CONESTOGA
Connect Life and Learning

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Deliverable:	In-Class Tasks Week 6 Assignment
Course Name:	NTWK8141-24S-Sec3-Linux Server

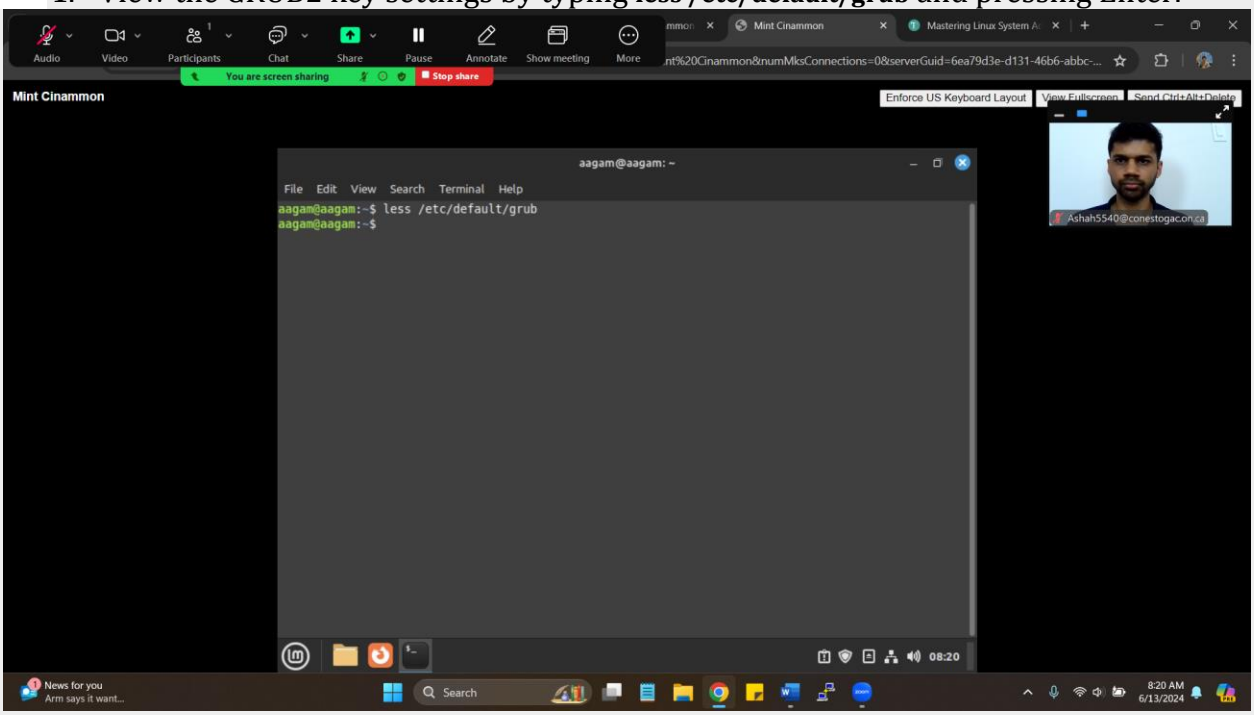
Date Assigned:	12/06/2024
Date Due:	13/06/2024
Rules:	• Individual. • Cheating is not allowed. • Plagiarism counts as cheating! • That FAILURE to submit work in the course can result in a grade of 'F' or 'I' for failure to complete the course!

In Class Task: Grub2

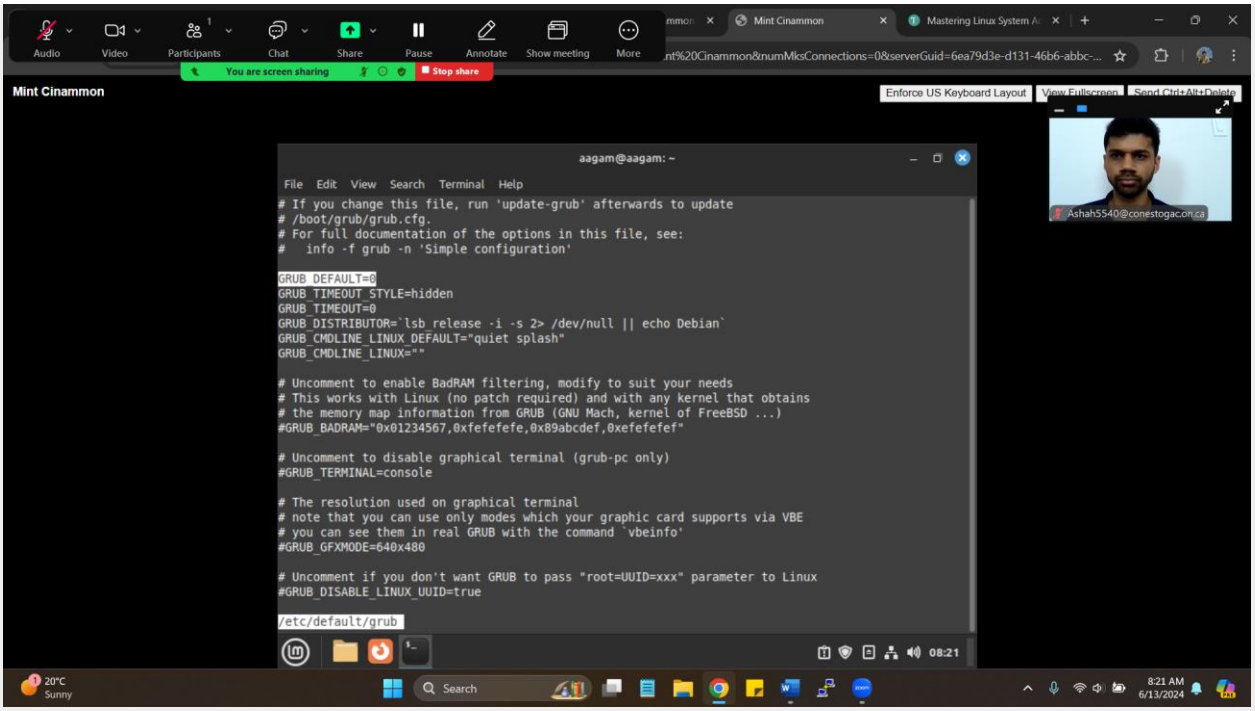
Complete the Real World Scenario: Exploring the GRUB2 Key Settings and Menu, Ch 10

The following steps will take you through exploring the GRUB2 key settings and interacting with its boot menu:

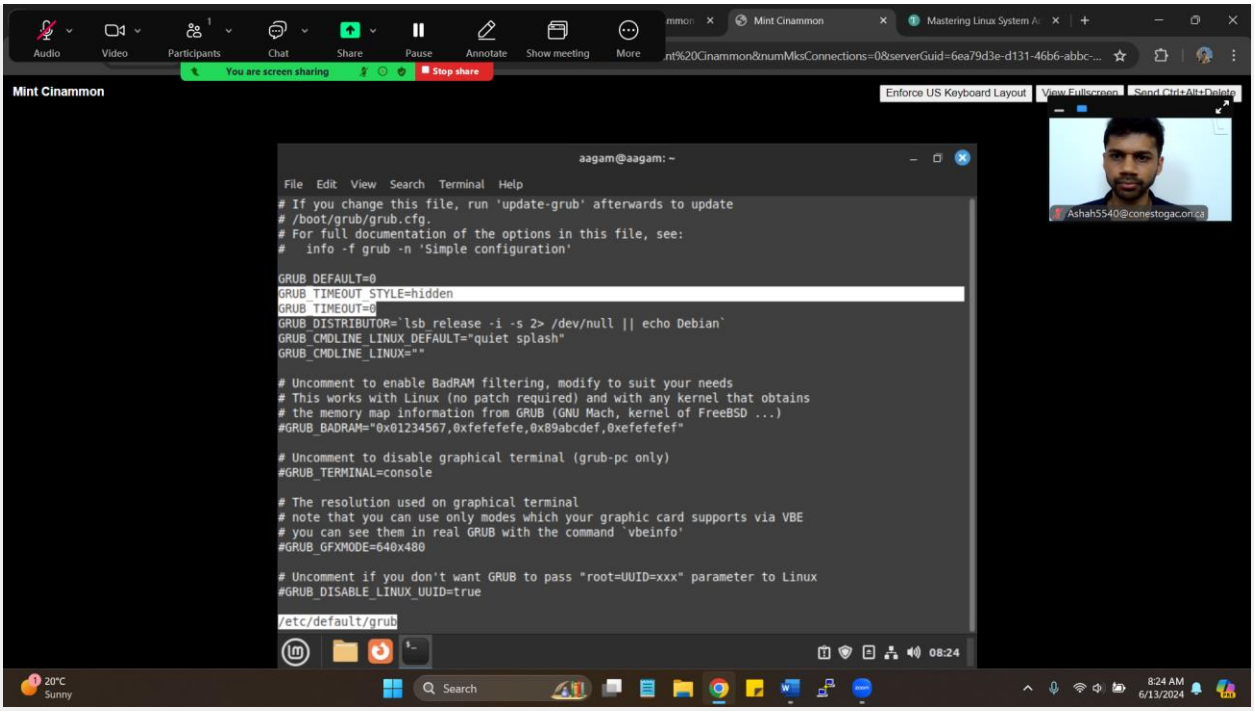
1. View the GRUB2 key settings by typing **less /etc/default/grub** and pressing Enter.



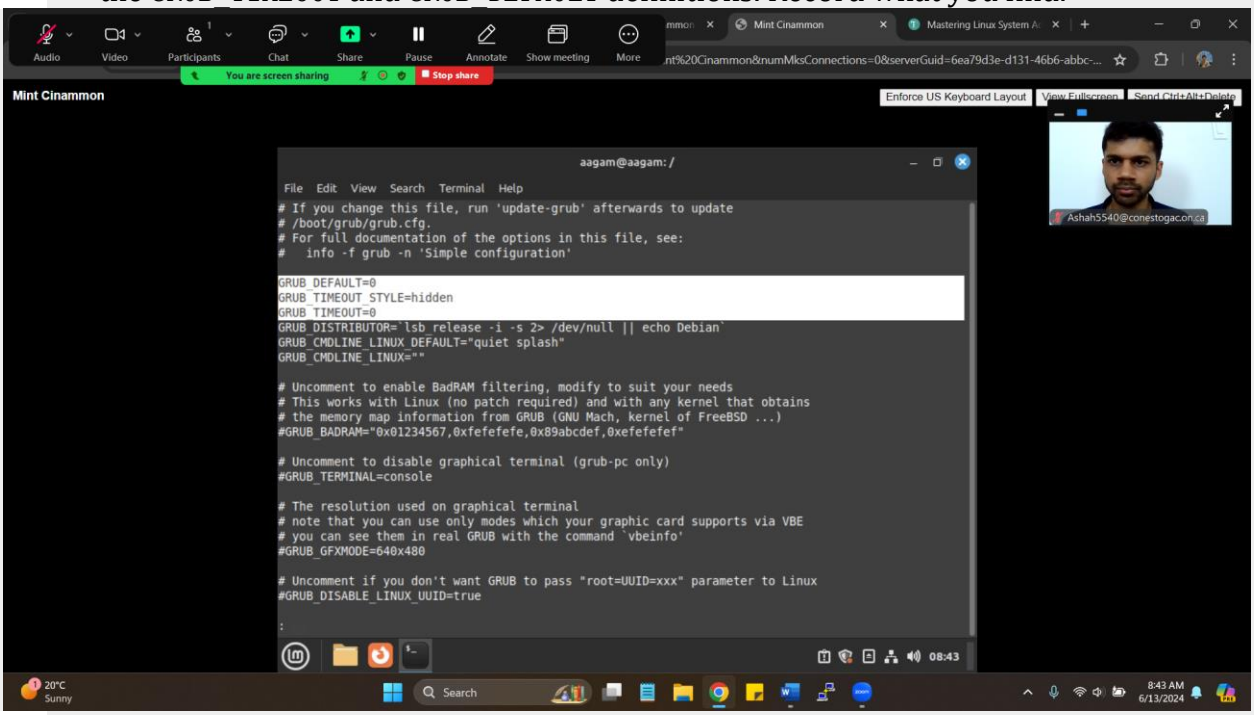
2. Looking at the `/etc/default/grub` key settings, determine the default boot menu entry by finding the `GRUB_DEFAULT` definition. Note that the first boot menu entry is selected by default, if `GRUB_DEFAULT` is set to `0`. If it is set to `1`, the second boot menu entry is selected, and so on. Record your findings.



