Who Am I?

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The Command Line

a.k.a The terminal

a.k.a. 'My worst nightmare' (but really?)

COMPUTER HOLY WARS
HOLD IT RIGHT THERE, BUDDY.
S. Adams E-mail: SCOTTADAMS@AOL.COM
THAT SCRUFFY BEARD... THOSE SUSPENDERS... THAT SMUG EXPRESSION...
6/24 © 1995 United Feature Syndicate, Inc. (NYC)
YOU'RE ONE OF THOSE CONDESCENDING UNIX COMPUTER USERS!
HERE'S A NICKEL, KID. GET YOURSELF A BETTER COMPUTER.

Interacting with a computer

WIMPs

Session Goals

What is the command line interface (**CLI**)?

Learn fundamental commands of a UNIX operating system

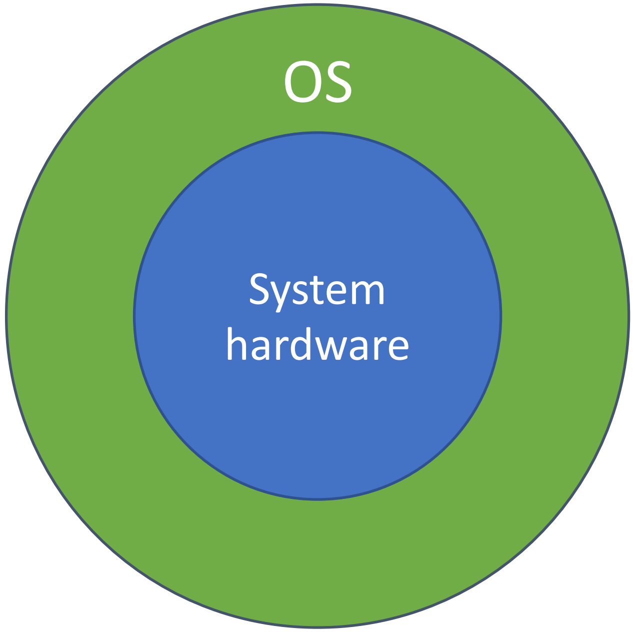
- Basis for Mac and Linux operating systems

What is UNIX?

