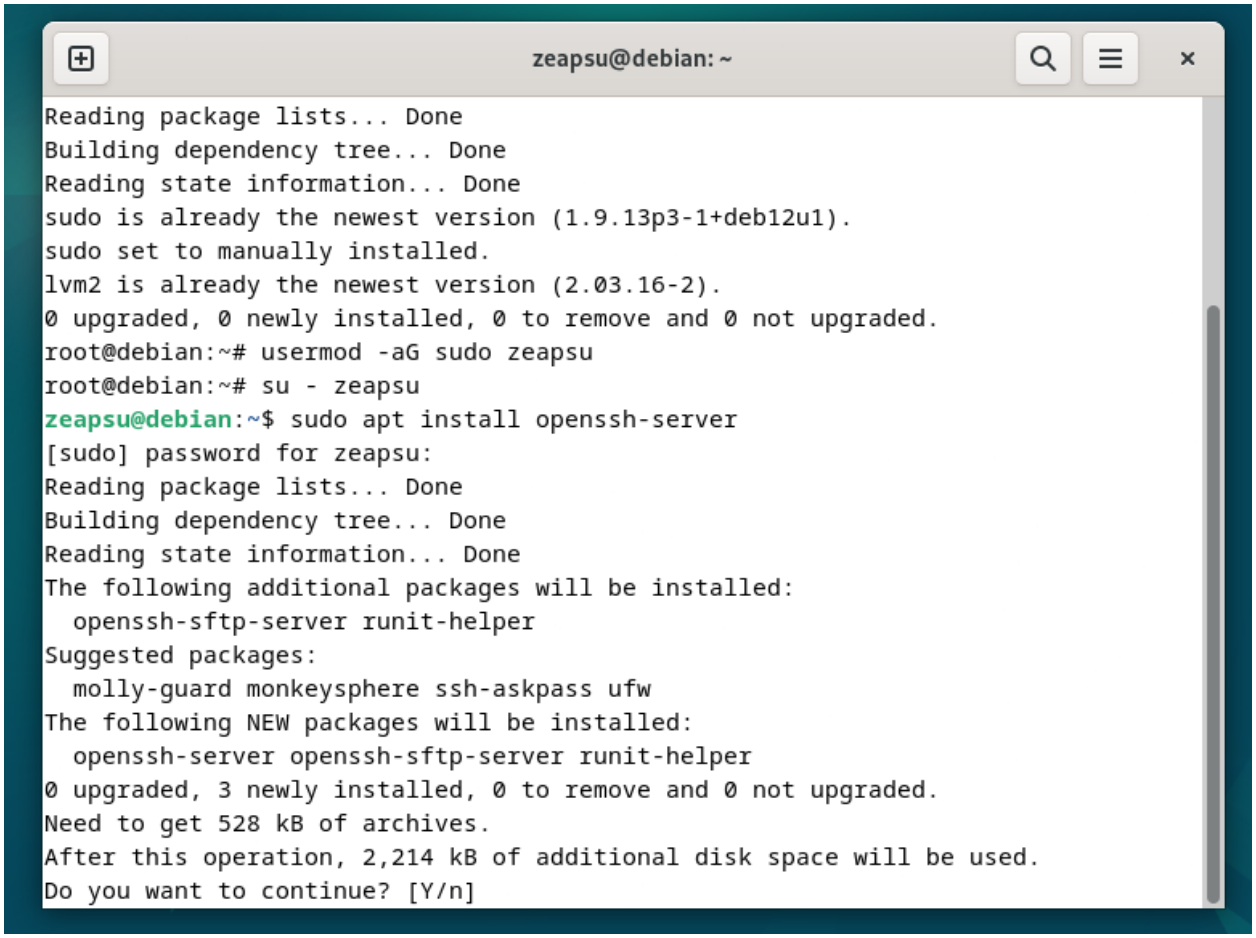
3. **Next we install sudo and lvm2 to be able to add sudo users and be able to create our logical volumes later**

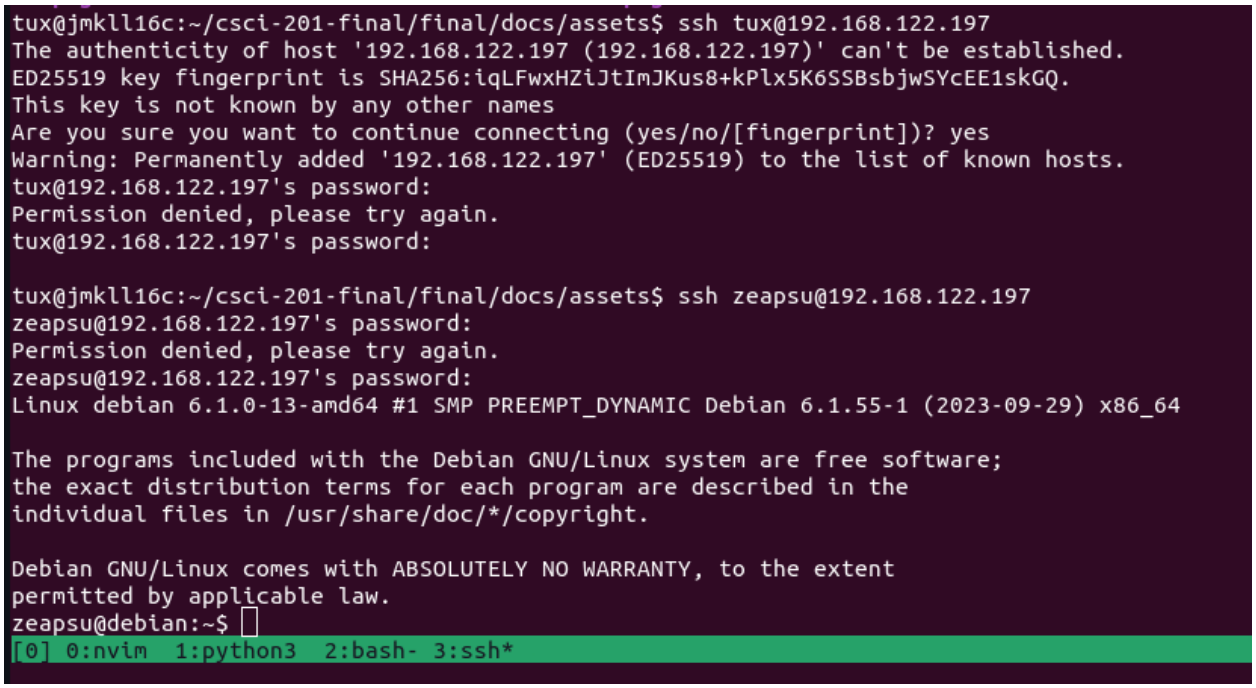

Activities
Terminal
Dec 5 19:43
zeapsu@debian: ~
zeapsu@debian:~$ apt install sudo lvm2
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
zeapsu@debian:~$ su -
Password:
root@debian:~# apt install sudo lvm2

