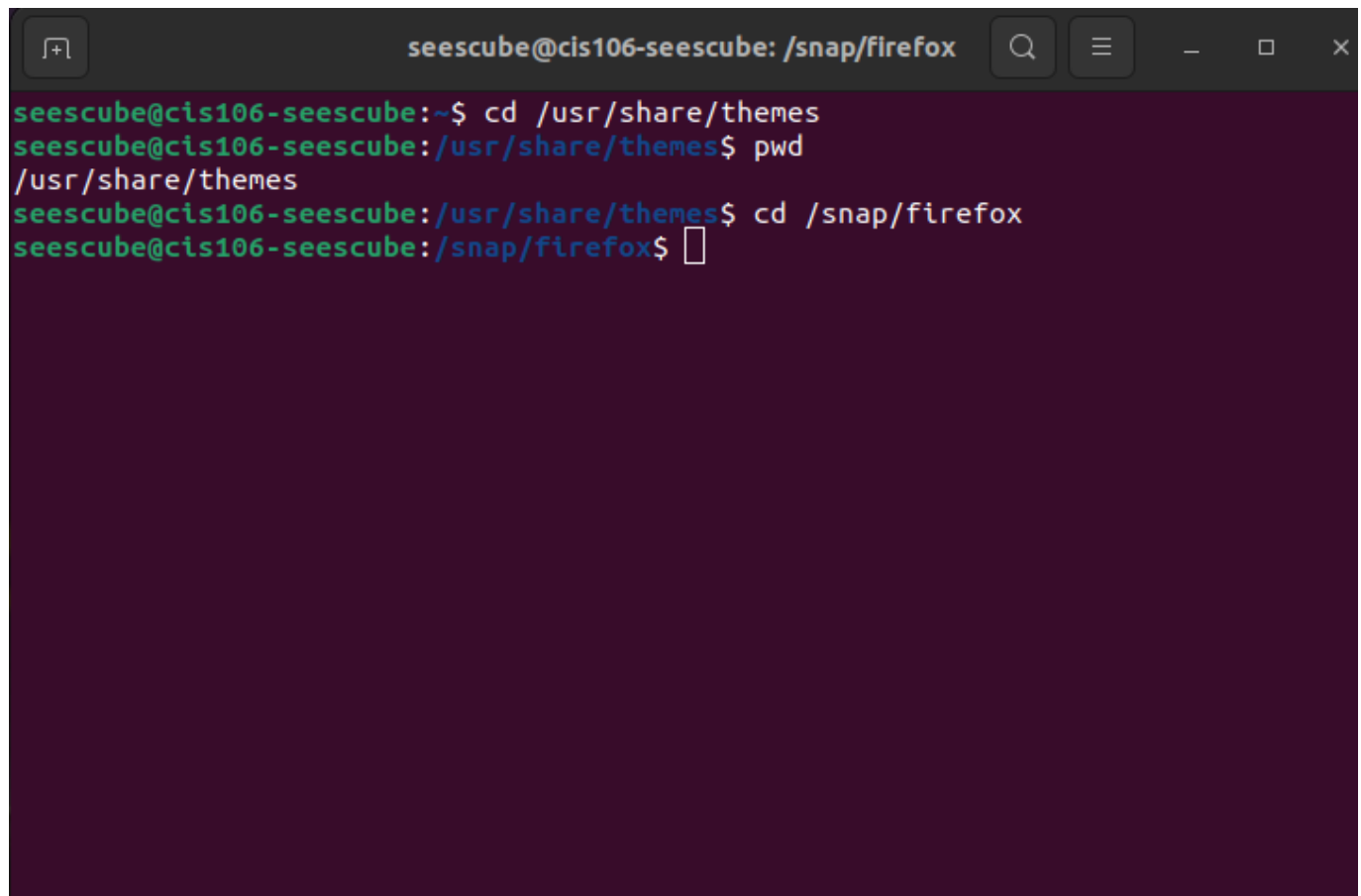


Lab 4: Linux File System

Question 1: Navigation

A terminal window with a dark background and light green text. The window title bar shows 'seescube@cis106-seescube: /snap/firefox' and standard window controls. The terminal content shows a sequence of commands: 'cd /usr/share/themes', 'pwd' (outputting '/usr/share/themes'), and 'cd /snap/firefox'. The prompt changes from '~\$' to '/usr/share/themes\$' and finally to '/snap/firefox\$' after the last command.

```
seescube@cis106-seescube:~$ cd /usr/share/themes
seescube@cis106-seescube:/usr/share/themes$ pwd
/usr/share/themes
seescube@cis106-seescube:/usr/share/themes$ cd /snap/firefox
seescube@cis106-seescube:/snap/firefox$
```

