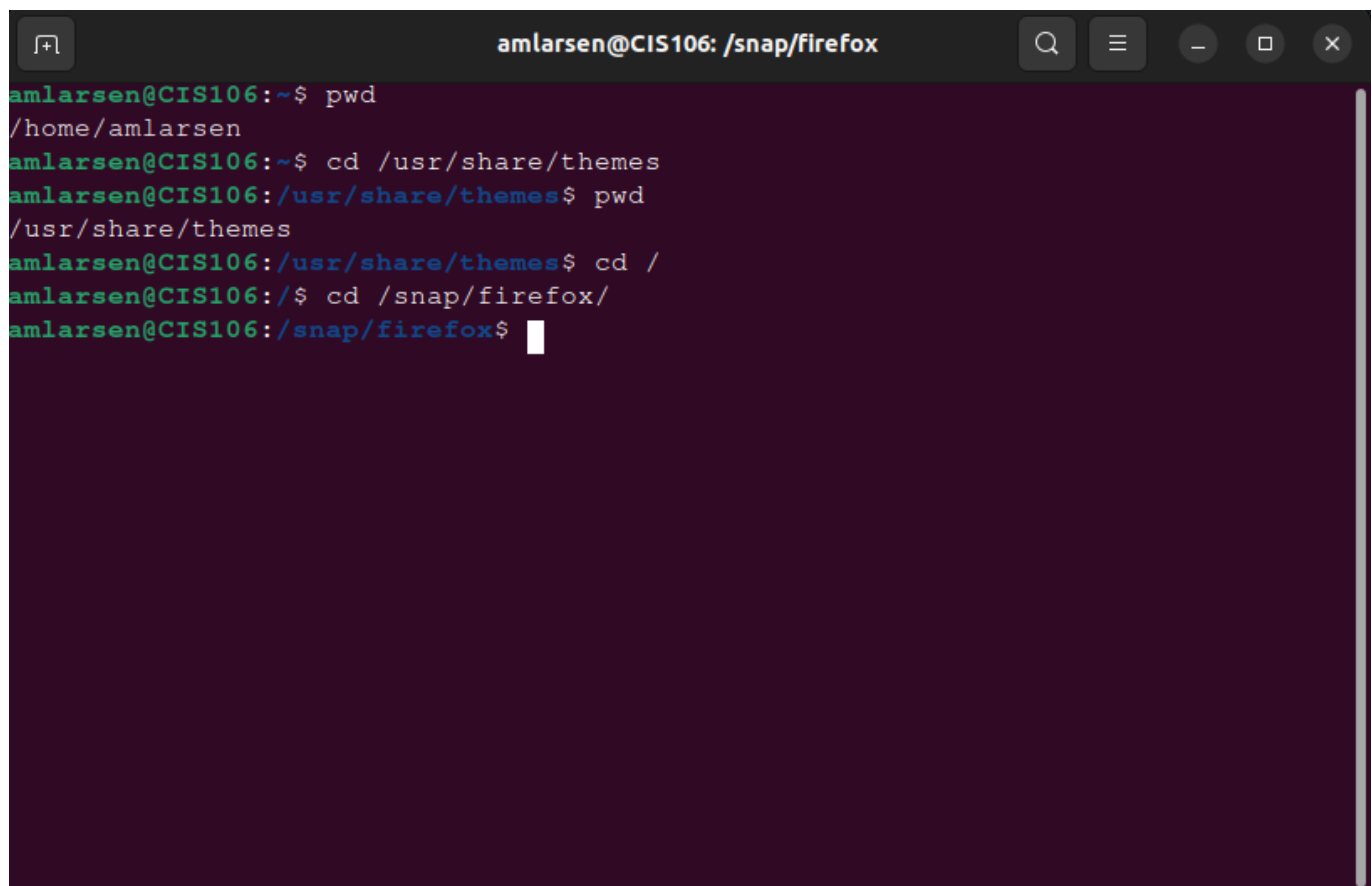
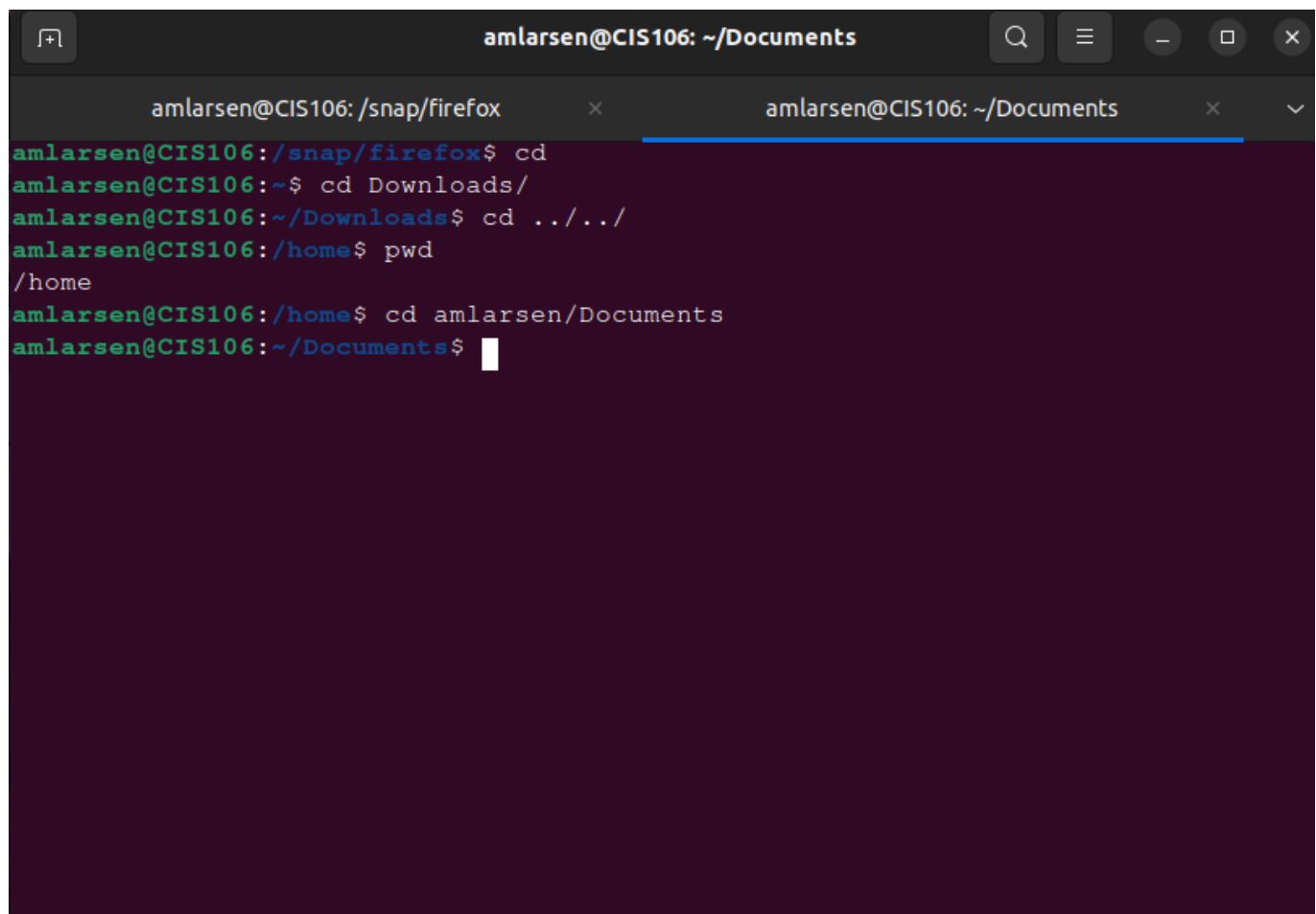


