



CONESTOGA

Connect Life and Learning

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

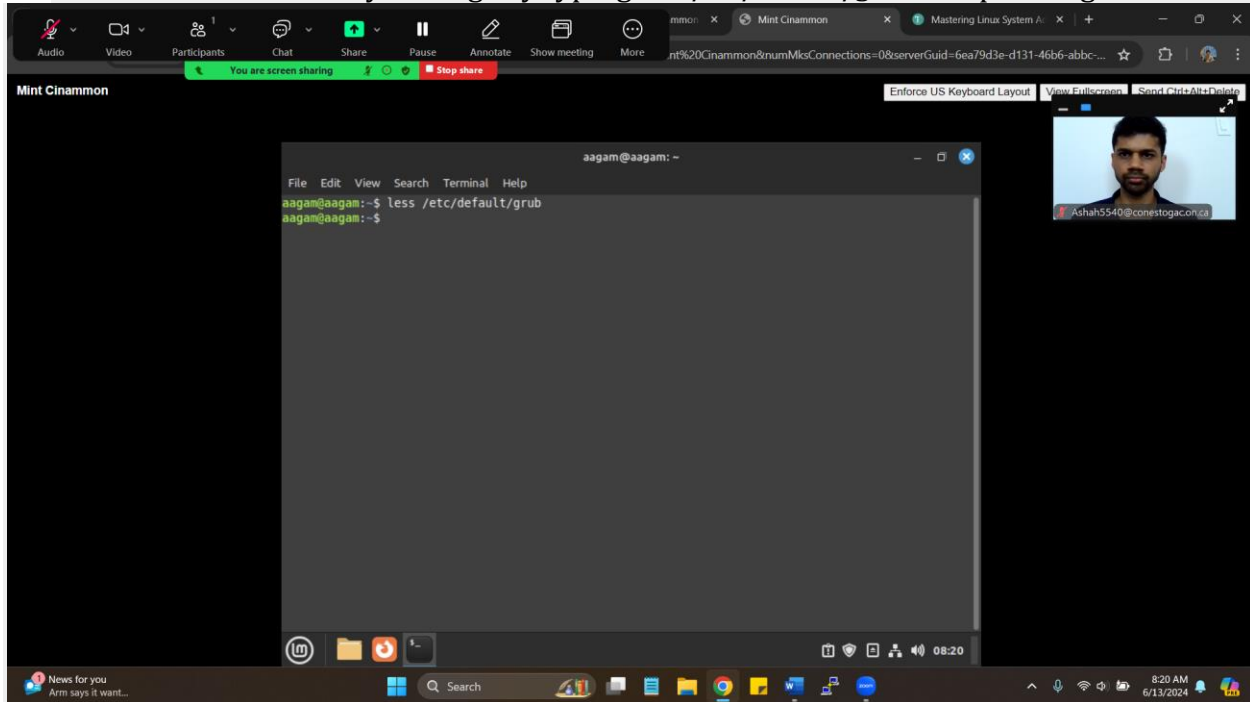
Date Assigned:	12/06/2024
Date Due:	13/06/2024
Rules:	<ul style="list-style-type: none">• Individual.• Cheating is not allowed.• Plagiarism counts as cheating!• That FAILURE to submit work in the course can result in a grade of 'F' or 'I' for failure to complete the course!

In Class Task: Grub2

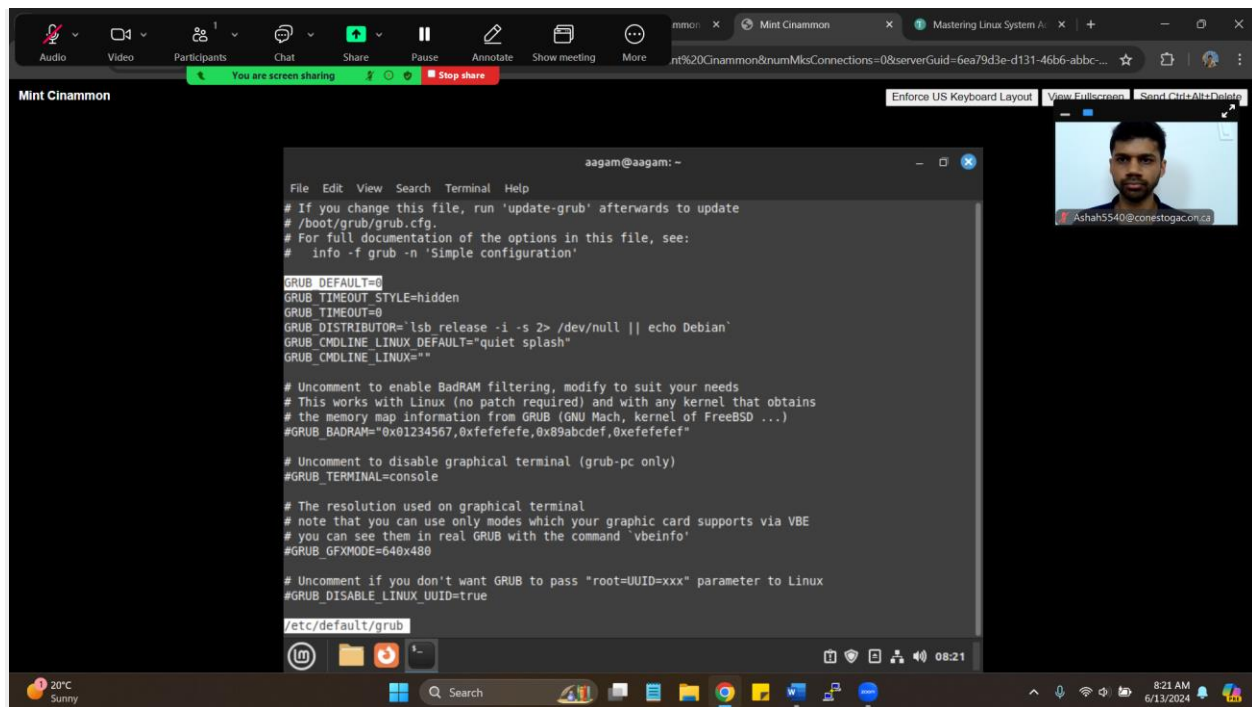
Complete the Real World Scenario: Exploring the GRUB2 Key Settings and Menu, Ch 10

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

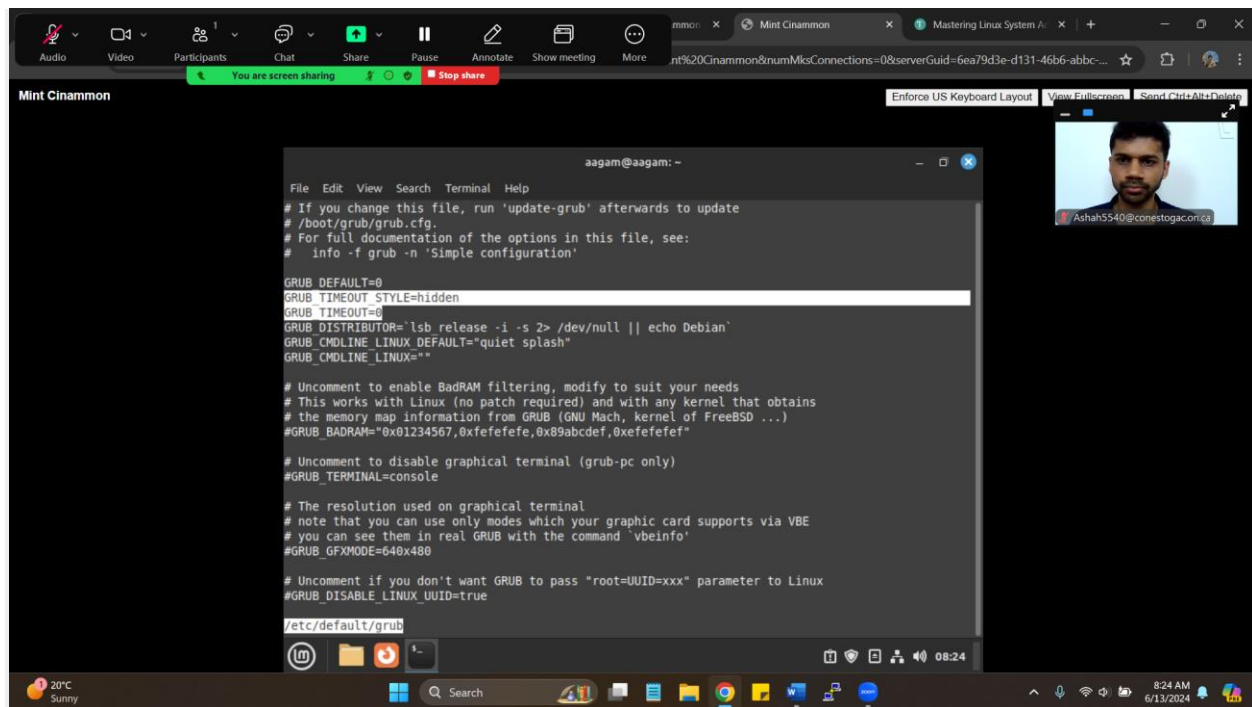
1. View the GRUB2 key settings by typing `less /etc/default/grub` and pressing Enter.



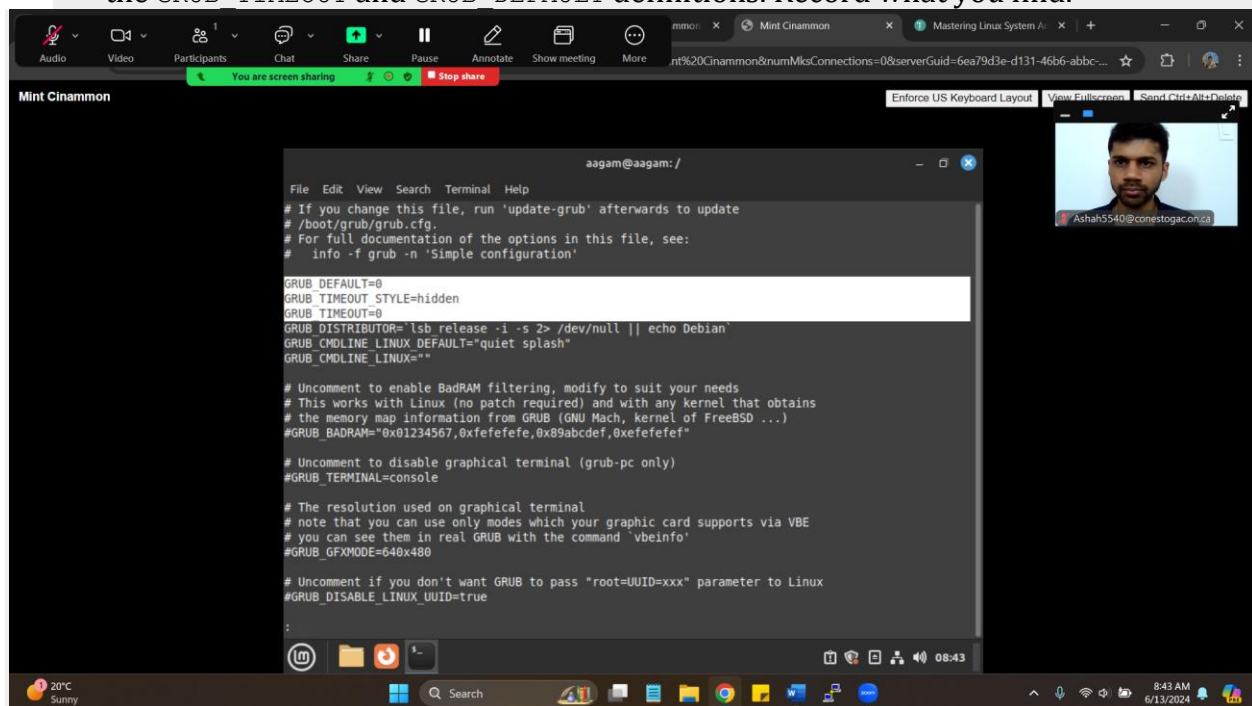
2. Looking at the `/etc/default/grub` key settings, determine the default boot menu entry by finding the `GRUB_DEFAULT` definition. Note that the first boot menu entry is selected by default, if `GRUB_DEFAULT` is set to 0. If it is set to 1, the second boot menu entry is selected, and so on. Record your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



