

# Lab 4 the Linux fs

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## Question 1

Table 1

Directory	Function
bin	directory contains binaries for use by all users.
dev	the location of special or device files.
etc	is where a Linux system's configuration files live.
home	directory for a particular user of the system and consists of individual files.
opt	reserved for the installation of add-on application software packages.
proc	is virtual file system created on fly when system boots.
srv	directory contains site-specific data served by your system running Red Hat.
usr	referred to as a process information pseudo-file system.

Table 2

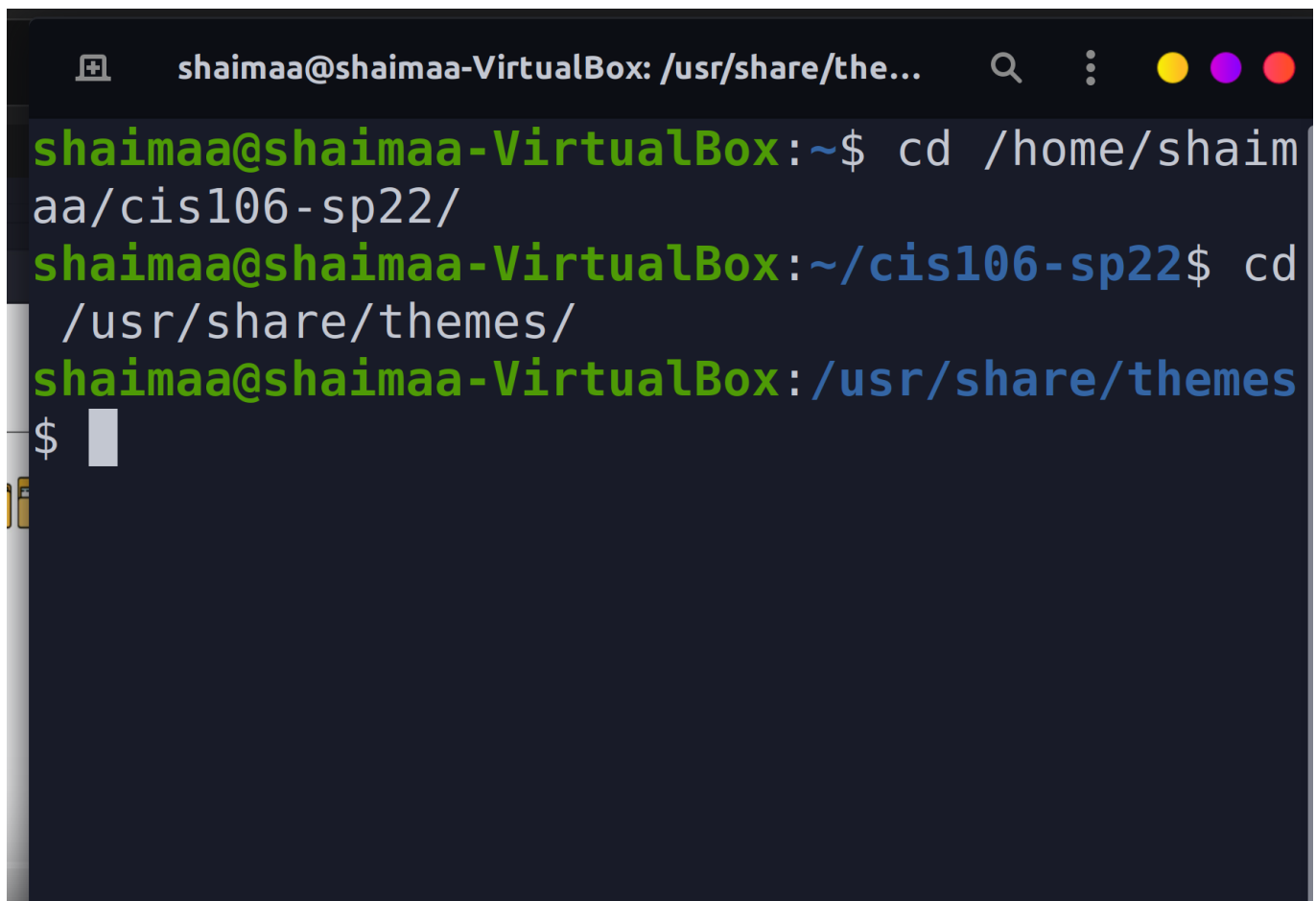
Command	What it does	Syntax	Example
pwd	displaying the current working directory	pwd	/home
cd	changing the current working directory	cd name/Documents/	~/Documents/\$
ls	displaying all files inside a given directory	-----	-----

