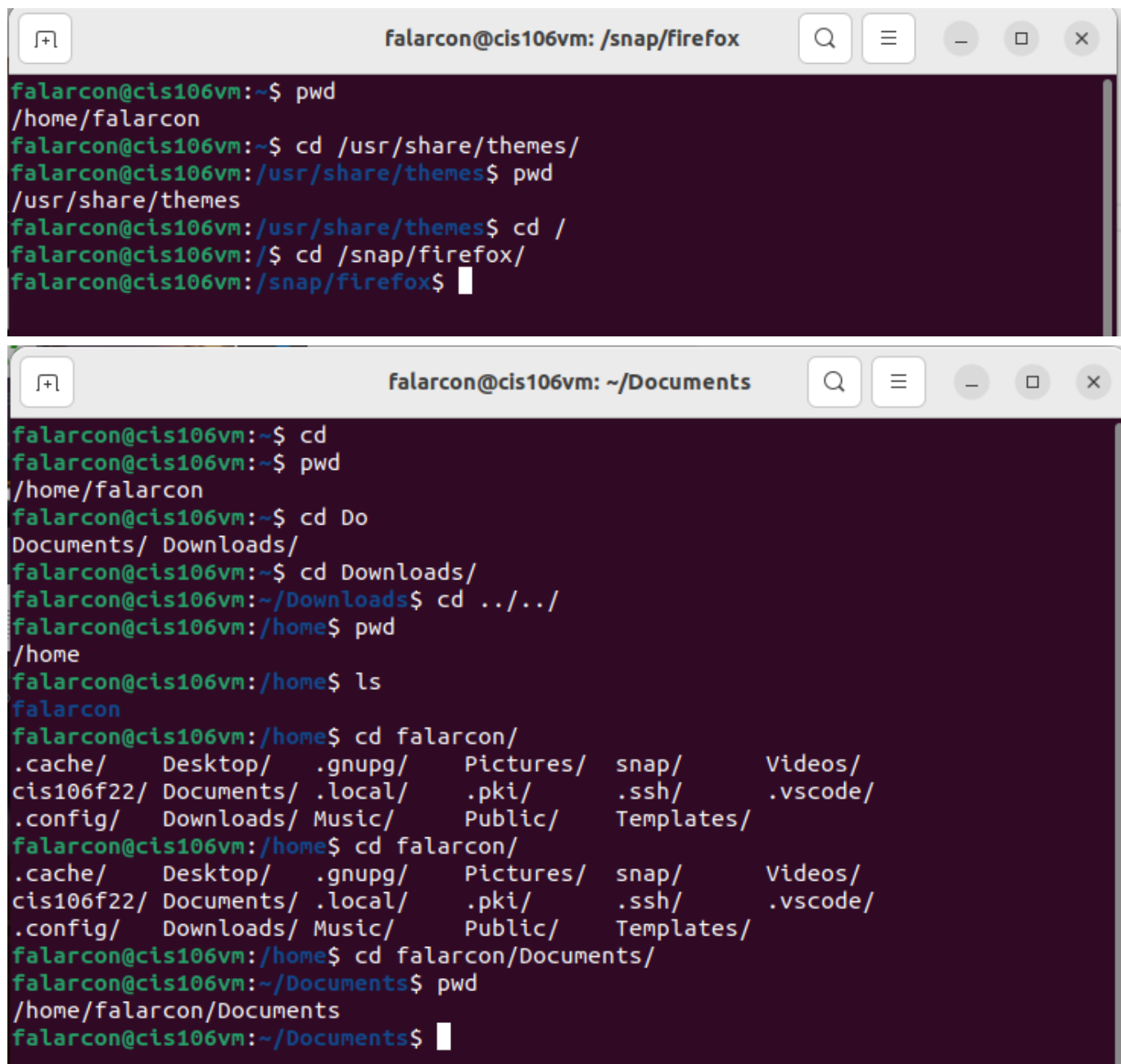


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Semester: Fall 22
Course: cis106

Lab 4 Submission

Question 1



The image shows two terminal windows from a virtual machine named 'falarcon@cis106vm'.