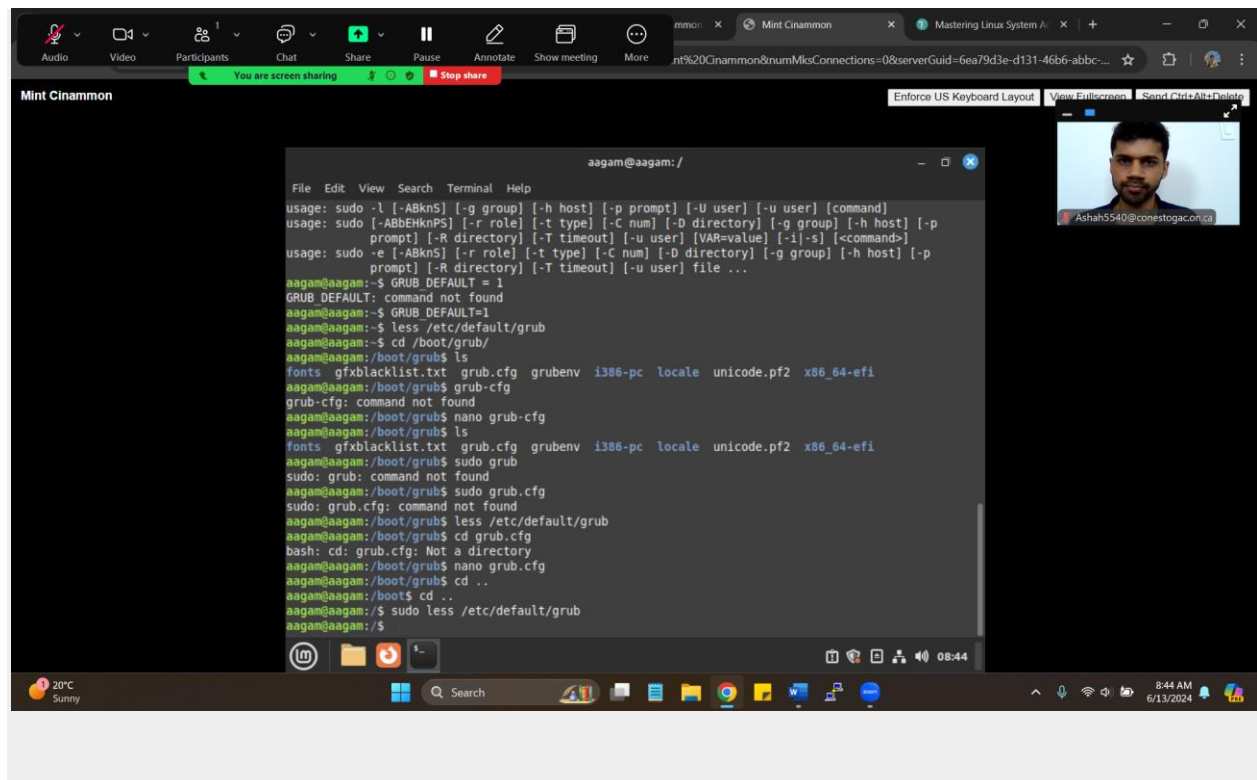
3. Continuing to view the `/etc/default/grub` key settings, and determine if the `GRUB_TIMEOUT_STYLE` is defined. Using the following process to record what you found in this step:
 1. If it is set to `hidden`, you will not see the boot menu when the system starts, and you will have to press the Esc 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.

The screenshot shows a terminal window titled 'aagam@aagam: /' with the following output:

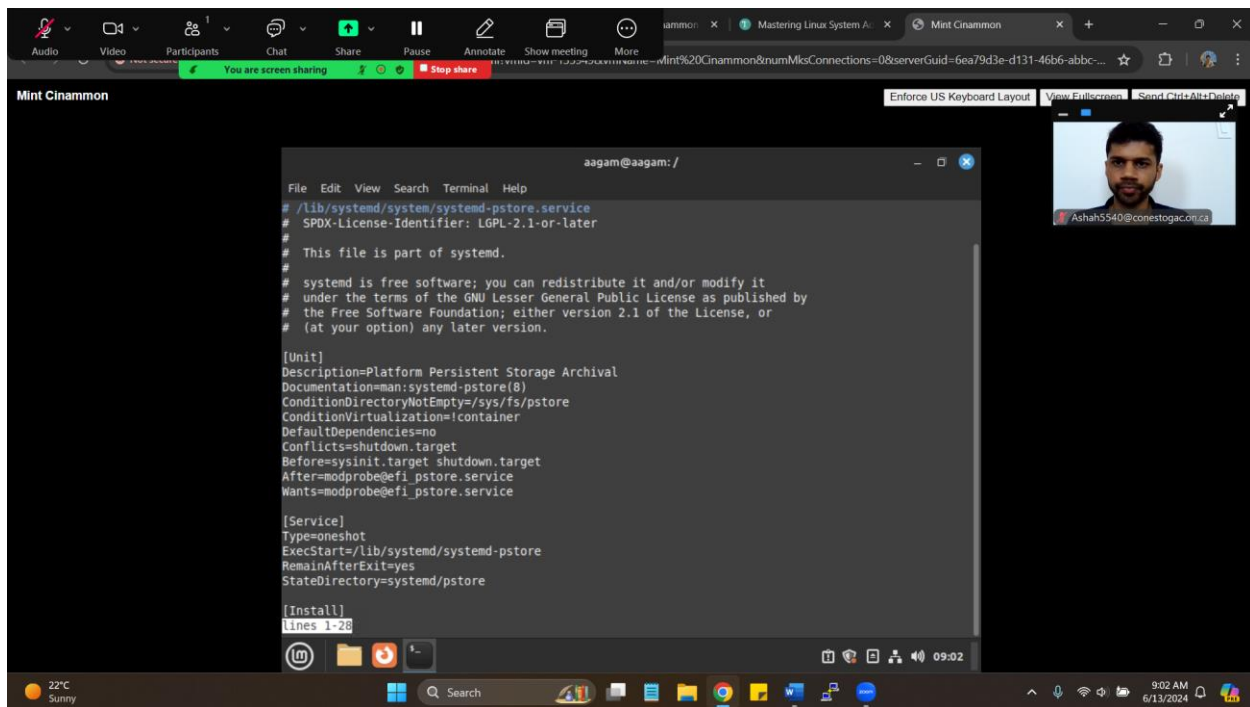
```
aagam@aagam:/$ systemctl list-unit-files *.service | grep enabled
accounts-daemon.service      enabled enabled
acpid.service                disabled enabled
alsa-utils.service           masked
anacron.service              enabled enabled
apparmor.service             enabled enabled
avahi-daemon.service         enabled enabled
blk-availability.service     enabled enabled
bluetooth.service            enabled enabled
brltty.service               disabled enabled
casper-md5check.service     enabled enabled
casper.service               enabled enabled
console-setup.service        enabled enabled
cron.service                 enabled enabled
cryptdisks-early.service     masked enabled
cryptdisks.service           masked enabled
cups-browsed.service         enabled enabled
cups.service                 enabled enabled
dmesg.service                enabled enabled
dns-clean.service            enabled enabled
e2scrub_reap.service         enabled enabled
finalrd.service              enabled enabled
getty@.service               enabled enabled
gpu-manager.service          enabled enabled
grub-common.service          enabled enabled
grub-initrd-fallback.service enabled enabled
hwclock.service              masked
ifupdown-wait-online.service disabled enabled
```

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

The screenshot shows a terminal window titled 'aagam@aagam: /' with the following output:

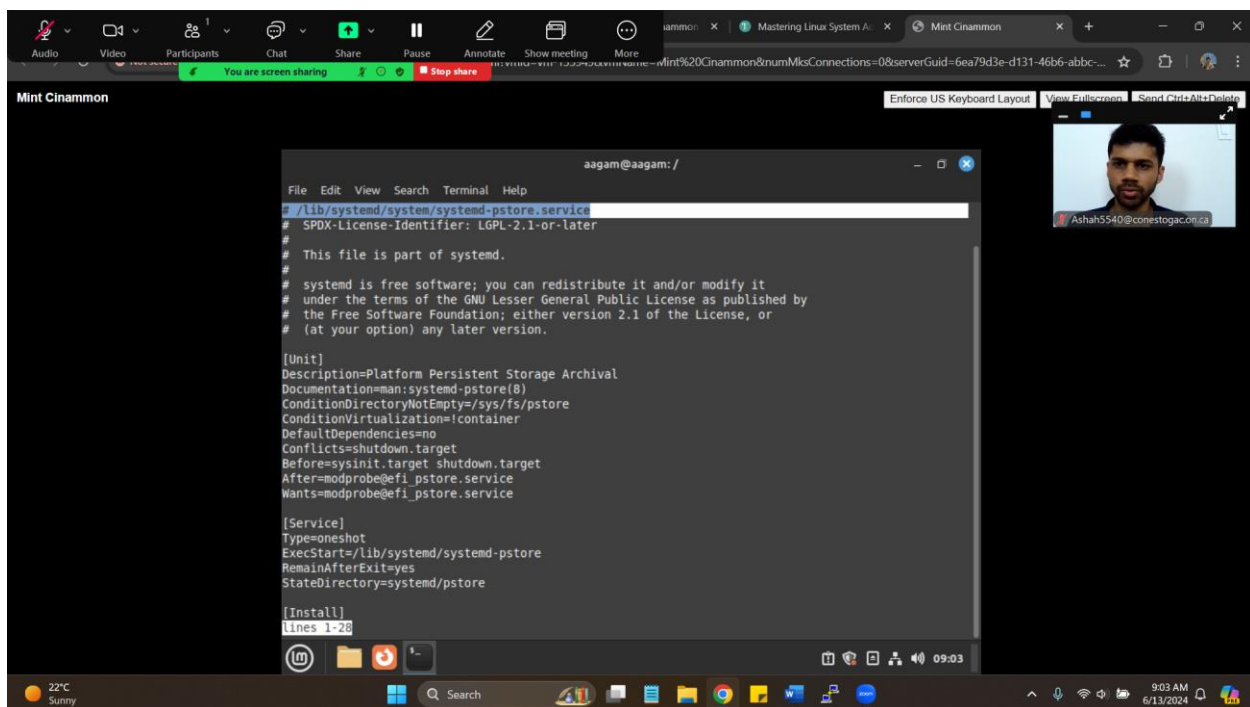
```
aagam@aagam:/$ systemctl list-unit-files systemd-pstore.service | grep enabled
systemd-pstore.service      enabled enabled
aagam@aagam:/$
```

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`).