4. **We add the default user created during VM installation to the sudo group**

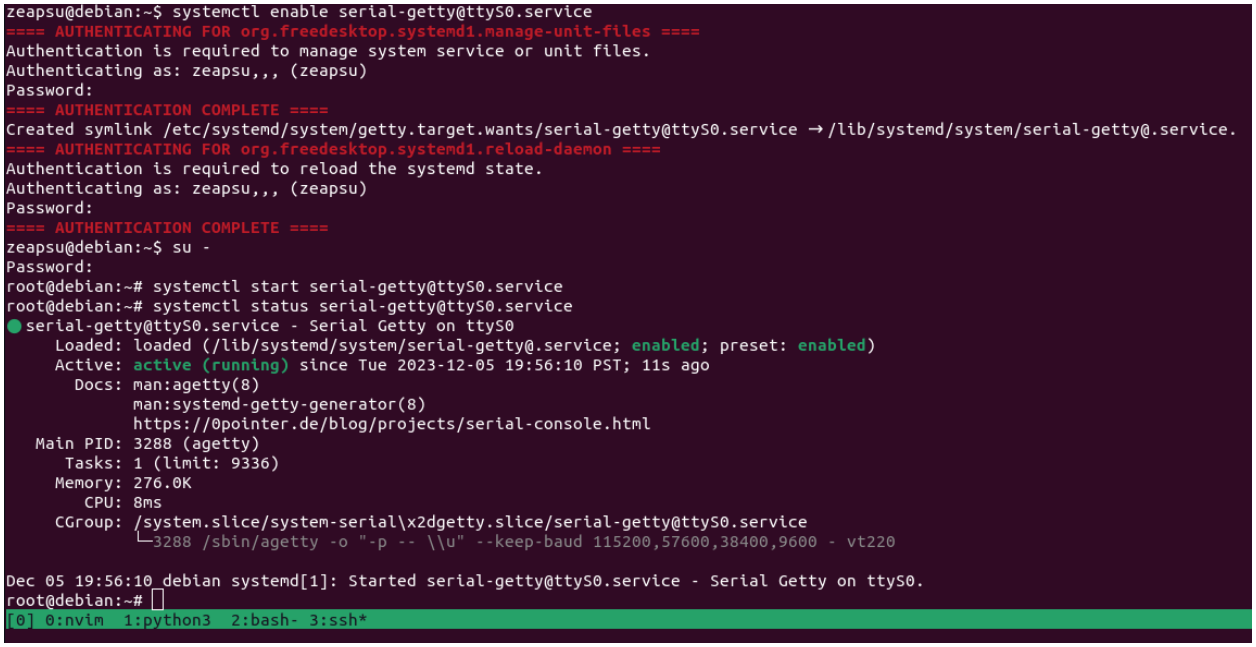


5. **We install the tools for the openssh server, testing out our new sudo privileges for the user and ssh into the VM from the local machine**

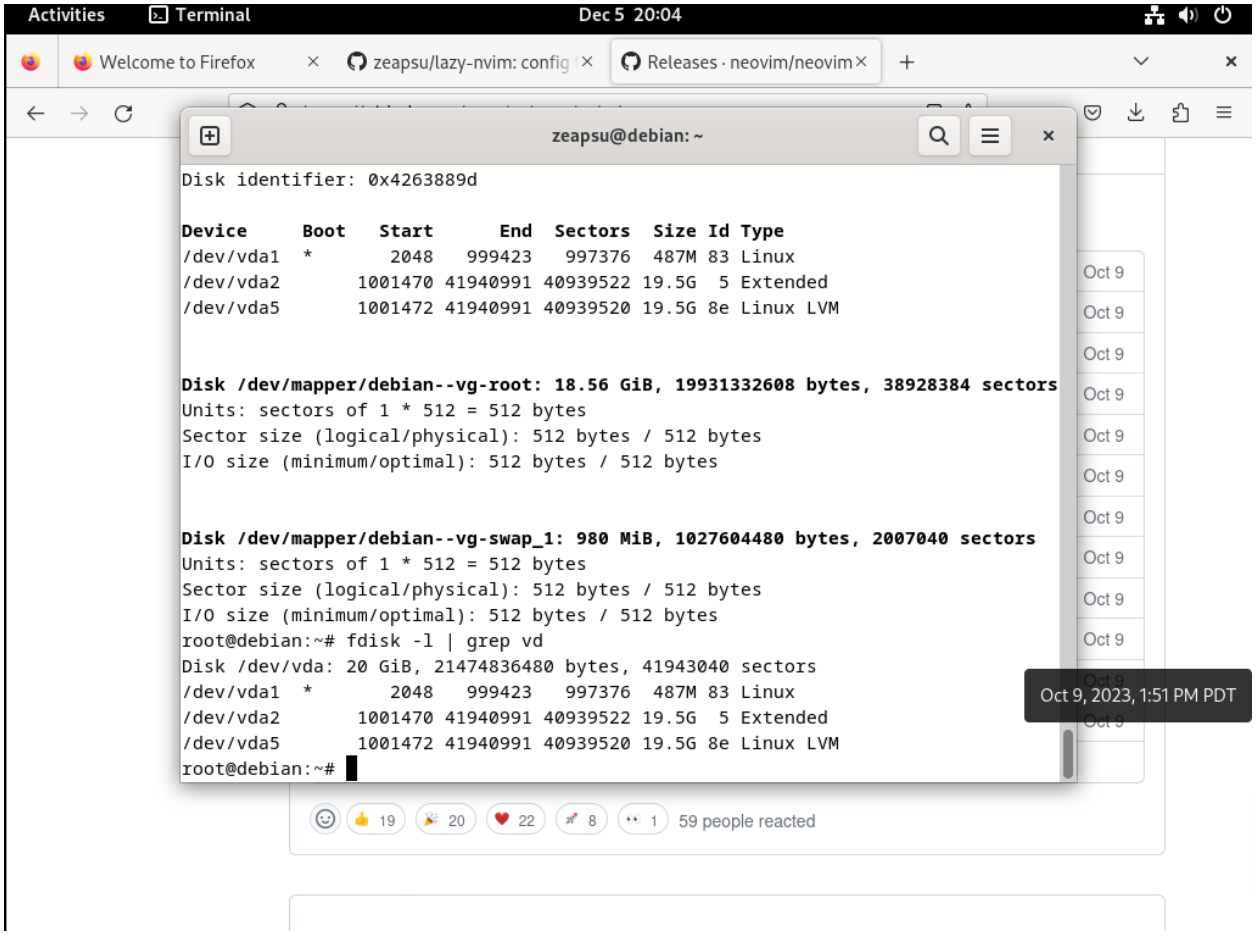

zeapsu@debian: ~
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
sudo is already the newest version (1.9.13p3-1+deb12u1).
sudo set to manually installed.
lvm2 is already the newest version (2.03.16-2).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@debian:~# usermod -aG sudo zeapsu
root@debian:~# su - zeapsu
zeapsu@debian:~$ sudo apt install openssh-server
[sudo] password for zeapsu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
openssh-sftp-server runit-helper
Suggested packages:
molly-guard monkeysphere ssh-askpass ufw
The following NEW packages will be installed:
openssh-server openssh-sftp-server runit-helper
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 528 kB of archives.
After this operation, 2,214 kB of additional disk space will be used.
Do you want to continue? [Y/n]


tux@jmkll16c:~/csci-201-final/final/docs/assets$ ssh tux@192.168.122.197
The authenticity of host '192.168.122.197 (192.168.122.197)' can't be established.
ED25519 key fingerprint is SHA256:iqLFwxHZiJtImJKus8+kPlx5K6SSBsbjwSYcEE1skGQ.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.122.197' (ED25519) to the list of known hosts.
tux@192.168.122.197's password:
Permission denied, please try again.
tux@192.168.122.197's password:
tux@jmkll16c:~/csci-201-final/final/docs/assets$ ssh zeapsu@192.168.122.197
zeapsu@192.168.122.197's password:
Permission denied, please try again.
zeapsu@192.168.122.197's password:
Linux debian 6.1.0-13-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.55-1 (2023-09-29) x86_64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
zeapsu@debian:~$
[0] 0:nvim 1:python3 2:bash- 3:ssh*