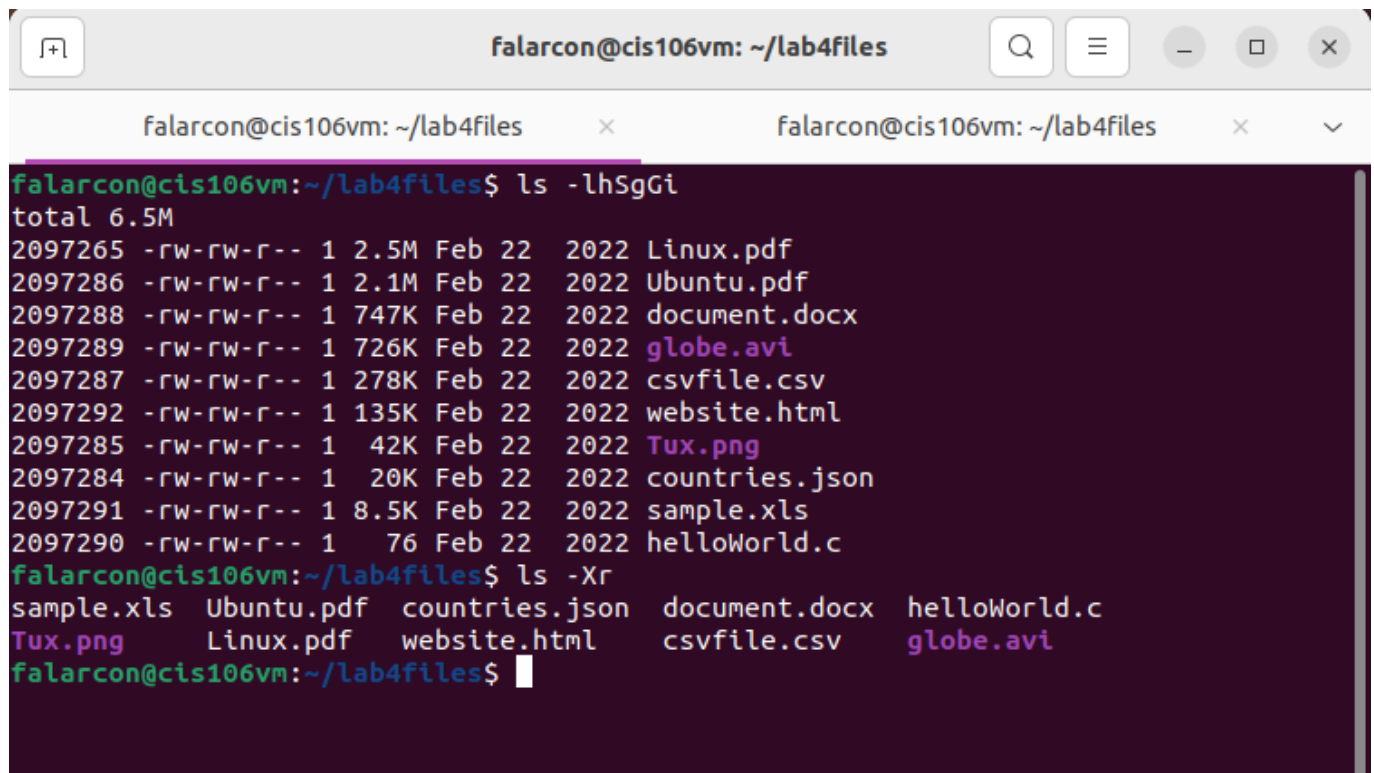
The first terminal window has the title 'falarcon@cis106vm: /snap/firefox'. The command history is as follows:
falarcon@cis106vm:~\$ pwd
/home/falarcon
falarcon@cis106vm:~\$ cd /usr/share/themes/
falarcon@cis106vm:/usr/share/themes\$ pwd
/usr/share/themes
falarcon@cis106vm:/usr/share/themes\$ cd /
falarcon@cis106vm:/\$ cd /snap/firefox/
falarcon@cis106vm:/snap/firefox\$