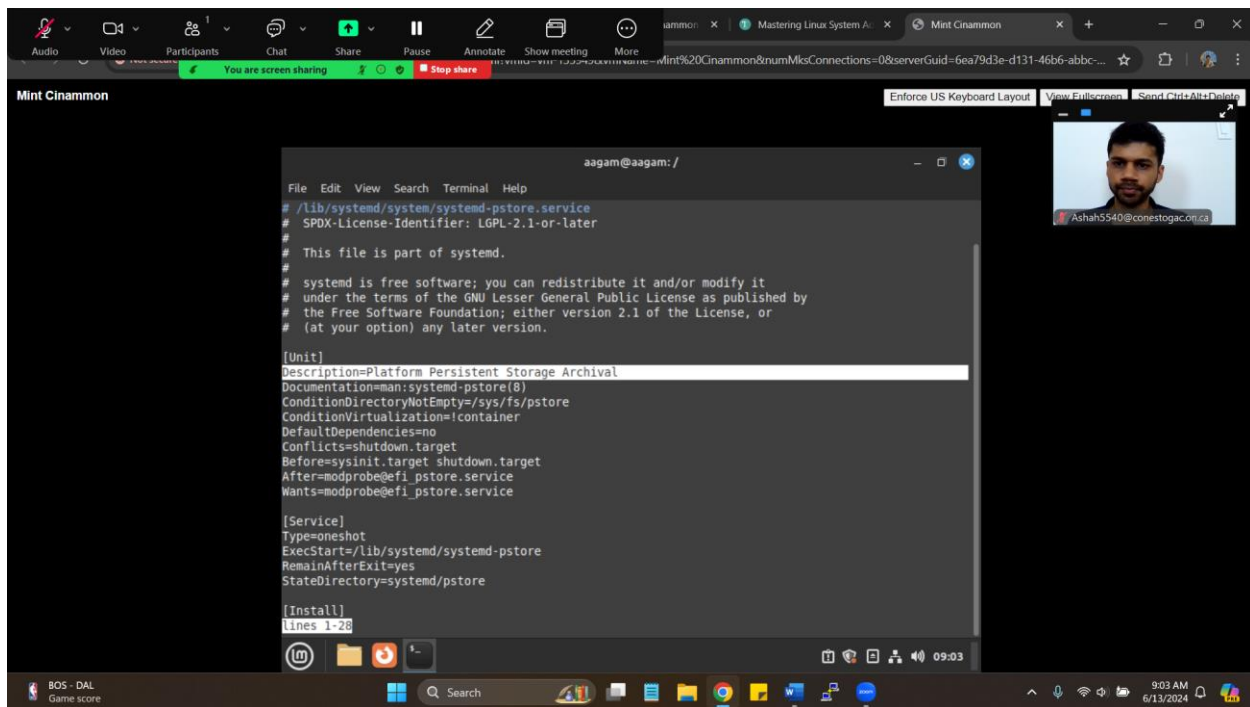


4. Looking at the displayed service unit file, answer the following questions:

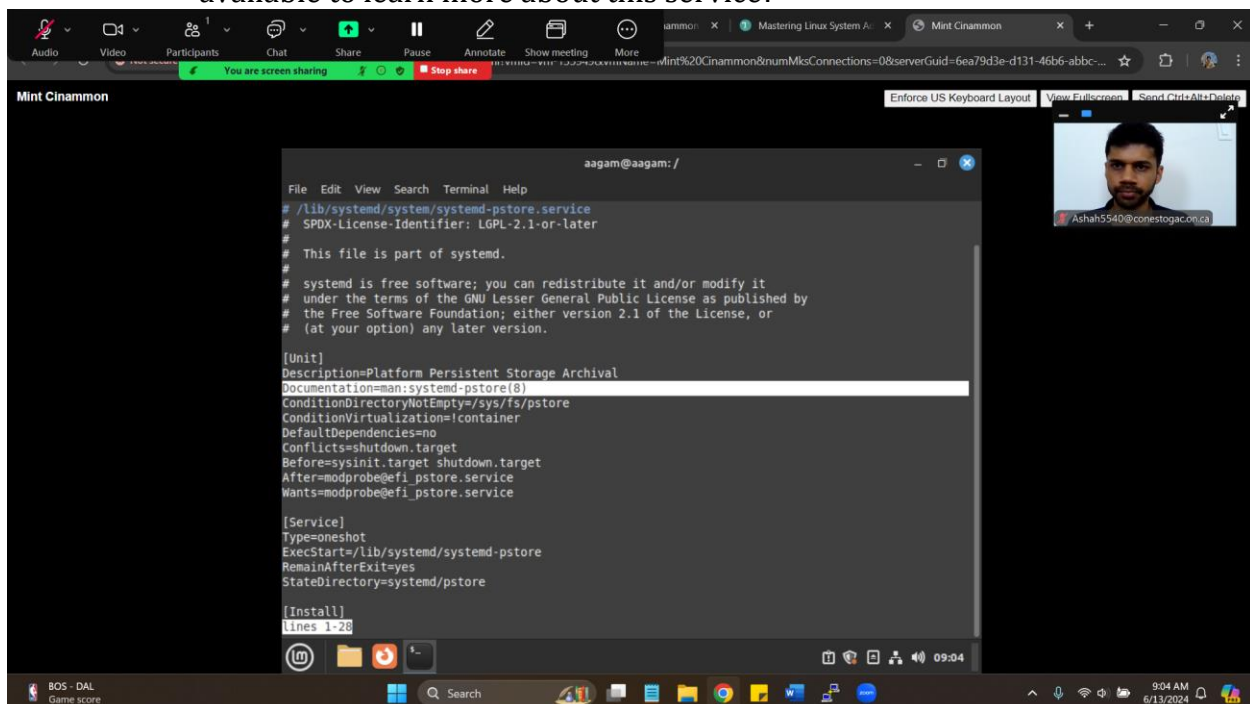
1. What directory does this file reside in? (Hint: Look at the first line in the file.)



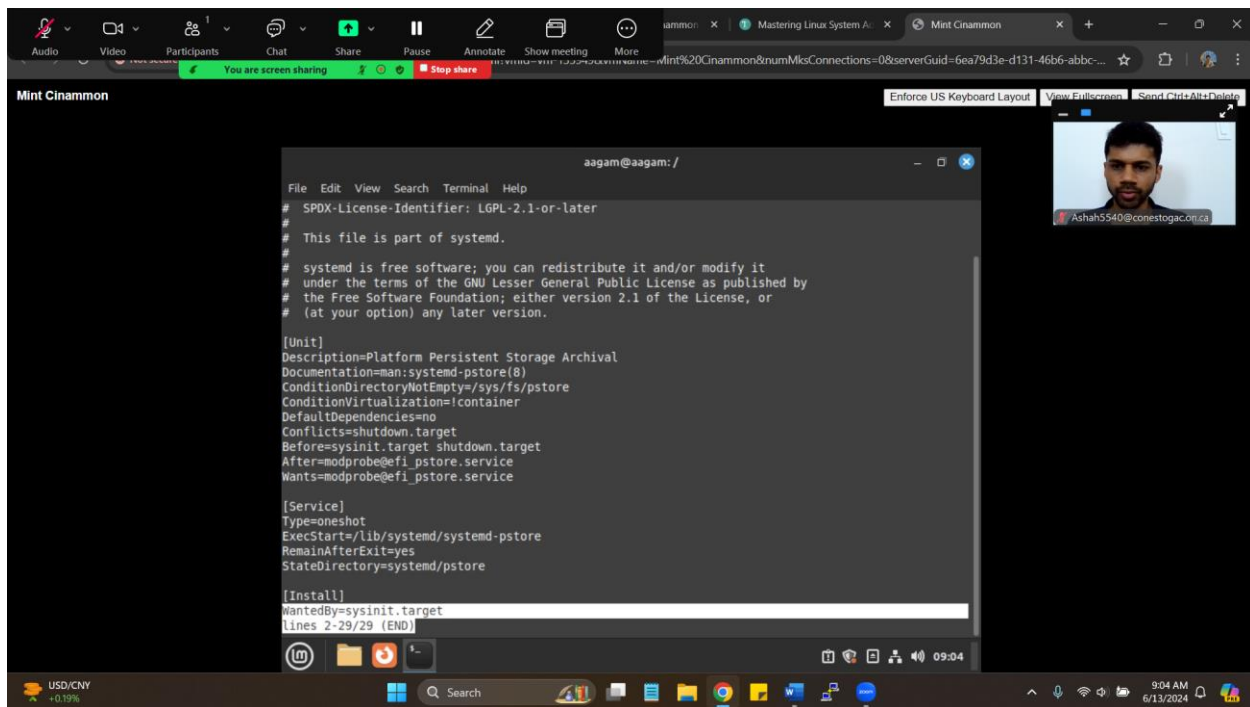
2. From the Description in the [Unit] section, for what is this service used?



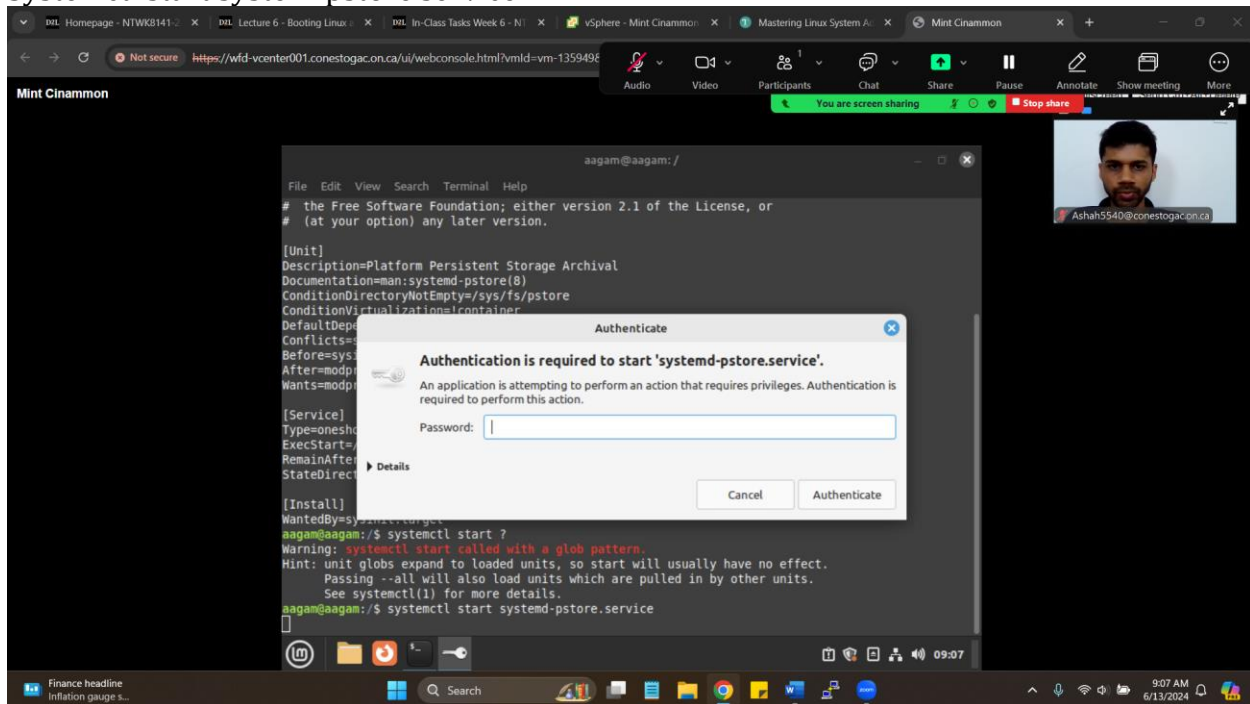
3. If a Documentation directive is in the [Unit] section, what documentation is available to learn more about this service?