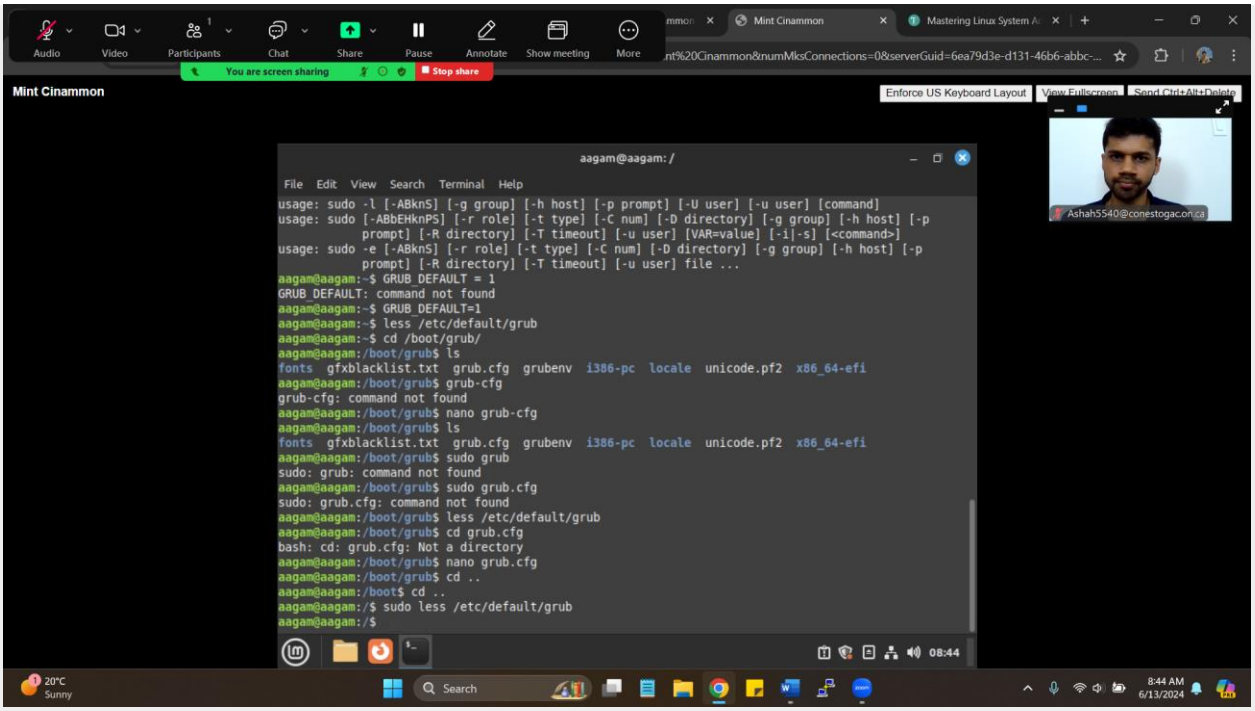
3. Continuing to view the `/etc/default/grub` key settings, and determine if the `GRUB_TIMEOUT_STYLE` is defined. Using the following process to record what you found in this step:
    1. If it is set to `hidden`, you will not see the boot menu when the system starts, and you will have to press the Esc key at the right time to view it (as long as `GRUB_TIMEOUT` is not set to `0`).
    2. If `GRUB_TIMEOUT_STYLE` is set to `countdown`, you'll have to press the Esc key to view the boot menu when the system starts, and you'll see a countdown on the screen.
    3. If `GRUB_TIMEOUT_STYLE` is not defined or set to `menu`, you will be able to view the boot menu without any additional actions on your part.



4. Still looking at the `/etc/default/grub` key settings, determine the boot menu timeout and default boot menu autoselection by finding the `GRUB_TIMEOUT` and `GRUB_DEFAULT` definitions. Record what you find.



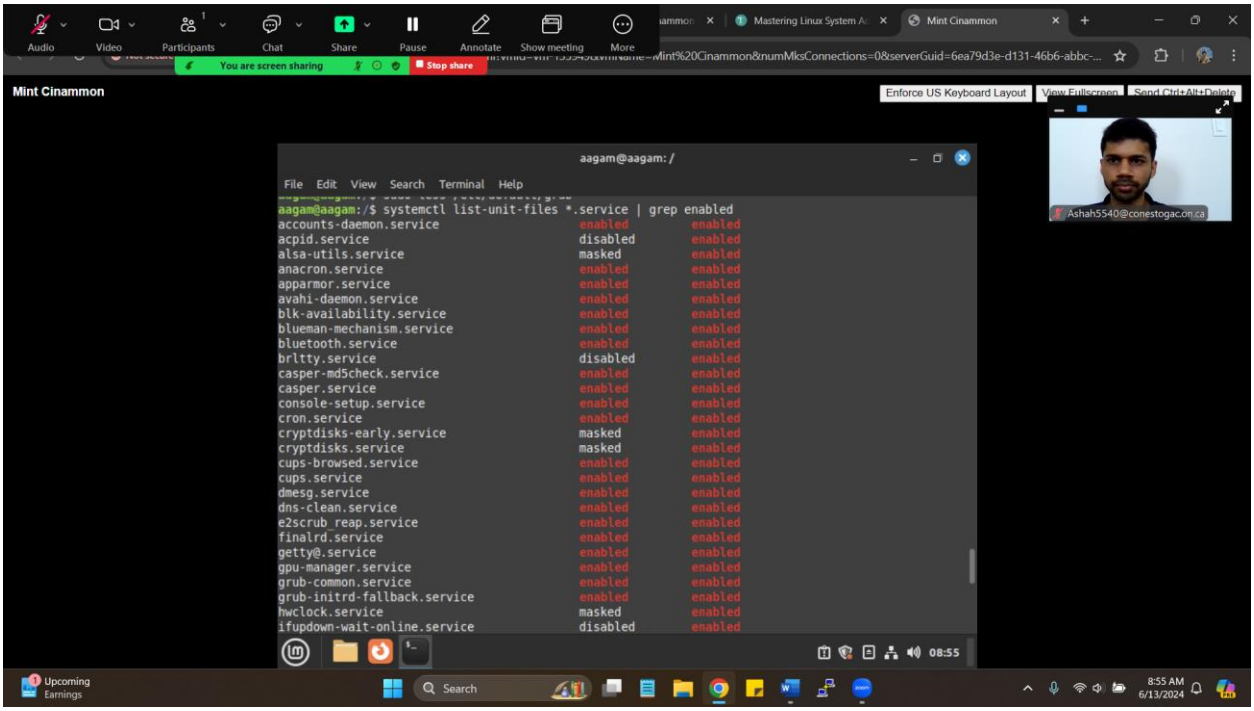
5. Press the Q key to quit the `less` pager and return to the command-line prompt.



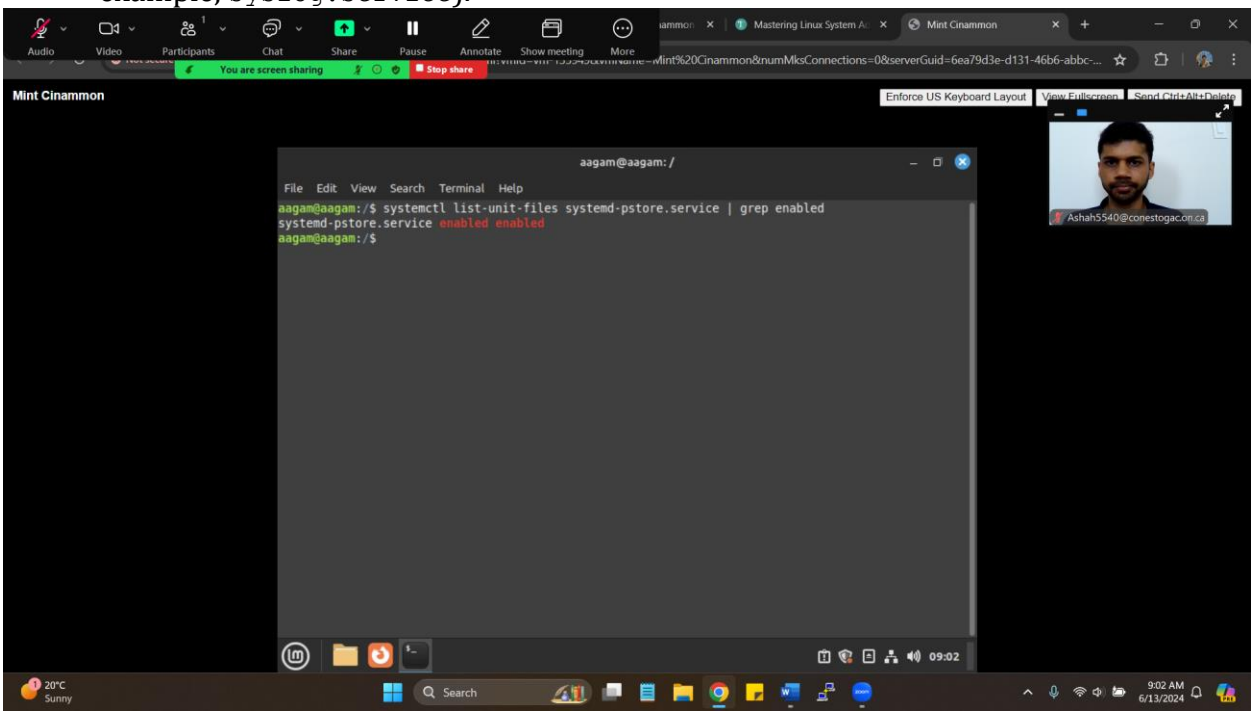
LOOKING AT SERVICE UNIT FILES

The systemd daemon performs the heavy-duty method of creating and configuring the various service unit files. However, it is still a good idea to understand their directives so you can manage any needed tweaks or quickly deal with problems.

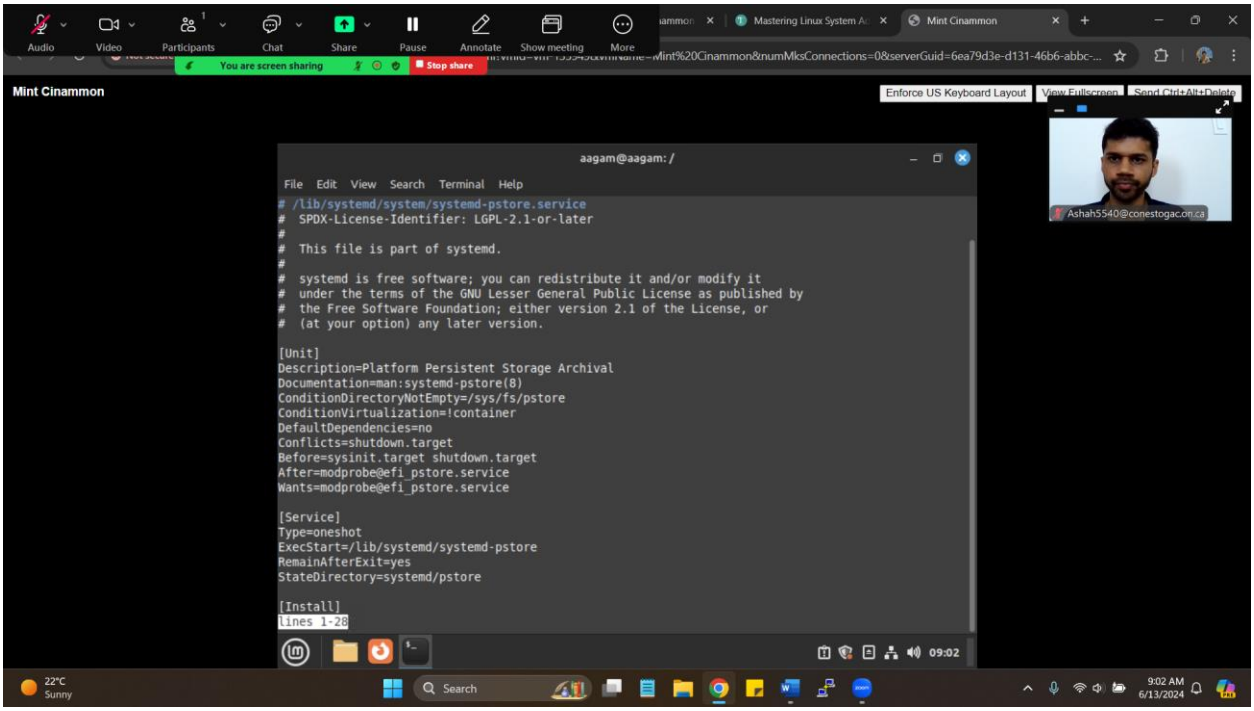
1. List the various enabled systemd service unit files on your system by typing **systemctl list-unit-files *.service | grep enabled** and pressing Enter.



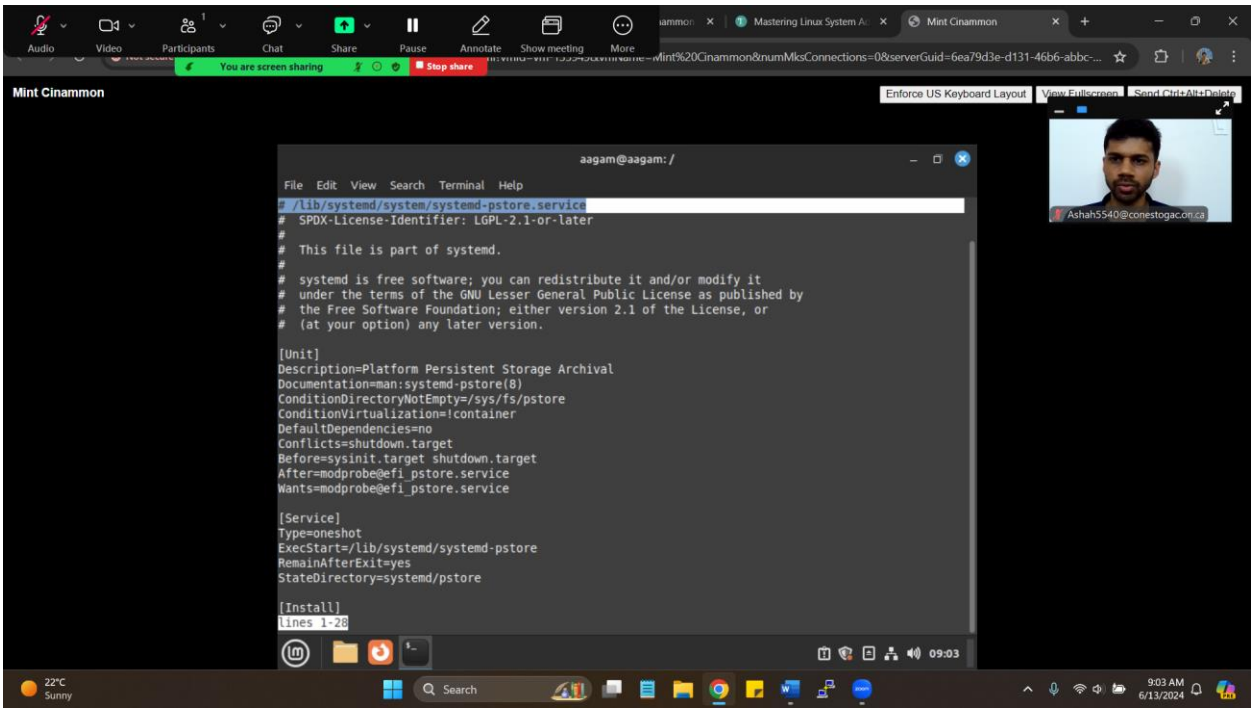
2. From the list in the previous step, pick a service unit file (for example, `syslog.service`).