Absolute path with cd and pwd commands.

```
seescube@cis106-seescube: ~/Documents
seescube@cis106-seescube:~$ cd Downloads/
seescube@cis106-seescube:~/Downloads$ cd ../../
seescube@cis106-seescube:/home$ cd seescube/Documents/
seescube@cis106-seescube:~/Documents$
```

Relative path with cd and pwd commands.

Question 2: ls Command

```
seescube@cis106-seescube:/usr/share$ ls /home/seescube/lab4files/
countries.json  document.docx  helloWorld.c  sample.xls  Ubuntu.pdf
csvfile.csv    globe.avi      Linux.pdf     Tux.png     website.html
seescube@cis106-seescube:/usr/share$ cd ~/lab4files/
```

Listing files through absolute path.

```
seescube@cis106-seescube:~/lab4files$ ls -l -h --sort=size
total 6.5M
-rw-rw-r-- 1 seescube seescube 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 seescube seescube 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 seescube seescube 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 seescube seescube 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 seescube seescube 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 seescube seescube 135K Feb 22 2022 website.html
-rw-rw-r-- 1 seescube seescube 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 seescube seescube 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 seescube seescube 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 seescube seescube 76 Feb 22 2022 helloWorld.c
```

Long list

sorted by size.

```
seescube@cis106-seescube:~/lab4files$ ls -l -Gg -h -i --sort=size
total 6.5M
1844637 -rw-rw-r-- 1 2.5M Feb 22 2022 Linux.pdf
1844639 -rw-rw-r-- 1 2.1M Feb 22 2022 Ubuntu.pdf
1844642 -rw-rw-r-- 1 747K Feb 22 2022 document.docx
1844643 -rw-rw-r-- 1 726K Feb 22 2022 globe.avi
1844641 -rw-rw-r-- 1 278K Feb 22 2022 csvfile.csv
1844646 -rw-rw-r-- 1 135K Feb 22 2022 website.html
1844638 -rw-rw-r-- 1 42K Feb 22 2022 Tux.png
1844640 -rw-rw-r-- 1 20K Feb 22 2022 countries.json
1844645 -rw-rw-r-- 1 8.5K Feb 22 2022 sample.xls
1844644 -rw-rw-r-- 1 76 Feb 22 2022 helloWorld.c
seescube@cis106-seescube:~/lab4files$
```

Long

list sorted by size, users and groups omitted, inode number displayed.

Question 3: Tree and Exa

Tree Exercises

```
seescube@cis106-seescube:/etc$ tree /home/seescube/lab4files/
/home/seescube/lab4files/
├── countries.json
├── csvfile.csv
├── document.docx
├── globe.avi
├── helloWorld.c
├── Linux.pdf
├── sample.xls
├── Tux.png
├── Ubuntu.pdf
└── website.html

0 directories, 10 files
seescube@cis106-seescube:/etc$
```

```
-- options processing terminator.
seescube@cis106-seescube:~/Downloads$ tree --sort mtime /home/seescube/lab4files/
/home/seescube/lab4files/
├── Linux.pdf
├── Tux.png
├── Ubuntu.pdf
├── sample.xls
├── globe.avi
├── document.docx
├── csvfile.csv
├── countries.json
├── website.html
└── helloWorld.c

0 directories, 10 files
seescube@cis106-seescube:~/Downloads$
```