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

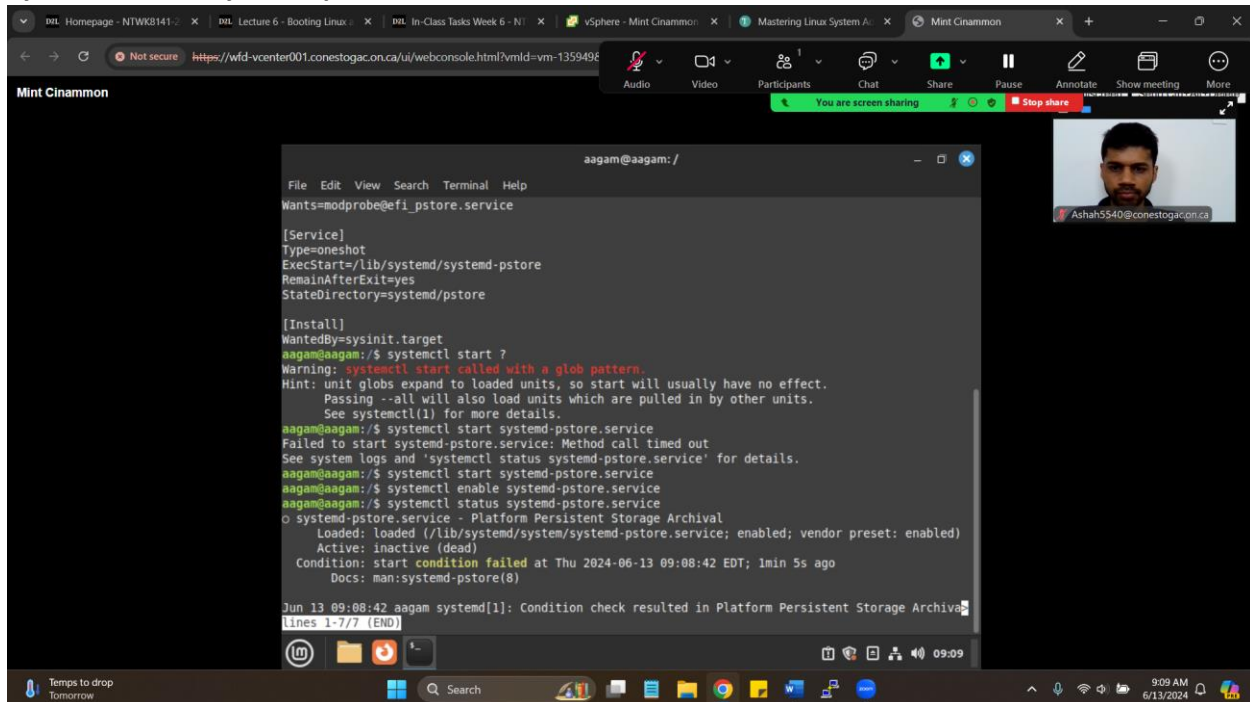


Systemctl start systemd-pstore.service

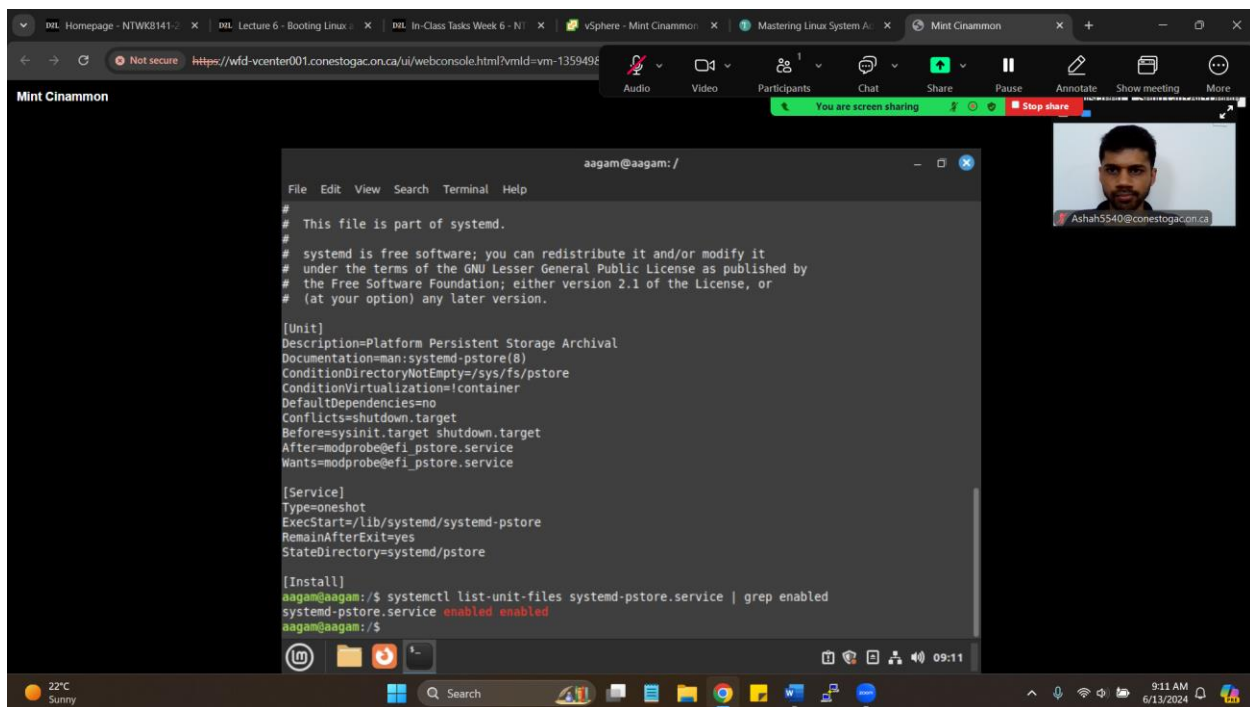


Systemctl enable systemd-pstore.service

Systemctl status systemd-pstore.service



```
aagam@aagam: /  
File Edit View Search Terminal Help  
Wants=modprobe@efi_pstore.service  
[Service]  
Type=oneshot  
ExecStart=/lib/systemd/systemd-pstore  
RemainAfterExit=yes  
StateDirectory=systemd/pstore  
[Install]  
WantedBy=sysinit.target  
aagam@aagam:/$ systemctl start ?  
Warning: systemctl start called with a glob pattern.  
Hint: unit globs expand to loaded units, so start will usually have no effect.  
       Passing --all will also load units which are pulled in by other units.  
       See systemctl(1) for more details.  
aagam@aagam:/$ systemctl start systemd-pstore.service  
Failed to start systemd-pstore.service: Method call timed out.  
See system logs and 'systemctl status systemd-pstore.service' for details.  
aagam@aagam:/$ systemctl start systemd-pstore.service  
aagam@aagam:/$ systemctl enable systemd-pstore.service  
aagam@aagam:/$ systemctl status systemd-pstore.service  
○ systemd-pstore.service - Platform Persistent Storage Archival  
   Loaded: loaded (/lib/systemd/system/systemd-pstore.service; enabled; vendor preset: enabled)  
   Active: inactive (dead)  
   Condition: start condition failed at Thu 2024-06-13 09:08:42 EDT; 1min 5s ago  
   Docs: man:systemd-pstore(8)  
  
Jun 13 09:08:42 aagam systemd[1]: Condition check resulted in Platform Persistent Storage Archival  
Lines 1-777 (END)
```

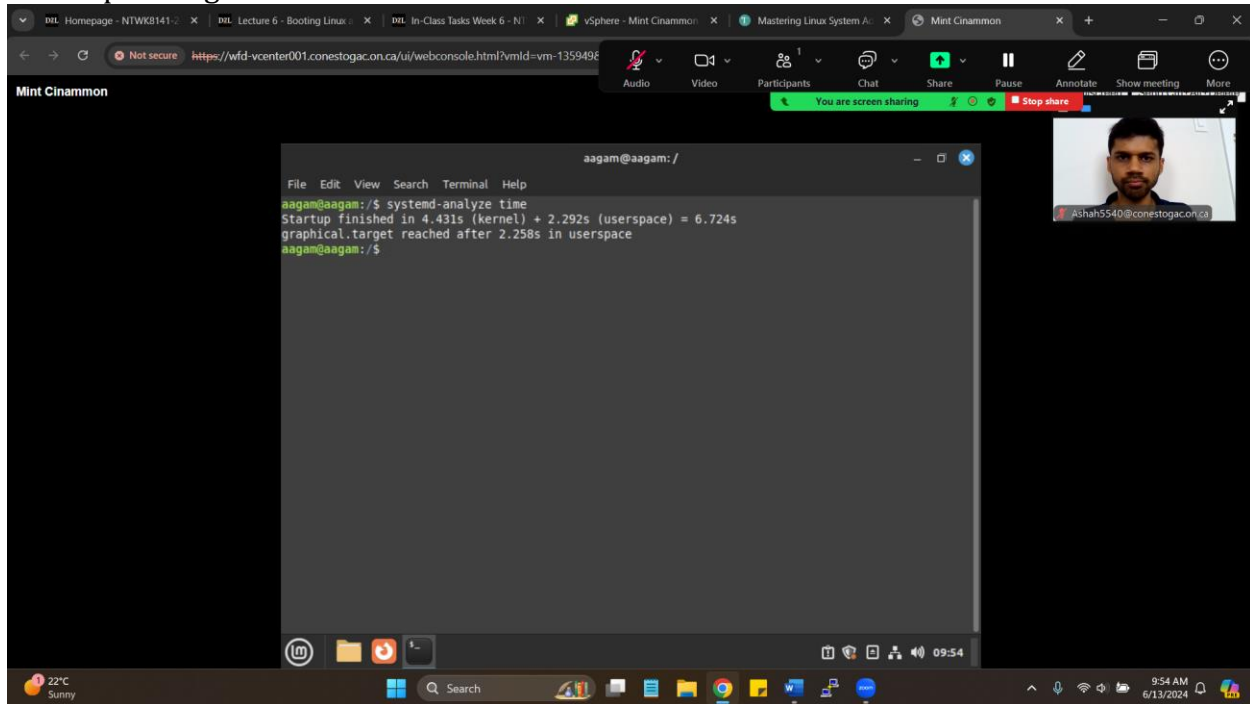


```
aagam@aagam: /  
File Edit View Search Terminal Help  
#  
# This file is part of systemd.  
#  
# systemd is free software; you can redistribute it and/or modify it  
# under the terms of the GNU Lesser General Public License as published by  
# the Free Software Foundation; either version 2.1 of the License, or  
# (at your option) any later version.  
#  
[Unit]  
Description=Platform Persistent Storage Archival  
Documentation=man:systemd-pstore(8)  
ConditionDirectoryNotEmpty=/sys/fs/pstore  
ConditionVirtualization=!container  
DefaultDependencies=no  
Conflicts=shutdown.target  
Before=sysinit.target shutdown.target  
After=modprobe@efi_pstore.service  
Wants=modprobe@efi_pstore.service  
#  
[Service]  
Type=oneshot  
ExecStart=/lib/systemd/systemd-pstore  
RemainAfterExit=yes  
StateDirectory=systemd/pstore  
#  
[Install]  
aagam@aagam:/$ systemctl list-unit-files systemd-pstore.service | grep enabled  
systemd-pstore.service enabled enabled  
aagam@aagam:/$
```