## Screen shots



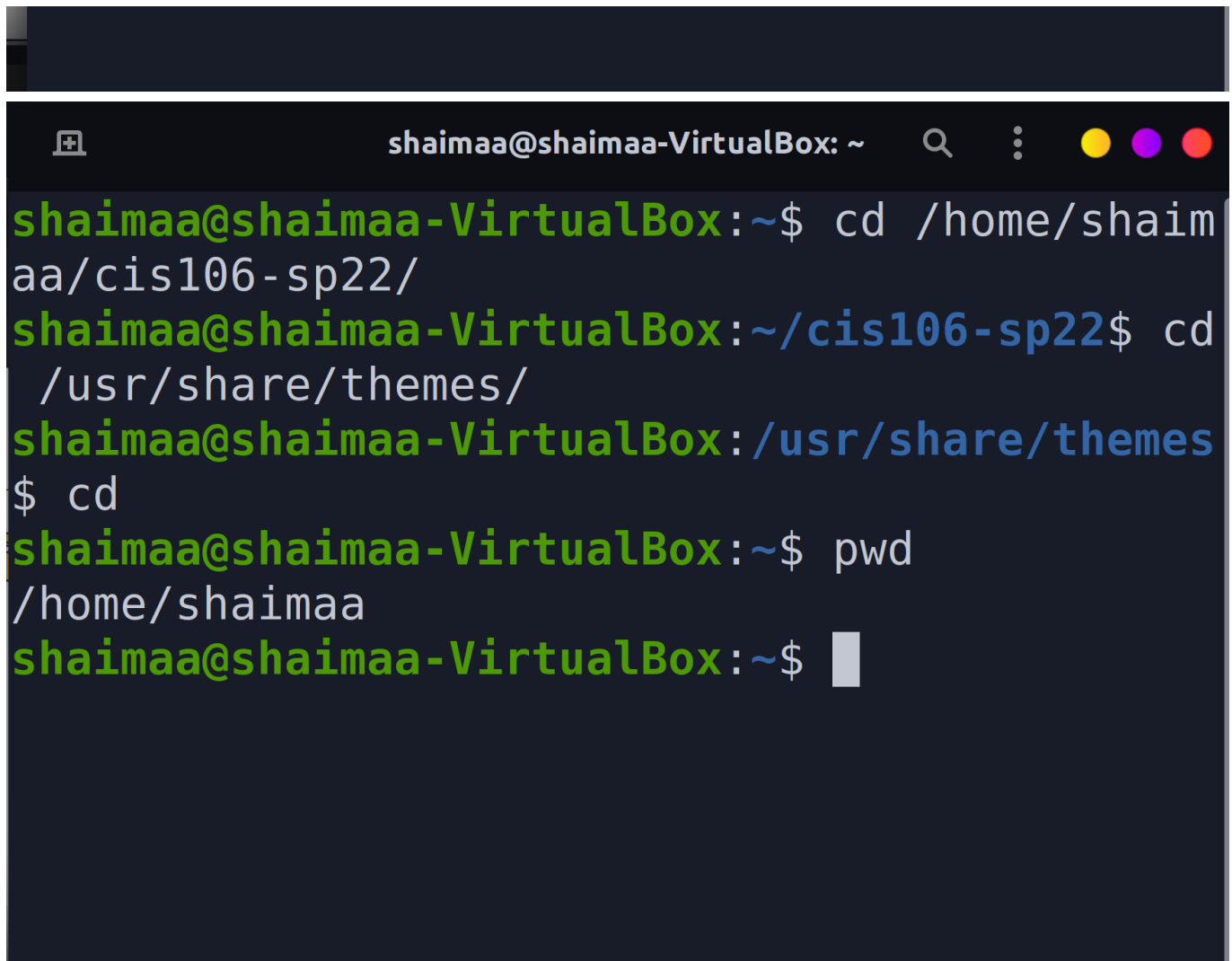
A terminal window titled "shaimaa@shaimaa-VirtualBox: ~/cis106-sp22". The prompt is "shaimaa@shaimaa-VirtualBox: ~\$". The user enters the command "cd /home/shaimaa/cis106-sp22/". The prompt changes to "shaimaa@shaimaa-VirtualBox: ~/cis106-sp22\$".

```
shaimaa@shaimaa-VirtualBox: ~$ cd /home/shaimaa/cis106-sp22/
shaimaa@shaimaa-VirtualBox: ~/cis106-sp22$
```