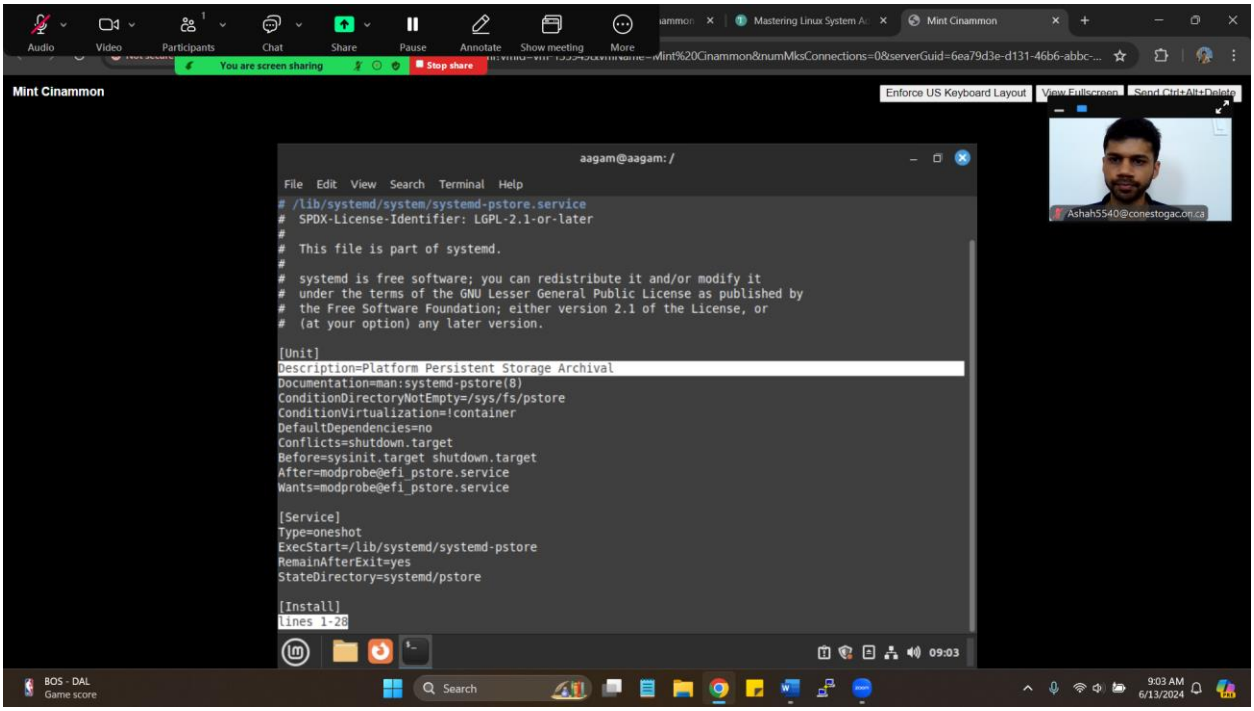
3. View the service unit file by typing **systemctl cat *chosen-service-file*** and pressing Enter, where *`chosen-service-file`* is the service unit file you picked in the previous step (for example, `systemctl cat syslog.service`).



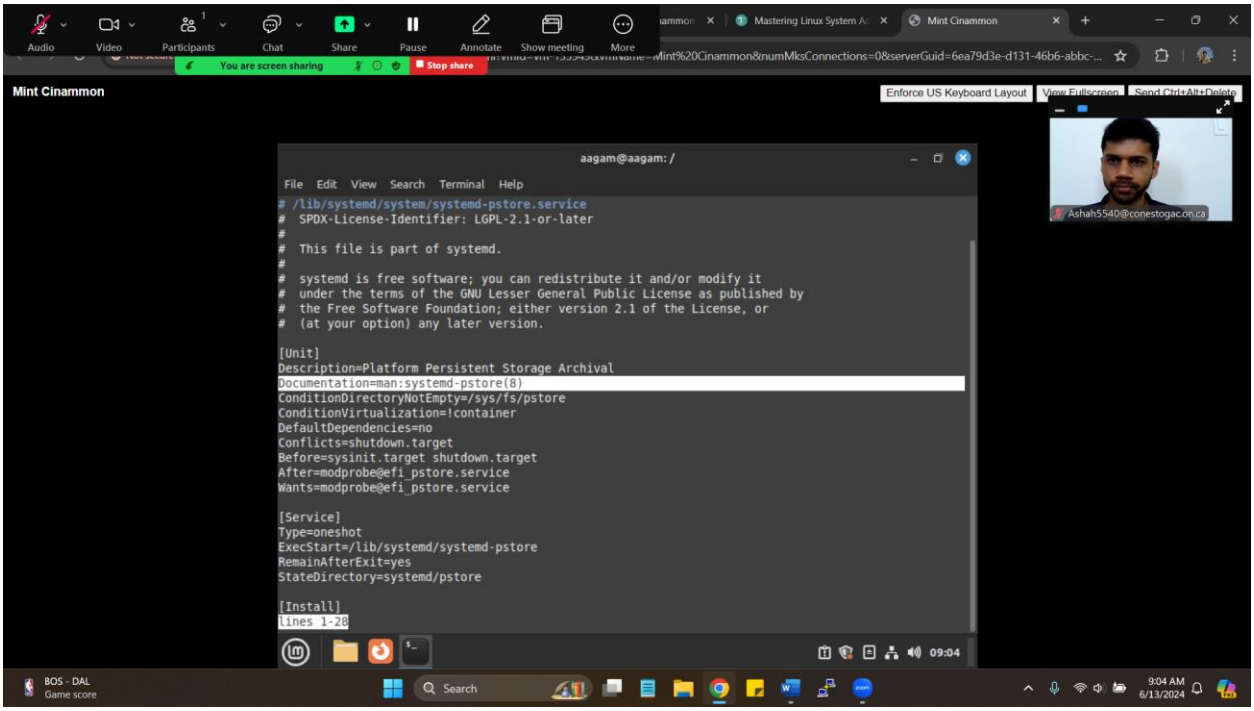
4. Looking at the displayed service unit file, answer the following questions:
    1. What directory does this file reside in? (Hint: Look at the first line in the file.)



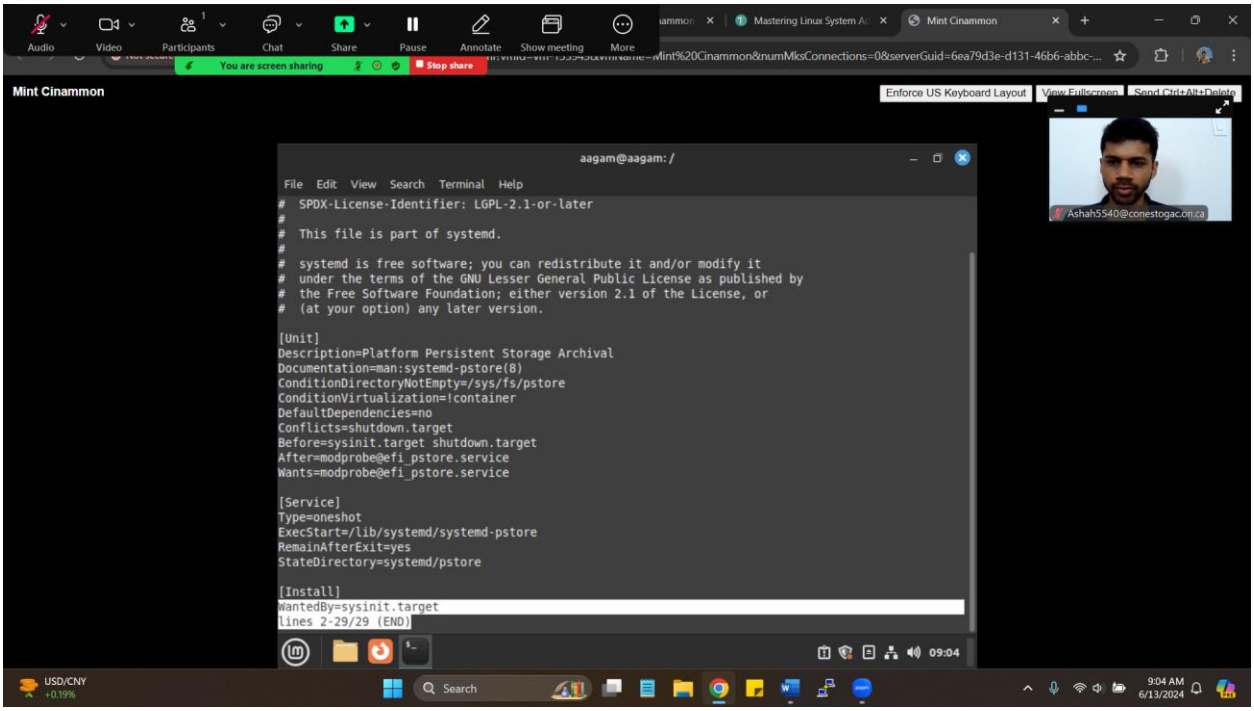
    2. From the `Description` in the `[Unit]` section, for what is this service used?



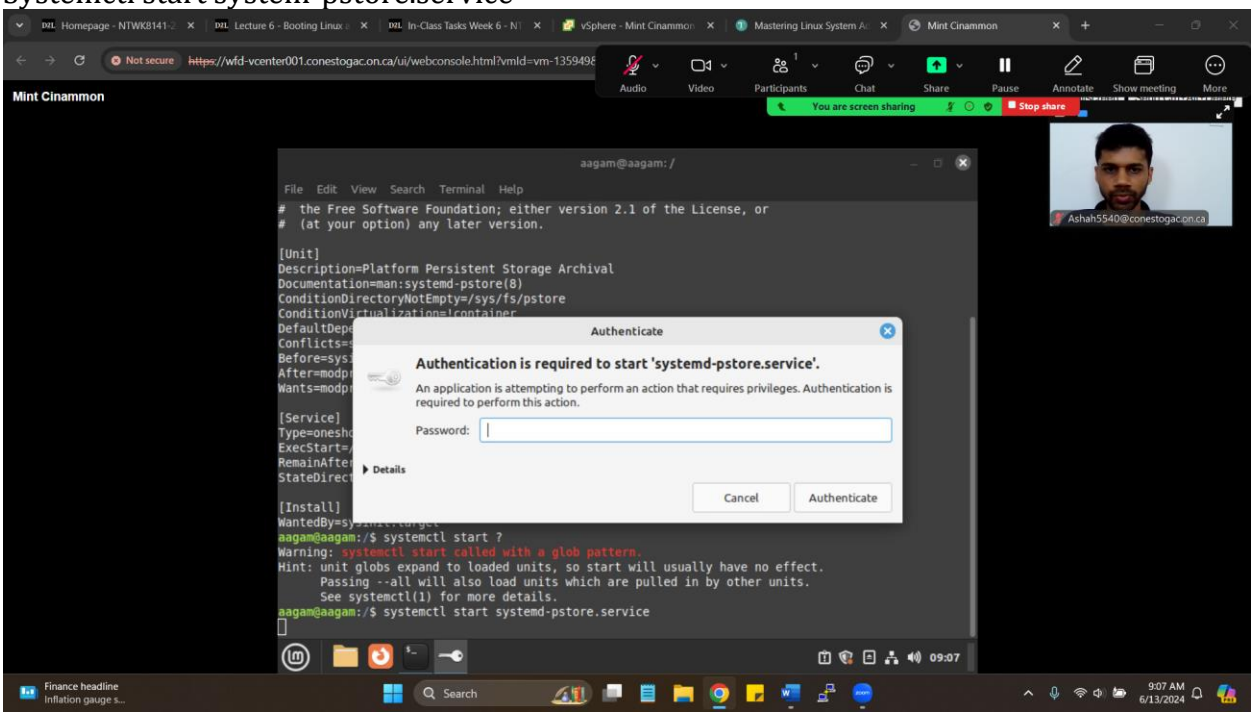
3. If a `Documentation` directive is in the `[Unit]` section, what documentation is available to learn more about this service?