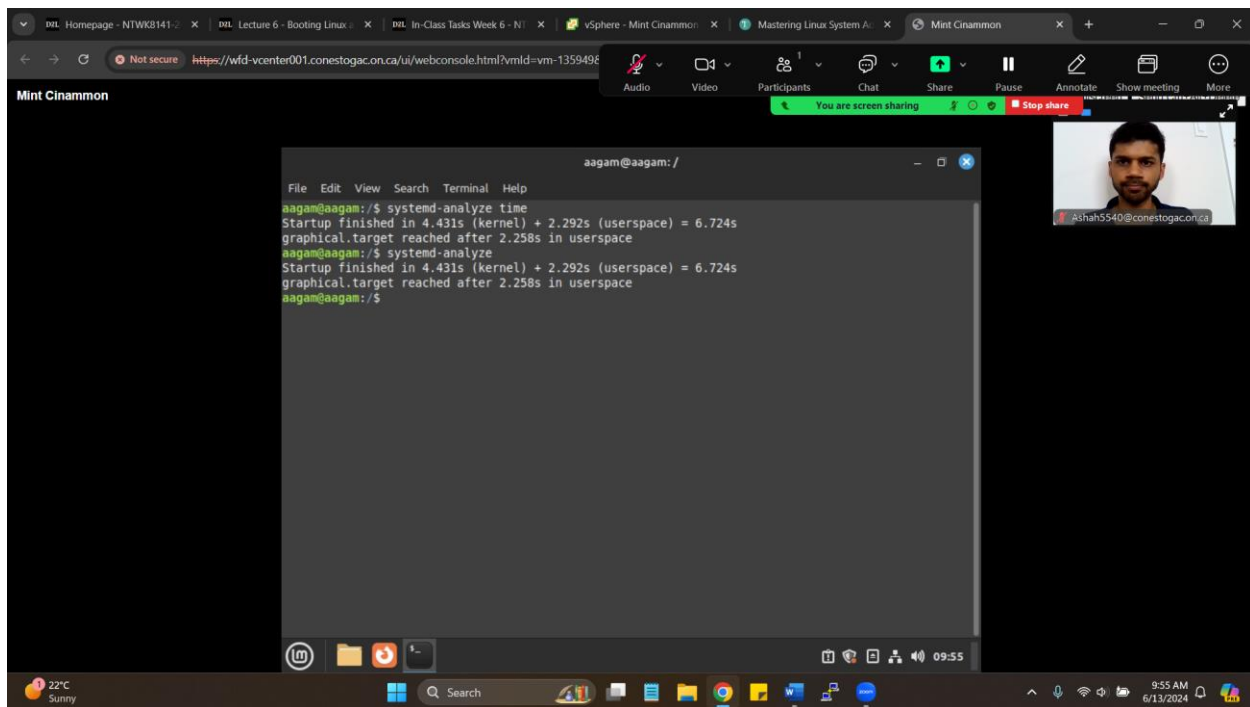
ANALYZING SYSTEM INITIALIZATION

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.

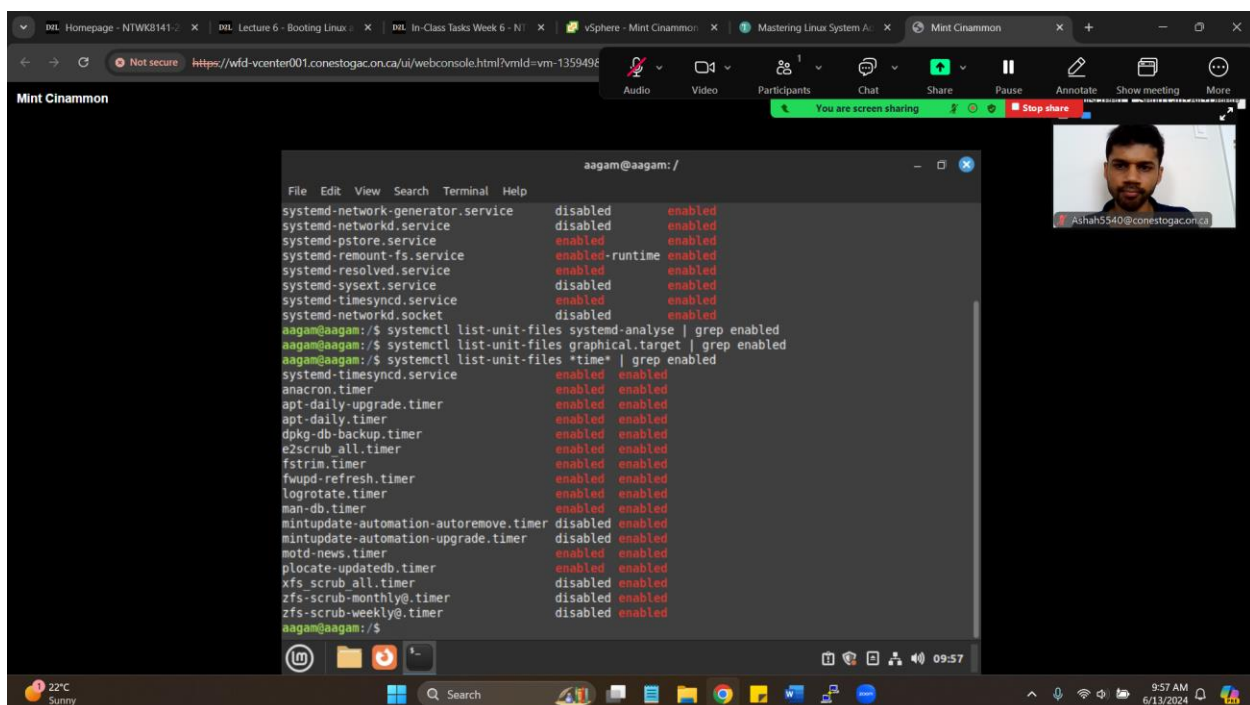
1. View your system's total initialization time by typing **systemd-analyze time** and pressing Enter.



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.

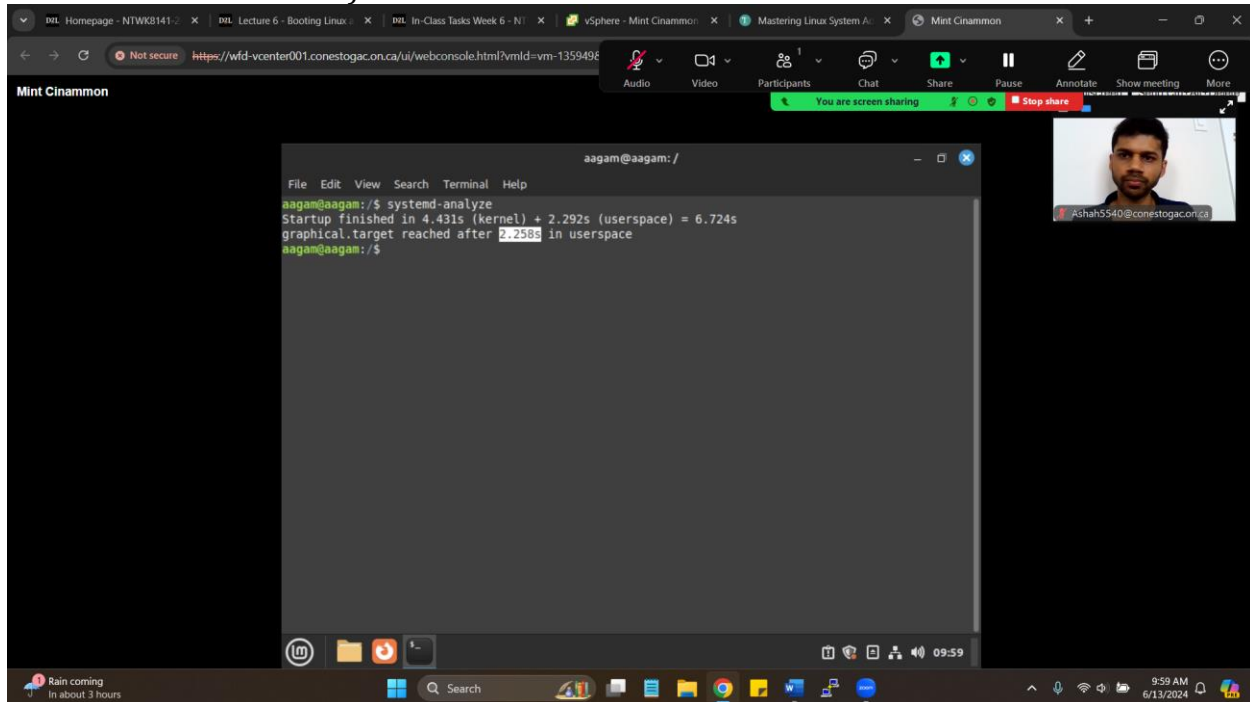


3. View the output from the previous step to determine which target unit file is used on this system.

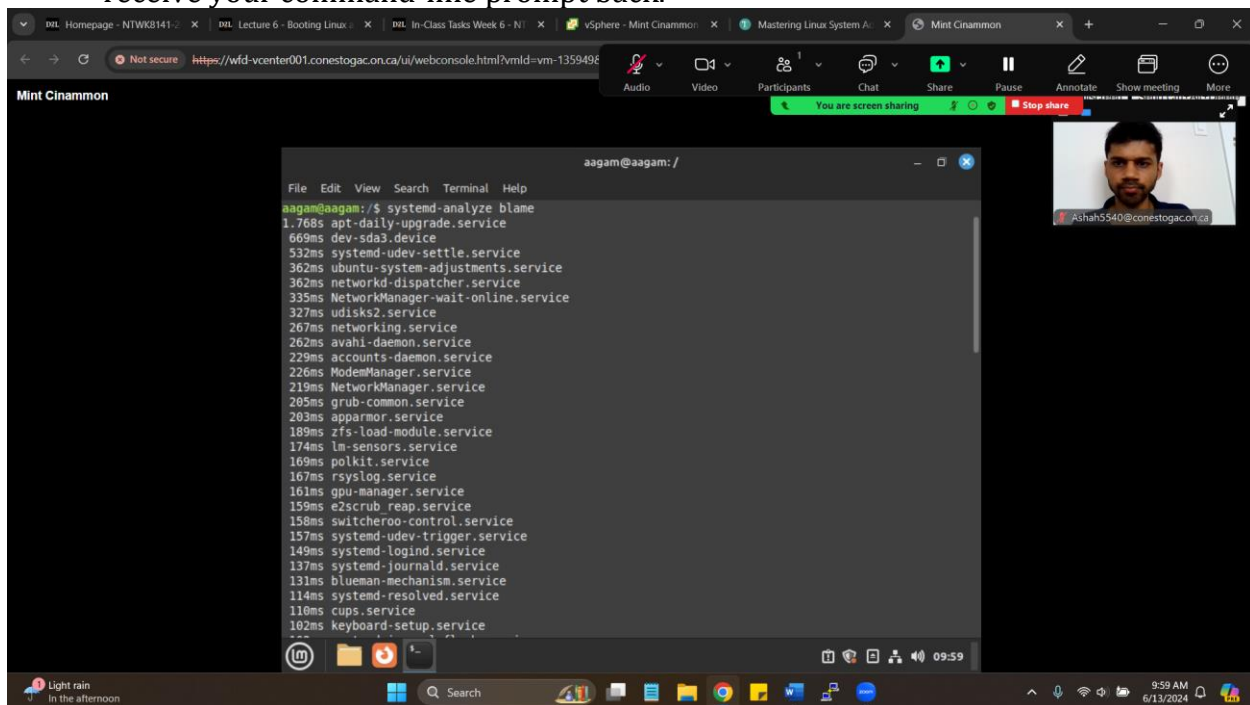


4. Looking at the output from step 3, how long did it take the services in the target unit file to start? (Hint: Find the line that says something similar to multi-user.target)