Question 1



```
amlarsen@CIS106: ~/snap/firefox
amlarsen@CIS106:~$ pwd
/home/amlarsen
amlarsen@CIS106:~$ cd /usr/share/themes
amlarsen@CIS106:/usr/share/themes$ pwd
/usr/share/themes
amlarsen@CIS106:/usr/share/themes$ cd /
amlarsen@CIS106:/$ cd /snap/firefox/
amlarsen@CIS106:/snap/firefox$
```



```
amlarsen@CIS106: ~/Documents
amlarsen@CIS106:/snap/firefox$ cd
amlarsen@CIS106:~$ cd Downloads/
amlarsen@CIS106:~/Downloads$ cd ../../
amlarsen@CIS106:/home$ pwd
/home
amlarsen@CIS106:/home$ cd amlarsen/Documents
amlarsen@CIS106:~/Documents$
```

Question 2

```

amlarsen@CIS106:~/Documents$ cd /usr/share/
amlarsen@CIS106:/usr/share$ ls /home/amlarsen/lab4files/
countries.json  document.docx  helloWorld.c  sample.xls  Ubuntu.pdf
csvfile.csv     globe.avi      Linux.pdf     Tux.png     website.html
amlarsen@CIS106:/usr/share$ cd -/lab4files/
bash: cd: -/: invalid option
cd: usage: cd [-L|[-P [-e]] [-@]] [dir]
amlarsen@CIS106:/usr/share$ cd -/lab4files/
bash: cd: -/: invalid option
cd: usage: cd [-L|[-P [-e]] [-@]] [dir]
amlarsen@CIS106:/usr/share$ cs ~/lab4files/
Command 'cs' not found, but can be installed with:
sudo apt install csound
amlarsen@CIS106:/usr/share$ cd ~/lab4files/
amlarsen@CIS106:~/lab4files$ ls -l
total 6580
-rw-rw-r-- 1 amlarsen amlarsen 20471 Feb 22 2022 countries.json
-rw-rw-r-- 1 amlarsen amlarsen 284042 Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 amlarsen amlarsen 764176 Feb 22 2022 document.docx
-rw-rw-r-- 1 amlarsen amlarsen 742478 Feb 22 2022 globe.avi
-rw-rw-r-- 1 amlarsen amlarsen 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 amlarsen amlarsen 2600138 Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 amlarsen amlarsen 8704 Feb 22 2022 sample.xls
-rw-rw-r-- 1 amlarsen amlarsen 42777 Feb 22 2022 Tux.png
-rw-rw-r-- 1 amlarsen amlarsen 2114053 Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 amlarsen amlarsen 137453 Feb 22 2022 website.html

```

```

amlarsen@CIS106: ~/lab4files
amlarsen@CIS106:~/lab4files$ ls -lh
total 6.5M
-rw-rw-r-- 1 amlarsen amlarsen 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 amlarsen amlarsen 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 amlarsen amlarsen 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 amlarsen amlarsen 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 amlarsen amlarsen 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 amlarsen amlarsen 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 amlarsen amlarsen 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 amlarsen amlarsen 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 amlarsen amlarsen 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 amlarsen amlarsen 135K Feb 22 2022 website.html
amlarsen@CIS106:~/lab4files$ ls -lHS
total 6.5M
-rw-rw-r-- 1 amlarsen amlarsen 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 amlarsen amlarsen 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 amlarsen amlarsen 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 amlarsen amlarsen 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 amlarsen amlarsen 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 amlarsen amlarsen 135K Feb 22 2022 website.html
-rw-rw-r-- 1 amlarsen amlarsen 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 amlarsen amlarsen 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 amlarsen amlarsen 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 amlarsen amlarsen 76 Feb 22 2022 helloWorld.c
amlarsen@CIS106:~/lab4files$ ls -lhSgG
total 6.5M

```

```
amlarsen@CIS106: ~/lab4files
amlarsen@CIS106:~/lab4files$ ls -lhSgG
total 6.5M
-rw-rw-r-- 1 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 135K Feb 22 2022 website.html
-rw-rw-r-- 1 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 76 Feb 22 2022 helloWorld.c
amlarsen@CIS106:~/lab4files$ ls -Xr
sample.xls  Ubuntu.pdf  countries.json  document.docx  helloWorld.c
Tux.png    Linux.pdf   website.html   csvfile.csv    globe.avi
amlarsen@CIS106:~/lab4files$ ls -Xrl
total 6580
-rw-rw-r-- 1 amlarsen amlarsen 8704 Feb 22 2022 sample.xls
-rw-rw-r-- 1 amlarsen amlarsen 42777 Feb 22 2022 Tux.png
-rw-rw-r-- 1 amlarsen amlarsen 2114053 Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 amlarsen amlarsen 2600138 Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 amlarsen amlarsen 20471 Feb 22 2022 countries.json
-rw-rw-r-- 1 amlarsen amlarsen 137453 Feb 22 2022 website.html
-rw-rw-r-- 1 amlarsen amlarsen 764176 Feb 22 2022 document.docx
-rw-rw-r-- 1 amlarsen amlarsen 284042 Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 amlarsen amlarsen 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 amlarsen amlarsen 742478 Feb 22 2022 globe.avi
amlarsen@CIS106:~/lab4files$
```