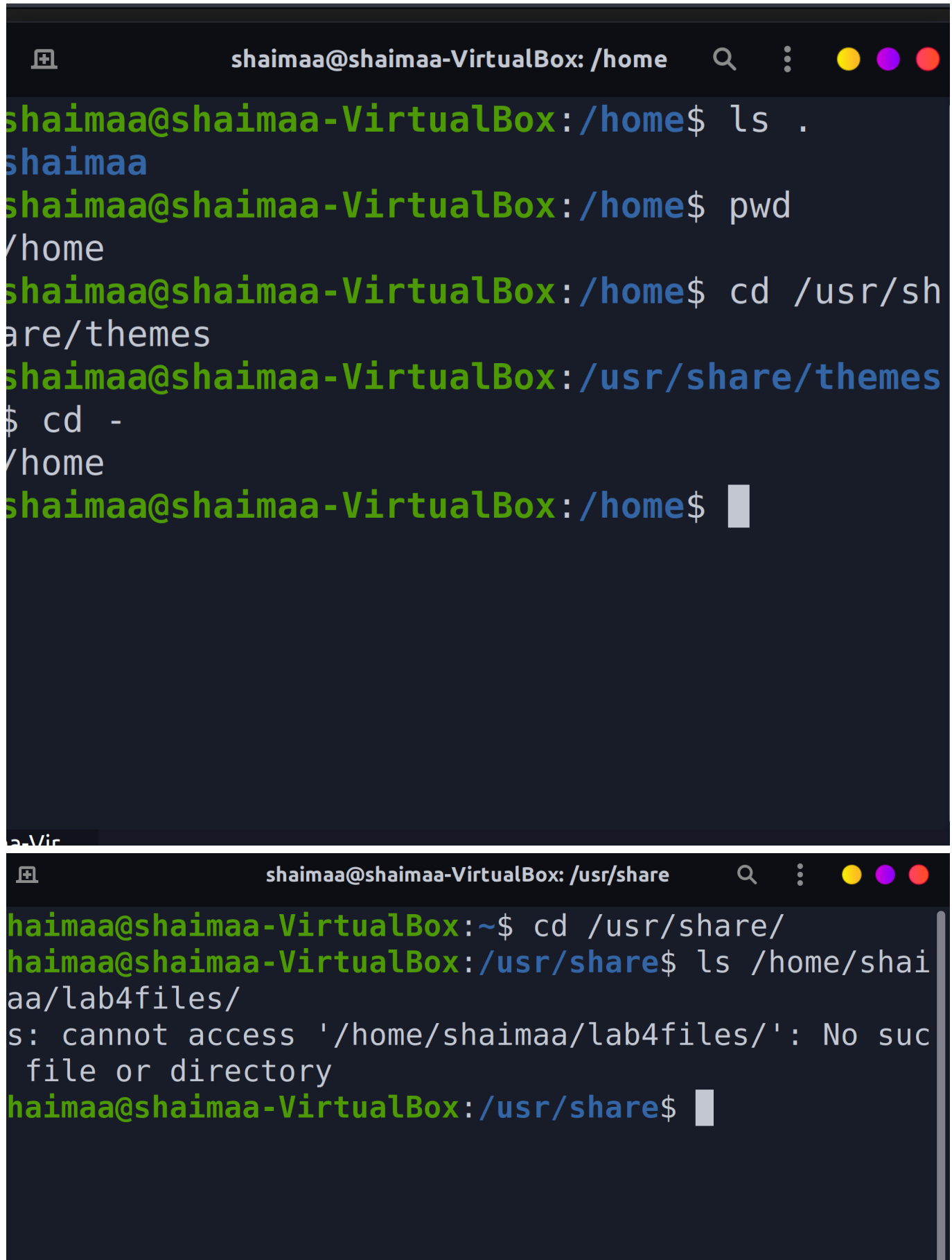


A terminal window titled "shaimaa@shaimaa-VirtualBox: /usr/share/the...". The prompt is "shaimaa@shaimaa-VirtualBox: ~\$". The user enters the command "cd /home/shaimaa/cis106-sp22/". The prompt changes to "shaimaa@shaimaa-VirtualBox: ~/cis106-sp22\$". The user enters the command "cd /usr/share/themes/". The prompt changes to "shaimaa@shaimaa-VirtualBox: /usr/share/themes\$".

```
shaimaa@shaimaa-VirtualBox: ~$ cd /home/shaimaa/cis106-sp22/
shaimaa@shaimaa-VirtualBox: ~/cis106-sp22$ cd /usr/share/themes/
shaimaa@shaimaa-VirtualBox: /usr/share/themes$
```