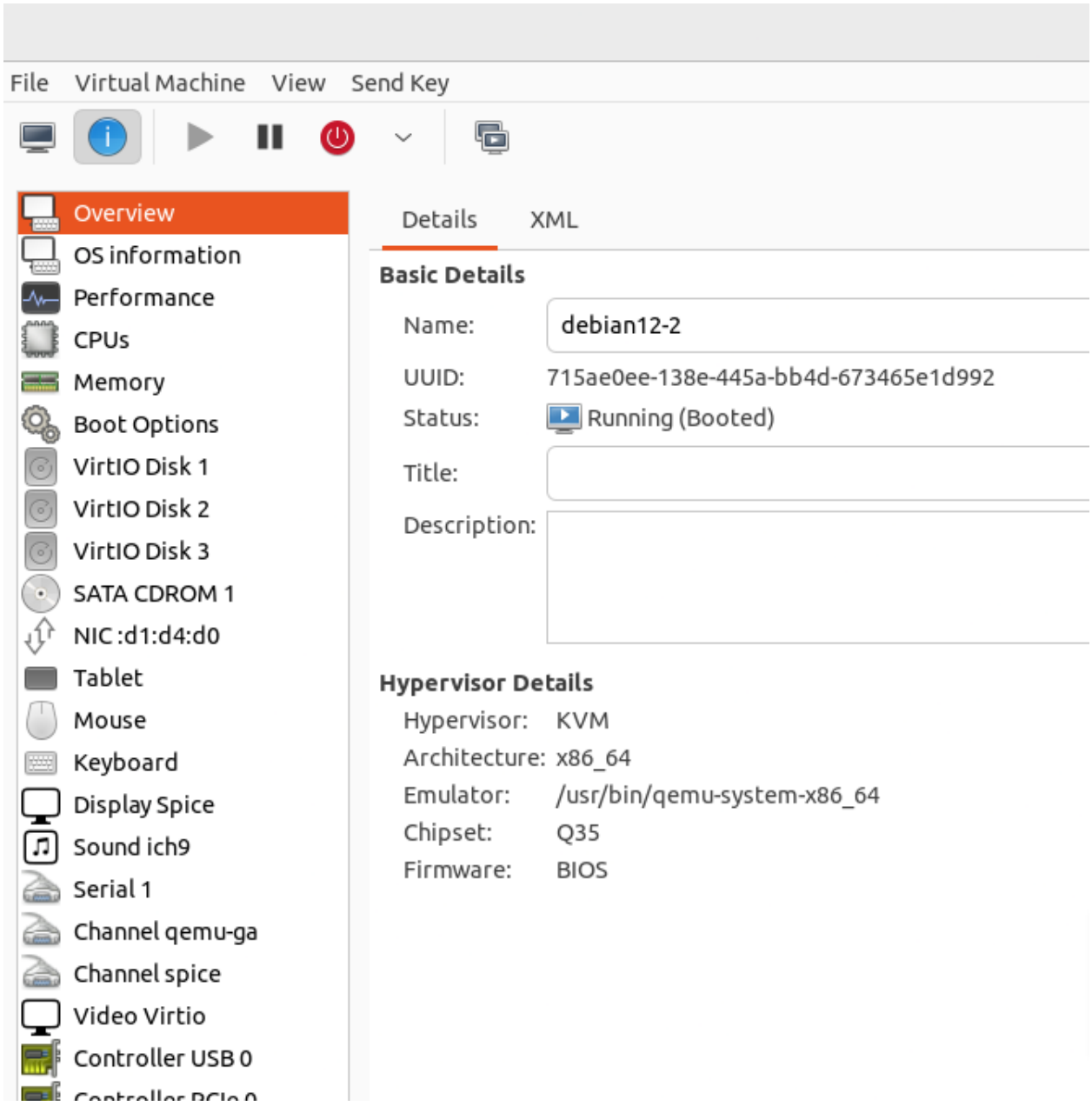
6. We enable the serial console and verify it is running via our ssh connection to the VM



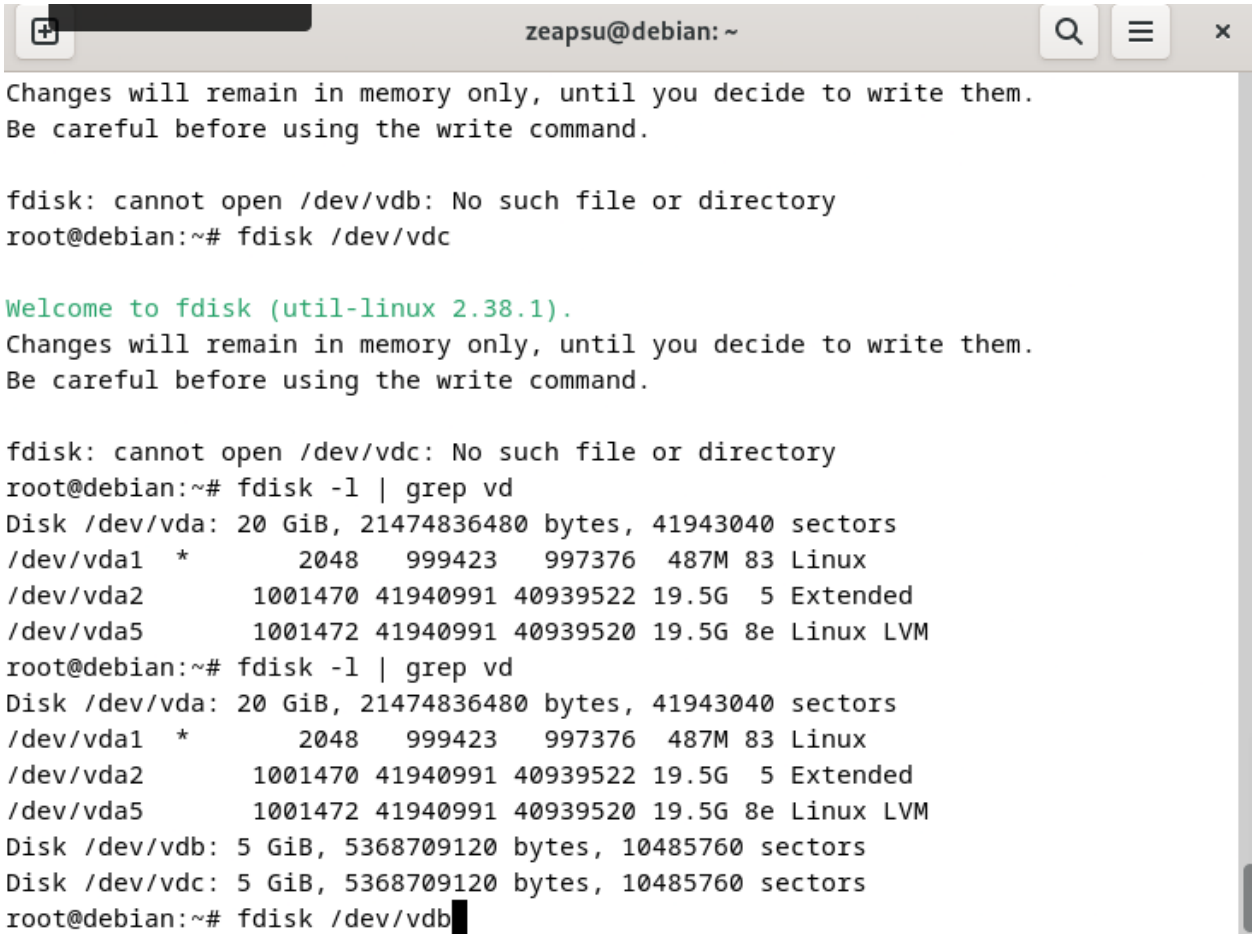
7. **We switch back to the VM to finish the rest of the lab instead of maintaining the ssh connection and see the disks with the prefix vd by piping the output of fdisk -l to grep vd**



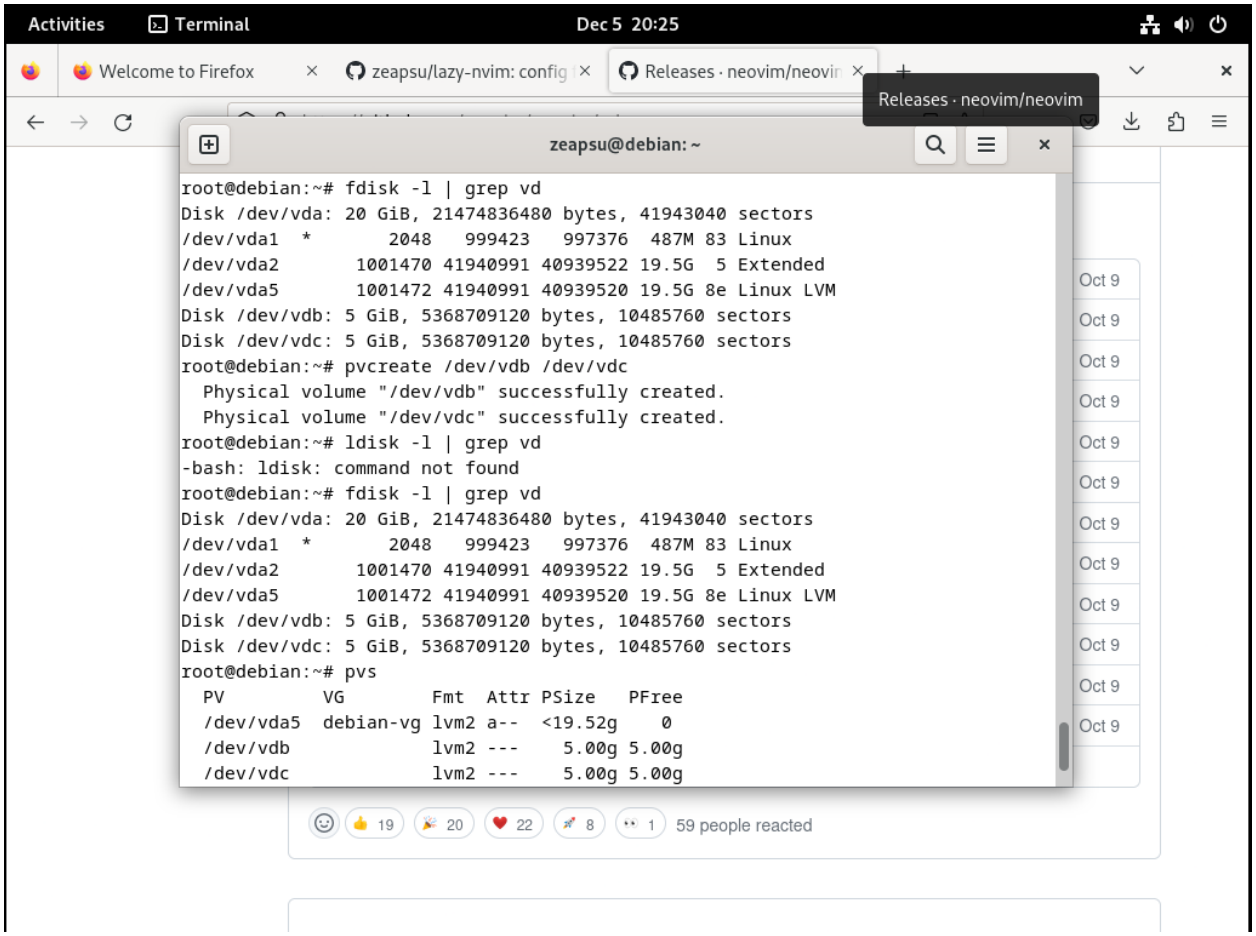
8. **We notice that we don’t have our vdb and vdc disks (disk 2 and disk 3) so we jump to VM settings to allocate 2 disks of size 5G.**