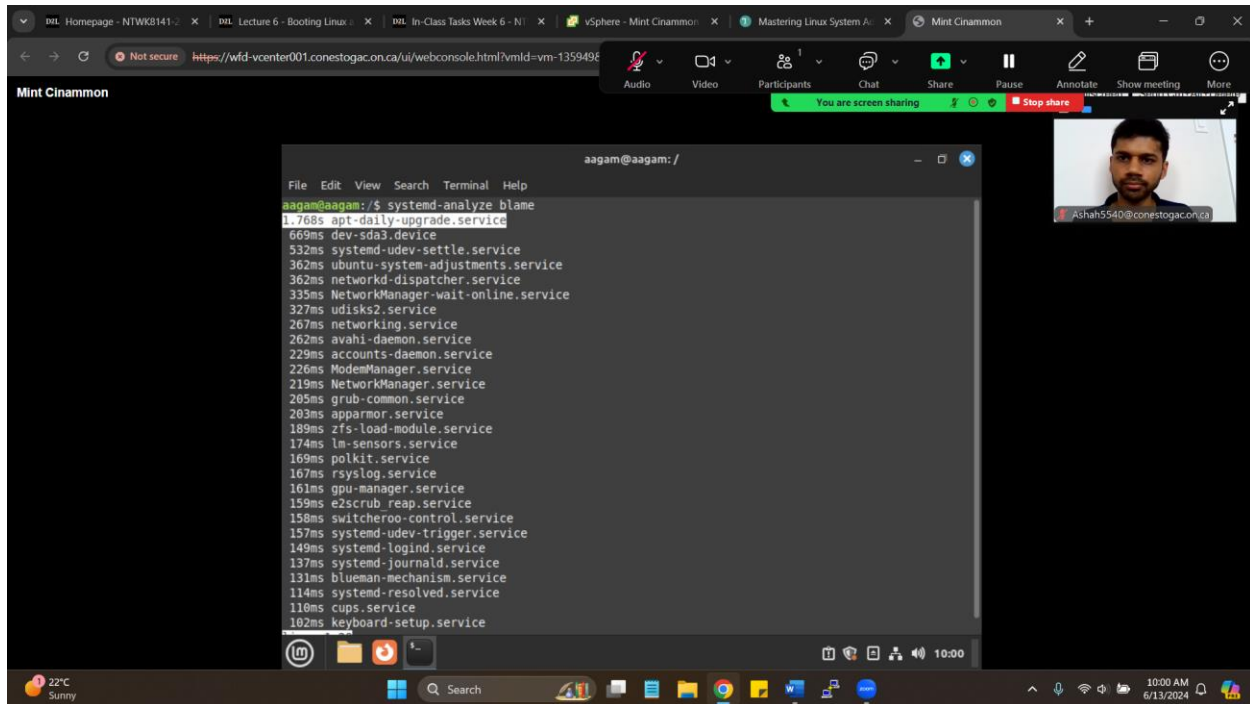
reached after ____ in userspace. You'll want to record the number of seconds listed on that line.)



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.

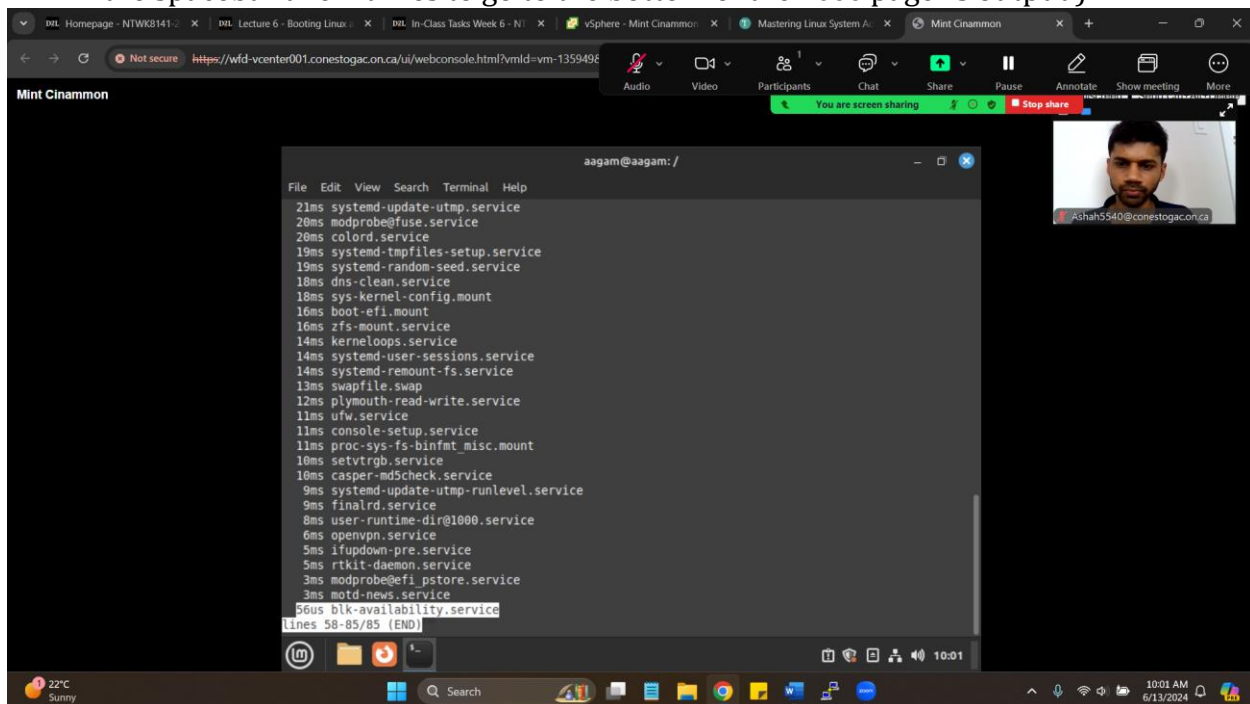


6. From the preceding step's results, record what service is the slowest to start. (Hint: Find the first line of output from the command. That is the slowest service.)



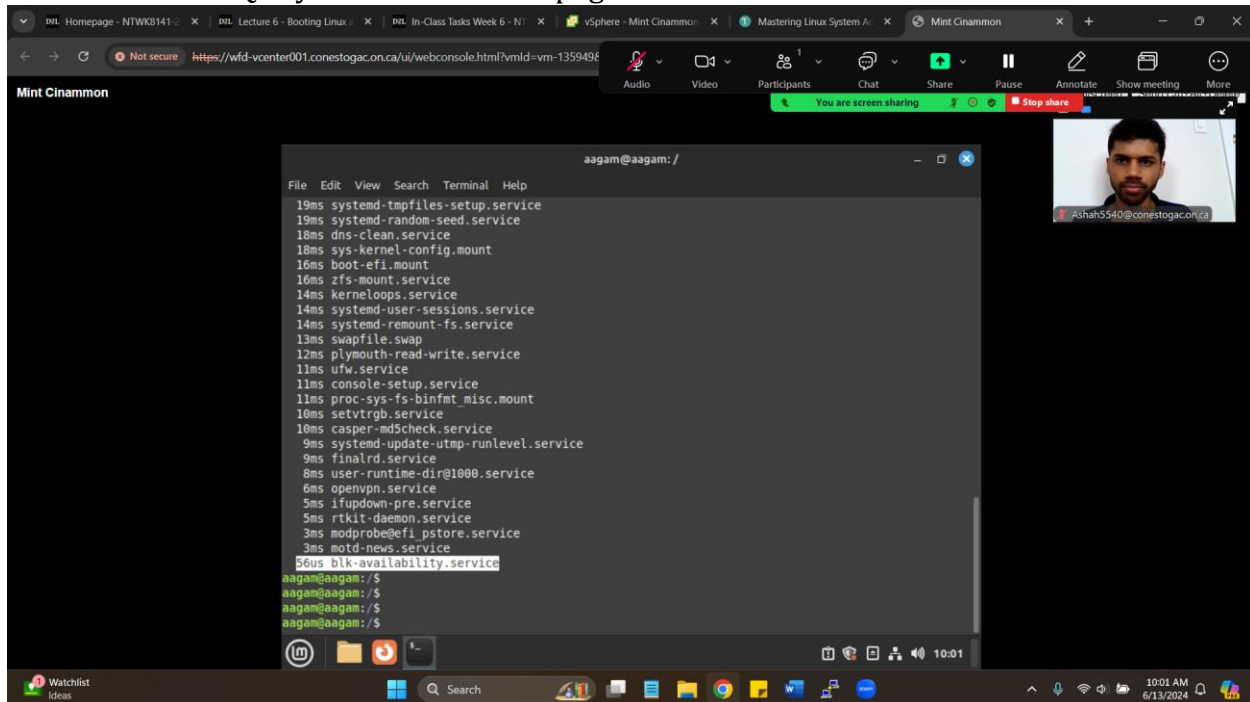
```
aagam@aagam: /  
File Edit View Search Terminal Help  
aagam@aagam:/$ systemd-analyze blame  
1.768s apt-daily-upgrade.service  
669ms dev-sdax.device  
532ms systemd-udev-settle.service  
362ms ubuntu-system-adjustments.service  
362ms networkd-dispatcher.service  
335ms NetworkManager-wait-online.service  
327ms udisks2.service  
267ms networking.service  
262ms avahi-daemon.service  
229ms accounts-daemon.service  
226ms ModemManager.service  
219ms NetworkManager.service  
205ms grub-common.service  
203ms apparmor.service  
189ms zfs-load-module.service  
174ms lm-sensors.service  
169ms polkit.service  
167ms rsyslog.service  
161ms gpu-manager.service  
159ms e2scrub_reap.service  
158ms switcheroo-control.service  
157ms systemd-udev-trigger.service  
149ms systemd-logind.service  
137ms systemd-journald.service  
131ms bluez-mechanism.service  
114ms systemd-resolved.service  
110ms cups.service  
102ms keyboard-setup.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.)



