

Lab 4 Submission

Question 1

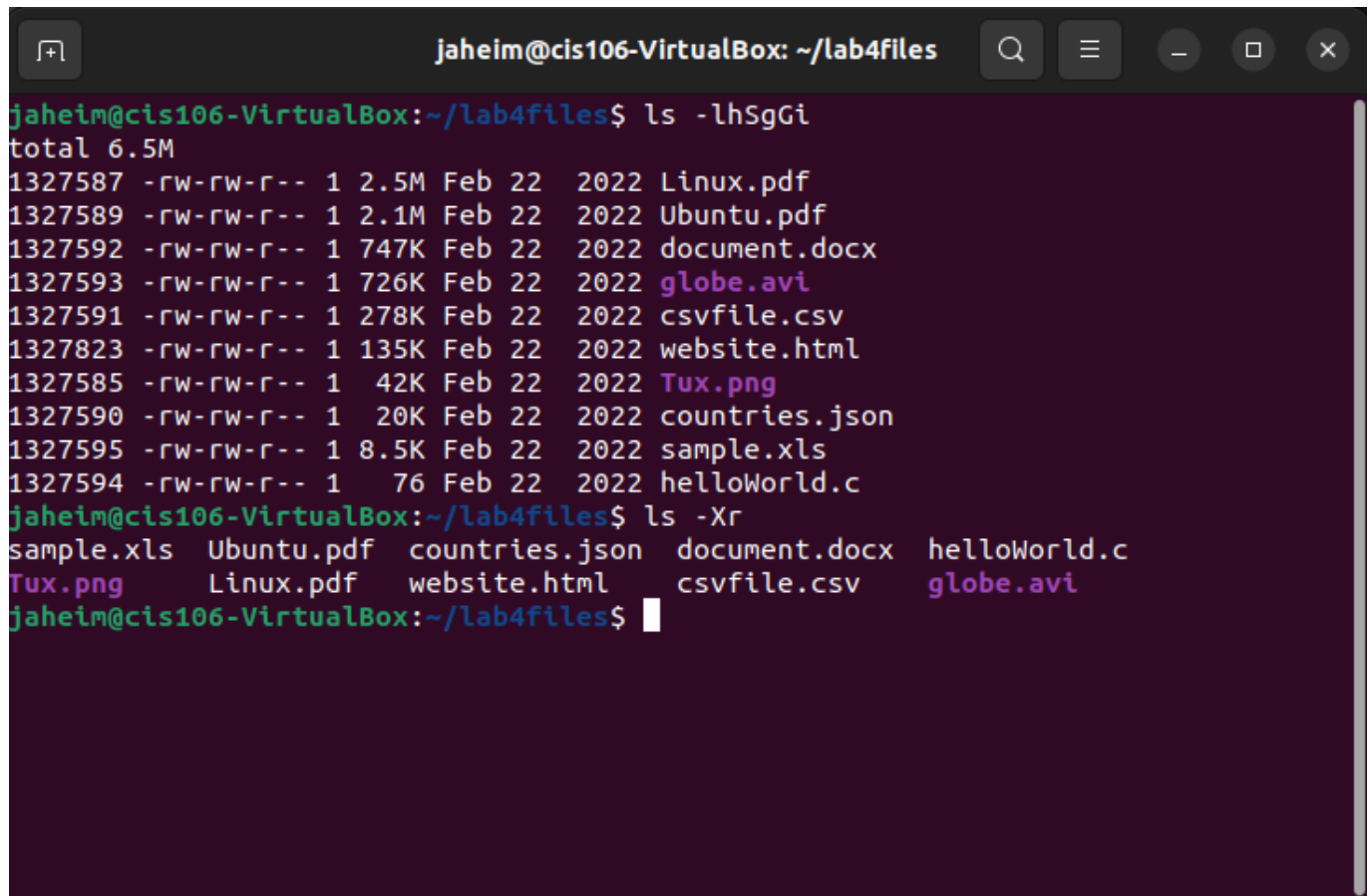
```
jaheim@cis106-VirtualBox: /snap/firefox
jaheim@cis106-VirtualBox:~$ pwd
/home/jaheim
jaheim@cis106-VirtualBox:~$ cd /usr/share/themes/
jaheim@cis106-VirtualBox:/usr/share/themes$ pwd
/usr/share/themes
jaheim@cis106-VirtualBox:/usr/share/themes$ cd /
jaheim@cis106-VirtualBox:/$ cd /snap/firefox/
jaheim@cis106-VirtualBox:/snap/firefox$
```

```
jaheim@cis106-VirtualBox: ~/Documents
jaheim@cis106-VirtualBox:~$ cd Downloads/
jaheim@cis106-VirtualBox:~/Downloads$ cd ../../
jaheim@cis106-VirtualBox:/home$ pwd
/home
jaheim@cis106-VirtualBox:/home$ cd ~/Documents/
jaheim@cis106-VirtualBox:~/Documents$
```