Question 4

```

amlarsen@CIS106:~$ cd /usr/share/icons/default/
amlarsen@CIS106:/usr/share/icons/default$ cd /proc/sys/net/ipv4/
amlarsen@CIS106:/proc/sys/net/ipv4$ cd /usr/
amlarsen@CIS106:/usr$ cd share/backgrounds
amlarsen@CIS106:/usr/share/backgrounds$ ls -l
total 25448
-rw-r--r-- 1 root root 3282920 Apr 14 2022 Blue_flower_by_Elena_Stravoravdi.jpg
-rw-r--r-- 1 root root 152918 Apr 14 2022 canvas_by_roytanck.jpg
-rw-r--r-- 1 root root 4358768 Apr 14 2022 Cherry_Tree_in_Lakones_by_elenastravoravdi.jpg
drwxr-xr-x 2 root root 4096 Aug 9 2022 contest
-rw-r--r-- 1 root root 778698 Apr 14 2022 DSC2943_by_kcpru.jpg
-rw-r--r-- 1 root root 1672978 Apr 14 2022 Jammy-Jellyfish_WP_4096x2304_Grey.png
-rw-r--r-- 1 root root 191945 Apr 14 2022 jj_dark_by_Hiking93.jpg
-rw-r--r-- 1 root root 250557 Apr 14 2022 jj_light_by_Hiking93.jpg
-rw-r--r-- 1 root root 1135788 Apr 14 2022 Mirror_by_Uday_Nakade.jpg
-rw-r--r-- 1 root root 2705552 Apr 14 2022 Optical_Fibers_in_Dark_by_Elena_Stravoravdi.jpg
-rw-r--r-- 1 root root 3891119 Apr 14 2022 ubuntu2_by_arman1992.jpg
-rw-r--r-- 1 root root 5559872 Apr 14 2022 ubuntu_by_arman1992.jpg
lrwxrwxrwx 1 root root 37 Feb 8 10:17 ubuntu-default-greyscale-wallpaper.png -> Jammy-Jellyfish_WP_4096x2304_Grey.png
-rw-r--r-- 1 root root 2044810 Aug 9 2022 warty-final-ubuntu.png
amlarsen@CIS106:/usr/share/backgrounds$ cs /home/amlarsen
Command 'cs' not found, but can be installed with:
sudo apt install csound
amlarsen@CIS106:/usr/share/backgrounds$ cd /home/amlarsen
amlarsen@CIS106:~$ ls -l
total 52
drwxr-xr-x 3 amlarsen amlarsen 4096 Mar 6 19:22 Desktop
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 8 10:28 Documents
drwxr-xr-x 2 amlarsen amlarsen 4096 Mar 6 20:03 Downloads
-rw-rw-r-- 1 amlarsen amlarsen 91 Feb 8 12:20 gitcommands.txt
-rw-rw-r-- 1 amlarsen amlarsen 83 Feb 8 12:14 'Github commands'
drwxrwxr-x 2 amlarsen amlarsen 4096 Mar 6 18:01 lab4files
drwx----- 7 amlarsen amlarsen 4096 Feb 20 20:05 Mail
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 8 10:28 Music
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 20 19:57 Pictures
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 8 10:28 Public
drwx----- 5 amlarsen amlarsen 4096 Feb 8 11:23 snap
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 8 10:28 Templates
drwxr-xr-x 2 amlarsen amlarsen 4096 Feb 8 10:28 Videos
amlarsen@CIS106:~$ cd Downloads/

amlarsen@CIS106:~$ cd Downloads/
amlarsen@CIS106:~/Downloads$ ls -l
total 1600940
-rw-rw-r-- 1 amlarsen amlarsen 473054 Feb 20 18:37 1200px-Falco_SSBu.webp
-rw-rw-r-- 1 amlarsen amlarsen 317536 Feb 20 18:41 320204228_2747196818747488_801362676986823724_n.jpg
-rw-rw-r-- 1 amlarsen amlarsen 194598 Feb 20 18:41 327094154_3491247504528569_4868900326190452177_n.jpg
-rw-rw-r-- 1 amlarsen amlarsen 255158 Feb 20 18:41 327162000_739172880933058_8700408570114678451_n.jpg
-rw-rw-r-- 1 amlarsen amlarsen 10712738 Feb 20 18:57 Arimo.zip
-rw-rw-r-- 1 amlarsen amlarsen 9182705 Feb 20 18:57 AurulentSansMono.zip
-rw-rw-r-- 1 amlarsen amlarsen 98228116 Feb 8 11:22 code_1.75.0-1675266613_amd64.deb
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:00 'code_1.76.0-1677667493_amd64(10).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:03 'code_1.76.0-1677667493_amd64(11).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:03 'code_1.76.0-1677667493_amd64(12).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:03 'code_1.76.0-1677667493_amd64(13).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:55 'code_1.76.0-1677667493_amd64(1).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:56 'code_1.76.0-1677667493_amd64(2).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:56 'code_1.76.0-1677667493_amd64(3).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:56 'code_1.76.0-1677667493_amd64(4).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:57 'code_1.76.0-1677667493_amd64(5).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:58 'code_1.76.0-1677667493_amd64(6).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:58 'code_1.76.0-1677667493_amd64(7).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:00 'code_1.76.0-1677667493_amd64(8).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 20:00 'code_1.76.0-1677667493_amd64(9).deb'
-rw-rw-r-- 1 amlarsen amlarsen 94825848 Mar 6 19:53 code_1.76.0-1677667493_amd64.deb
-rw-rw-r-- 1 amlarsen amlarsen 134497308 Mar 6 19:58 code-1.76.0-1677667581.el7.x86_64.rpm
-rw-rw-r-- 1 amlarsen amlarsen 32459095 Feb 20 18:58 FiraCode.zip
-rw-rw-r-- 1 amlarsen amlarsen 3460751 Mar 6 17:56 'lab4files(1).zip'
-rw-rw-r-- 1 amlarsen amlarsen 3460751 Mar 6 17:56 lab4files.zip
-rw-rw-r-- 1 amlarsen amlarsen 1283565 Feb 20 20:59 'Powerpoint(1).odp'
-rw-rw-r-- 1 amlarsen amlarsen 1283565 Feb 20 20:59 Powerpoint.odp
-rw-rw-r-- 1 amlarsen amlarsen 11297 Feb 12 21:58 'Snapshot 1 Lab 1.PNG'
-rw-rw-r-- 1 amlarsen amlarsen 15842713 Feb 20 18:55 Wallpaper.jpg
amlarsen@CIS106:~/Downloads$ cd /dev/disk/by-id
amlarsen@CIS106:/dev/disk/by-id$ ls -l
total 0
lrwxrwxrwx 1 root root 9 Mar 6 20:08 ata-VBOX_CD-ROM_VB2-01700376 -> ../../sr0
lrwxrwxrwx 1 root root 9 Mar 6 20:08 ata-VBOX_HARDDISK_VB5f6297f9-74f80055 -> ../../sda
lrwxrwxrwx 1 root root 10 Mar 6 20:08 ata-VBOX_HARDDISK_VB5f6297f9-74f80055-part1 -> ../../sda1
lrwxrwxrwx 1 root root 10 Mar 6 20:08 ata-VBOX_HARDDISK_VB5f6297f9-74f80055-part2 -> ../../sda2
lrwxrwxrwx 1 root root 10 Mar 6 20:08 ata-VBOX_HARDDISK_VB5f6297f9-74f80055-part3 -> ../../sda3
amlarsen@CIS106:/dev/disk/by-id$ cd /usr/share/themes/