4. If a `WantedBy` directive is in the `[Install]` section, what target unit file wants this service started?

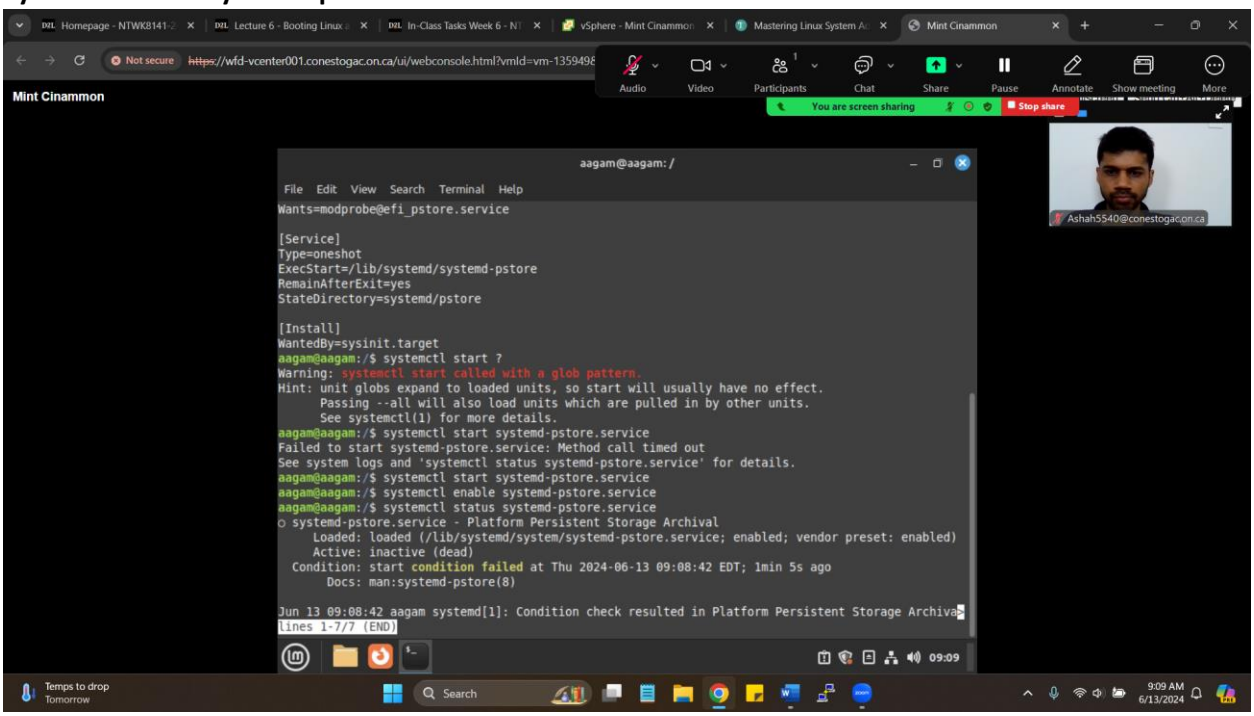


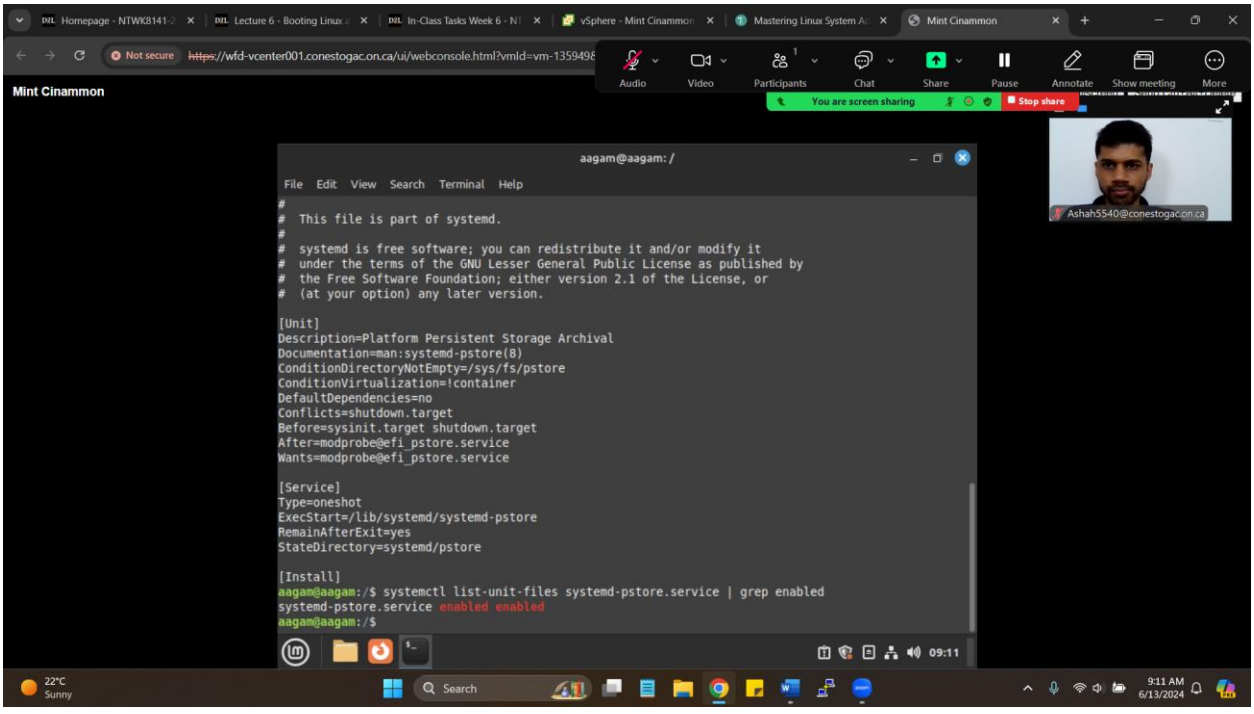
Systemctl start system-pstore.service



Systemctl enable system-pstore.service

Systemctl status systemd-pstore.service

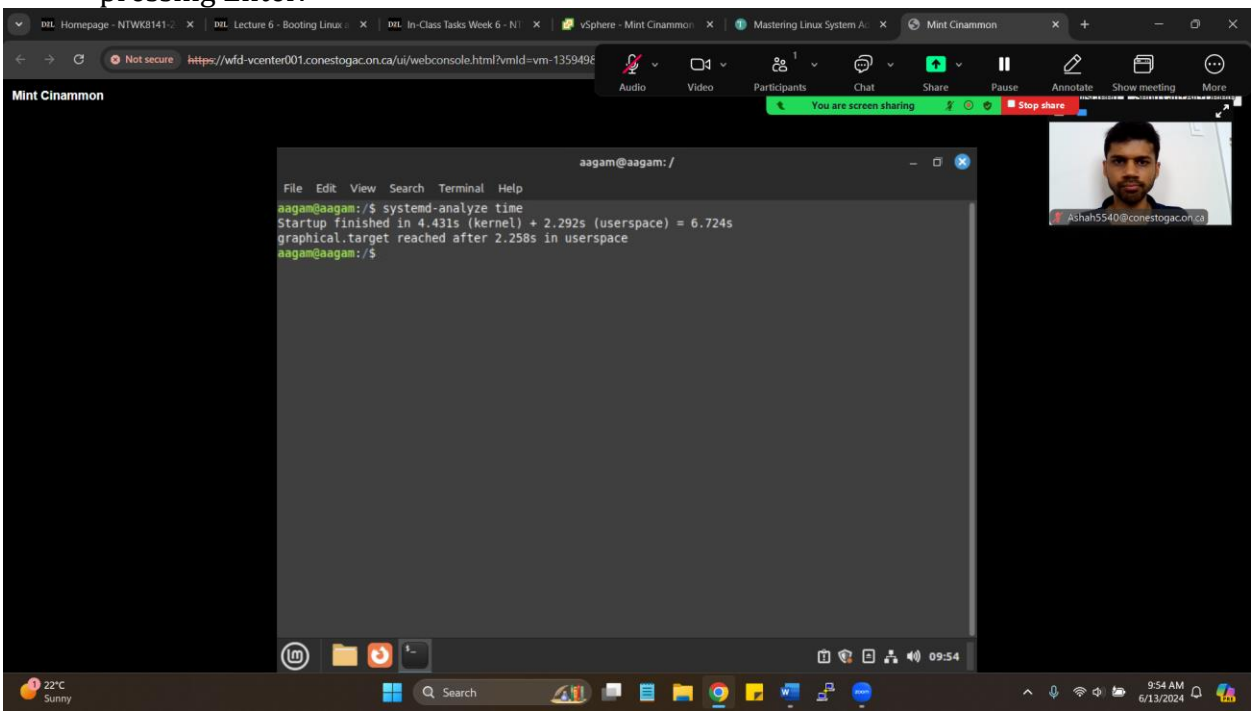




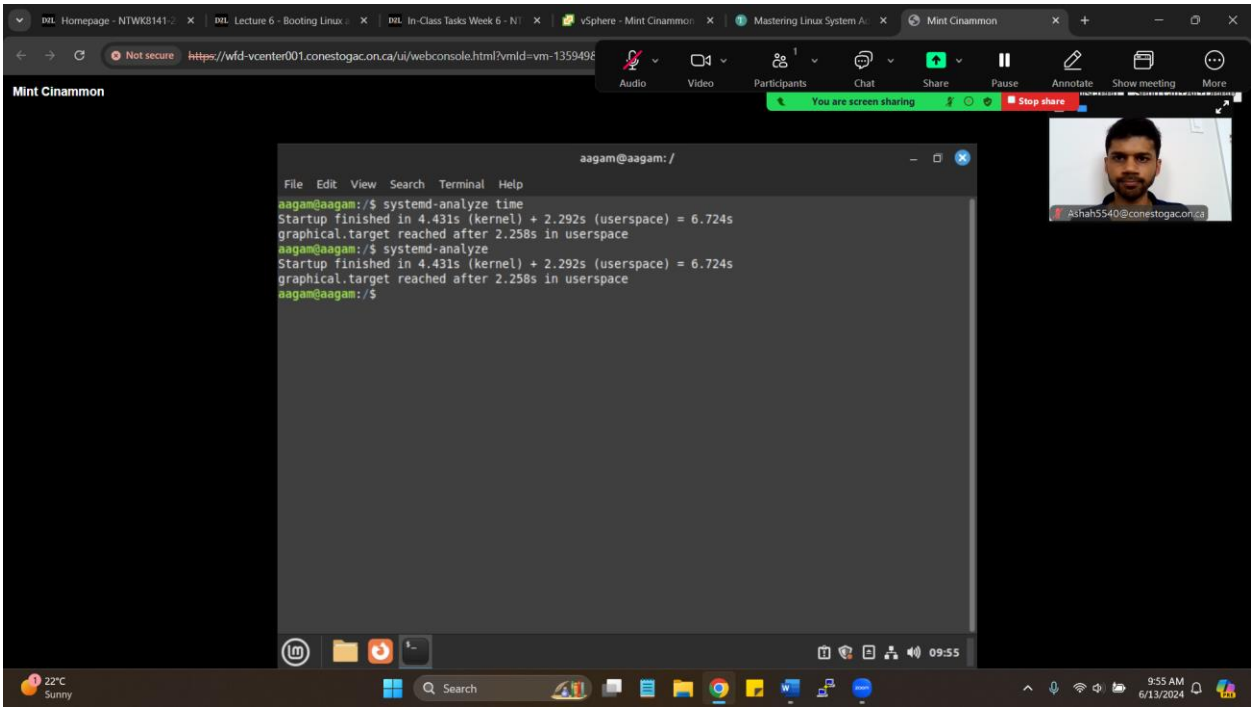
ANALYZING SYSTEM INITIALIZATION

Most production servers are expected to have minimal downtime. So when you need to take a server down, the faster it can boot back to full service, the better. Taking some time to analyze your system's initialization is worthwhile, especially if the analysis uncovers some services that are unneeded or whose configuration needs exploration to improve their startup times.

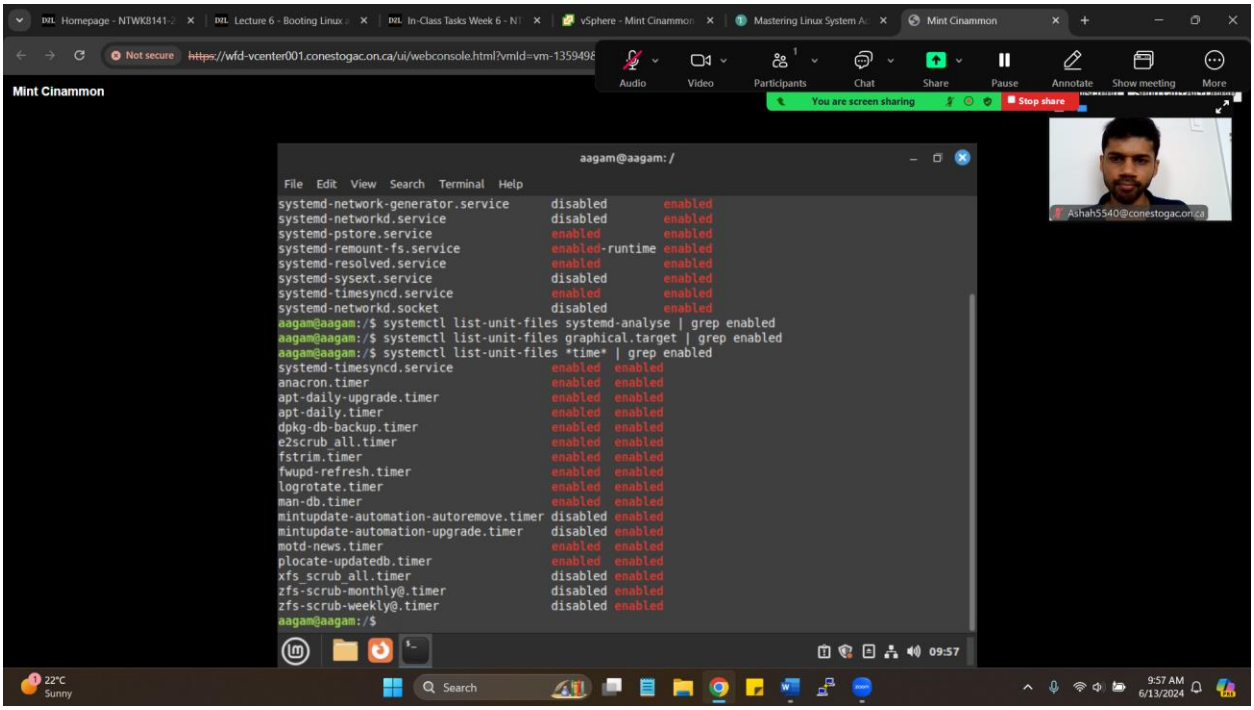
1. View your system's total initialization time by typing **systemd-analyze time** and pressing Enter.