Question 2

```
jaheim@cis106-VirtualBox: ~/lab4files
jaheim@cis106-VirtualBox:~/lab4files$ ls -l
total 6580
-rw-rw-r-- 1 jaheim jaheim 20471 Feb 22 2022 countries.json
-rw-rw-r-- 1 jaheim jaheim 284042 Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 jaheim jaheim 764176 Feb 22 2022 document.docx
-rw-rw-r-- 1 jaheim jaheim 742478 Feb 22 2022 globe.avi
-rw-rw-r-- 1 jaheim jaheim 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 jaheim jaheim 2600138 Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 jaheim jaheim 8704 Feb 22 2022 sample.xls
-rw-rw-r-- 1 jaheim jaheim 42777 Feb 22 2022 Tux.png
-rw-rw-r-- 1 jaheim jaheim 2114053 Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 jaheim jaheim 137453 Feb 22 2022 website.html
jaheim@cis106-VirtualBox:~/lab4files$
```

```
jaheim@cis106-VirtualBox: ~/lab4files
total 6580
-rw-rw-r-- 1 jaheim jaheim 20471 Feb 22 2022 countries.json
-rw-rw-r-- 1 jaheim jaheim 284042 Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 jaheim jaheim 764176 Feb 22 2022 document.docx
-rw-rw-r-- 1 jaheim jaheim 742478 Feb 22 2022 globe.avi
-rw-rw-r-- 1 jaheim jaheim 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 jaheim jaheim 2600138 Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 jaheim jaheim 8704 Feb 22 2022 sample.xls
-rw-rw-r-- 1 jaheim jaheim 42777 Feb 22 2022 Tux.png
-rw-rw-r-- 1 jaheim jaheim 2114053 Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 jaheim jaheim 137453 Feb 22 2022 website.html
jaheim@cis106-VirtualBox:~/lab4files$ ls -lhs
total 6.5M
-rw-rw-r-- 1 jaheim jaheim 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 jaheim jaheim 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 jaheim jaheim 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 jaheim jaheim 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 jaheim jaheim 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 jaheim jaheim 135K Feb 22 2022 website.html
-rw-rw-r-- 1 jaheim jaheim 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 jaheim jaheim 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 jaheim jaheim 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 jaheim jaheim 76 Feb 22 2022 helloWorld.c
jaheim@cis106-VirtualBox:~/lab4files$
```



A terminal window titled "jaheim@cis106-VirtualBox: ~/lab4files" with standard window controls. The terminal shows the output of two commands. The first command, `ls -lhSgGi`, lists files with detailed permissions, sizes, and timestamps. The second command, `ls -Xr`, lists the same files in a cross-sorted order. The files listed are: `Linux.pdf`, `Ubuntu.pdf`, `document.docx`, `globe.avi`, `csvfile.csv`, `website.html`, `Tux.png`, `countries.json`, `sample.xls`, and `helloWorld.c`.

```
jaheim@cis106-VirtualBox: ~/lab4files$ ls -lhSgGi
total 6.5M
1327587 -rw-rw-r-- 1 2.5M Feb 22 2022 Linux.pdf
1327589 -rw-rw-r-- 1 2.1M Feb 22 2022 Ubuntu.pdf
1327592 -rw-rw-r-- 1 747K Feb 22 2022 document.docx
1327593 -rw-rw-r-- 1 726K Feb 22 2022 globe.avi
1327591 -rw-rw-r-- 1 278K Feb 22 2022 csvfile.csv
1327823 -rw-rw-r-- 1 135K Feb 22 2022 website.html
1327585 -rw-rw-r-- 1 42K Feb 22 2022 Tux.png
1327590 -rw-rw-r-- 1 20K Feb 22 2022 countries.json
1327595 -rw-rw-r-- 1 8.5K Feb 22 2022 sample.xls
1327594 -rw-rw-r-- 1 76 Feb 22 2022 helloWorld.c
jaheim@cis106-VirtualBox:~/lab4files$ ls -Xr
sample.xls  Ubuntu.pdf  countries.json  document.docx  helloWorld.c
Tux.png    Linux.pdf   website.html   csvfile.csv    globe.avi
jaheim@cis106-VirtualBox:~/lab4files$
```