```

```
amlarsen@CIS106:/dev/disk/by-id$ cd /usr/share/themes/  
amlarsen@CIS106:/usr/share/themes$ ls -lu  
total 120  
drwxr-xr-x 4 root root 4096 Feb 20 20:19 Adwaita  
drwxr-xr-x 4 root root 4096 Feb 20 20:19 Adwaita-dark  
drwxr-xr-x 4 root root 4096 Feb 20 20:19 Default  
drwxr-xr-x 4 root root 4096 Feb 20 20:19 Emacs  
drwxr-xr-x 4 root root 4096 Feb 20 20:19 HighContrast  
drwxr-xr-x 3 root root 4096 Feb 20 20:19 Raleigh  
drwxr-xr-x 7 root root 4096 Feb 20 20:19 Yaru  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-bark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-bark-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-blue  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-blue-dark  
drwxr-xr-x 7 root root 4096 Feb 20 20:19 Yaru-dark  
drwxr-xr-x 3 root root 4096 Feb 20 20:19 Yaru-dark-hdpi  
drwxr-xr-x 3 root root 4096 Feb 20 20:19 Yaru-dark-xhdpi  
drwxr-xr-x 3 root root 4096 Feb 20 20:19 Yaru-hdpi  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-magenta  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-magenta-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-olive  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-olive-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-prussiangreen  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-prussiangreen-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-purple  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-purple-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-red  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-red-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-sage  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-sage-dark  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-viridian  
drwxr-xr-x 5 root root 4096 Feb 20 20:19 Yaru-viridian-dark  
drwxr-xr-x 3 root root 4096 Feb 20 20:19 Yaru-xhdpi
```



```

amlarsen@CIS106:/usr/share/themes$ cd /usr
amlarsen@CIS106:/usr$ cd share/
amlarsen@CIS106:/usr/share$ ls -lX
total 1420
drwxr-xr-x    4 root root   4096 Feb 20 19:10 accountsservice
drwxr-xr-x    2 root root   4096 Feb  8 11:31 aclocal
drwxr-xr-x    2 root root   4096 Aug  9 2022 acpi-support
drwxr-xr-x    2 root root   4096 Aug  9 2022 adduser
drwxr-xr-x    4 root root   4096 Feb  8 11:29 aisleriot
drwxr-xr-x    3 root root   4096 Feb 20 19:10 alacarte
drwxr-xr-x   11 root root   4096 Feb  8 10:29 alsa
drwxr-xr-x    2 root root   4096 Aug  9 2022 alsa-base
drwxr-xr-x    3 root root   4096 Aug  9 2022 alsa-card-profile
drwxr-xr-x    2 root root   4096 Mar  6 20:07 appdata
drwxr-xr-x    3 root root   4096 Feb  8 11:36 app-info
drwxr-xr-x    2 root root 12288 Mar  6 20:08 applications
drwxr-xr-x    4 root root   4096 Feb  8 11:29 appport
drwxr-xr-x    4 root root   4096 Feb  8 11:36 apps
drwxr-xr-x    2 root root   4096 Aug  9 2022 apturl
drwxr-xr-x    2 root root   4096 Aug  9 2022 aspell
drwxr-xr-x    2 root root   4096 Aug  9 2022 avahi
drwxr-xr-x    3 root root   4096 Aug  9 2022 backgrounds
drwxr-xr-x    2 root root   4096 Mar  6 20:07 base-files
drwxr-xr-x    2 root root   4096 Aug  9 2022 base-passwd
drwxr-xr-x    4 root root   4096 Aug  9 2022 bash-completion
drwxr-xr-x    2 root root   4096 Feb  8 10:29 binfmts
drwxr-xr-x    4 root root   4096 Aug  9 2022 branding
drwxr-xr-x    3 root root   4096 Aug  9 2022 brltty
drwxr-xr-x   132 root root   4096 Feb  8 11:36 bug
drwxr-xr-x    2 root root   4096 Feb  8 11:31 build-essential
drwxr-xr-x    3 root root   4096 Aug  9 2022 ca-certificates
drwxr-xr-x    3 root root   4096 Feb  8 11:33 caffeine-indicator
drwxr-xr-x    2 root root   4096 Feb  8 11:31 catdoc
drwxr-xr-x    3 root root   4096 Aug  9 2022 cmake
drwxr-xr-x    5 root root   4096 Mar  6 20:07 code
drwxr-xr-x    3 root root   4096 Aug  9 2022 cogl
drwxr-xr-x    3 root root   4096 Aug  9 2022 color
drwxr-xr-x    7 root root   4096 Aug  9 2022 colord
drwxr-xr-x    2 root root   4096 Mar  6 20:07 common-licenses
drwxr-xr-x    2 root root 28672 Aug  9 2022 consolefonts
drwxr-xr-x    2 root root   4096 Aug  9 2022 console-setup
drwxr-xr-x    2 root root   4096 Aug  9 2022 consoletrans
drwxr-xr-x    3 root root   4096 Feb 20 20:21 cowsay
drwxr-xr-x   18 root root   4096 Aug  9 2022 cups