```
aagam@aagam: /  
File Edit View Search Terminal Help  
21ms systemd-update-utmp.service  
20ms modprobe@fuse.service  
20ms colord.service  
19ms systemd-tmpfiles-setup.service  
19ms systemd-random-seed.service  
18ms dns-clean.service  
18ms sys-kernel-config.mount  
16ms boot-efi.mount  
16ms zfs-mount.service  
14ms kerneloops.service  
14ms systemd-user-sessions.service  
14ms systemd-remount-fs.service  
13ms swapfile.swap  
12ms plymouth-read-write.service  
11ms ufw.service  
11ms console-setup.service  
11ms proc-sys-fs-binfmt_misc.mount  
10ms setvtrgb.service  
10ms casper-md5check.service  
9ms systemd-update-utmp-runlevel.service  
9ms finalrd.service  
8ms user-runtime-dir@1000.service  
6ms openvpn.service  
5ms ifupdown-pre.service  
5ms rtkit-daemon.service  
3ms modprobe@efi_pstore.service  
3ms motd-news.service  
56us blk-availability.service  
lines 58-85/85 (END)
```

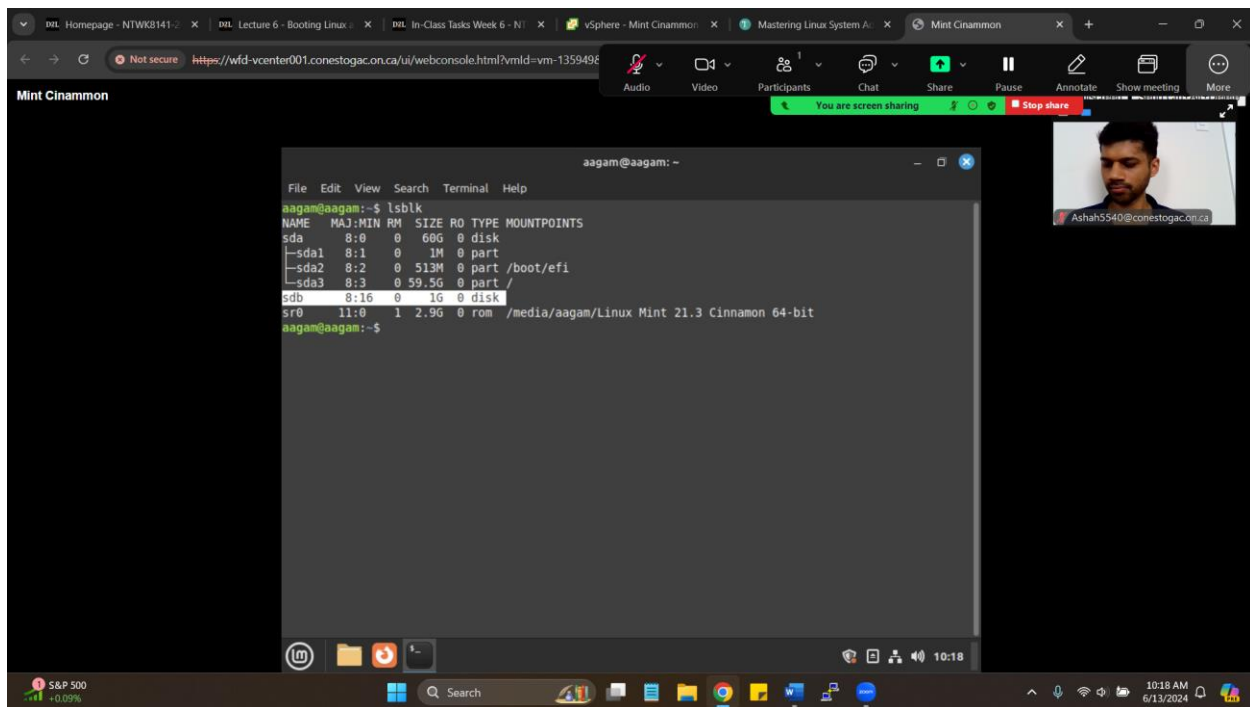

8. Press the Q key to leave the `less` pager and return to the command line.



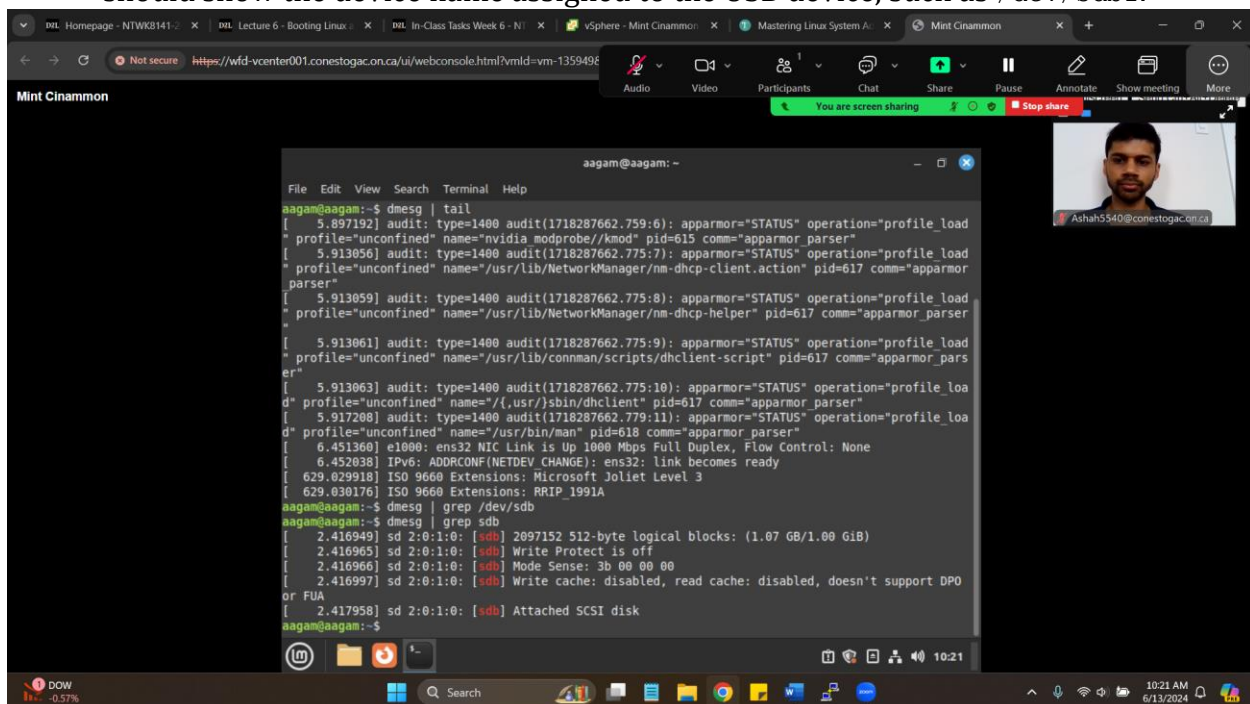
FORMATTING A NEW STORAGE DEVICE

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`.

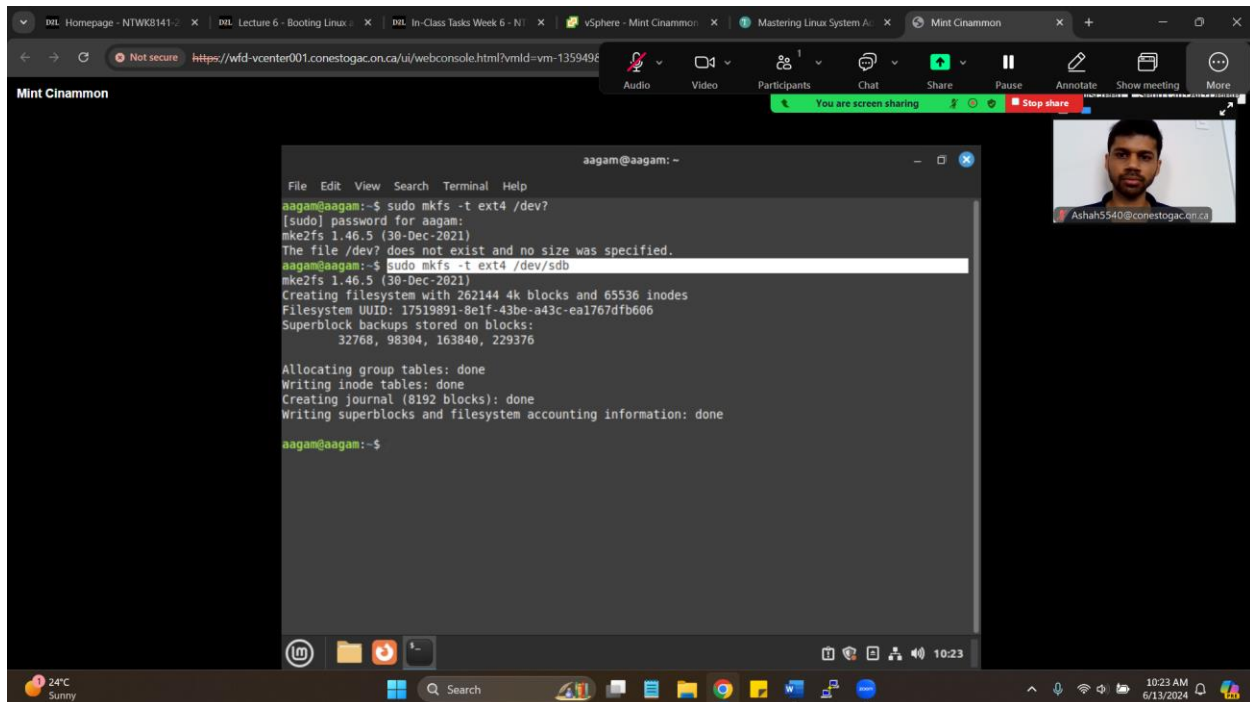


3. Create a new filesystem on the new partition. Type `sudo mkfs -t ext4 /dev/xxx 1`, where `xxx` is the device name for the USB memory stick. You should see something similar to the following output:
mke2fs 1.45.6 (20-Mar-2020)