Question 3

```

jaheim@cis106-VirtualBox: ~/Downloads

jaheim@cis106-VirtualBox:~$ cd /etc/
jaheim@cis106-VirtualBox:/etc$ tree ~/lab4files/
/home/jaheim/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
jaheim@cis106-VirtualBox:/etc$ cd ~/Downloads/
jaheim@cis106-VirtualBox:~/Downloads$ tree -fph ../lab4files/
[drwxrwxr-x 4.0K] ../lab4files
├── [-rw-rw-r-- 20K] ../lab4files/countries.json
├── [-rw-rw-r-- 277K] ../lab4files/csvfile.csv
├── [-rw-rw-r-- 746K] ../lab4files/document.docx
├── [-rw-rw-r-- 725K] ../lab4files/globe.avi
├── [-rw-rw-r-- 76] ../lab4files/helloWorld.c
├── [-rw-rw-r-- 2.5M] ../lab4files/Linux.pdf
├── [-rw-rw-r-- 8.5K] ../lab4files/sample.xls
├── [-rw-rw-r-- 42K] ../lab4files/Tux.png
├── [-rw-rw-r-- 2.0M] ../lab4files/Ubuntu.pdf
└── [-rw-rw-r-- 134K] ../lab4files/website.html

0 directories, 10 files
jaheim@cis106-VirtualBox:~/Downloads$

```

```

jaheim@cis106-VirtualBox: ~/Downloads

jaheim@cis106-VirtualBox:~/Downloads$ tree -tug ../lab4files/
[jaheim jaheim] ../lab4files/
├── [jaheim jaheim] Linux.pdf
├── [jaheim jaheim] Tux.png
├── [jaheim jaheim] Ubuntu.pdf
├── [jaheim jaheim] sample.xls
├── [jaheim jaheim] globe.avi
├── [jaheim jaheim] document.docx
├── [jaheim jaheim] csvfile.csv
├── [jaheim jaheim] countries.json
├── [jaheim jaheim] website.html
└── [jaheim jaheim] helloWorld.c

0 directories, 10 files
jaheim@cis106-VirtualBox:~/Downloads$ exa --help
Usage:
  exa [options] [files...]

META OPTIONS
  -?, --help          show list of command-line options
  -v, --version       show version of exa

DISPLAY OPTIONS
  -1, --oneline       display one entry per line
  -l, --long          display extended file metadata as a table
  -G, --grid          display entries as a grid (default)
  -x, --across        sort the grid across, rather than downwards
  -R, --recurse       recurse into directories
  -T, --tree          recurse into directories as a tree
  -F, --classify      display type indicator by file names
  --colorful=WHEN    when to use terminal colours (always, auto, never)

```

```

jaheim@cis106-VirtualBox: ~/Downloads
jaheim@cis106-VirtualBox:~/Downloads$ exa ~/lab4files/ -l
.rw-rw-r-- 20k jaheim 22 Feb 14:16 countries.json
.rw-rw-r-- 284k jaheim 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k jaheim 22 Feb 14:13 document.docx
.rw-rw-r-- 742k jaheim 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 jaheim 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M jaheim 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k jaheim 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k jaheim 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M jaheim 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k jaheim 22 Feb 14:16 website.html
jaheim@cis106-VirtualBox:~/Downloads$ exa ~/lab4files/ -lh
Permissions Size User Date Modified Name
.rw-rw-r-- 20k jaheim 22 Feb 14:16 countries.json
.rw-rw-r-- 284k jaheim 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k jaheim 22 Feb 14:13 document.docx
.rw-rw-r-- 742k jaheim 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 jaheim 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M jaheim 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k jaheim 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k jaheim 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M jaheim 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k jaheim 22 Feb 14:16 website.html
jaheim@cis106-VirtualBox:~/Downloads$