```

```

drwxr-xr-x 8 root root 4096 Feb 8 10:29 dbus-1
drwxr-xr-x 3 root root 4096 Aug 9 2022 dconf
drwxr-xr-x 2 root root 4096 Aug 9 2022 debconf
drwxr-xr-x 3 root root 4096 Aug 9 2022 debhelper
drwxr-xr-x 3 root root 4096 Aug 9 2022 debianutils
drwxr-xr-x 3 root root 4096 Aug 9 2022 defaults
drwxr-xr-x 2 root root 4096 Feb 20 19:10 desktop-directories
drwxr-xr-x 2 root root 4096 Aug 9 2022 dict
drwxr-xr-x 3 root root 4096 Aug 9 2022 dictionaries-common
drwxr-xr-x 2 root root 4096 Feb 8 10:29 distro-info
drwxr-xr-x 4 root root 4096 Aug 9 2022 djvu
drwxr-xr-x 2 root root 4096 Aug 9 2022 dns
drwxr-xr-x 2 root root 4096 Aug 9 2022 dnsmasq-base
drwxr-xr-x 2255 root root 81920 Mar 6 17:53 doc
drwxr-xr-x 2 root root 4096 Feb 8 11:36 doc-base
drwxr-xr-x 3 root root 4096 Feb 8 11:31 dpkg
drwxr-xr-x 3 root root 4096 Aug 9 2022 emacs
drwxr-xr-x 2 root root 4096 Aug 9 2022 emacsen-common
drwxr-xr-x 2 root root 4096 Aug 9 2022 enchant-2
drwxr-xr-x 3 root root 4096 Aug 9 2022 eog
drwxr-xr-x 2 root root 4096 Feb 20 19:47 epiphany-browser
drwxr-xr-x 3 root root 4096 Mar 6 20:07 evince
drwxr-xr-x 3 root root 4096 Feb 8 10:29 evolution-data-server
drwxr-xr-x 2 root root 4096 Feb 20 20:22 figlet
drwxr-xr-x 3 root root 4096 Aug 9 2022 file
drwxr-xr-x 2 root root 4096 Aug 9 2022 file-roller
drwxr-xr-x 4 root root 4096 Aug 9 2022 fish
drwxr-xr-x 3 root root 4096 Feb 8 11:30 flameshot
drwxr-xr-x 3 root root 4096 Feb 8 11:36 flatpak
drwxr-xr-x 3 root root 4096 Aug 9 2022 fontconfig
drwxr-xr-x 8 root root 4096 Aug 9 2022 fonts
drwxr-xr-x 3 root root 4096 Aug 9 2022 fonts-droid-fallback
drwxr-xr-x 4 root root 4096 Aug 9 2022 fonts-sil-abyssinica
drwxr-xr-x 4 root root 4096 Aug 9 2022 fonts-sil-padauk
drwxr-xr-x 3 root root 4096 Aug 9 2022 foo2qpd1
drwxr-xr-x 3 root root 4096 Aug 9 2022 foo2zjs
drwxr-xr-x 5 root root 4096 Feb 8 10:29 fwupd
drwxr-xr-x 2 root root 4096 Aug 9 2022 gamemode
drwxr-xr-x 4 root root 4096 Feb 20 20:21 games
drwxr-xr-x 3 root root 4096 Aug 9 2022 gcc
drwxr-xr-x 3 root root 4096 Aug 9 2022 GConf
drwxr-xr-x 6 root root 4096 Aug 9 2022 gdb
drwxr-xr-x 5 root root 4096 Aug 9 2022 gdm
drwxr-xr-x 6 root root 4096 Feb 8 11:30 geany
drwxr-xr-x 3 root root 4096 Feb 20 20:04 geary