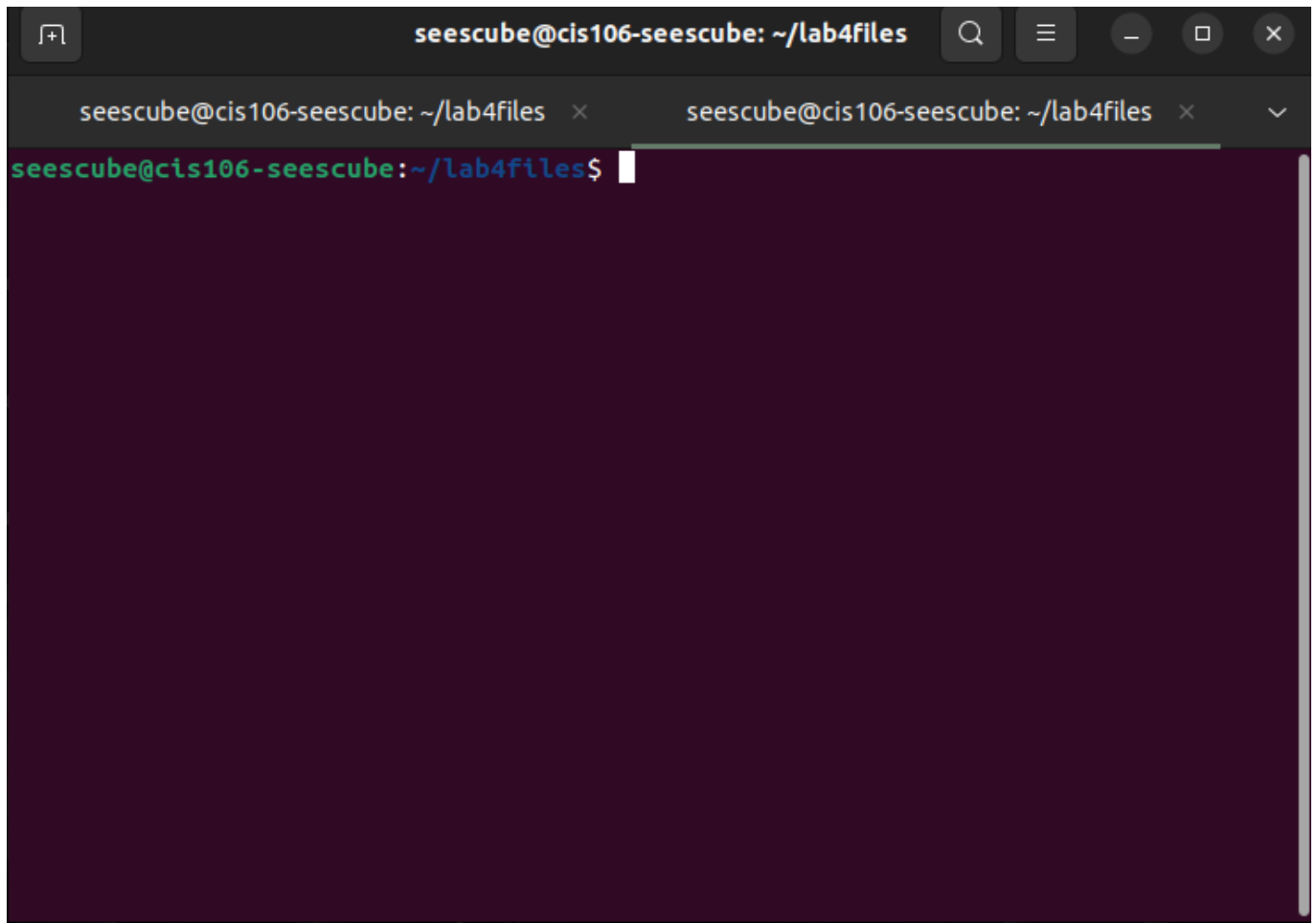
```
seescube@cis106-seescube:~/Downloads$ tree -h -f -p
[drwxr-xr-x 4.0K] .
├── [-rw-rw-r-- 218K] ./ChaosTitansSiegeofTerra.png
├── [-rw-rw-r-- 94M] ./code_1.75.1-1675893397_amd64.deb
├── [-rw-rw-r-- 31M] ./FiraCode.zip
├── [-rw-rw-r-- 28M] ./FiraMono.zip
├── [-rw-rw-r-- 8.7M] ./InconsolataGo.zip
├── [-rw-rw-r-- 26M] ./Inconsolata.zip
├── [-rw-rw-r-- 653M] ./Iosevka.zip
├── [-rw-rw-r-- 145M] ./JetBrainsMono.zip
├── [-rw-rw-r-- 904K] ./lab2.zip
├── [-rw-rw-r-- 3.3M] ./lab4files.zip
├── [-rw-rw-r-- 13M] ./Lekton.zip
├── [-rw-rw-r-- 691K] ./liberation-mono.zip
├── [-rw-rw-r-- 14M] ./Monofur.zip
├── [-rw-rw-r-- 18M] ./Monoid.zip
├── [-rw-rw-r-- 17M] ./Mononoki.zip
└── [-rw-rw-r-- 17M] ./SpaceMono.zip
```