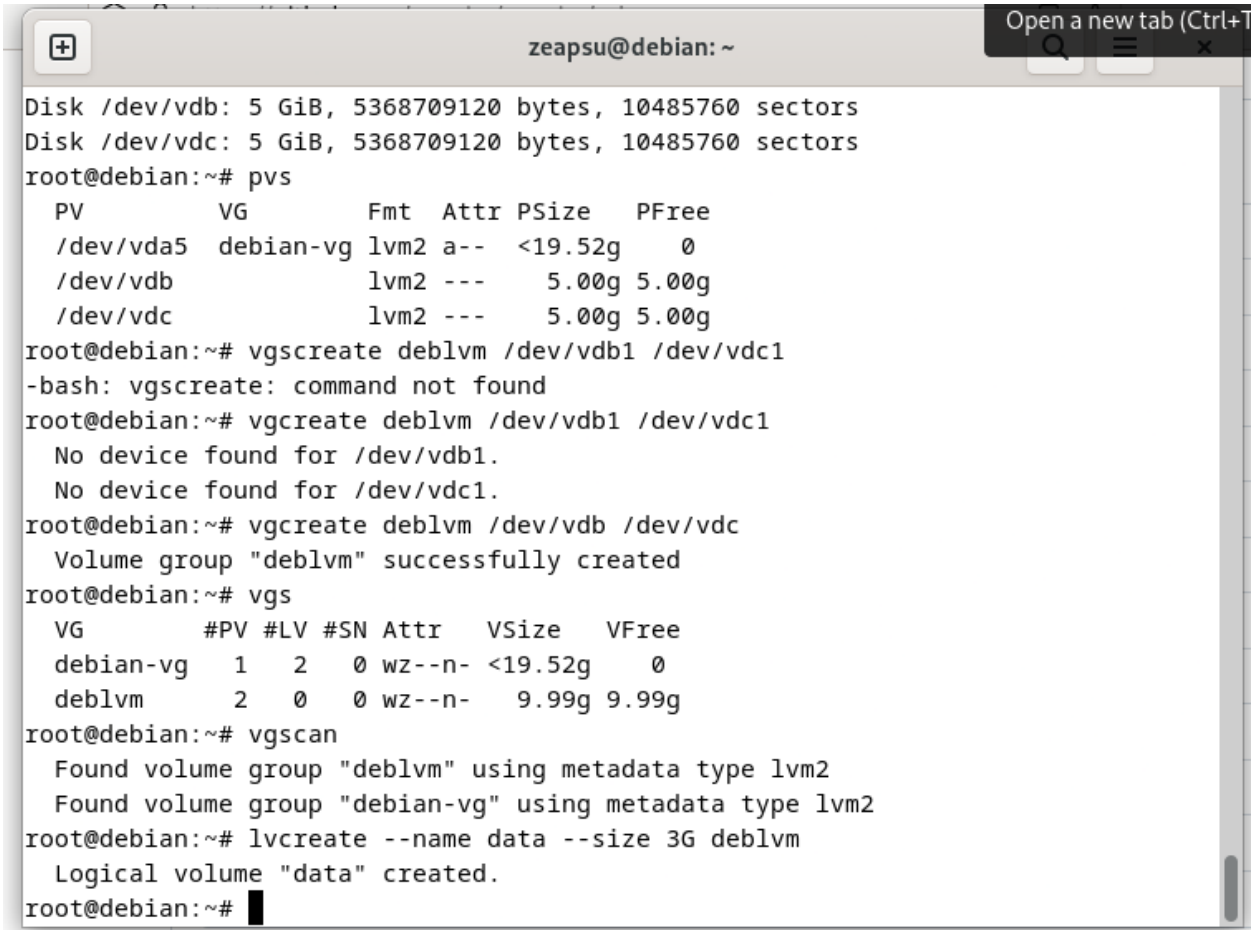
9. **Now we have our vdb and vdc disks**



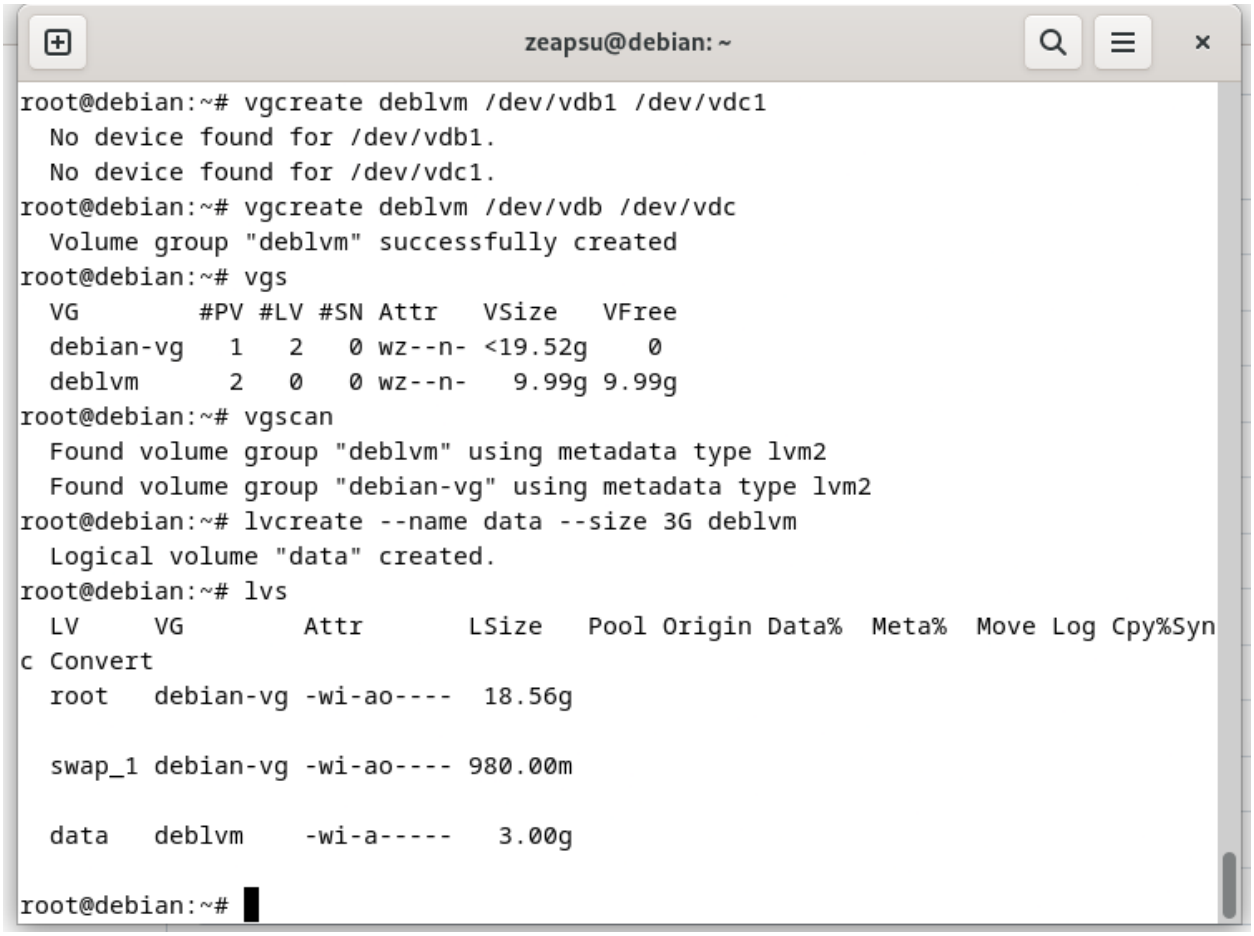
10. **We omit to create partition 1 and partition 2 on vdb and vdc to simply create the physical volume using the disks and list the volumes to confirm.**