```



```

drwxr-xr-x 3 root root 4096 Feb 20 20:04 geary
drwxr-xr-x 3 root root 4096 Aug 9 2022 gedit
drwxr-xr-x 2 root root 4096 Feb 8 11:30 GeoIP
drwxr-xr-x 3 root root 4096 Aug 9 2022 gettext
drwxr-xr-x 4 root root 4096 Aug 9 2022 ghostscript
drwxr-xr-x 4 root root 4096 Feb 8 11:31 git-core
drwxr-xr-x 3 root root 4096 Feb 20 15:58 gitweb
drwxr-xr-x 3 root root 4096 Aug 9 2022 glade
drwxr-xr-x 3 root root 4096 Aug 9 2022 glvnd
drwxr-xr-x 4 root root 4096 Feb 8 10:29 gnome
drwxr-xr-x 5 root root 4096 Feb 20 19:10 gnome-applets
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-background-properties
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-bluetooth
drwxr-xr-x 5 root root 4096 Aug 9 2022 gnome-control-center
drwxr-xr-x 2 root root 4096 Mar 6 20:07 gnome-initial-setup
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-logs
drwxr-xr-x 3 root root 4096 Feb 8 11:29 gnome-mahjongg
drwxr-xr-x 4 root root 4096 Feb 20 19:10 gnome-panel
drwxr-xr-x 2 root root 4096 Feb 12 22:03 gnome-remote-desktop
drwxr-xr-x 3 root root 4096 Aug 9 2022 gnome-session
drwxr-xr-x 3 root root 4096 Aug 9 2022 gnome-settings-daemon
drwxr-xr-x 7 root root 4096 Feb 8 10:29 gnome-shell
drwxr-xr-x 2 root root 4096 Feb 8 11:36 gnome-software
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-system-monitor
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-todo
drwxr-xr-x 2 root root 4096 Feb 8 11:33 gnome-tweaks
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnome-video-effects
drwxr-xr-x 2 root root 4096 Aug 9 2022 gnupg
drwxr-xr-x 3 root root 4096 Aug 9 2022 grilo-plugins
drwxr-xr-x 3 root root 4096 Aug 9 2022 groff
drwxr-xr-x 3 root root 4096 Feb 8 10:21 grub
drwxr-xr-x 3 root root 4096 Aug 9 2022 grub-gfxpayload-lists
drwxr-xr-x 3 root root 4096 Aug 9 2022 gst-plugins-base
drwxr-xr-x 3 root root 4096 Aug 9 2022 gtk-doc
drwxr-xr-x 2 root root 4096 Aug 9 2022 gtk-engines
drwxr-xr-x 4 root root 4096 Aug 9 2022 gtksourceview-4
drwxr-xr-x 3 root root 4096 Aug 9 2022 guile
drwxr-xr-x 2 root root 4096 Aug 9 2022 gupnp-av
drwxr-xr-x 4 root root 4096 Aug 9 2022 gvfs
drwxr-xr-x 64 root root 4096 Feb 20 19:47 help
drwxr-xr-x 4 root root 4096 Feb 8 10:21 help-langpack
drwxr-xr-x 12 root root 4096 Feb 8 10:30 hplip
drwxr-xr-x 2 root root 4096 Aug 9 2022 hunspell
drwxr-xr-x 2 root root 4096 Feb 8 11:31 hwdata
drwxr-xr-x 2 root root 4096 Aug 9 2022 hyphen

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drwxr-xr-x 4 root root 4096 Aug 9 2022 il8n
drwxr-xr-x 6 root root 4096 Aug 9 2022 ibus
drwxr-xr-x 7 root root 4096 Aug 9 2022 ibus-table
drwxr-xr-x 40 root root 4096 Feb 20 19:28 icons
drwxr-xr-x 2 root root 4096 Mar 1 14:20 ImageMagick-6
drwxr-xr-x 3 root root 4096 Aug 9 2022 im-config
drwxr-xr-x 3 root root 4096 Feb 20 19:10 indicator-application
drwxr-xr-x 3 root root 4096 Feb 20 19:10 indicator-power
drwxr-xr-x 3 root root 4096 Aug 9 2022 indicators
drwxr-xr-x 2 root root 4096 Mar 6 20:08 info
drwxr-xr-x 7 root root 4096 Feb 8 10:29 initramfs-tools
drwxr-xr-x 3 root root 4096 Feb 8 10:21 installed-tests
drwxr-xr-x 3 root root 4096 Aug 9 2022 ipp-usb
drwxr-xr-x 2 root root 4096 Aug 9 2022 iptables
drwxr-xr-x 3 root root 4096 Aug 9 2022 iso-codes
drwxr-xr-x 2 root root 4096 Feb 20 19:10 java
drwxr-xr-x 5 root root 4096 Feb 8 11:31 javascript
drwxr-xr-x 2 root root 4096 Feb 20 19:27 kconf_update
drwxr-xr-x 3 root root 4096 Aug 9 2022 kde4
drwxr-xr-x 2 root root 4096 Mar 6 20:07 keyrings
drwxr-xr-x 6 root root 4096 Feb 20 19:27 kf5
drwxr-xr-x 2 root root 4096 Feb 20 19:27 knotifications5
drwxr-xr-x 4 root root 4096 Feb 20 19:55 kservices5
drwxr-xr-x 2 root root 4096 Feb 20 19:27 kservicetypes5
drwxr-xr-x 3 root root 4096 Aug 9 2022 language-selector
drwxr-xr-x 2 root root 4096 Feb 8 10:29 language-support
drwxr-xr-x 2 root root 4096 Aug 9 2022 language-tools
drwxr-xr-x 2 root root 4096 Feb 8 11:33 libcaca
drwxr-xr-x 2 root root 4096 Aug 9 2022 libc-bin
drwxr-xr-x 2 root root 4096 Feb 20 19:40 libdbi-perl
drwxr-xr-x 2 root root 4096 Aug 9 2022 libdebuginfod-common
drwxr-xr-x 2 root root 4096 Feb 8 10:29 libdrm
drwxr-xr-x 2 root root 4096 Aug 9 2022 libexttextcat
drwxr-xr-x 4 root root 4096 Aug 9 2022 libgnomekbd
drwxr-xr-x 2 root root 4096 Aug 9 2022 libgweather
drwxr-xr-x 2 root root 4096 Feb 20 19:10 libgweather-4
drwxr-xr-x 2 root root 12288 Feb 8 10:29 libinput
drwxr-xr-x 3 root root 4096 Aug 9 2022 liblangtag
drwxr-xr-x 3 root root 4096 Aug 9 2022 liblouis
drwxr-xr-x 3 root root 4096 Aug 9 2022 liblouisutdml
drwxr-xr-x 2 root root 4096 Feb 8 10:21 libmysofa
drwxr-xr-x 6 root root 4096 Mar 6 20:07 libreoffice
drwxr-xr-x 3 root root 4096 Aug 9 2022 librevenge
drwxr-xr-x 2 root root 4096 Aug 9 2022 libthai
drwxr-xr-x 3 root root 20480 Aug 9 2022 libwacom

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drwxr-xr-x    3 root root    4096 Aug  9  2022 lightdm
drwxr-xr-x    4 root root    4096 Aug  9  2022 lintian
drwxr-xr-x    2 root root    4096 Aug  9  2022 linux-sound-base
drwxr-xr-x  248 root root    4096 Feb 20 20:05 locale
drwxr-xr-x   10 root root    4096 Feb  8 10:21 locale-langpack
drwxr-xr-x    2 root root    4096 Aug  9  2022 locales
drwxr-xr-x    2 root root    4096 Feb  8 11:31 lto-disabled-list
drwxr-xr-x    3 root root    4096 Aug  9  2022 m2300w
drwxr-xr-x   38 root root    4096 Feb 20 19:28 man
drwxr-xr-x    2 root root    4096 Aug  9  2022 man-db
drwxr-xr-x    3 root root    4096 Feb  8 11:31 mate-panel
drwxr-xr-x    3 root root    4096 Aug  9  2022 maven-repo
drwxr-xr-x    2 root root   12288 Aug  9  2022 media-player-info
drwxr-xr-x    2 root root    4096 Feb 20 20:21 menu
drwxr-xr-x    2 root root    4096 Feb  8 11:31 mesa-demos
drwxr-xr-x    2 root root   12288 Mar  6 20:07 metainfo
drwxr-xr-x    2 root root    4096 Feb  8 10:21 mfx
drwxr-xr-x   15 root root    4096 Mar  6 20:08 mime
drwxr-xr-x    2 root root    4096 Aug  9  2022 misc
drwxr-xr-x    2 root root    4096 Aug  9  2022 mobile-broadband-provider-info
drwxr-xr-x    4 root root    4096 Mar  6 20:07 ModemManager
drwxr-xr-x    2 root root    4096 Aug  9  2022 mousetweaks
drwxr-xr-x    2 root root    4096 Aug  9  2022 mythes
drwxr-xr-x    4 root root    4096 Aug  9  2022 nano
drwxr-xr-x    3 root root    4096 Aug  9  2022 nautilus
drwxr-xr-x    3 root root    4096 Feb  8 11:30 nautilus-python
drwxr-xr-x    3 root root    4096 Aug  9  2022 nautilus-share
drwxr-xr-x    5 root root    4096 Feb  8 11:31 nemo
drwxr-xr-x    2 root root    4096 Feb  8 11:33 netpbm
drwxr-xr-x    3 root root    4096 Feb  8 10:29 netplan
drwxr-xr-x    2 root root    4096 Feb  8 11:30 numpy3
drwxr-xr-x    2 root root    4096 Feb  8 10:30 openvpn
drwxr-xr-x    3 root root    4096 Aug  9  2022 orca
drwxr-xr-x    2 root root    4096 Aug  9  2022 os-prober
drwxr-xr-x    3 root root    4096 Aug  9  2022 pll-kit
drwxr-xr-x    2 root root    4096 Feb  8 11:38 package-data-downloads
drwxr-xr-x    3 root root    4096 Aug  9  2022 PackageKit
drwxr-xr-x    2 root root    4096 Feb  8 10:29 pam
drwxr-xr-x    2 root root    4096 Feb  8 10:30 pam-configs
drwxr-xr-x    3 root root    4096 Aug  9  2022 perl
drwxr-xr-x   81 root root    4096 Feb 20 19:40 perl5
drwxr-xr-x    2 root root    4096 Aug  9  2022 perl-openssl-defaults
drwxr-xr-x    3 root root    4096 Feb  8 10:29 pipewire
drwxr-xr-x    4 root root    4096 Mar  6 20:07 pixmaps
drwxr-xr-x    2 root root    4096 Feb  8 10:29 pkgconfig