The second terminal window has the title 'falarcon@cis106vm: ~/Documents'. The command history is as follows:
falarcon@cis106vm:~\$ cd
falarcon@cis106vm:~\$ pwd
/home/falarcon
falarcon@cis106vm:~\$ cd Do
Documents/ Downloads/
falarcon@cis106vm:~\$ cd Downloads/
falarcon@cis106vm:~/Downloads\$ cd ../../
falarcon@cis106vm:/home\$ pwd
/home
falarcon@cis106vm:/home\$ ls
falarcon
falarcon@cis106vm:/home\$ cd falarcon/
.cache/ Desktop/ .gnupg/ Pictures/ snap/ Videos/
cis106f22/ Documents/ .local/ .pki/ .ssh/ .vscode/
.config/ Downloads/ Music/ Public/ Templates/
falarcon@cis106vm:/home\$ cd falarcon/
.cache/ Desktop/ .gnupg/ Pictures/ snap/ Videos/
cis106f22/ Documents/ .local/ .pki/ .ssh/ .vscode/
.config/ Downloads/ Music/ Public/ Templates/
falarcon@cis106vm:/home\$ cd falarcon/Documents/
falarcon@cis106vm:~/Documents\$ pwd
/home/falarcon/Documents
falarcon@cis106vm:~/Documents\$

Question 2

```
falarcon@cis106vm: ~/lab4files
falarcon@cis106vm: ~/lab4files
falarcon@cis106vm: ~/lab4files
.cache/ Desktop/ .gnupg/ Pictures/ snap/ Videos/
cis106f22/ Documents/ .local/ .pki/ .ssh/ .vscode/
.config/ Downloads/ Music/ Public/ Templates/
falarcon@cis106vm:/home$ cd falarcon/Documents/
falarcon@cis106vm:~/Documents$ pwd
/home/falarcon/Documents
falarcon@cis106vm:~/Documents$ cd /usr/share/
falarcon@cis106vm:/usr/share$ ls /home/falarcon/lab4files/
countries.json document.docx helloWorld.c sample.xls Ubuntu.pdf
csvfile.csv globe.avi Linux.pdf Tux.png website.html
falarcon@cis106vm:/usr/share$ cd /home/falarcon/lab4files/
falarcon@cis106vm:~/lab4files$ ls -l
total 6580
-rw-rw-r-- 1 falarcon falarcon 20471 Feb 22 2022 countries.json
-rw-rw-r-- 1 falarcon falarcon 284042 Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 falarcon falarcon 764176 Feb 22 2022 document.docx
-rw-rw-r-- 1 falarcon falarcon 742478 Feb 22 2022 globe.avi
-rw-rw-r-- 1 falarcon falarcon 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 falarcon falarcon 2600138 Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 falarcon falarcon 8704 Feb 22 2022 sample.xls
-rw-rw-r-- 1 falarcon falarcon 42777 Feb 22 2022 Tux.png
-rw-rw-r-- 1 falarcon falarcon 2114053 Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 falarcon falarcon 137453 Feb 22 2022 website.html
falarcon@cis106vm:~/lab4files$

falarcon@cis106vm: ~/lab4files
falarcon@cis106vm: ~/lab4files
falarcon@cis106vm: ~/lab4files$ ls -lh
total 6.5M
-rw-rw-r-- 1 falarcon falarcon 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 falarcon falarcon 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 falarcon falarcon 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 falarcon falarcon 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 falarcon falarcon 76 Feb 22 2022 helloWorld.c
-rw-rw-r-- 1 falarcon falarcon 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 falarcon falarcon 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 falarcon falarcon 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 falarcon falarcon 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 falarcon falarcon 135K Feb 22 2022 website.html
falarcon@cis106vm:~/lab4files$ ls -lhs
total 6.5M
-rw-rw-r-- 1 falarcon falarcon 2.5M Feb 22 2022 Linux.pdf
-rw-rw-r-- 1 falarcon falarcon 2.1M Feb 22 2022 Ubuntu.pdf
-rw-rw-r-- 1 falarcon falarcon 747K Feb 22 2022 document.docx
-rw-rw-r-- 1 falarcon falarcon 726K Feb 22 2022 globe.avi
-rw-rw-r-- 1 falarcon falarcon 278K Feb 22 2022 csvfile.csv
-rw-rw-r-- 1 falarcon falarcon 135K Feb 22 2022 website.html
-rw-rw-r-- 1 falarcon falarcon 42K Feb 22 2022 Tux.png
-rw-rw-r-- 1 falarcon falarcon 20K Feb 22 2022 countries.json
-rw-rw-r-- 1 falarcon falarcon 8.5K Feb 22 2022 sample.xls
-rw-rw-r-- 1 falarcon falarcon 76 Feb 22 2022 helloWorld.c
falarcon@cis106vm:~/lab4files$
```