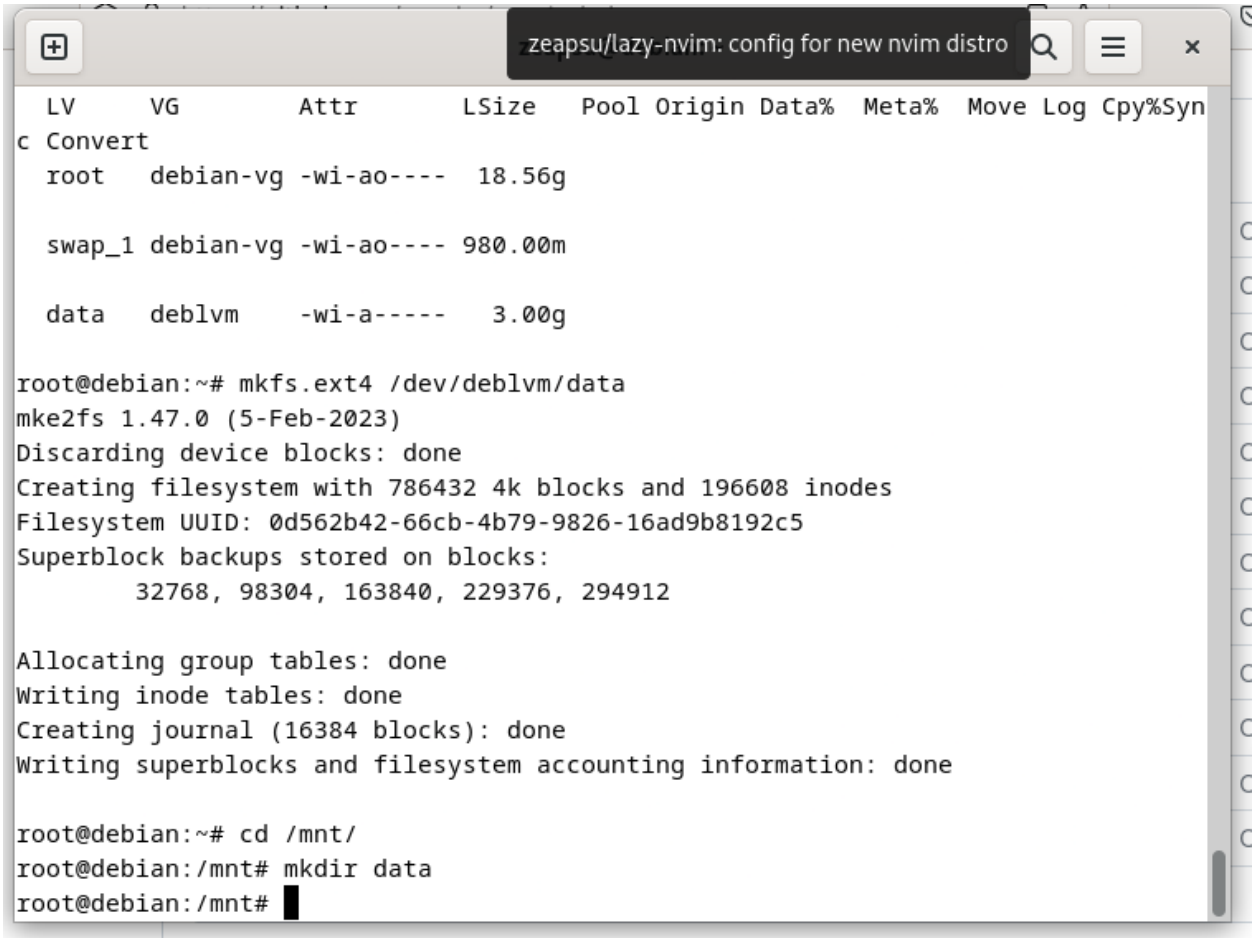
11. We create a volume group called deblvm and add both of these physical volumes to it, then list the groups to verify



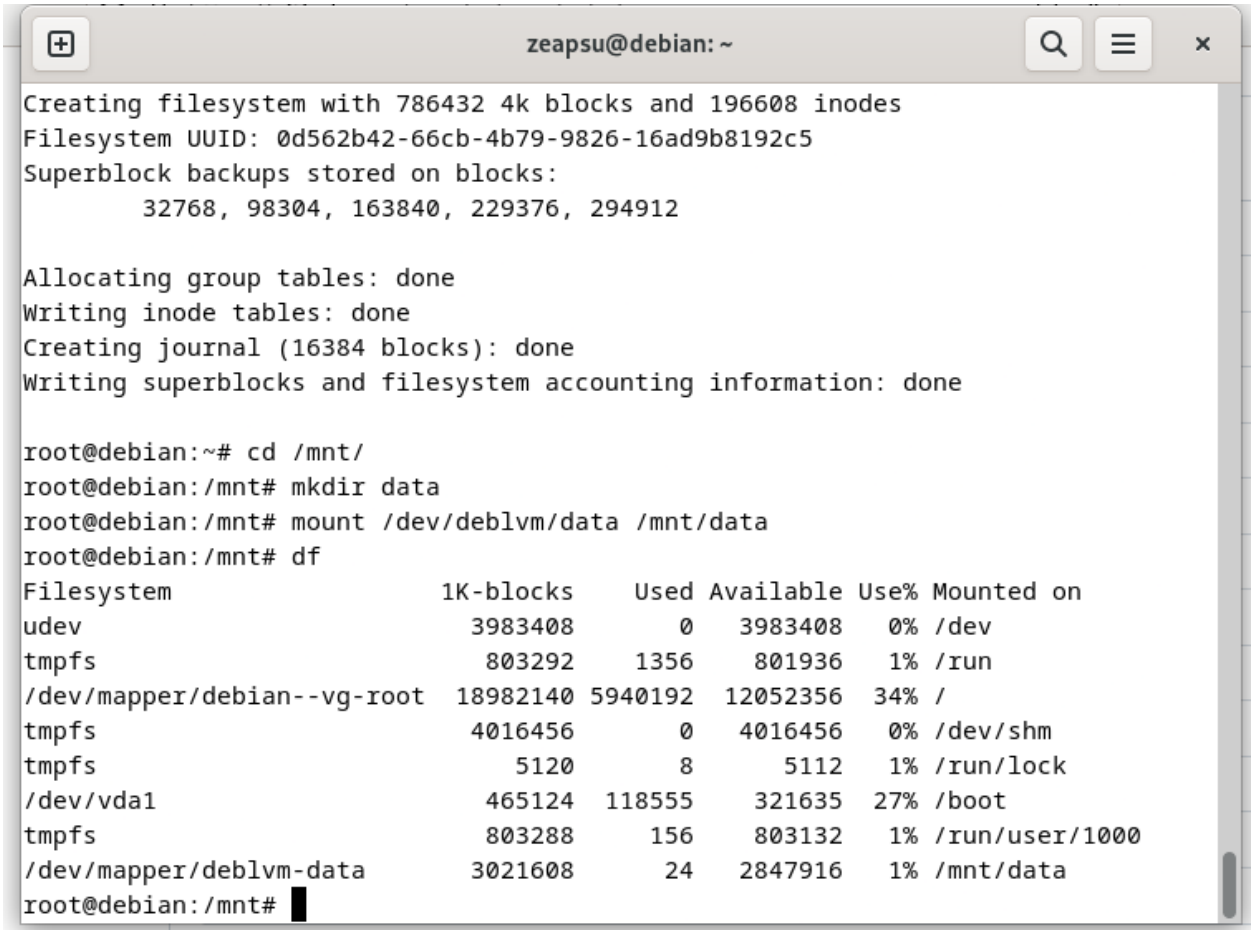
12. We now create the logical volume named data that is allocated 3G and is linked to the deblvm group and list it to confirm