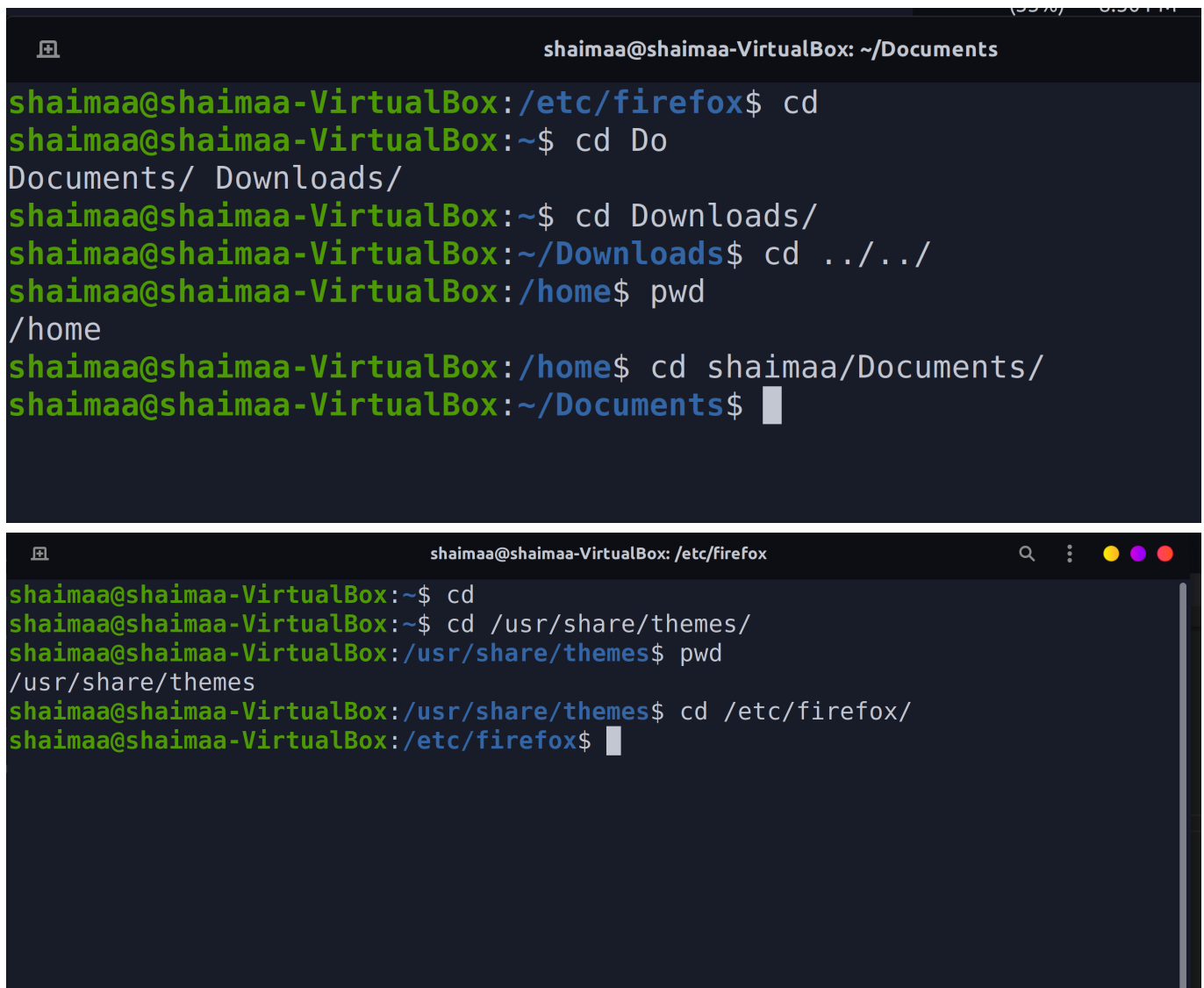
```
shaimaa@shaimaa-VirtualBox: ~  
shaimaa@shaimaa-VirtualBox:~$ cd /home/shaimaa/cis106-sp22/  
shaimaa@shaimaa-VirtualBox:~/cis106-sp22$ cd /usr/share/themes/  
shaimaa@shaimaa-VirtualBox:/usr/share/themes$ cd  
shaimaa@shaimaa-VirtualBox:~$ pwd  
/home/shaimaa  
shaimaa@shaimaa-VirtualBox:~$
```



```
shaimaa@shaimaa-VirtualBox: /home
shaimaa@shaimaa-VirtualBox: /home$ ls .
shaimaa
shaimaa@shaimaa-VirtualBox: /home$ pwd
/home
shaimaa@shaimaa-VirtualBox: /home$ cd /usr/share/themes
shaimaa@shaimaa-VirtualBox: /usr/share/themes
$ cd -
/home
shaimaa@shaimaa-VirtualBox: /home$

shaimaa@shaimaa-VirtualBox: /usr/share
shaimaa@shaimaa-VirtualBox: ~$ cd /usr/share/
shaimaa@shaimaa-VirtualBox: /usr/share$ ls /home/shaimaa/lab4files/
ls: cannot access '/home/shaimaa/lab4files/': No such file or directory
shaimaa@shaimaa-VirtualBox: /usr/share$
```

Question 2