A terminal window titled 'falarcon@cis106vm: ~/lab4files' with standard window controls. It shows two tabs, both with the same title. The terminal content displays the output of two 'ls' commands. The first command, 'ls -lhSgGi', lists files sorted by size in descending order. The second command, 'ls -Xr', lists files sorted by extension in reverse alphabetical order.

```
falarcon@cis106vm:~/lab4files$ ls -lhSgGi
total 6.5M
2097265 -rw-rw-r-- 1 2.5M Feb 22 2022 Linux.pdf
2097286 -rw-rw-r-- 1 2.1M Feb 22 2022 Ubuntu.pdf
2097288 -rw-rw-r-- 1 747K Feb 22 2022 document.docx
2097289 -rw-rw-r-- 1 726K Feb 22 2022 globe.avi
2097287 -rw-rw-r-- 1 278K Feb 22 2022 csvfile.csv
2097292 -rw-rw-r-- 1 135K Feb 22 2022 website.html
2097285 -rw-rw-r-- 1 42K Feb 22 2022 Tux.png
2097284 -rw-rw-r-- 1 20K Feb 22 2022 countries.json
2097291 -rw-rw-r-- 1 8.5K Feb 22 2022 sample.xls
2097290 -rw-rw-r-- 1 76 Feb 22 2022 helloWorld.c
falarcon@cis106vm:~/lab4files$ ls -Xr
sample.xls  Ubuntu.pdf  countries.json  document.docx  helloWorld.c
Tux.png    Linux.pdf   website.html   csvfile.csv    globe.avi
falarcon@cis106vm:~/lab4files$
```

Question 3

```
falarcon@cis106vm: ~/Downloads
falarcon@cis106vm:~/Downloads$ cd /etc/
falarcon@cis106vm:/etc$ tree ~/lab4files/
/home/falarcon/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
falarcon@cis106vm:/etc$ cd ~/Downloads/
falarcon@cis106vm:~/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

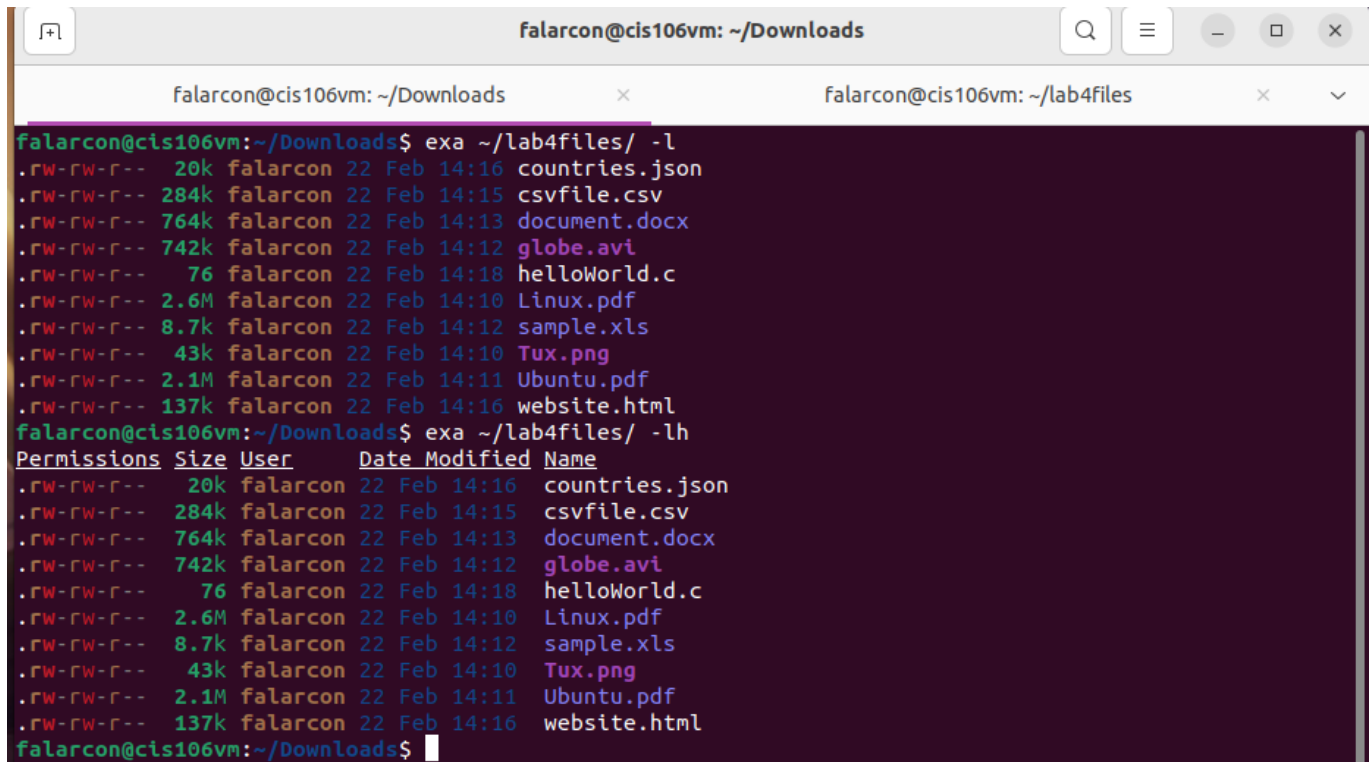
0 directories, 10 files
falarcon@cis106vm:~/Downloads$
```

```
falarcon@cis106vm: ~/Downloads
falarcon@cis106vm:~/Downloads$ tree -tug ../lab4files/
[falarcon falarcon] ../lab4files/
├── [falarcon falarcon] Linux.pdf
├── [falarcon falarcon] Tux.png
├── [falarcon falarcon] Ubuntu.pdf
├── [falarcon falarcon] sample.xls
├── [falarcon falarcon] globe.avi
├── [falarcon falarcon] document.docx
├── [falarcon falarcon] csvfile.csv
├── [falarcon falarcon] countries.json
├── [falarcon falarcon] website.html
└── [falarcon falarcon] helloWorld.c

0 directories, 10 files
falarcon@cis106vm:~/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
  --colo[u]r=WHEN      when to use terminal colours (always, auto, never)
  --colo[u]r-scale      highlight levels of file sizes distinctly
  --icons              display icons
  --no-icons           don't display icons (always overrides --icons)
```