```

```

jaheim@cis106-VirtualBox: ~/Downloads
.rw-rw-r-- 76 jaheim 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M jaheim 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k jaheim 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k jaheim 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M jaheim 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k jaheim 22 Feb 14:16 website.html
jaheim@cis106-VirtualBox:~/Downloads$ exa ~/lab4files/ -lh
Permissions Size User Date Modified Name
.rw-rw-r-- 20k jaheim 22 Feb 14:16 countries.json
.rw-rw-r-- 284k jaheim 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k jaheim 22 Feb 14:13 document.docx
.rw-rw-r-- 742k jaheim 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 jaheim 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M jaheim 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k jaheim 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k jaheim 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M jaheim 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k jaheim 22 Feb 14:16 website.html
jaheim@cis106-VirtualBox:~/Downloads$ exa ~/lab4files/ -lh --no-user -U
Permissions Size Date Created Name
.rw-rw-r-- 20k 22 Oct 20:16 countries.json
.rw-rw-r-- 284k 22 Oct 20:16 csvfile.csv
.rw-rw-r-- 764k 22 Oct 20:16 document.docx
.rw-rw-r-- 742k 22 Oct 20:16 globe.avi
.rw-rw-r-- 76 22 Oct 20:16 helloWorld.c
.rw-rw-r-- 2.6M 22 Oct 20:16 Linux.pdf
.rw-rw-r-- 8.7k 22 Oct 20:16 sample.xls
.rw-rw-r-- 43k 22 Oct 20:16 Tux.png
.rw-rw-r-- 2.1M 22 Oct 20:16 Ubuntu.pdf
.rw-rw-r-- 137k 22 Oct 20:16 website.html
jaheim@cis106-VirtualBox:~/Downloads$