2. Try this command without the argument by typing **systemd-analyze** and pressing Enter. You should see the same output as displayed in the previous step.

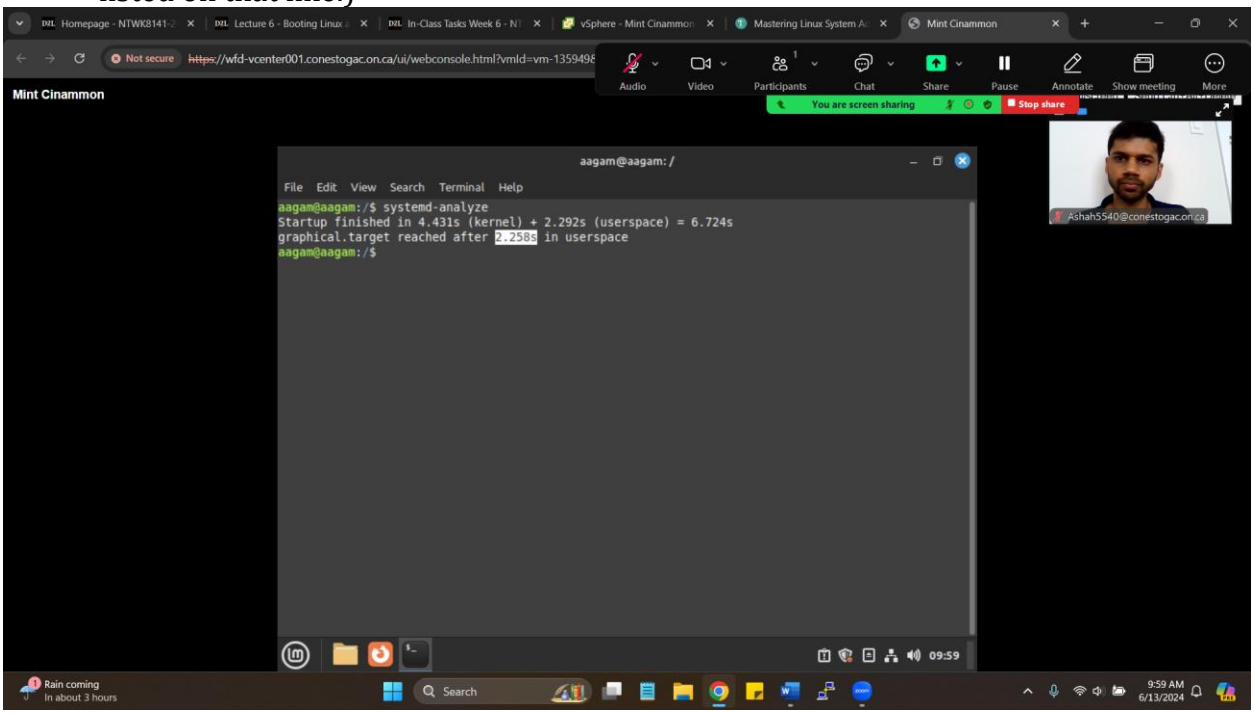


3. View the output from the previous step to determine which target unit file is used on this system.

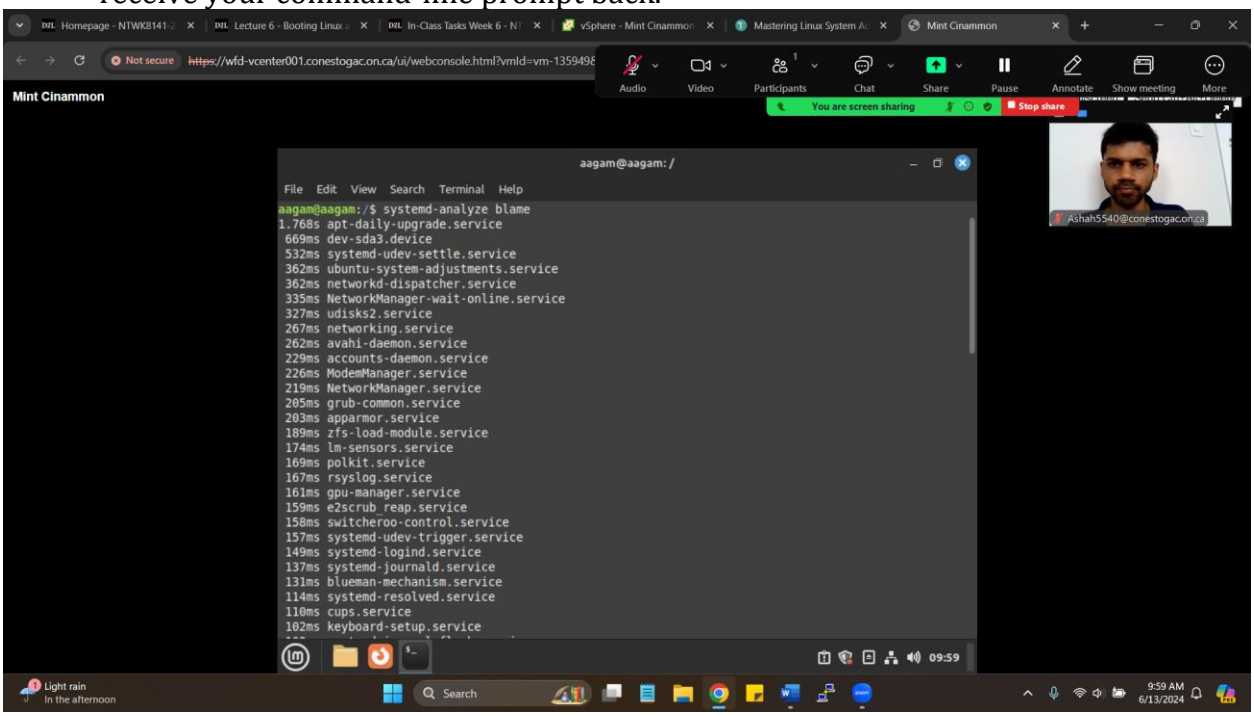


4. Looking at the output from step 3, how long did it take the services in the target unit file to start? (Hint: Find the line that says something similar to `multi-user.target`

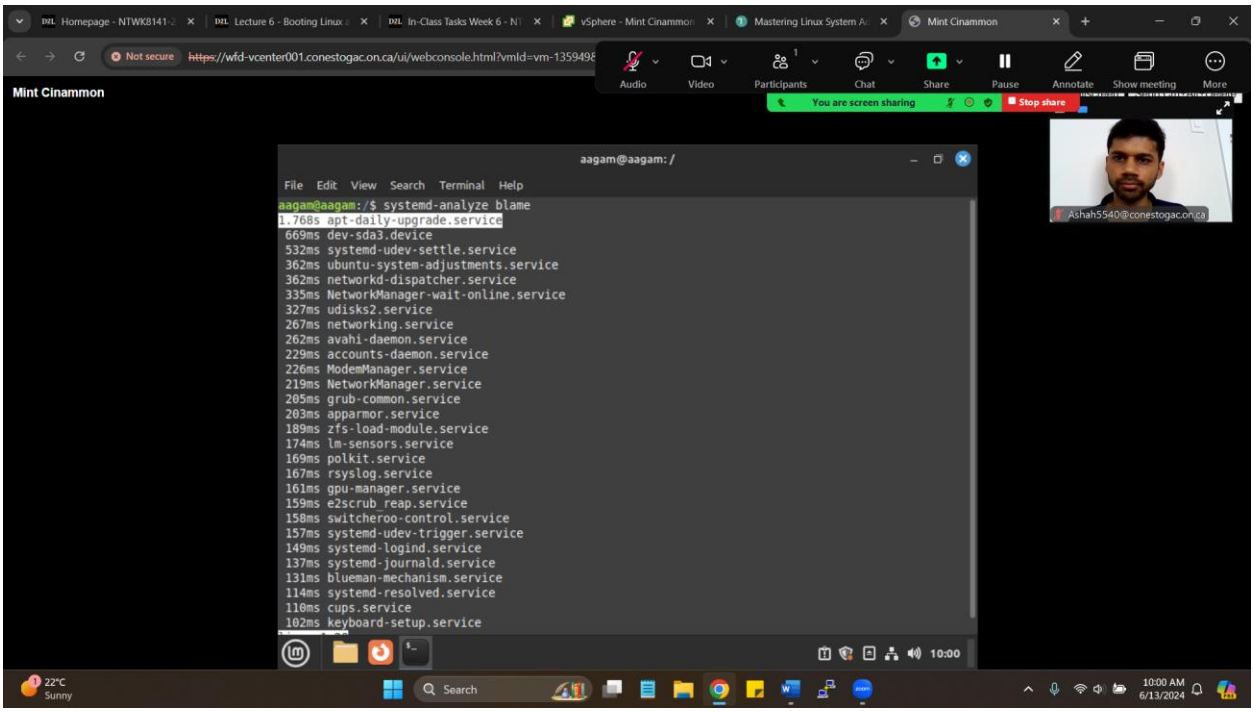
`reached after ___ in userspace`. You'll want to record the number of seconds listed on that line.)



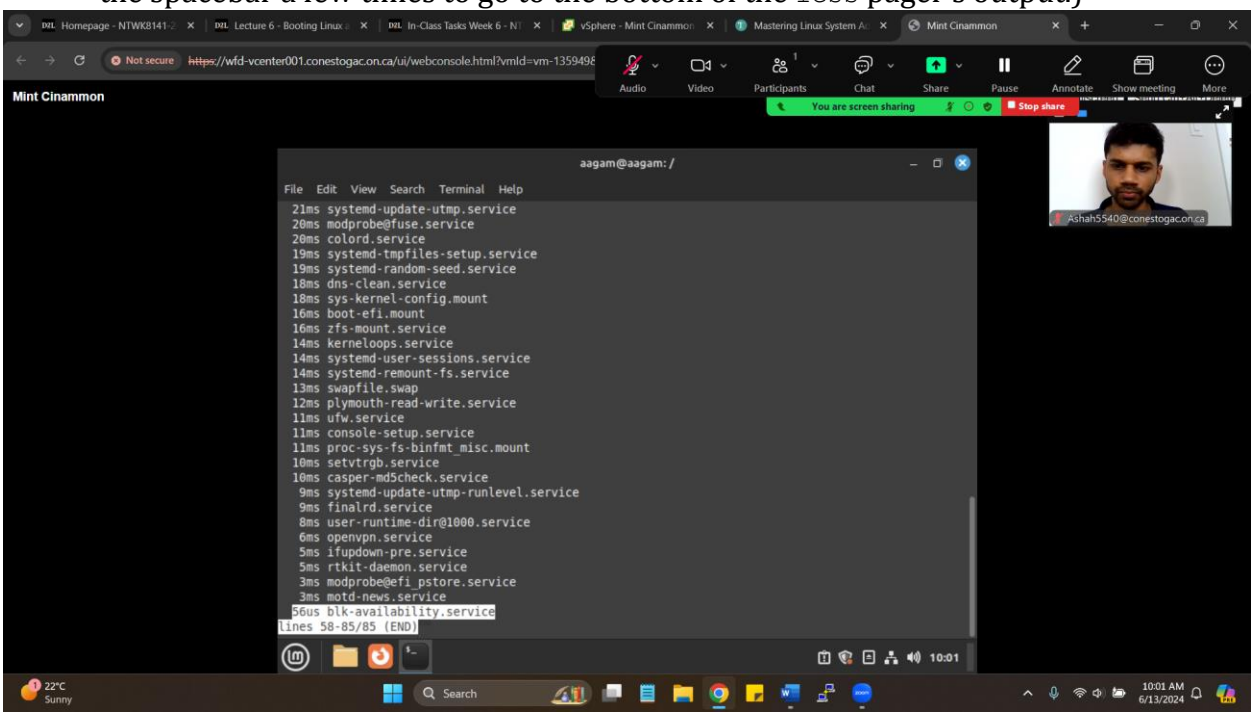
5. Now analyze the speed of starting each service. Type **systemd-analyze blame** and press Enter. The results of this command will display using the `less` pager, so you will not receive your command-line prompt back.