A terminal window titled 'falarcon@cis106vm: ~/Downloads' is shown. The terminal displays the output of the command 'exa ~/lab4files/ -l', which lists files with their permissions, sizes, owners, and modification dates. The files listed are: countries.json (20k), csvfile.csv (284k), document.docx (764k), globe.avi (742k), helloWorld.c (76), Linux.pdf (2.6M), sample.xls (8.7k), Tux.png (43k), Ubuntu.pdf (2.1M), and website.html (137k). The terminal then shows the command 'exa ~/lab4files/ -lh', which lists the same files with their permissions, sizes, owners, and modification dates in a more detailed format. The files listed are: countries.json (20k), csvfile.csv (284k), document.docx (764k), globe.avi (742k), helloWorld.c (76), Linux.pdf (2.6M), sample.xls (8.7k), Tux.png (43k), Ubuntu.pdf (2.1M), and website.html (137k). The terminal prompt is 'falarcon@cis106vm:~/Downloads\$'.

```
falarcon@cis106vm:~/Downloads$ exa ~/lab4files/ -l
.rw-rw-r-- 20k falarcon 22 Feb 14:16 countries.json
.rw-rw-r-- 284k falarcon 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k falarcon 22 Feb 14:13 document.docx
.rw-rw-r-- 742k falarcon 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 falarcon 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M falarcon 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k falarcon 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k falarcon 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M falarcon 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k falarcon 22 Feb 14:16 website.html
falarcon@cis106vm:~/Downloads$ exa ~/lab4files/ -lh
Permissions Size User Date Modified Name
.rw-rw-r-- 20k falarcon 22 Feb 14:16 countries.json
.rw-rw-r-- 284k falarcon 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k falarcon 22 Feb 14:13 document.docx
.rw-rw-r-- 742k falarcon 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 falarcon 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M falarcon 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k falarcon 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k falarcon 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M falarcon 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k falarcon 22 Feb 14:16 website.html
falarcon@cis106vm:~/Downloads$
```

```
falarcon@cis106vm: ~/Downloads
```