```

Question 4

```

Oct 22 21:10
jaheim@cis106-VirtualBox: /dev/disk/by-id

jaheim@cis106-VirtualBox: ~/Downloads
jaheim@cis106-VirtualBox: ~/Downloads$ pwd
/home/jaheim/Downloads
jaheim@cis106-VirtualBox: ~/Downloads$ cd /usr/share/icons/default/
jaheim@cis106-VirtualBox: /usr/share/icons/default$ cd /proc/sys/net/ipv4
jaheim@cis106-VirtualBox: /proc/sys/net/ipv4$ cd -
/usr/share/icons/default
jaheim@cis106-VirtualBox: /usr/share/icons/default$ ls /usr/share/backgrounds/
blue_flower_by_Elena_Stravoravdi.jpg
canvas_by_roytanck.jpg
cherry_Tree_in_Lakones_by_elenastravoravdi.jpg
cintest
DSC2943_by_kcpru.jpg
danny-Jellyfish_MP_4096x2304_Grey.png
dj_dark_by_Htking93.jpg
dLight_by_Htking93.jpg
Error_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
jaheim@cis106-VirtualBox: /usr/share/icons/default$ ls ~/cis106f22/
Cheat Sheets  Final project  Labs  Week Reports  wr4.md  wr4.pdf
jaheim@cis106-VirtualBox: /usr/share/icons/default$ cd -
jaheim@cis106-VirtualBox: ~$ ls /home/jaheim/Downloads/
2022-10-12_17-51.png                                Oswald
Documents                                              Oswald.zip
lab4files.zip                                         soft_linkmyfile.txt
Linux Workshop Ubuntu Software Installation cheat sheet.png  wallpaper.jpg
MyWallpapers
jaheim@cis106-VirtualBox: ~$ cd /dev/disk/by-id/
jaheim@cis106-VirtualBox: /dev/disk/by-id$ ls -al ~
total 136
drwxr-xr-x 23 jaheim jaheim 4096 Oct 22 20:34 .
drwxr-xr-x 3 root root 4096 Sep 28 16:30 ..
-rw-r--r-- 1 jaheim jaheim 6021 Oct 22 20:00 .bash_history
-rw-r--r-- 1 jaheim jaheim 220 Sep 28 16:30 .bash_logout
-rw-r--r-- 1 jaheim jaheim 3771 Sep 28 16:30 .bashrc
-rwxr-xr-x 19 jaheim jaheim 4096 Oct 5 21:35 .cache
drwxrwxr-x 7 jaheim jaheim 4096 Oct 22 20:58 cis106f22
-rw-rw-r-- 1 jaheim jaheim 3520 Oct 5 15:02 .cis106.png
-rwx----- 21 jaheim jaheim 4096 Oct 22 20:47 .config
drwxr-xr-x 3 jaheim jaheim 4096 Oct 22 17:59 Desktop
drwxr-xr-x 2 jaheim jaheim 4096 Oct 19 18:24 Documents
drwxr-xr-x 4 jaheim jaheim 4096 Oct 22 20:15 Downloads
-rw-rw-r-- 1 jaheim jaheim 48 Oct 2 21:22 gitcommands.txt
-rw-rw-r-- 1 jaheim jaheim 64 Oct 2 21:03 .gitconfig
-rwx----- 2 jaheim jaheim 4096 Oct 5 14:48 .gnupg
-rwxr-xr-x 1 jaheim jaheim 349 Oct 2 20:48 installprogramme.sh

Oct 22 21:23
jaheim@cis106-VirtualBox: /dev/disk/by-id

jaheim@cis106-VirtualBox: ~/Downloads
jaheim@cis106-VirtualBox: /dev/disk/by-id
jaheim@cis106-VirtualBox: /dev/disk/by-id$ ls -lt /usr/share/themes/
total 120
drwxr-xr-x 7 root root 4096 Aug 9 07:50 Varu
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-bark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-bark-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-blue
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-blue-dark
drwxr-xr-x 7 root root 4096 Aug 9 07:50 Varu-dark
drwxr-xr-x 3 root root 4096 Aug 9 07:50 Varu-dark-hdpi
drwxr-xr-x 3 root root 4096 Aug 9 07:50 Varu-dark-xhdpi
drwxr-xr-x 3 root root 4096 Aug 9 07:50 Varu-hdpi
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-magenta
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-magenta-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-olive
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-olive-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-prussiangreen
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-prussiangreen-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-purple
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-purple-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-red
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-red-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-sage
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-sage-dark
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-viridian
drwxr-xr-x 5 root root 4096 Aug 9 07:50 Varu-viridian-dark
drwxr-xr-x 3 root root 4096 Aug 9 07:50 Varu-xhdpi
drwxr-xr-x 4 root root 4096 Aug 9 07:49 Default
drwxr-xr-x 4 root root 4096 Aug 9 07:49 Emacs
drwxr-xr-x 3 root root 4096 Aug 9 07:49 Raleigh
drwxr-xr-x 4 root root 4096 Aug 9 07:49 Adwaita
drwxr-xr-x 4 root root 4096 Aug 9 07:49 Adwaita-dark
drwxr-xr-x 4 root root 4096 Aug 9 07:49 HighContrast
jaheim@cis106-VirtualBox: /dev/disk/by-id$ ls -lX /usr/share/
total 1404
drwxr-xr-x 4 root root 4096 Oct 5 21:34 accountsservice
drwxr-xr-x 2 root root 4096 Oct 2 20:19 aclocal
drwxr-xr-x 2 root root 4096 Aug 9 07:49 acpi-support
drwxr-xr-x 2 root root 4096 Aug 9 07:48 adduser
drwxr-xr-x 6 root root 4096 Aug 9 07:49 alacarte
drwxr-xr-x 3 root root 4096 Oct 5 21:34 alacarte
drwxr-xr-x 11 root root 4096 Aug 9 07:49 alsa
drwxr-xr-x 2 root root 4096 Aug 9 07:49 alsa-base
drwxr-xr-x 3 root root 4096 Aug 9 07:49 alsa-card-profile
drwxr-xr-x 2 root root 4096 Aug 9 07:50 appdata
drwxr-xr-x 3 root root 4096 Oct 2 20:50 app-info
drwxr-xr-x 2 root root 16384 Oct 5 22:35 applications
drwxr-xr-x 6 root root 4096 Aug 9 07:49 appport
drwxr-xr-x 4 root root 4096 Oct 2 20:21 apps
drwxr-xr-x 3 root root 4096 Aug 9 07:49 appstream

```