The image contains two screenshots of a terminal window. The top screenshot shows a user named 'shaimaa' navigating through directories: from `/etc/firefox` to `~`, then to `Downloads/`, and finally to `~/Downloads`. The bottom screenshot shows the user navigating from `~/Downloads` to `~/Documents/`, then to `~/Documents/shaimaa/`, and finally to `~/Documents/shaimaa/Downloads/`.

```
shaimaa@shaimaa-VirtualBox: ~/Documents
shaimaa@shaimaa-VirtualBox: /etc/firefox$ cd
shaimaa@shaimaa-VirtualBox: ~$ cd Do
Documents/ Downloads/
shaimaa@shaimaa-VirtualBox: ~$ cd Downloads/
shaimaa@shaimaa-VirtualBox: ~/Downloads$ cd ../../
shaimaa@shaimaa-VirtualBox: /home$ pwd
/home
shaimaa@shaimaa-VirtualBox: /home$ cd shaimaa/Documents/
shaimaa@shaimaa-VirtualBox: ~/Documents$

shaimaa@shaimaa-VirtualBox: /etc/firefox
shaimaa@shaimaa-VirtualBox: ~$ cd
shaimaa@shaimaa-VirtualBox: ~$ cd /usr/share/themes/
shaimaa@shaimaa-VirtualBox: /usr/share/themes$ pwd
/usr/share/themes
shaimaa@shaimaa-VirtualBox: /usr/share/themes$ cd /etc/firefox/
shaimaa@shaimaa-VirtualBox: /etc/firefox$
```