Exa Exercises

```
seescube@cis106-seescube:~/lab4files$ exa -l -h
Permissions Size User Date Modified Name
.rw-rw-r-- 20k seescube 22 Feb 2022 countries.json
.rw-rw-r-- 284k seescube 22 Feb 2022 csvfile.csv
.rw-rw-r-- 764k seescube 22 Feb 2022 document.docx
.rw-rw-r-- 742k seescube 22 Feb 2022 globe.avi
.rw-rw-r-- 76 seescube 22 Feb 2022 helloWorld.c
.rw-rw-r-- 2.6M seescube 22 Feb 2022 Linux.pdf
.rw-rw-r-- 8.7k seescube 22 Feb 2022 sample.xls
.rw-rw-r-- 43k seescube 22 Feb 2022 Tux.png
.rw-rw-r-- 2.1M seescube 22 Feb 2022 Ubuntu.pdf
.rw-rw-r-- 137k seescube 22 Feb 2022 website.html
seescube@cis106-seescube:~/lab4files$
```

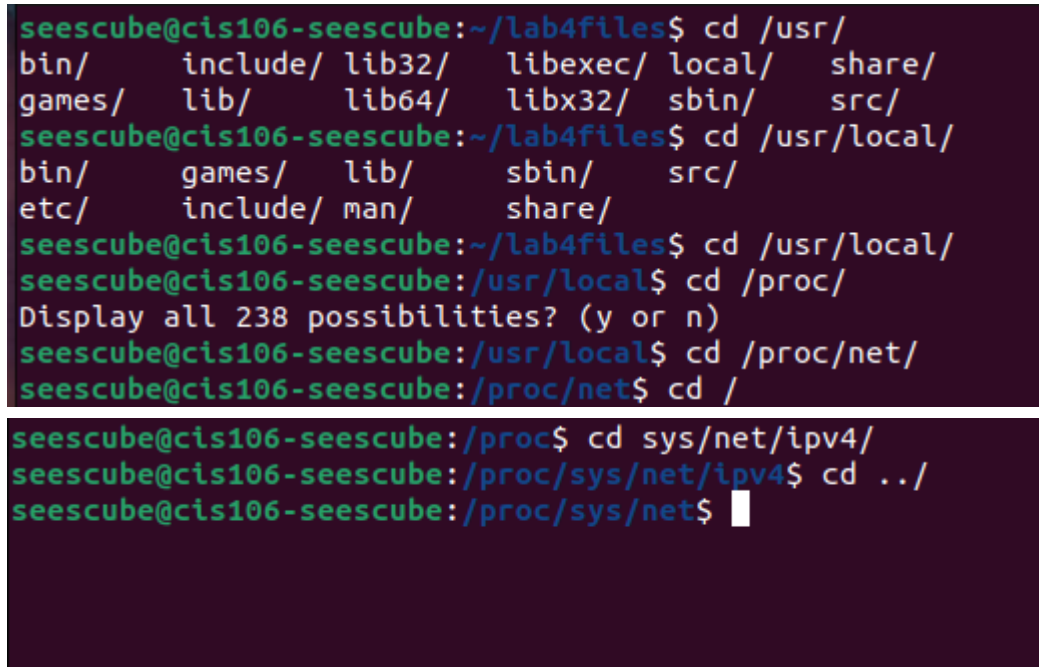
```
seescube@cis106-seescube:~/lab4files$ exa -l -h
Permissions Size User Date Modified Name
.rw-rw-r-- 20k seescube 22 Feb 2022 countries.json
.rw-rw-r-- 284k seescube 22 Feb 2022 csvfile.csv
.rw-rw-r-- 764k seescube 22 Feb 2022 document.docx
.rw-rw-r-- 742k seescube 22 Feb 2022 globe.avi
.rw-rw-r-- 76 seescube 22 Feb 2022 helloWorld.c
.rw-rw-r-- 2.6M seescube 22 Feb 2022 Linux.pdf
.rw-rw-r-- 8.7k seescube 22 Feb 2022 sample.xls
.rw-rw-r-- 43k seescube 22 Feb 2022 Tux.png
.rw-rw-r-- 2.1M seescube 22 Feb 2022 Ubuntu.pdf
.rw-rw-r-- 137k seescube 22 Feb 2022 website.html
seescube@cis106-seescube:~/lab4files$
```

Question 4: Challenge 1



A terminal window with a dark purple background. The title bar shows 'seescube@cis106-seescube: ~/lab4files'. There are two tabs open, both with the same title. The prompt is 'seescube@cis106-seescube:~/lab4files\$' followed by a cursor.