```
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
```

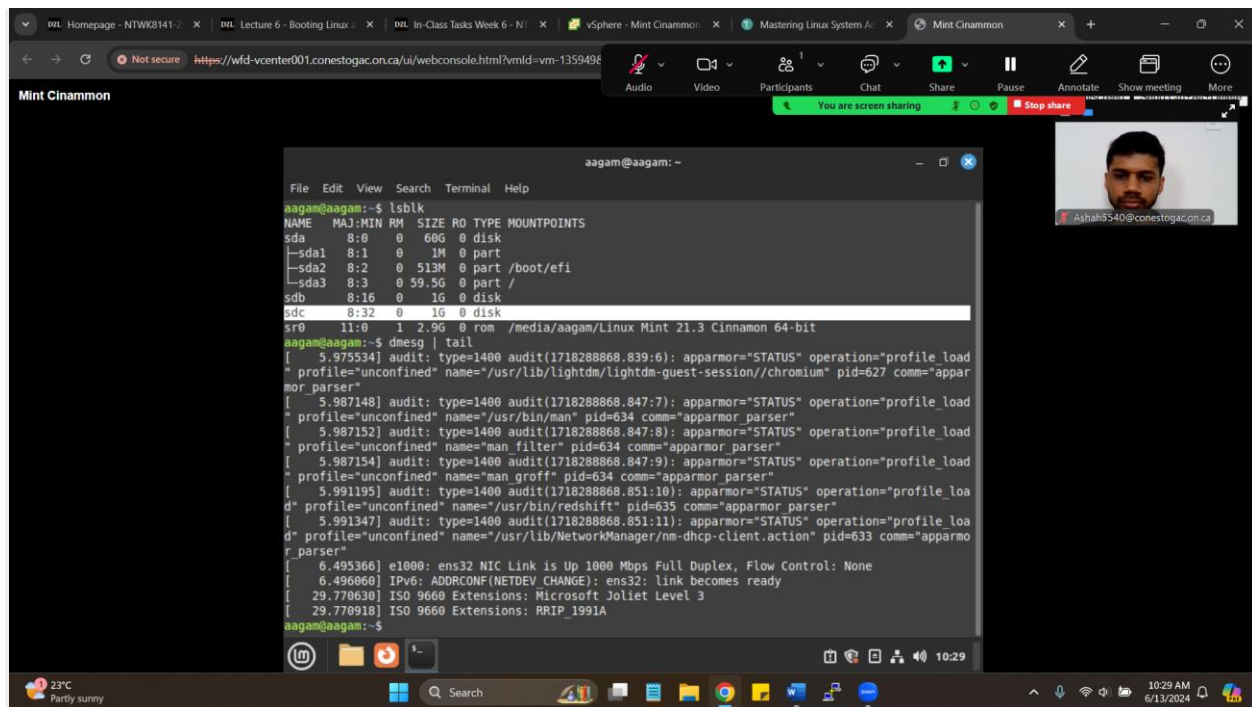
\$



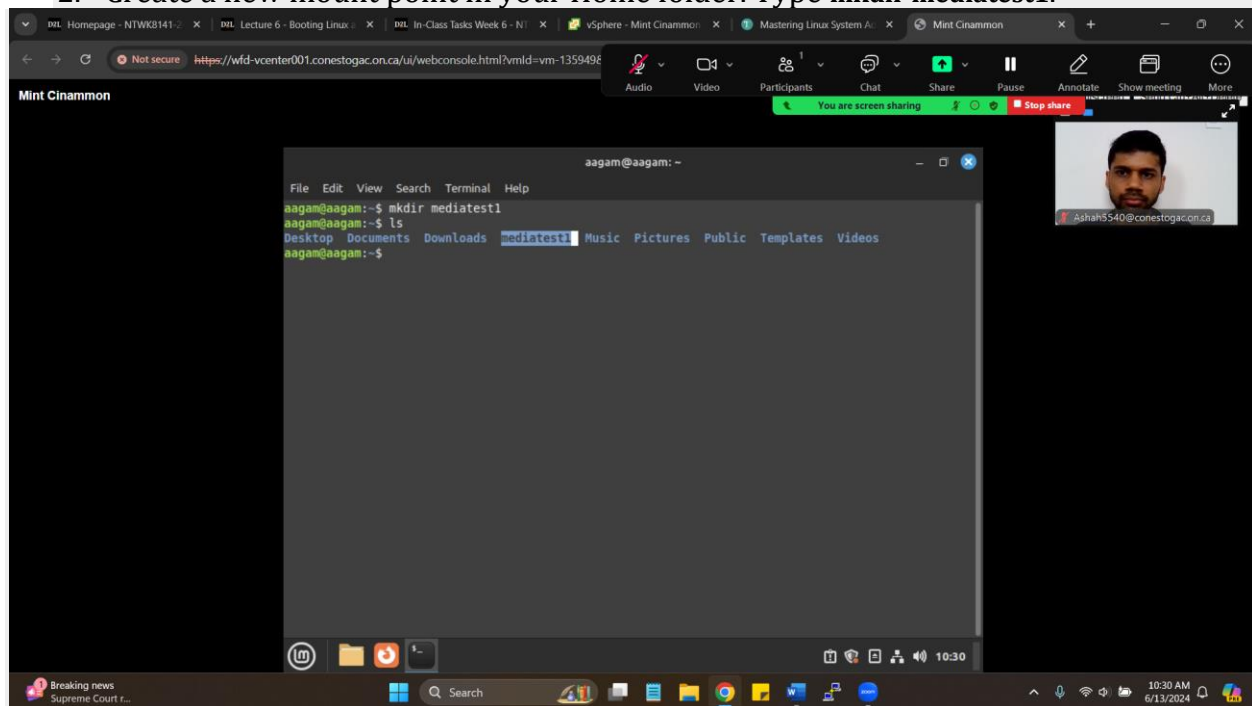
MOUNTING A PARTITION

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

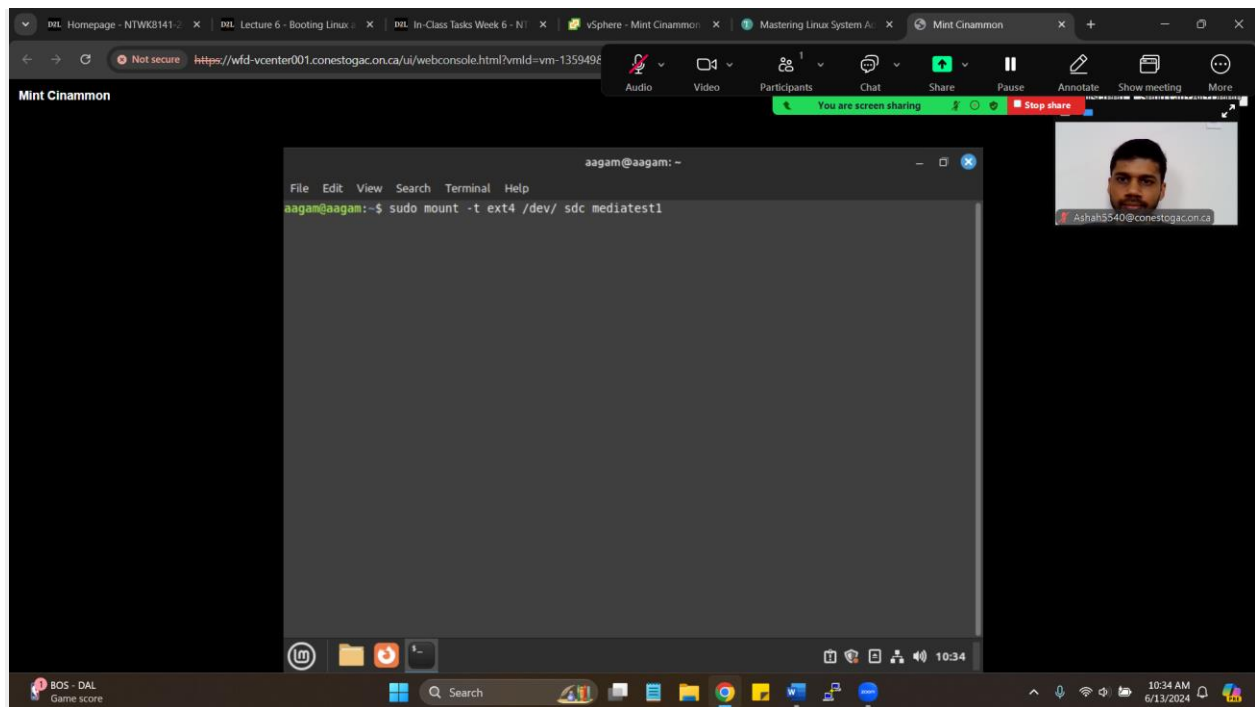
1. The Linux system may mount the device automatically. Type **dmesg | tail** to display the last few lines from the system console output. This should show the device name assigned to the USB device, such as `/dev/sdb1`, and if it was mounted.



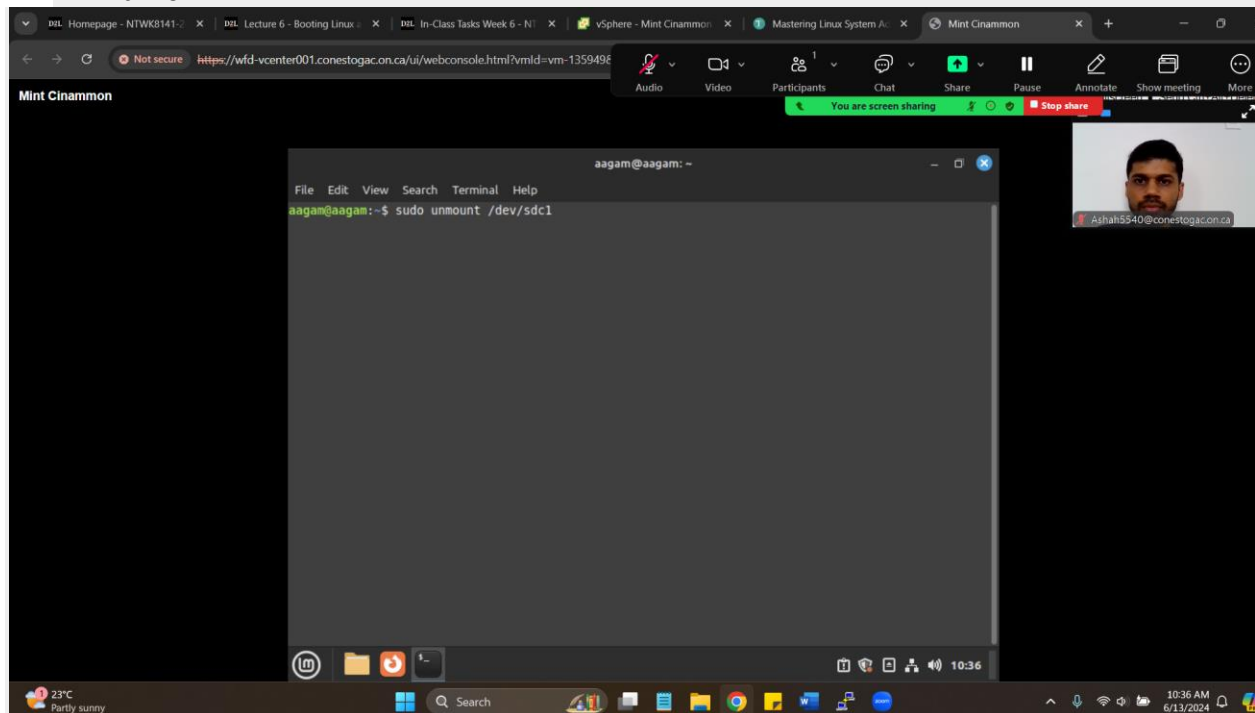
2. Create a new mount point in your Home folder. Type `mkdir mediatest1`.



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

DLI: Homepage - NTWK8141... x DLI: Lecture 6 - Booting Linux... x DLI: In-Class Tasks Week 6 - NT... x vSphere - Mint Cinnamon... x Mastering Linux System A... x Mint Cinnamon

Not secure <https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmid=vm-1359498>

Mint Cinnamon

You are screen sharing Stop share

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:~$
```

23°C Partly sunny

10:39 AM 6/13/2024

du -h

DLI: Homepage - NTWK8141... x DLI: Lecture 6 - Booting Linux... x DLI: In-Class Tasks Week 6 - NT... x vSphere - Mint Cinnamon... x Mastering Linux System A... x Mint Cinnamon

Not secure <https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmid=vm-1359498>

Mint Cinnamon

You are screen sharing Stop share

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.o
rg
4.0K ./mozilla/firefox/l58n7s9g.default-release/browser-extension-data/amazondotcom@search.moz
illa.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/1451318868ntourom
lalnodry--epcr.files
4.0K ./mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/1657114595Amcatei
rvtiSty.files
4.0K ./mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/356128849sdhlie.
files
4.0K ./mozilla/firefox/l58n7s9g.default-release/storage/permanent/chrome/idb/3870112724rsegmno
.files
aagam@aagam:~$
```

Temps to drop Tomorrow

10:40 AM 6/13/2024

mount

Browser tabs: DML Homepage - NTWK8141, DML Lecture 6 - Booting Linux, DML In-Class Tasks Week 6 - NT, vSphere - Mint Cinnamon, Mastering Linux System A, Mint Cinnamon

Address bar: Not secure https://wfd-vcen001.conestogac.on.ca/ui/webconsole.html?vmld=vm-1359498

Meeting controls: Audio, Video, Participants, Chat, Share, Pause, Annotate, Show meeting, More

Status: You are screen sharing, Stop share

Terminal window (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:~$
```

System tray: Watchlist, Ideas, Search, 10:41 AM 6/13/2024

lsblk

Browser tabs: DML Homepage - NTWK8141, DML Lecture 6 - Booting Linux, DML In-Class Tasks Week 6 - NT, vSphere - Mint Cinnamon, Mastering Linux System A, Mint Cinnamon

Address bar: Not secure https://wfd-vcen001.conestogac.on.ca/ui/webconsole.html?vmld=vm-1359498

Meeting controls: Audio, Video, Participants, Chat, Share, Pause, Annotate, Show meeting, More

Status: You are screen sharing, Stop share

Terminal window (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:~$
```

System tray: Watchlist, Ideas, Search, 10:41 AM 6/13/2024