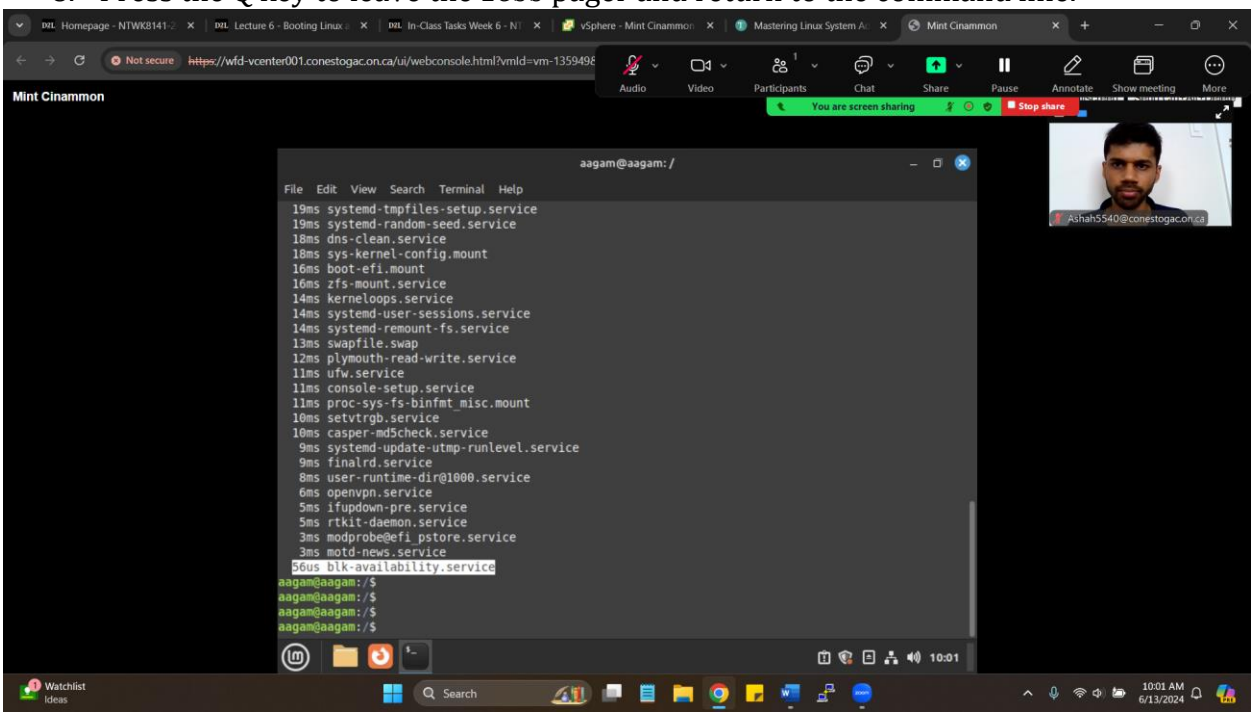
6. From the preceding step's results, record what service is the slowest to start. (Hint: Find the first line of output from the command. That is the slowest service.)



7. From the results in step 6, record what service is the fastest to start. (Hint: This will be displayed on the last line of output from the command. You may need to press the spacebar a few times to go to the bottom of the `less` pager's output.)



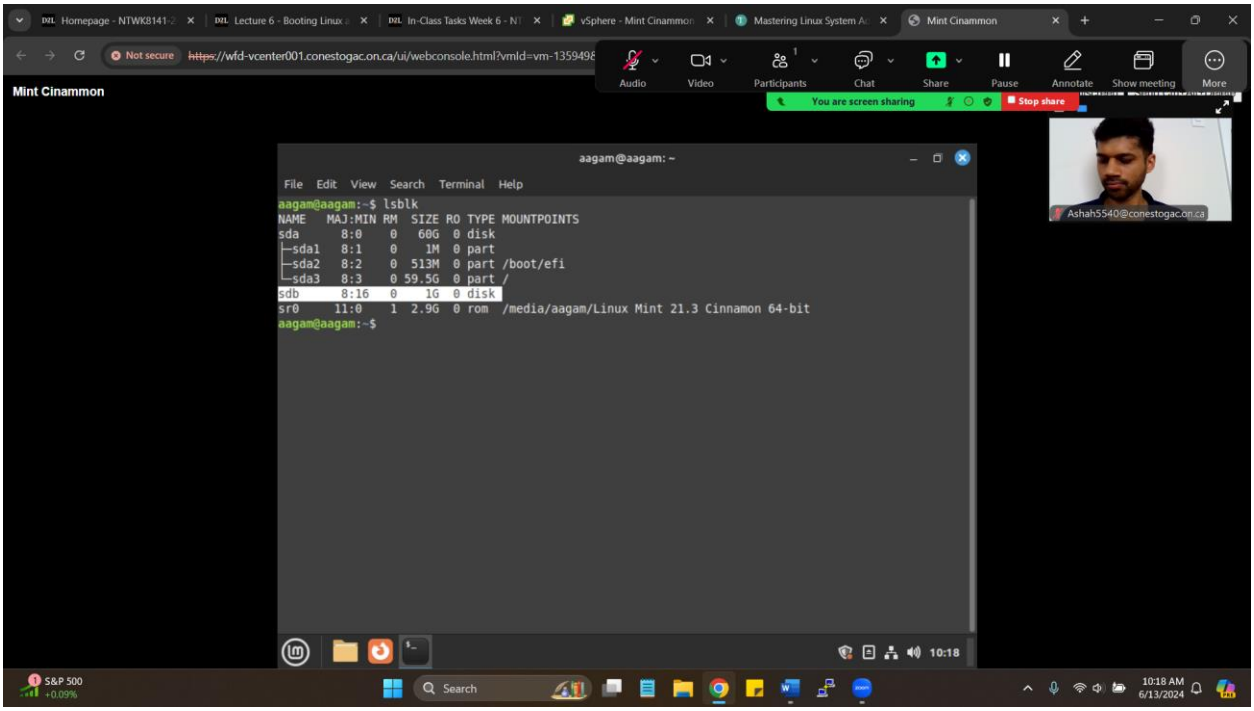
8. Press the Q key to leave the `less` pager and return to the command line.



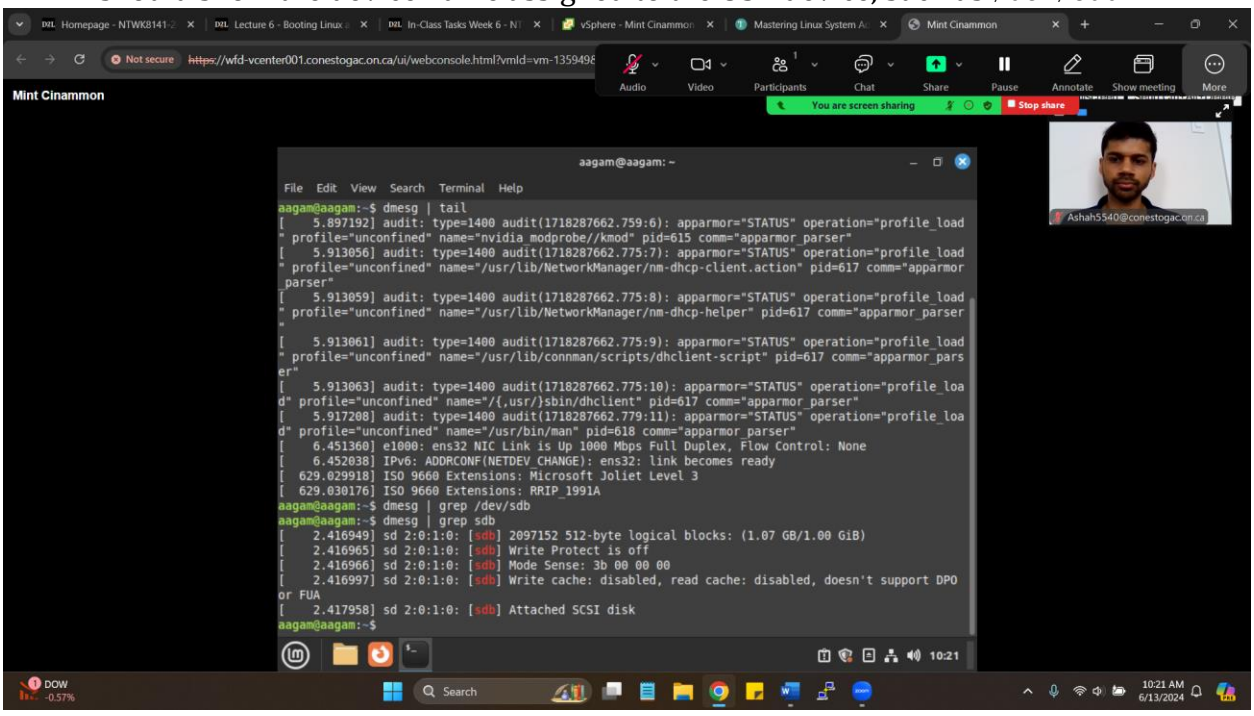
FORMATTING A NEW STORAGE DEVICE

created a partition on a new USB memory stick storage device. Now you know that you need to use the `mkfs` command to format it so you can store data.

1. Insert the USB memory stick that you formatted in the “Partitioning a New Storage Device” case study if it's not already loaded on your system. If you're using a virtual machine (VM)environment, you may need to configure the VM to recognize the new USB device. For VirtualBox, click the Devices menu bar item and then select USB and the USB device name.



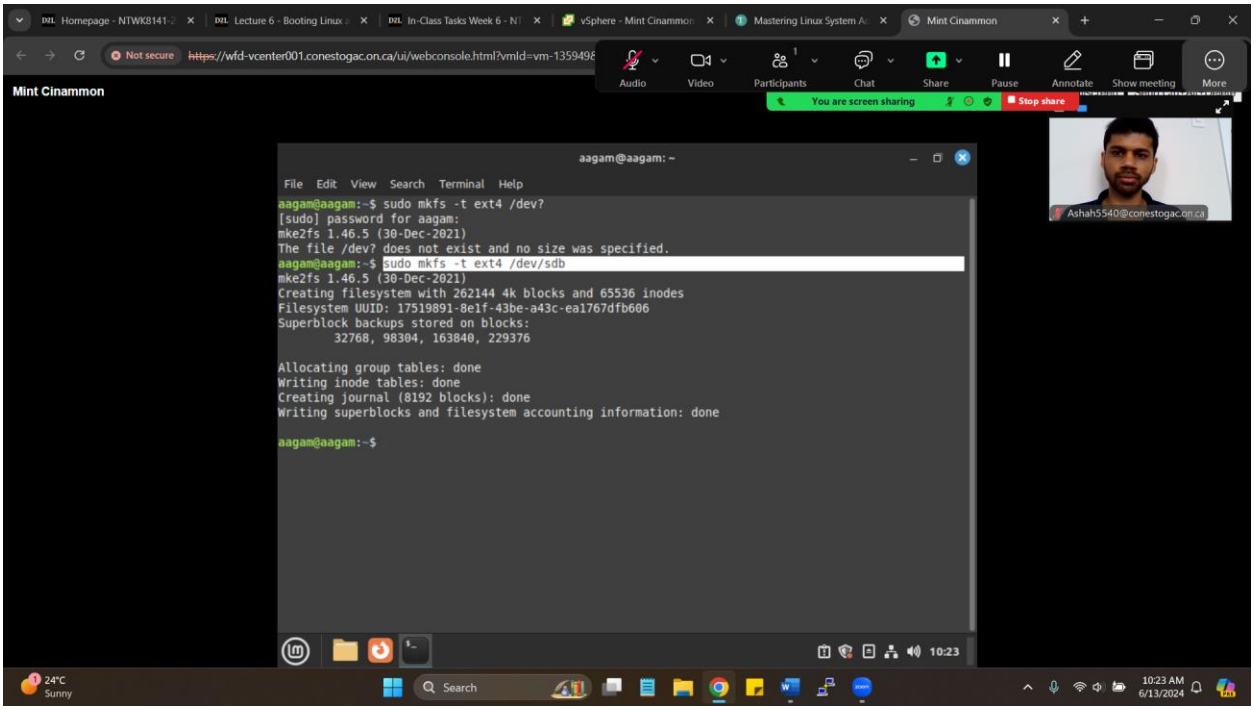
2. Type **dmesg | tail** to display the last few lines of the system console output. This should show the device name assigned to the USB device, such as `/dev/sdb1`.