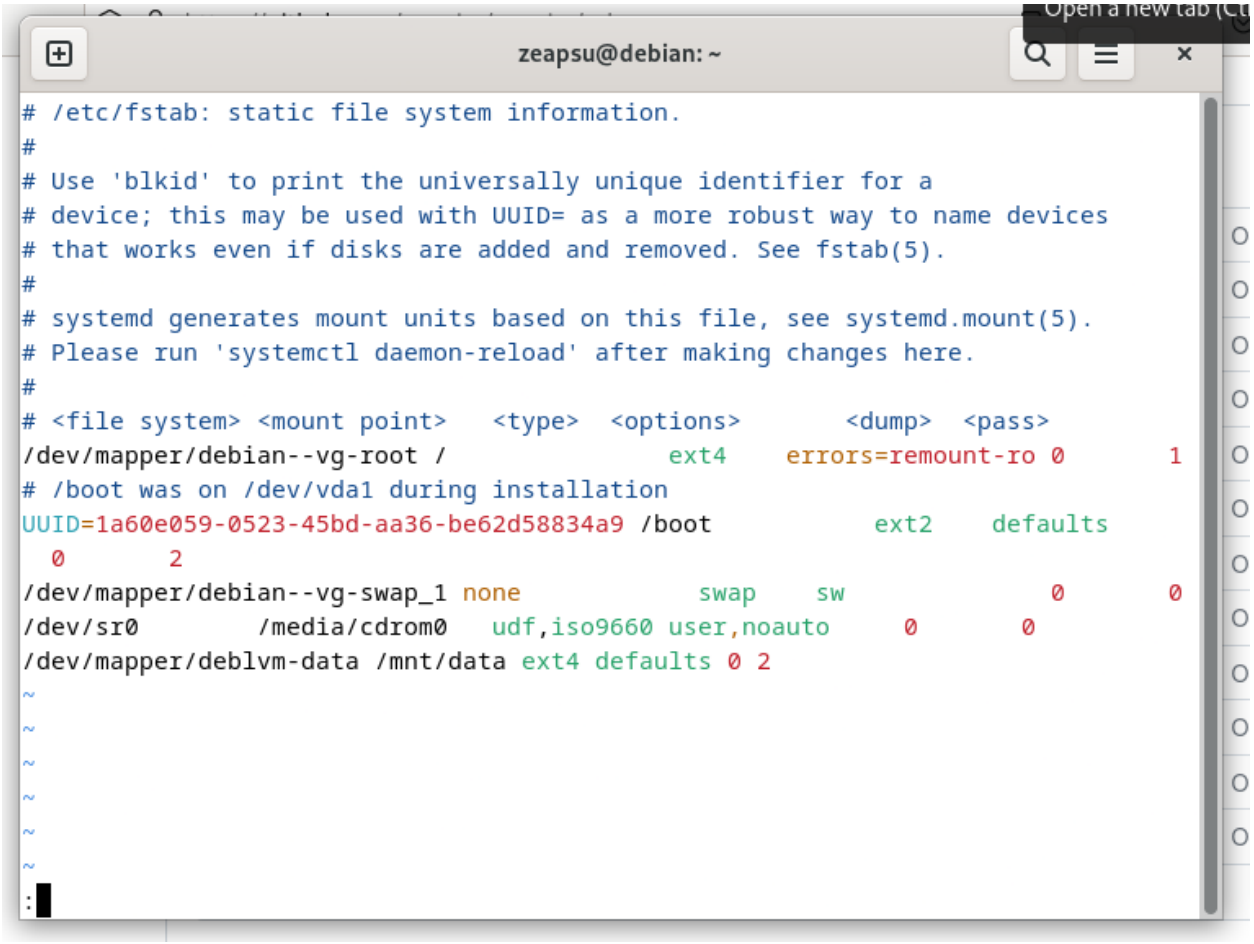
13. **Then we format this logical volume to the standard ext4 format for most Linux file systems and create a dir in the \mnt dir called data to prep for mounting this volume to this point**



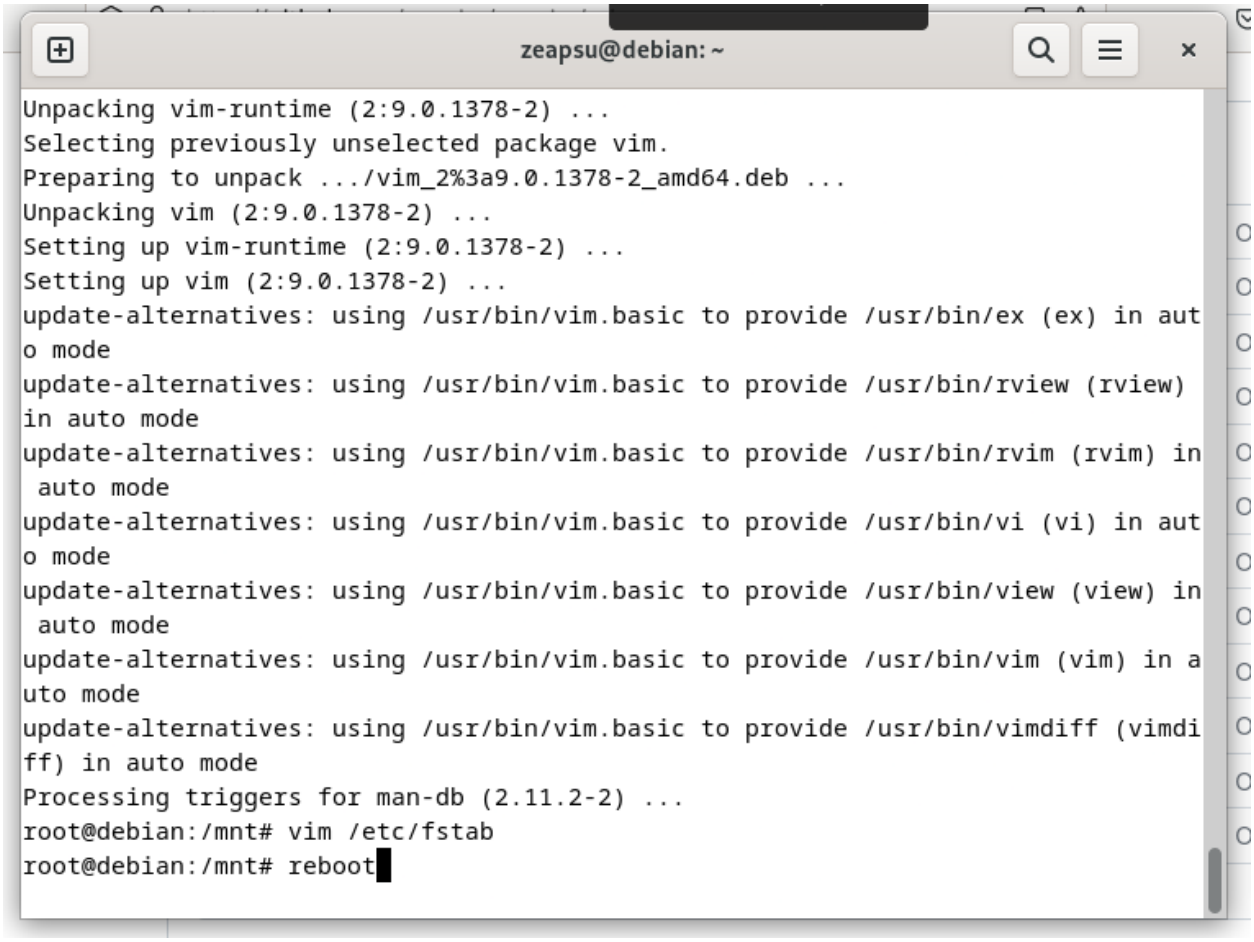
14. **We mount the logical volume to the /mnt/data dir and list to confirm that it was successfully mounted**