falarcon@cis106vm: ~/Downloads x falarcon@cis106vm: ~/lab4files x

```
falarcon@cis106vm:~/Downloads$ exa ~/lab4files/ -l
.rw-rw-r-- 20k falarcon 22 Feb 14:16 countries.json
.rw-rw-r-- 284k falarcon 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k falarcon 22 Feb 14:13 document.docx
.rw-rw-r-- 742k falarcon 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 falarcon 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M falarcon 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k falarcon 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k falarcon 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M falarcon 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k falarcon 22 Feb 14:16 website.html
falarcon@cis106vm:~/Downloads$ exa ~/lab4files/ -lh
Permissions Size User Date Modified Name
.rw-rw-r-- 20k falarcon 22 Feb 14:16 countries.json
.rw-rw-r-- 284k falarcon 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k falarcon 22 Feb 14:13 document.docx
.rw-rw-r-- 742k falarcon 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 falarcon 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M falarcon 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k falarcon 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k falarcon 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M falarcon 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k falarcon 22 Feb 14:16 website.html
falarcon@cis106vm:~/Downloads$ exa ~/lab4files/ -lh --no-user -U
Permissions Size Date Created Name
.rw-rw-r-- 20k 15 Oct 22:29 countries.json
.rw-rw-r-- 284k 15 Oct 22:29 csvfile.csv
.rw-rw-r-- 764k 15 Oct 22:29 document.docx
.rw-rw-r-- 742k 15 Oct 22:29 globe.avi
.rw-rw-r-- 76 15 Oct 22:29 helloWorld.c
.rw-rw-r-- 2.6M 15 Oct 22:29 Linux.pdf
.rw-rw-r-- 8.7k 15 Oct 22:29 sample.xls
.rw-rw-r-- 43k 15 Oct 22:29 Tux.png
.rw-rw-r-- 2.1M 15 Oct 22:29 Ubuntu.pdf
.rw-rw-r-- 137k 15 Oct 22:29 website.html
falarcon@cis106vm:~/Downloads$
```

Question 4

Applications Places

falarcon@cis106vm: /home

```
falarcon@cis106vm:~$ pwd
/home/falarcon
falarcon@cis106vm:~$ cd ../../usr/share/icons/default/
falarcon@cis106vm:/usr/share/icons/default$ cd ../../../../proc/ipv4
bash: cd: ../../../../proc/ipv4: No such file or directory
falarcon@cis106vm:/usr/share/icons/default$ cd ../../proc/ipv4
bash: cd: ../../proc/ipv4: No such file or directory
falarcon@cis106vm:/usr/share/icons/default$ cd ../../proc/ipv4
bash: cd: ../../proc/ipv4: No such file or directory
falarcon@cis106vm:/usr/share/icons/default$ cd ../../
falarcon@cis106vm:/usr/share$ cd ../
falarcon@cis106vm:/usr$ cd /proc/
falarcon@cis106vm:/proc$ cd /ipv4/
bash: cd: /ipv4/: No such file or directory
falarcon@cis106vm:/proc$ cd ipv4/
bash: cd: ipv4/: No such file or directory
falarcon@cis106vm:/proc$ cd ipv4/
bash: cd: ipv4/: No such file or directory
falarcon@cis106vm:/proc$ cd /proc/ipv4
bash: cd: /proc/ipv4: No such file or directory
falarcon@cis106vm:/proc$ cd /proc/ipv4/
bash: cd: /proc/ipv4/: No such file or directory
falarcon@cis106vm:/proc$ cd /proc/sys/net/ipv4/
falarcon@cis106vm:/proc/sys/net/ipv4$ ../
bash: ../: Is a directory
falarcon@cis106vm:/proc/sys/net/ipv4$ cd ../
falarcon@cis106vm:/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
OSC2943_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
falarcon@cis106vm:/proc/sys/net$ ls /home/falarcon/cis106f22/
cheatsheets  finalproject  labs  weekreports
falarcon@cis106vm:/proc/sys/net$ cd
falarcon@cis106vm:~$ cd /home
falarcon@cis106vm:/home$ ls /home
falarcon
falarcon@cis106vm:/home$ ls /falarcon/Downloads
ls: cannot access '/falarcon/Downloads': No such file or directory
falarcon@cis106vm:/home$ ls /home/falarcon/Downloads/
Lab4Files.zip 'Linux Workshop Ubuntu Software Installation cheat sheet.png' q3.png
'Linux Workshop Ubuntu Software Installation cheat sheet(1).png' q2.png q4.png
falarcon@cis106vm:/home$ cd /dev/by-id/
bash: cd: /dev/by-id/: No such file or directory
falarcon@cis106vm:/home$ cd /dev/by-id/
```