Started a new terminal after doing Q2. Current location is still in lab4files.



```
seescube@cis106-seescube:~/lab4files$ cd /usr/  
bin/      include/ lib32/    libexec/  local/    share/  
games/    lib/      lib64/    libx32/   sbin/     src/  
seescube@cis106-seescube:~/lab4files$ cd /usr/local/  
bin/      games/    lib/      sbin/     src/  
etc/      include/ man/      share/  
seescube@cis106-seescube:~/lab4files$ cd /usr/local/  
seescube@cis106-seescube:/usr/local$ cd /proc/  
Display all 238 possibilities? (y or n)  
seescube@cis106-seescube:/usr/local$ cd /proc/net/  
seescube@cis106-seescube:/proc/net$ cd /  
seescube@cis106-seescube:/proc$ cd sys/net/ipv4/  
seescube@cis106-seescube:/proc/sys/net/ipv4$ cd ../  
seescube@cis106-seescube:/proc/sys/net$
```

```
seescube@cis106-seescube:~$ cd /proc/sys/net/
seescube@cis106-seescube:/proc/sys/net$ ls /usr/share/backgrounds/
Blue_flower_by_Elena_Stravoravdi.jpg
canvas_by_roytanck.jpg
Cherry_Tree_in_Lakones_by_elenastravoravdi.jpg
contest
DSC2943_by_kcpru.jpg
Jammy-Jellyfish_WP_4096x2304_Grey.png
jj_dark_by_Hiking93.jpg
jj_light_by_Hiking93.jpg
Mirror_by_Uday_Nakade.jpg
Optical_Fibers_in_Dark_by_Elena_Stravoravdi.jpg
ubuntu2_by_arman1992.jpg
ubuntu_by_arman1992.jpg
ubuntu-default-greyscale-wallpaper.png
warty-final-ubuntu.png
seescube@cis106-seescube:/proc/sys/net$
```

Listing files located in a different directory.

```
seescube@cis106-seescube:~$ ls /home/seescube/Cis-106/
cheatSheets  labs  README.md  weekReports
```

List of files in the

Cis-106 folder.

```
seescube@cis106-seescube:/home$ ls /home/seescube/Downloads/
ChaosTitansSiegeofTerra.png      Inconsolata.zip      Lekton.zip
code_1.75.1-1675893397_amd64.deb  Iosevka.zip          Monofur.zip
FiraCode.zip                    JetBrainsMono.zip    Monoid.zip
FiraMono.zip                    lab2.zip             Mononoki.zip
InconsolataGo.zip               lab4files.zip        SpaceMono.zip
```

List of

files in Downloads.

```
seescube@cis106-seescube:/dev/disk/by-id$ ls -l -a
total 0
drwxr-xr-x 2 root root 140 Mar  6 12:13 .
drwxr-xr-x 7 root root 140 Mar  6 12:13 ..
lrwxrwxrwx 1 root root   9 Mar  6 12:13 ata-VBOX_CD-ROM_VB2-01700376 -> ../../sr0
lrwxrwxrwx 1 root root   9 Mar  6 12:13 ata-VBOX_HARDDISK_VB8c98ab95-aff5081b -> ../../sd
lrwxrwxrwx 1 root root  10 Mar  6 12:13 ata-VBOX_HARDDISK_VB8c98ab95-aff5081b-part1 -> ..
../sda1
lrwxrwxrwx 1 root root  10 Mar  6 12:13 ata-VBOX_HARDDISK_VB8c98ab95-aff5081b-part2 -> ..
../sda2
lrwxrwxrwx 1 root root  10 Mar  6 12:13 ata-VBOX_HARDDISK_VB8c98ab95-aff5081b-part3 -> ..
../sda3
seescube@cis106-seescube:/dev/disk/by-id$
```

```
seescube@cis106-seescube:/usr/share/themes$ ls -a -t
..          Yaru-dark-hdpi      Yaru-prussiangreen-dark  Yaru-viridian-dark
.           Yaru-dark-xdpi    Yaru-purple              Yaru-xdpi
Yaru        Yaru-hdpi        Yaru-purple-dark         Default
Yaru-bark   Yaru-magenta      Yaru-red                 Emacs
Yaru-bark-dark Yaru-magenta-dark Yaru-red-dark            Raleigh
Yaru-blue   Yaru-olive        Yaru-sage                Adwaita
Yaru-blue-dark Yaru-olive-dark   Yaru-sage-dark           Adwaita-dark
Yaru-dark   Yaru-prussiangreen Yaru-viridian            HighContrast
seescube@cis106-seescube:/usr/share/themes$
```