```



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drwxr-xr-x  3 root root  4096 Aug  9  2022 plymouth
drwxr-xr-x  2 root root  4096 Aug  9  2022 pnm2ppa
drwxr-xr-x  3 root root  4096 Feb  8 10:21 pocketsphinx
drwxr-xr-x  4 root root  4096 Aug  9  2022 polkit-1
drwxr-xr-x  6 root root  4096 Aug  9  2022 poppler
drwxr-xr-x  5 root root  4096 Aug  9  2022 ppd
drwxr-xr-x  2 root root  4096 Aug  9  2022 ppp
drwxr-xr-x  2 root root  4096 Aug  9  2022 publicsuffix
drwxr-xr-x  3 root root  4096 Aug  9  2022 pulseaudio
drwxr-xr-x  2 root root  4096 Aug  9  2022 pyshared
drwxr-xr-x  6 root root  4096 Feb  8 10:29 python3
drwxr-xr-x  3 root root  4096 Aug  9  2022 python-apt
drwxr-xr-x  2 root root  4096 Feb 20 19:28 qlogging-categories5
drwxr-xr-x  3 root root  4096 Feb  8 11:30 qt5
drwxr-xr-x  2 root root  4096 Aug  9  2022 readline
drwxr-xr-x  5 root root  4096 Aug  9  2022 remmina
drwxr-xr-x  3 root root  4096 Aug  9  2022 rhythmbox
drwxr-xr-x  2 root root  4096 Feb 20 20:22 rig
drwxr-xr-x  3 root root  4096 Aug  9  2022 rsync
drwxr-xr-x  2 root root  4096 Aug  9  2022 rsyslog
drwxr-xr-x  4 root root  4096 Feb  8 11:31 rubygems-integration
drwxr-xr-x  5 root root  4096 Aug  9  2022 rygel
drwxr-xr-x  5 root root  4096 Feb  8 11:33 samba
drwxr-xr-x  3 root root  4096 Aug  9  2022 seahorse
drwxr-xr-x  3 root root  4096 Aug  9  2022 secureboot
drwxr-xr-x  3 root root  4096 Aug 29  2021 sensible-utils
drwxr-xr-x  3 root root  4096 Aug  9  2022 session-migration
drwxr-xr-x  9 root root  4096 Aug  9  2022 sgml
drwxr-xr-x  2 root root  4096 Aug  9  2022 sgml-base
drwxr-xr-x  2 root root  4096 Aug  9  2022 sgml-data
drwxr-xr-x  4 root root  4096 Aug  9  2022 snmp
drwxr-xr-x  3 root root  4096 Feb 12 22:03 software-properties
drwxr-xr-x  3 root root  4096 Feb  8 11:30 solid
drwxr-xr-x 11 root root  4096 Feb 20 19:10 sounds
drwxr-xr-x  2 root root 12288 Aug  9  2022 source-highlight
drwxr-xr-x  4 root root  4096 Aug  9  2022 speech-dispatcher
drwxr-xr-x  2 root root  4096 Aug  9  2022 ssl-cert
drwxr-xr-x  7 root root  4096 Aug  9  2022 system-config-printer
drwxr-xr-x  2 root root  4096 Feb  8 10:29 systemd
drwxr-xr-x  3 root root  4096 Feb  8 11:31 systemtap
drwxr-xr-x  2 root root  4096 Aug  9  2022 tabset
drwxr-xr-x  3 root root  4096 Aug  9  2022 tcltk
drwxr-xr-x  2 root root  4096 Jan 17  2022 terminfo
drwxr-xr-x  2 root root  4096 Feb  8 11:31 tex-common
drwxr-xr-x  7 root root  4096 Feb  8 11:31 texlive