3. Create a new filesystem on the new partition. Type **sudo mkfs -t ext4 /dev/ *xxx* 1**, where *xxx* is the device name for the USB memory stick. You should see something similar to the following output:

```
mke2fs 1.45.6 (20-Mar-2020)
```

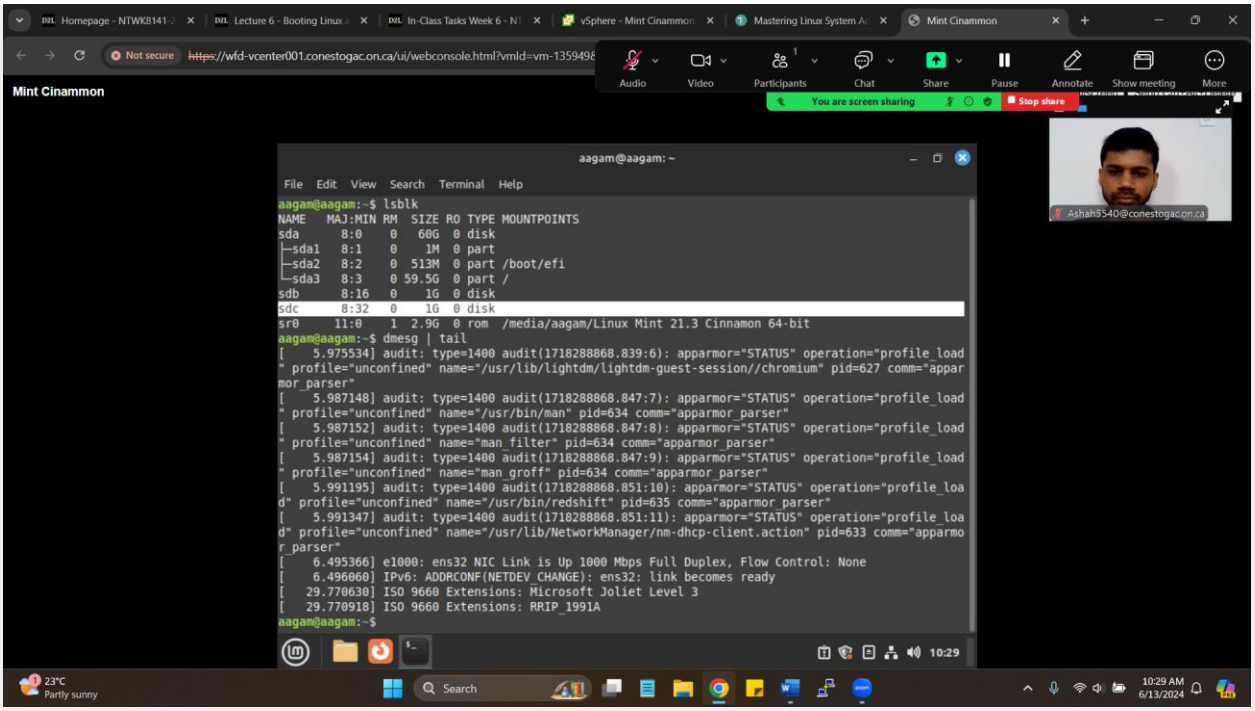
```
Creating filesystem with 255808 4k blocks and 64000 inodes
Filesystem UUID: 944a8b8d-0e8c-4828-b926-fa4656d39bac
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

$
```



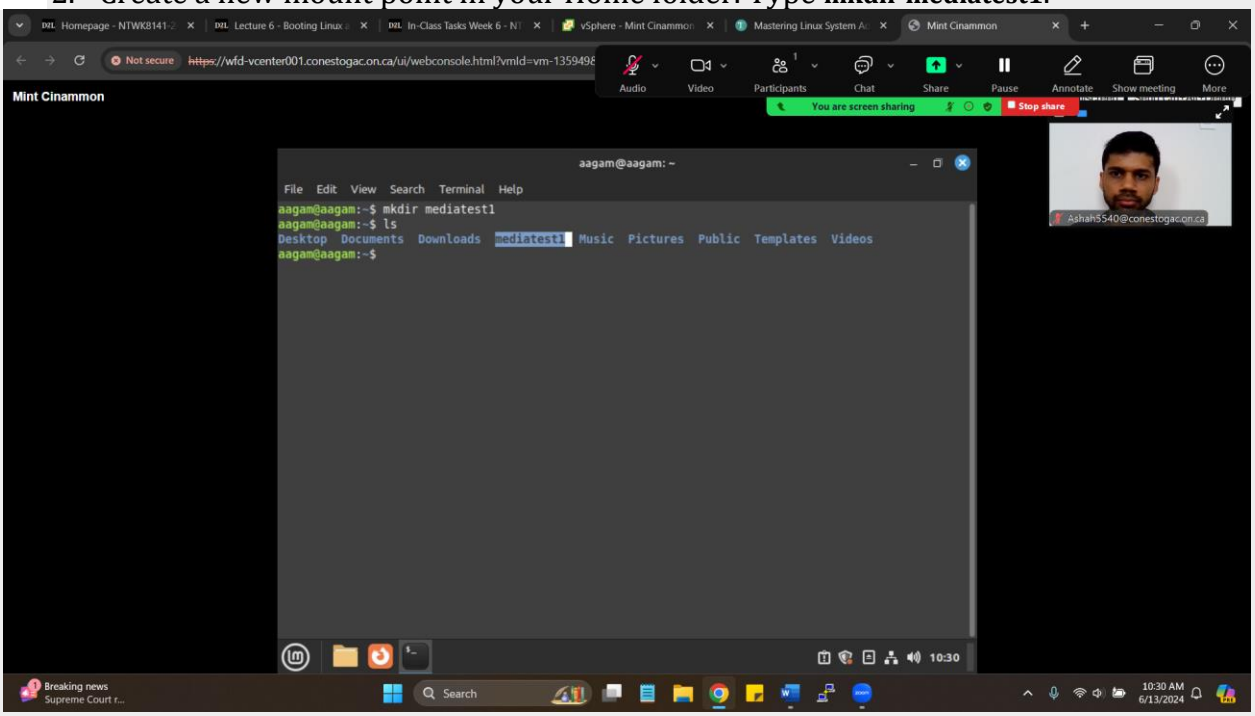
MOUNTING A PARTITION

In the previous case study, you created a filesystem on a USB memory stick partition, but you can't access it until you mount it within the virtual directory on your Linux system

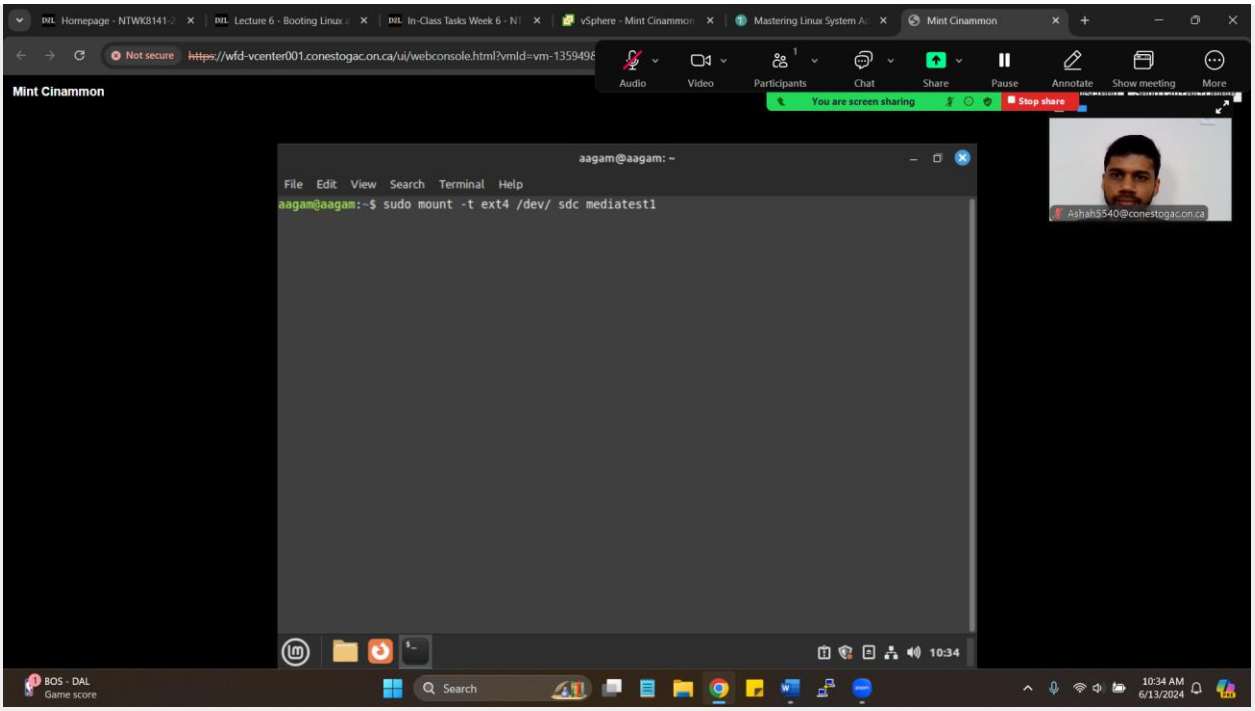
1. The Linux system may mount the device automatically. Type **dmesg | tail** to display the last few lines from the system console output. This should show the device name assigned to the USB device, such as `/dev/sdb1`, and if it was mounted.



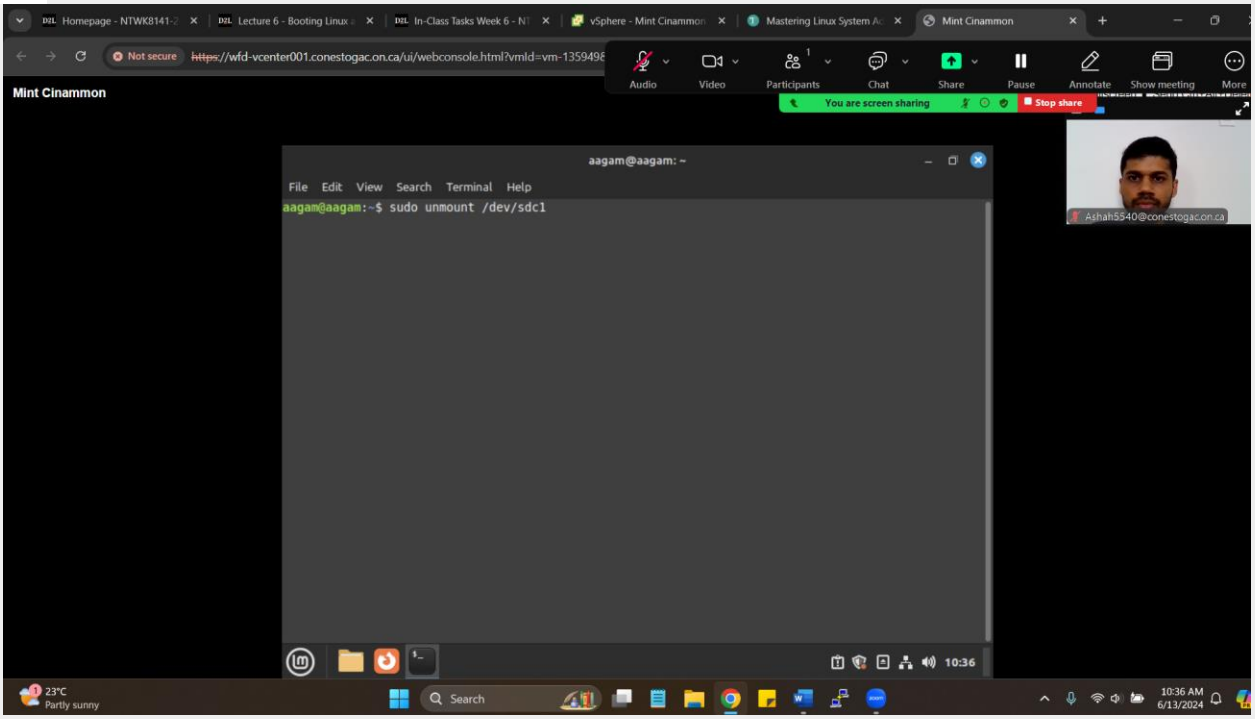
2. Create a new mount point in your Home folder. Type **mkdir mediatest1**.



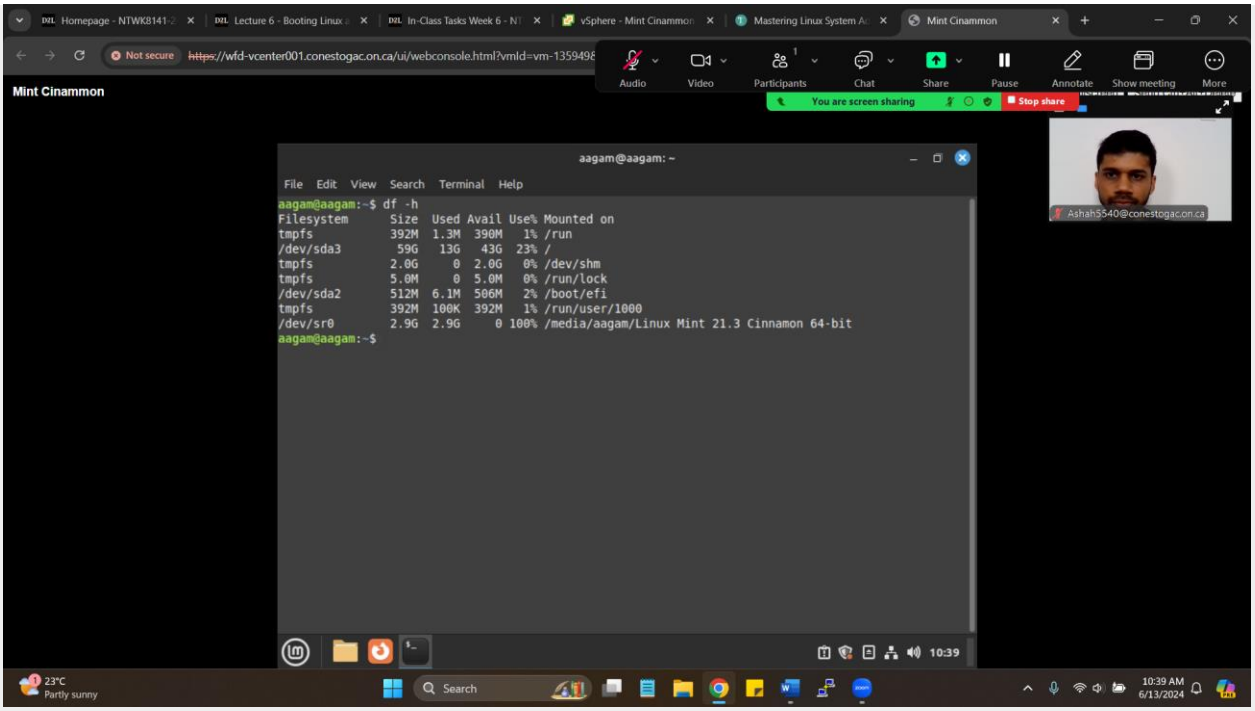
1. Mount the new filesystem to the mount point. Type **sudo mount -t ext4 /dev/ *xxx* 1 mediatest1**, where *xxx* is the device name. Type **ls mediatest1** to list any files currently in the filesystem.