### Question 3

```
shaimaa@shaimaa-VirtualBox: ~/lab4files
shaimaa@shaimaa-VirtualBox:~$ cd /usr/share/
shaimaa@shaimaa-VirtualBox:/usr/share$ ls/home/shaimaa/lab4files/
bash: ls/home/shaimaa/lab4files/: No such file or directory
shaimaa@shaimaa-VirtualBox:/usr/share$ ls /home/shaimaa/lab4files/
countries.json  document.docx  helloWorld.c  sample.xls  Ubuntu.pdf
csvfile.csv     globe.avi      Linux.pdf     Tux.png     website.html
shaimaa@shaimaa-VirtualBox:/usr/share$ cd ~/lab4files/
shaimaa@shaimaa-VirtualBox:~/lab4files$ ls -lh
total 6.5M
-rw-rw-r-- 1 shaimaa shaimaa 20K Feb 22 14:16 countries.json
-rw-rw-r-- 1 shaimaa shaimaa 278K Feb 22 14:15 csvfile.csv
-rw-rw-r-- 1 shaimaa shaimaa 747K Feb 22 14:13 document.docx
-rw-rw-r-- 1 shaimaa shaimaa 726K Feb 22 14:12 globe.avi
-rw-rw-r-- 1 shaimaa shaimaa 76 Feb 22 14:18 helloWorld.c
-rw-rw-r-- 1 shaimaa shaimaa 2.5M Feb 22 14:10 Linux.pdf
-rw-rw-r-- 1 shaimaa shaimaa 8.5K Feb 22 14:12 sample.xls
-rw-rw-r-- 1 shaimaa shaimaa 42K Feb 22 14:10 Tux.png
-rw-rw-r-- 1 shaimaa shaimaa 2.1M Feb 22 14:11 Ubuntu.pdf
-rw-rw-r-- 1 shaimaa shaimaa 135K Feb 22 14:16 website.html
shaimaa@shaimaa-VirtualBox:~/lab4files$ ls -lhs
```

```
shaimaa@shaimaa-VirtualBox: ~/lab4files
-rw-rw-r-- 1 shaimaa shaimaa 726K Feb 22 14:12 globe.avi
-rw-rw-r-- 1 shaimaa shaimaa 76 Feb 22 14:18 helloWorld.c
-rw-rw-r-- 1 shaimaa shaimaa 2.5M Feb 22 14:10 Linux.pdf
-rw-rw-r-- 1 shaimaa shaimaa 8.5K Feb 22 14:12 sample.xls
-rw-rw-r-- 1 shaimaa shaimaa 42K Feb 22 14:10 Tux.png
-rw-rw-r-- 1 shaimaa shaimaa 2.1M Feb 22 14:11 Ubuntu.pdf
-rw-rw-r-- 1 shaimaa shaimaa 135K Feb 22 14:16 website.html
shaimaa@shaimaa-VirtualBox:~/lab4files$ ls -lhs
total 6.5M
20K -rw-rw-r-- 1 shaimaa shaimaa 20K Feb 22 14:16 countries.json
280K -rw-rw-r-- 1 shaimaa shaimaa 278K Feb 22 14:15 csvfile.csv
748K -rw-rw-r-- 1 shaimaa shaimaa 747K Feb 22 14:13 document.docx
728K -rw-rw-r-- 1 shaimaa shaimaa 726K Feb 22 14:12 globe.avi
4.0K -rw-rw-r-- 1 shaimaa shaimaa 76 Feb 22 14:18 helloWorld.c
2.5M -rw-rw-r-- 1 shaimaa shaimaa 2.5M Feb 22 14:10 Linux.pdf
12K -rw-rw-r-- 1 shaimaa shaimaa 8.5K Feb 22 14:12 sample.xls
44K -rw-rw-r-- 1 shaimaa shaimaa 42K Feb 22 14:10 Tux.png
2.1M -rw-rw-r-- 1 shaimaa shaimaa 2.1M Feb 22 14:11 Ubuntu.pdf
136K -rw-rw-r-- 1 shaimaa shaimaa 135K Feb 22 14:16 website.html
shaimaa@shaimaa-VirtualBox:~/lab4files$
```

```

shaimaa@shaimaa-VirtualBox: ~/lab4files
shaimaa@shaimaa-VirtualBox: ~/lab4files$ ls -lhSgGi
total 6.5M
415648 -rw-rw-r-- 1 2.5M Feb 22 14:10 Linux.pdf
415651 -rw-rw-r-- 1 2.1M Feb 22 14:11 Ubuntu.pdf
415674 -rw-rw-r-- 1 747K Feb 22 14:13 document.docx
415685 -rw-rw-r-- 1 726K Feb 22 14:12 globe.avi
415668 -rw-rw-r-- 1 278K Feb 22 14:15 csvfile.csv
415689 -rw-rw-r-- 1 135K Feb 22 14:16 website.html
415649 -rw-rw-r-- 1 42K Feb 22 14:10 Tux.png
415646 -rw-rw-r-- 1 20K Feb 22 14:16 countries.json
415688 -rw-rw-r-- 1 8.5K Feb 22 14:12 sample.xls
415687 -rw-rw-r-- 1 76 Feb 22 14:18 helloWorld.c
shaimaa@shaimaa-VirtualBox:~/lab4files$ ls -Xr
sample.xls  Ubuntu.pdf  countries.json  document.docx  helloWorld.c
Tux.png     Linux.pdf   website.html   csvfile.csv    globe.avi
shaimaa@shaimaa-VirtualBox:~/lab4files$