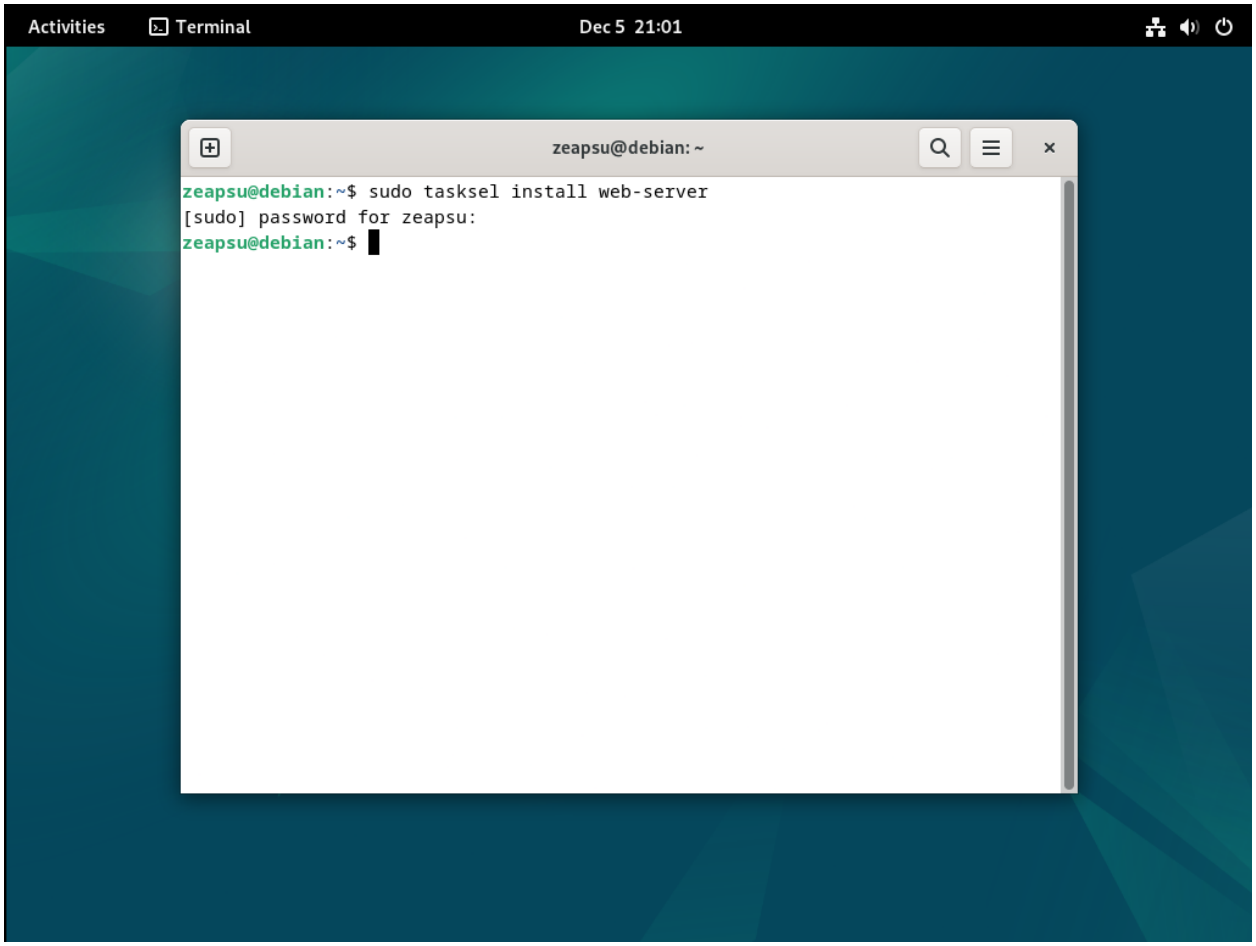
15. **We edit (using vim) /etc/fstab, our filesystem table configuration file to include and control this new mount point (sorry I did not format the file)**