Listing themes sorted by time.

```
seescube@cis106-seescube:/usr/share$ ls -X
accountsservice      gnome-shell           pam-configs
aclocal              gnome-software        perl
acpi-support         gnome-system-monitor  perl5
adduser              gnome-todo            perl-openssl-defaults
aisleriot            gnome-tweaks          pipewire
alacarte             gnome-video-effects  pixmaps
alsa                 gnupg                 pkgconfig
alsa-base            grilo-plugins         plymouth
alsa-card-profile    groff                 pnm2ppa
appdata              grub                  pocketsphinx
app-info             grub-gfxpayload-lists polkit-1
applications         gst-plugins-base      poppler
appport             gtk-doc               ppd
apps                 gtk-engines           ppp
apturl               gtksourceview-4       publicsuffix
aspell               guile                 pulseaudio
avahi                gupnp-av              pyshared
backgrounds          gvfs                  python3
base-files           help                  python-apt
base-passwd          help-langpack         qt5
bash-completion      hplip                 readline
binfmts              hunspell              remmina
branding              hwddata               rhythmbox
brltty               hyphen                rig
bug                  i18n                  rsync
build-essential      ibus                  rsyslog
ca-certificates      ibus-table            rubygems-integration
caffeine-indicator   icons                 rygel
catdoc               ImageMagick-6         samba
cmake                im-config             seahorse
code                 indicator-application  secureboot
cogl                 indicator-power        sensible-utils
color                indicators             session-migration
colord               info                  sgml
common-licenses      initramfs-tools       sgml-base
consolefonts          installed-tests        sgml-data
console-setup         ipp-usb               snmp
consoletrans          iptables              software-properties
cowsay               iso-codes              solid
```

List of everything in the usr/share directory sorted by extension. This is only a portion of the files shown.

Question 5: Challenge 2


```
seescube@cis106-seescube:~$ cd /
seescube@cis106-seescube:/$ cd
bin/      etc/      lib64/    mnt/      run/      sys/
boot/     home/     libx32/   opt/      sbin/     tmp/
cdrom/    lib/      lost+found/ proc/     snap/     usr/
dev/      lib32/    media/    root/     srv/      var/
seescube@cis106-seescube:/$ cd home/seescube/
.cache/   Desktop/  Downloads/ lab4files/ Pictures/  snap/     Videos/
Cis-106/  Documents/ Fonts/     .local/   .pki/     .ssh/     .vscode/
.config/  .dotnet/  .gnupg/    Music/    Public/   Templates/
seescube@cis106-seescube:/$ cd home/seescube/Downloads/
seescube@cis106-seescube:~/Downloads$ pwd
/home/seescube/Downloads
seescube@cis106-seescube:~/Downloads$
```

From root to the Downloads folder, one directory at a time.

```
seescube@cis106-seescube:/usr/share/themes/Adwaita$ cd ../../
seescube@cis106-seescube:/usr/share$ cd ../../
seescube@cis106-seescube:/$ cd home/seescube/
seescube@cis106-seescube:~$ cd
.cache/   Desktop/  Downloads/ lab4files/ Pictures/  snap/     Videos/
Cis-106/  Documents/ Fonts/     .local/   .pki/     .ssh/     .vscode/
.config/  .dotnet/  .gnupg/    Music/    Public/   Templates/
seescube@cis106-seescube:~$ cd Documents/
seescube@cis106-seescube:~/Documents$
```

Navigating between directories.