```

## Question 4

```

shaimaa@shaimaa-VirtualBox:~/lab4files$ cd /etc/
shaimaa@shaimaa-VirtualBox:/etc$ tree ~/lab4files/
/home/shaimaa/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
shaimaa@shaimaa-VirtualBox:/etc$
lab4.md - Visual Stu... Welcome to the cours... shaimaa@shaimaa-Vir...

shaimaa@shaimaa-VirtualBox:~/Downloads$ tree ../lab4files/ -fph
../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
shaimaa@shaimaa-VirtualBox:~/Downloads$
lab4.md - Visual Stu... Welcome to the cours... shaimaa@shaimaa-Vir...

```

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

0 directories, 10 files
shaimaa@shaimaa-VirtualBox:~/Downloads$
```

```
shaimaa@shaimaa-VirtualBox: ~/Downloads x shaimaa@shaimaa-VirtualBox: ~/lab4files
shaimaa@shaimaa-VirtualBox:~/Downloads$ tree ../lab4files/ -X
?xml version="1.0" encoding="UTF-8"?>
tree>
<directory name="../lab4files/">
  <file name="countries.json"></file>
  <file name="csvfile.csv"></file>
  <file name="document.docx"></file>
  <file name="globe.avi"></file>
  <file name="helloWorld.c"></file>
  <file name="Linux.pdf"></file>
  <file name="sample.xls"></file>
  <file name="Tux.png"></file>
  <file name="Ubuntu.pdf"></file>
  <file name="website.html"></file>
</directory>
<report>
  <directories>0</directories>
  <files>10</files>
</report>
```



```
shaimaa@shaimaa-VirtualBox: ~/Downloads x shaimaa@shaimaa-VirtualBox: ~/lab4files x
</report>
</tree>
shaimaa@shaimaa-VirtualBox:~/Downloads$ tree ../lab4files/ -J
{"type":"directory","name":"../lab4files/","contents":[
  {"type":"file","name":"countries.json"},
  {"type":"file","name":"csvfile.csv"},
  {"type":"file","name":"document.docx"},
  {"type":"file","name":"globe.avi"},
  {"type":"file","name":"helloWorld.c"},
  {"type":"file","name":"Linux.pdf"},
  {"type":"file","name":"sample.xls"},
  {"type":"file","name":"Tux.png"},
  {"type":"file","name":"Ubuntu.pdf"},
  {"type":"file","name":"website.html"}
]},
{"type":"report","directories":0,"files":10}
shaimaa@shaimaa-VirtualBox:~/Downloads$
```

## Question

```

shaimaa@shaimaa-VirtualBox: ~
shaimaa@shaimaa-VirtualBox: ~/lab4files

shaimaa@shaimaa-VirtualBox:~$ exa --help
Usage:
  exa [options] [files...]