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drwxr-xr-x    6 root root  4096 Feb  8 11:31 texmf
drwxr-xr-x   32 root root  4096 Aug  9  2022 themes
drwxr-xr-x    2 root root  4096 Mar  6 20:07 thumbnailers
drwxr-xr-x    5 root root  4096 Feb  8 11:30 tilix
drwxr-xr-x    2 root root  4096 Aug  9  2022 totem
drwxr-xr-x    5 root root  4096 Aug  9  2022 tracker3
drwxr-xr-x    5 root root  4096 Aug  9  2022 tracker3-miners
drwxr-xr-x    3 root root  4096 Aug  9  2022 transmission
drwxr-xr-x    3 root root  4096 Aug  9  2022 ubuntu
drwxr-xr-x    4 root root  4096 Aug  9  2022 ubuntu-drivers-common
drwxr-xr-x    3 root root  4096 Mar  6 20:07 ubuntu-release-upgrader
drwxr-xr-x    3 root root  4096 Aug  9  2022 ubuntu-wayland
drwxr-xr-x    2 root root  4096 Aug  9  2022 ucf
drwxr-xr-x    4 root root  4096 Aug  9  2022 ufw
drwxr-xr-x    2 root root  4096 Aug  9  2022 unattended-upgrades
drwxr-xr-x    3 root root  4096 Feb 20 19:10 unity
drwxr-xr-x    3 root root  4096 Aug  9  2022 update-manager
drwxr-xr-x    5 root root  4096 Feb 12 22:03 update-notifier
drwxr-xr-x    5 root root  4096 Feb 20 19:10 upstart
drwxr-xr-x    2 root root  4096 Aug  9  2022 usb-creator
drwxr-xr-x    2 root root  4096 Aug  9  2022 usb_modeswitch
drwxr-xr-x    3 root root  4096 Aug  9  2022 vala
drwxr-xr-x    5 root root  4096 Feb  8 10:29 vim
drwxr-xr-x    5 root root  4096 Feb  8 11:30 vlc
drwxr-xr-x    5 root root  4096 Aug  9  2022 vulkan
drwxr-xr-x    2 root root  4096 Feb  8 11:33 w3m
drwxr-xr-x    2 root root  4096 Aug  9  2022 wayland-sessions
drwxr-xr-x    5 root root  4096 Aug  9  2022 X11
drwxr-xr-x    3 root root  4096 Feb  8 11:31 xapps-common
drwxr-xr-x    3 root root  4096 Aug  9  2022 xdg-desktop-portal
drwxr-xr-x   11 root root  4096 Aug  9  2022 xml
drwxr-xr-x    2 root root  4096 Aug  9  2022 xml-core
drwxr-xr-x    2 root root  4096 Feb 20 19:51 xmms2
drwxr-xr-x    2 root root  4096 Feb 20 19:10 xsessions
drwxr-xr-x    6 root root  4096 Aug  9  2022 yelp
drwxr-xr-x    4 root root  4096 Aug  9  2022 yelp-xsl
drwxr-xr-x    2 root root  4096 Aug  9  2022 zenity
drwxr-xr-x   20 root root  4096 Feb  8 10:29 zoneinfo
drwxr-xr-x    3 root root  4096 Aug  9  2022 zoneinfo-icu
drwxr-xr-x    4 root root  4096 Feb  8 11:30 zsh
drwxr-xr-x    2 root root  4096 Feb  8 10:21 gir-1.0
drwxr-xr-x    3 root root  4096 Feb  8 10:29 glib-2.0
drwxr-xr-x    2 root root  4096 Aug  9  2022 gnome-bluetooth-3.0
drwxr-xr-x    3 root root  4096 Aug  9  2022 goa-1.0
drwxr-xr-x    4 root root  4096 Feb  8 10:21 gstreamer-1.0
drwxr-xr-x    2 root root  4096 Aug  9  2022 gtk-4.0

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```
drwxr-xr-x    4 root root  4096 Feb  8 11:30 zsh
drwxr-xr-x    2 root root  4096 Feb  8 10:21 gir-1.0
drwxr-xr-x    3 root root  4096 Feb  8 10:29 glib-2.0
drwxr-xr-x    2 root root  4096 Aug  9 2022 gnome-bluetooth-
drwxr-xr-x    3 root root  4096 Aug  9 2022 goa-1.0
drwxr-xr-x    4 root root  4096 Feb  8 10:21 gstreamer-1.0
drwxr-xr-x    3 root root  4096 Aug  9 2022 gtk-4.0
drwxr-xr-x    4 root root  4096 Feb  8 11:31 gtksourceview-2.
drwxr-xr-x    4 root root  4096 Feb  8 11:31 gtksourceview-3.
drwxr-xr-x    3 root root  4096 Aug  9 2022 gupnp-dlna-2.0
drwxr-xr-x    3 root root  4096 Aug  9 2022 org.gnome.Charac
drwxr-xr-x    2 root root  4096 Feb  8 10:30 drirc.d
amlarsen@CIS106:/usr/share$
```

Question 5

```
root@CIS106: /home/amlarsen/

amlarsen@CIS106:~$ pwd
/home/amlarsen
amlarsen@CIS106:~$ sudo -i
[sudo] password for amlarsen:
root@CIS106:~# cd /boot/
root@CIS106:/boot# cd /dev/
root@CIS106:/dev# cd /etc
root@CIS106:/etc# cd /home/amlarsen/
root@CIS106:/home/amlarsen# cd Downloads/
root@CIS106:/home/amlarsen/Downloads#

root@CIS106:/home/amlarsen/Downloads# cd /media/proc/
-bash: cd: /media/proc/: No such file or directory
root@CIS106:/home/amlarsen/Downloads# cd /media/
root@CIS106:/media# cd /usr/share/themes/Adwaita
root@CIS106:/usr/share/themes/Adwaita# cd /home/amlarsen/Documents/
root@CIS106:/home/amlarsen/Documents#
```