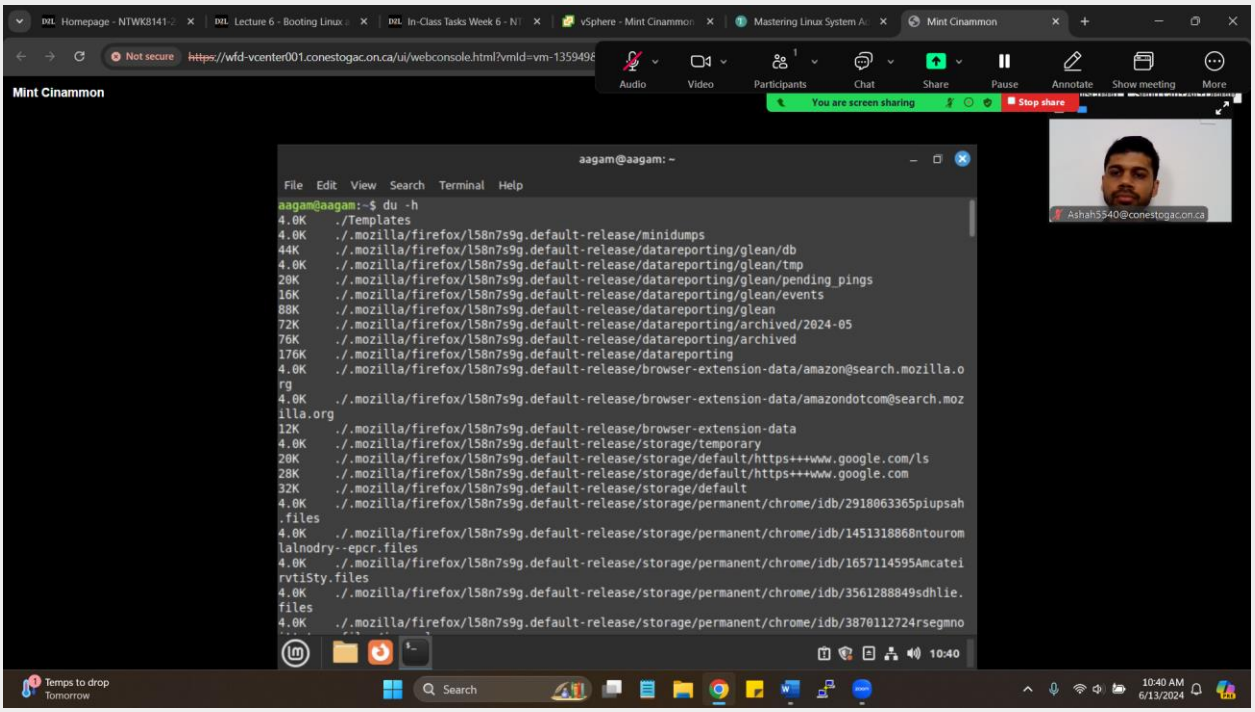
2. Remove the USB stick by typing **sudo umount /dev/ *xxx* 1**, where *xxx* is the device name.



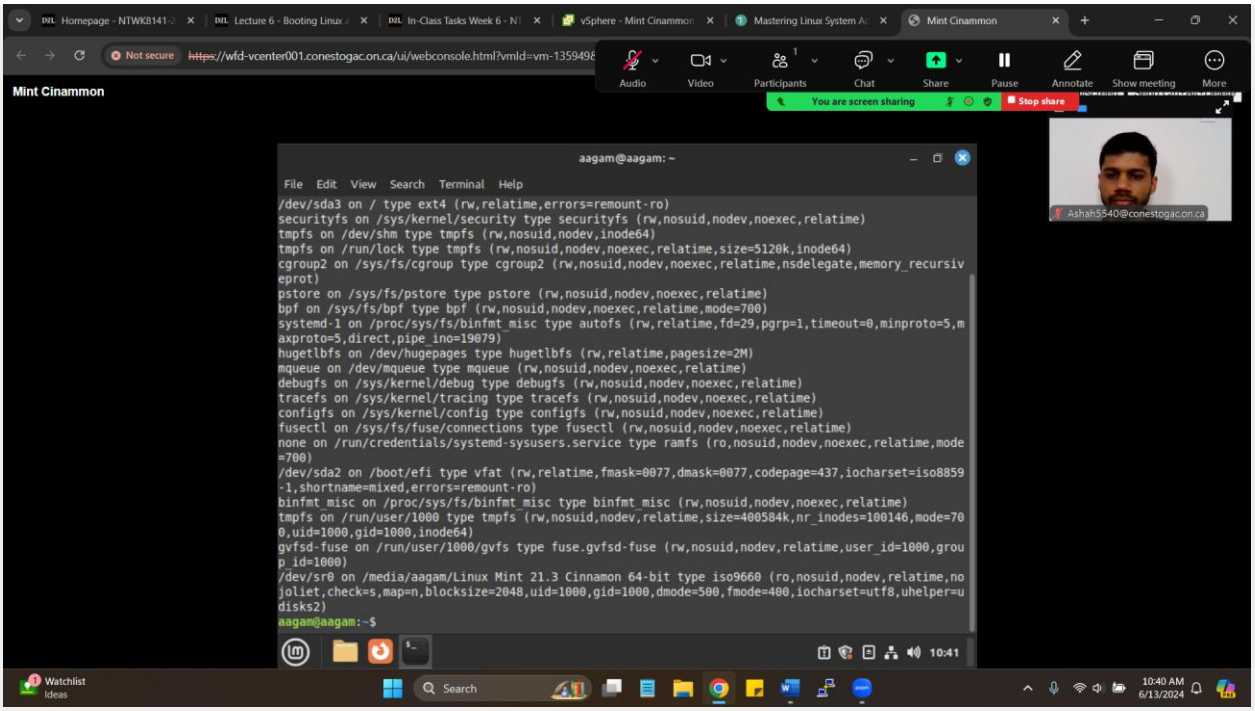
df -h


Mint Cinammon
aagam@aagam: ~
File Edit View Search Terminal Help
aagam@aagam:~$ df -h
Filesystem Size Used Avail Use% Mounted on
tmpfs 392M 1.3M 390M 1% /run
/dev/sda3 59G 13G 43G 23% /
tmpfs 2.0G 0 2.0G 0% /dev/shm
tmpfs 5.0M 0 5.0M 0% /run/lock
/dev/sda2 512M 6.1M 506M 2% /boot/efi
tmpfs 392M 100K 392M 1% /run/user/1000
/dev/sr0 2.9G 2.9G 0 100% /media/aagam/Linux Mint 21.3 Cinnamon 64-bit
aagam@aagam:~$

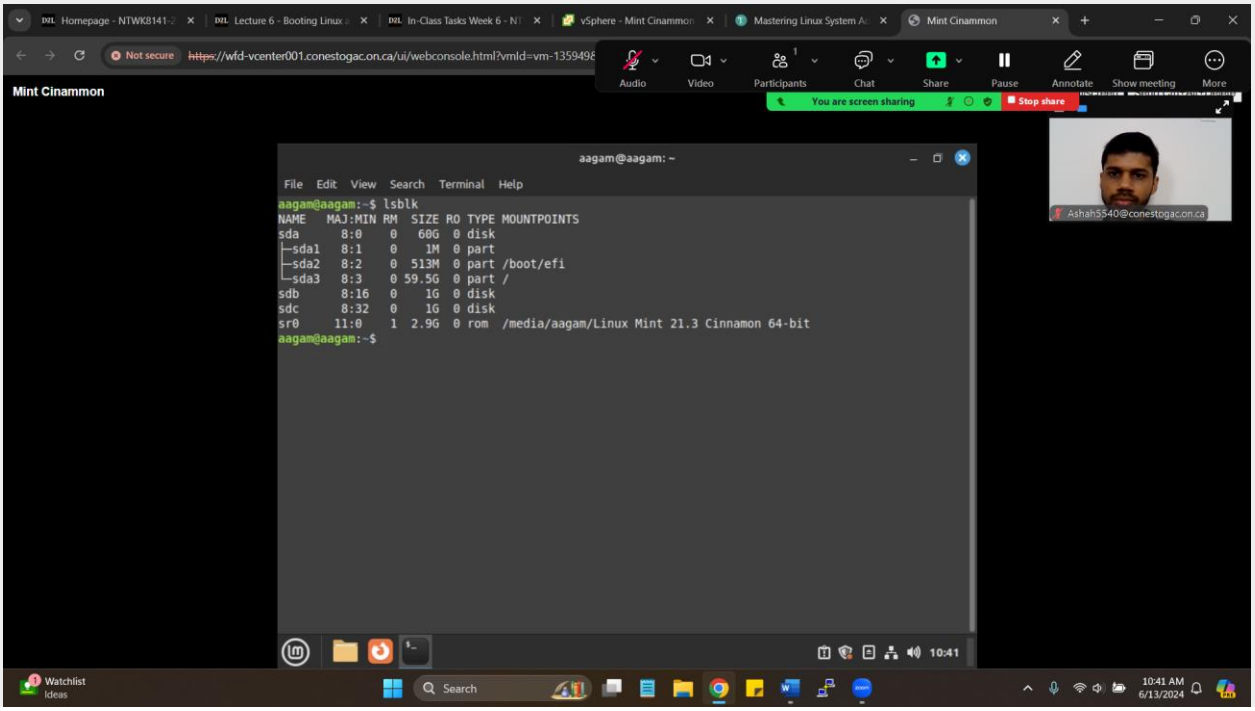
du -h


Mint Cinammon
aagam@aagam: ~
File Edit View Search Terminal Help
aagam@aagam:~$ du -h
4.0K ./Templates
4.0K ./.mozilla/firefox/l58n7s9g.default-release/minidumps
44K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/glean/db
4.0K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/glean/tmp
20K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/glean/pending_pings
16K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/glean/events
88K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/glean
72K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/archived/2024-05
76K ./.mozilla/firefox/l58n7s9g.default-release/datareporting/archived
176K ./.mozilla/firefox/l58n7s9g.default-release/datareporting
4.0K ./.mozilla/firefox/l58n7s9g.default-release/browser-extension-data/amazon@search.mozilla.org
4.0K ./.mozilla/firefox/l58n7s9g.default-release/browser-extension-data/amazondotcom@search.mozilla.org
12K ./.mozilla/firefox/l58n7s9g.default-release/browser-extension-data
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/temporary
20K ./.mozilla/firefox/l58n7s9g.default-release/storage/default/https+++www.google.com/ls
28K ./.mozilla/firefox/l58n7s9g.default-release/storage/default/https+++www.google.com
32K ./.mozilla/firefox/l58n7s9g.default-release/storage/default
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/2918063365piupsah.files
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/1451318868ntouromalnodry--epcr.files
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/1657114595Amcateirvtisty.files
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/3561288849sdhlie.files
4.0K ./.mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/3870112724rsegmno

mount


Mint Cinammon
aagam@aagam: ~
File Edit View Search Terminal Help
/dev/sda3 on / type ext4 (rw,relatime,errors=remount-ro)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,inode64)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k,inode64)
cgroup2 on /sys/fs/cgroup type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate,memory_recursiveprot)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
bpf on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=29,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=19079)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,pagesize=2M)
mqueue on /dev/mqueue type mqueue (rw,nosuid,nodev,noexec,relatime)
debugfs on /sys/kernel/debug type debugfs (rw,nosuid,nodev,noexec,relatime)
tracefs on /sys/kernel/tracing type tracefs (rw,nosuid,nodev,noexec,relatime)
configfs on /sys/kernel/config type configfs (rw,nosuid,nodev,noexec,relatime)
fusectl on /sys/fs/fuse/connections type fusectl (rw,nosuid,nodev,noexec,relatime)
none on /run/credentials/systemd-sysusers.service type ramfs (ro,nosuid,nodev,noexec,relatime,mode=700)
/dev/sda2 on /boot/efi type vfat (rw,relatime,fmask=0077,dmask=0077,codepage=437,iocharset=iso8859-1,shortname=mixed,errors=remount-ro)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,nosuid,nodev,noexec,relatime)
tmpfs on /run/user/1000 type tmpfs (rw,nosuid,nodev,relatime,size=400584k,nr_inodes=100146,mode=700,uid=1000,gid=1000,inode64)
gvfsd-fuse on /run/user/1000/gvfs type fuse.gvfsd-fuse (rw,nosuid,nodev,relatime,user_id=1000,group_id=1000)
/dev/sr0 on /media/aagam/Linux Mint 21.3 Cinnamon 64-bit type iso9660 (ro,nosuid,nodev,relatime,nojoliet,check=s,map=n,blocksize=2048,uid=1000,gid=1000,dmode=500,fmode=400,iocharset=utf8,uhelper=udisks2)
aagam@aagam:~$

lsblk


Mint Cinammon
aagam@aagam: ~
File Edit View Search Terminal Help
aagam@aagam:~$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 60G 0 disk
├─sda1 8:1 0 1M 0 part
├─sda2 8:2 0 513M 0 part /boot/efi
└─sda3 8:3 0 59.5G 0 part /
sdb 8:16 0 1G 0 disk
sdc 8:32 0 1G 0 disk
sr0 11:0 1 2.9G 0 rom /media/aagam/Linux Mint 21.3 Cinnamon 64-bit
aagam@aagam:~$