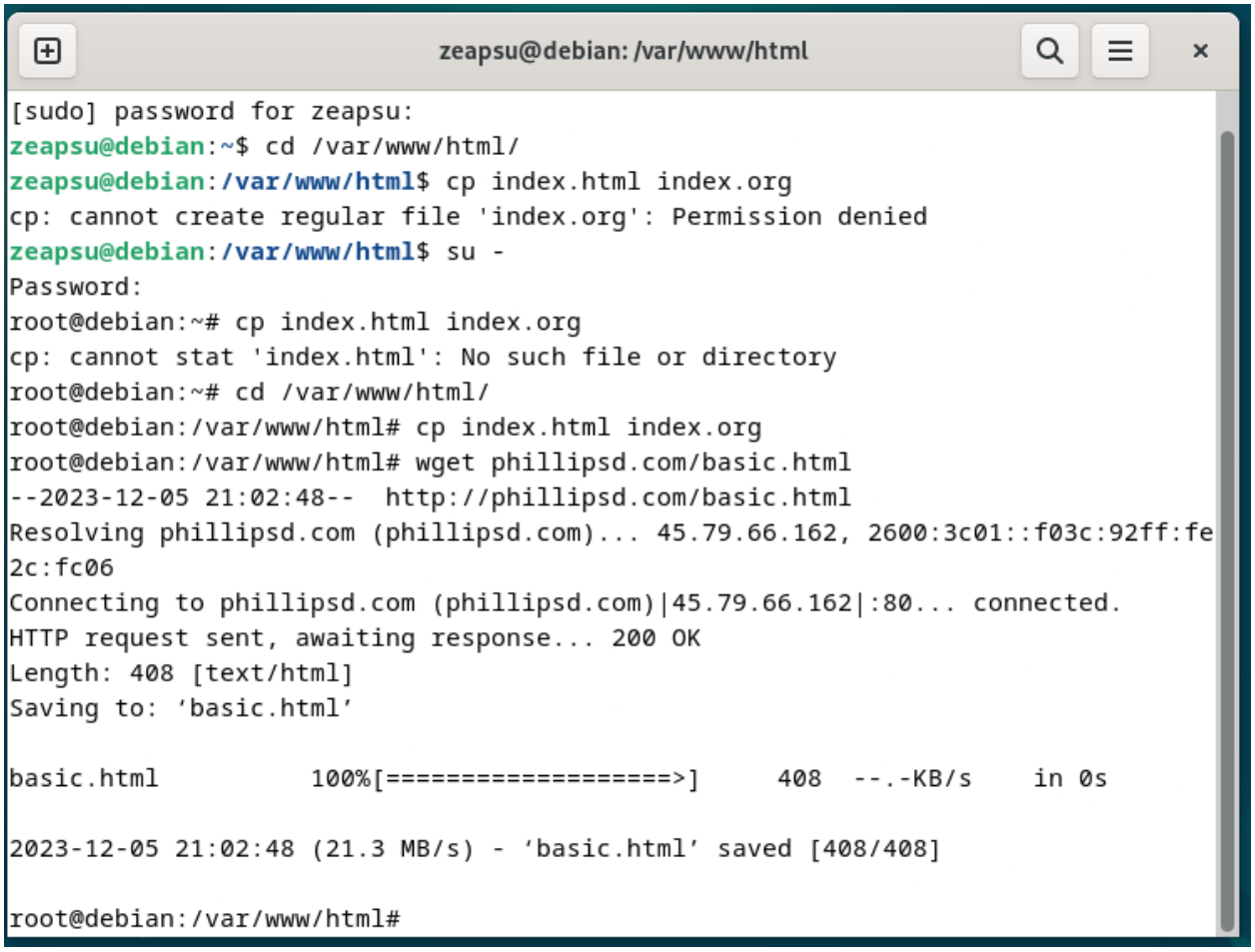
16. We then reboot the system

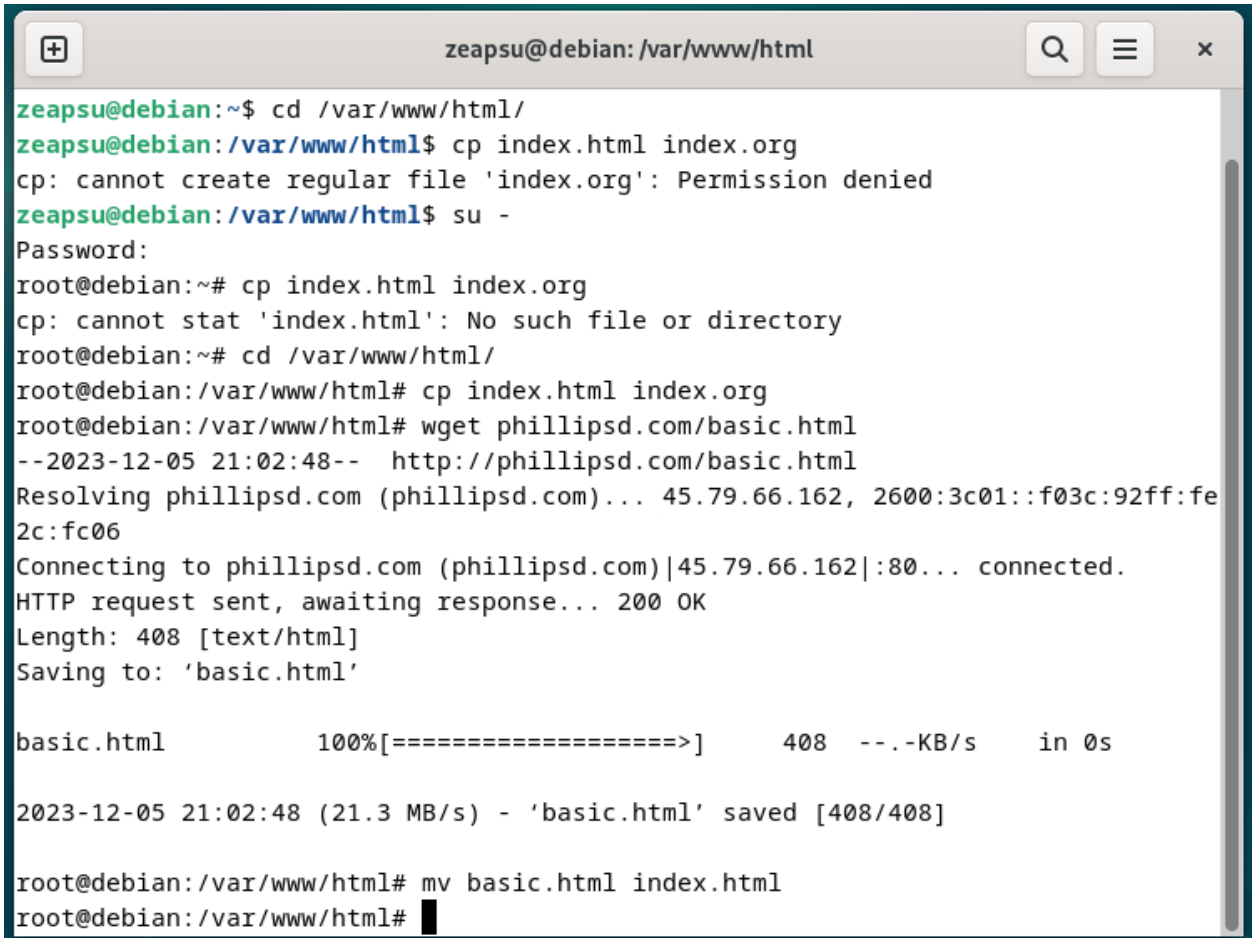


17. **As the last part, we see if we can visit and make a simple webserver using our VM, so we first get the necessary dependencies.**

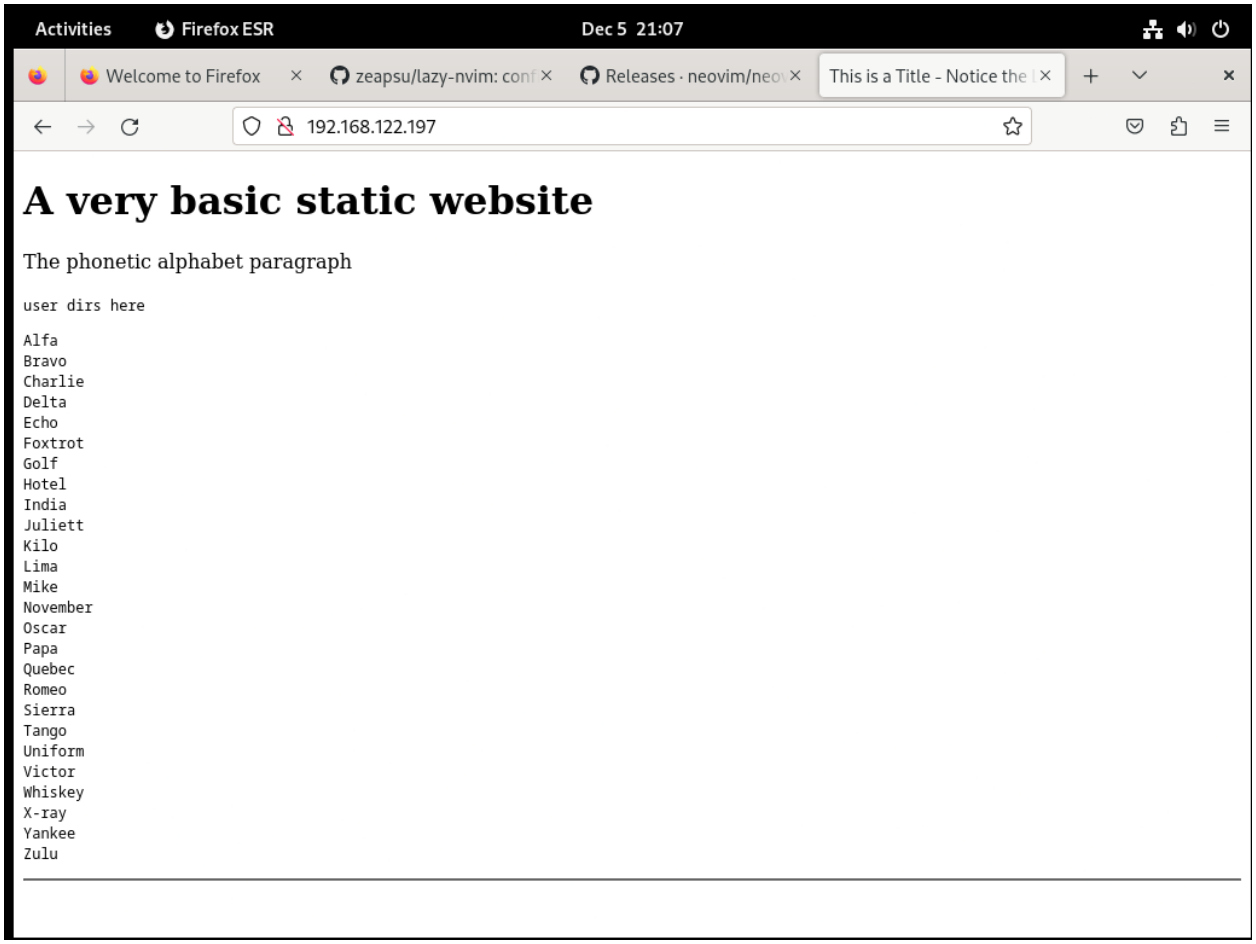


18. **We then prep the web server by modifying/copying the necessary files and getting a template from the professor's website.**


zeapsu@debian: /var/www/html
[sudo] password for zeapsu:
zeapsu@debian:~$ cd /var/www/html/
zeapsu@debian:/var/www/html$ cp index.html index.org
cp: cannot create regular file 'index.org': Permission denied
zeapsu@debian:/var/www/html$ su -
Password:
root@debian:~# cp index.html index.org
cp: cannot stat 'index.html': No such file or directory
root@debian:~# cd /var/www/html/
root@debian:/var/www/html# cp index.html index.org
root@debian:/var/www/html# wget phillipsd.com/basic.html
--2023-12-05 21:02:48-- http://phillipsd.com/basic.html
Resolving phillipsd.com (phillipsd.com)... 45.79.66.162, 2600:3c01::f03c:92ff:fe
2c:fc06
Connecting to phillipsd.com (phillipsd.com)|45.79.66.162|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 408 [text/html]
Saving to: 'basic.html'
basic.html 100%[==========>] 408 --.-KB/s in 0s
2023-12-05 21:02:48 (21.3 MB/s) - 'basic.html' saved [408/408]
root@debian:/var/www/html#



19. **Lastly, we visit the VM IP address in the browser to confirm that it is now a simple web server.**


Activities
Firefox ESR
Dec 5 21:07
Welcome to Firefox
zeapsu/lazy-nvim: conf
Releases · neovim/neo
This is a Title - Notice the
192.168.122.197
A very basic static website
The phonetic alphabet paragraph
user dirs here
Alfa
Bravo
Charlie
Delta
Echo
Foxtrot
Golf
Hotel
India
Juliett
Kilo
Lima
Mike
November
Oscar
Papa
Quebec
Romeo
Sierra
Tango
Uniform
Victor
Whiskey
X-ray
Yankee
Zulu