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

DISPLAY OPTIONS
  -l, --shell         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
  --color[=WHEN]     when to use terminal colours (always, auto, never)
  --color[=SCALE]    highlight levels of file sizes distinctly
  --icons            display icons
  --no-icons         don't display icons (always overrides --icons)

FILTERING AND SORTING OPTIONS
  -a, --all           show hidden and 'dot' files
  -d, --list-dirs     list directories as files; don't list their contents
  -L, --level DEPTH  limit the depth of recursion
  -r, --reverse       reverse the sort order
  -s, --sort SORT-FIELD which field to sort by
  --group-directories-first list directories before other files
  -D, --only-dirs     list only directories
  -I, --ignore-glob GLOBs glob patterns (pipe-separated) of files to ignore
  --git-ignore        ignore files mentioned in '.gitignore'
  --help-sort-fields  name, name, extension, Extension, size, type,
                    date, time, old, and new all refer to modified.

LONG VIEW OPTIONS
  -B, --binary        list file sizes with binary prefixes
  -b, --bytes         list file sizes in bytes, without any prefixes
  -g, --group         list each file's group
  -h, --header        add a header row to each column
  -H, --links         list each file's number of hard links
  -l, --inode         list each file's inode number
  -m, --modified      use the modified timestamp field
  -n, --numeric       list numeric user and group IDs
  -s, --blocks        show number of file system blocks
  -t, --time FIELD    which timestamp field to list (modified, accessed, created)
  -u, --accessed      use the accessed timestamp field
  -U, --created       use the created timestamp field
  -c, --changed       use the changed timestamp field
  --time-style        how to format timestamps (default, iso, long-iso, full-iso)
  --no-permissions    suppress the permissions field
  --octal-permissions list each file's permission in octal format
  --no-filesize       suppress the filesize field
  --no-user           suppress the user field
  --no-time           suppress the time field
  --git              list each file's git status, if tracked or ignored
  -0, --extended     list each file's extended attributes and sizes
shaimaa@shaimaa-VirtualBox:~$

```

```

shaimaa@shaimaa-VirtualBox: ~
shaimaa@shaimaa-VirtualBox: ~/lab4files

shaimaa@shaimaa-VirtualBox:~$ exa -l lab4files/
.rw-rw-r-- 20k shaimaa 22 Feb 14:16 countries.json
.rw-rw-r-- 284k shaimaa 22 Feb 14:15 csvfile.csv
.rw-rw-r-- 764k shaimaa 22 Feb 14:13 document.docx
.rw-rw-r-- 742k shaimaa 22 Feb 14:12 globe.avi
.rw-rw-r-- 76 shaimaa 22 Feb 14:18 helloWorld.c
.rw-rw-r-- 2.6M shaimaa 22 Feb 14:10 Linux.pdf
.rw-rw-r-- 8.7k shaimaa 22 Feb 14:12 sample.xls
.rw-rw-r-- 43k shaimaa 22 Feb 14:10 Tux.png
.rw-rw-r-- 2.1M shaimaa 22 Feb 14:11 Ubuntu.pdf
.rw-rw-r-- 137k shaimaa 22 Feb 14:16 website.html
shaimaa@shaimaa-VirtualBox:~$ exa -T lab4files/
lab4files
├── countries.json
├── csvfile.csv
├── document.docx
├── globe.avi
├── helloWorld.c
├── Linux.pdf
├── sample.xls
├── Tux.png
├── Ubuntu.pdf
└── website.html
shaimaa@shaimaa-VirtualBox:~$

```

! [q5.3](q5.3.png)