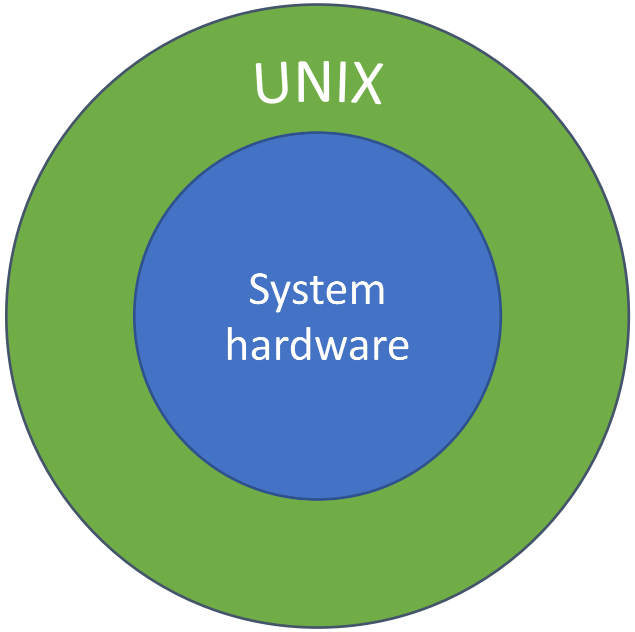
UNIX

System
hardware

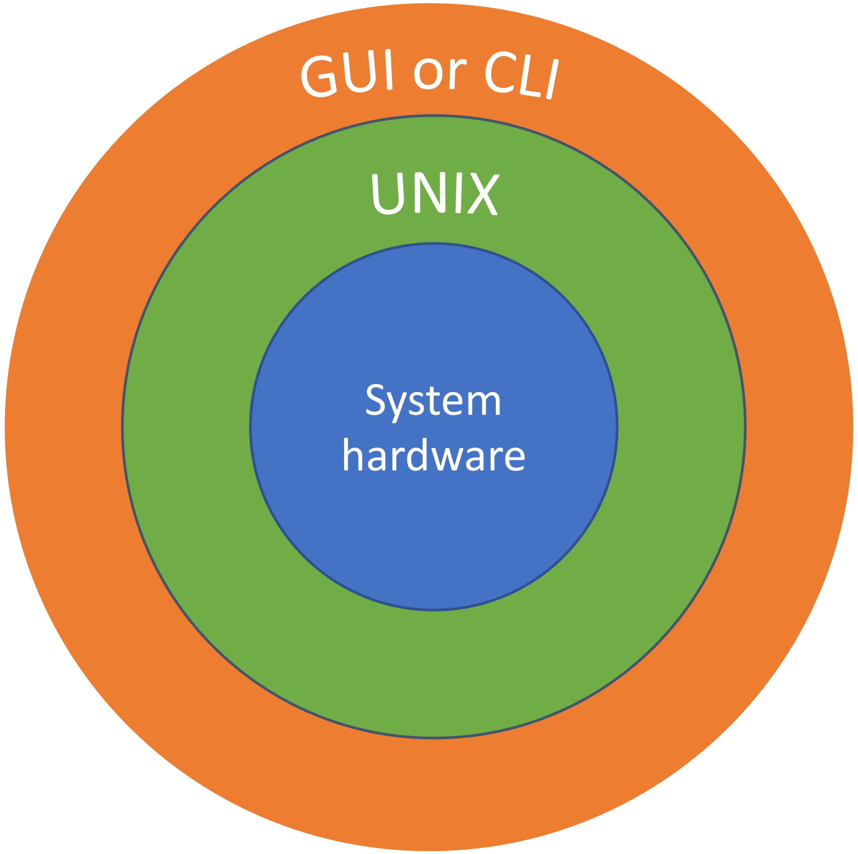
UNIX


OS
System hardware

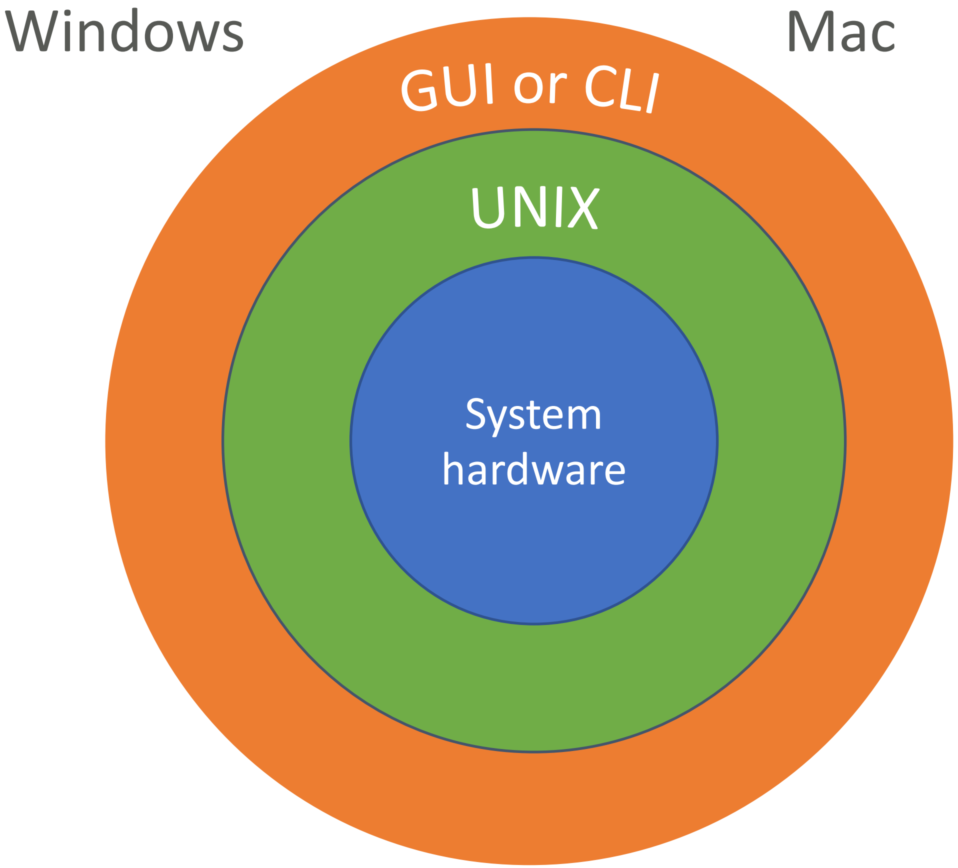
UNIX


UNIX
System hardware

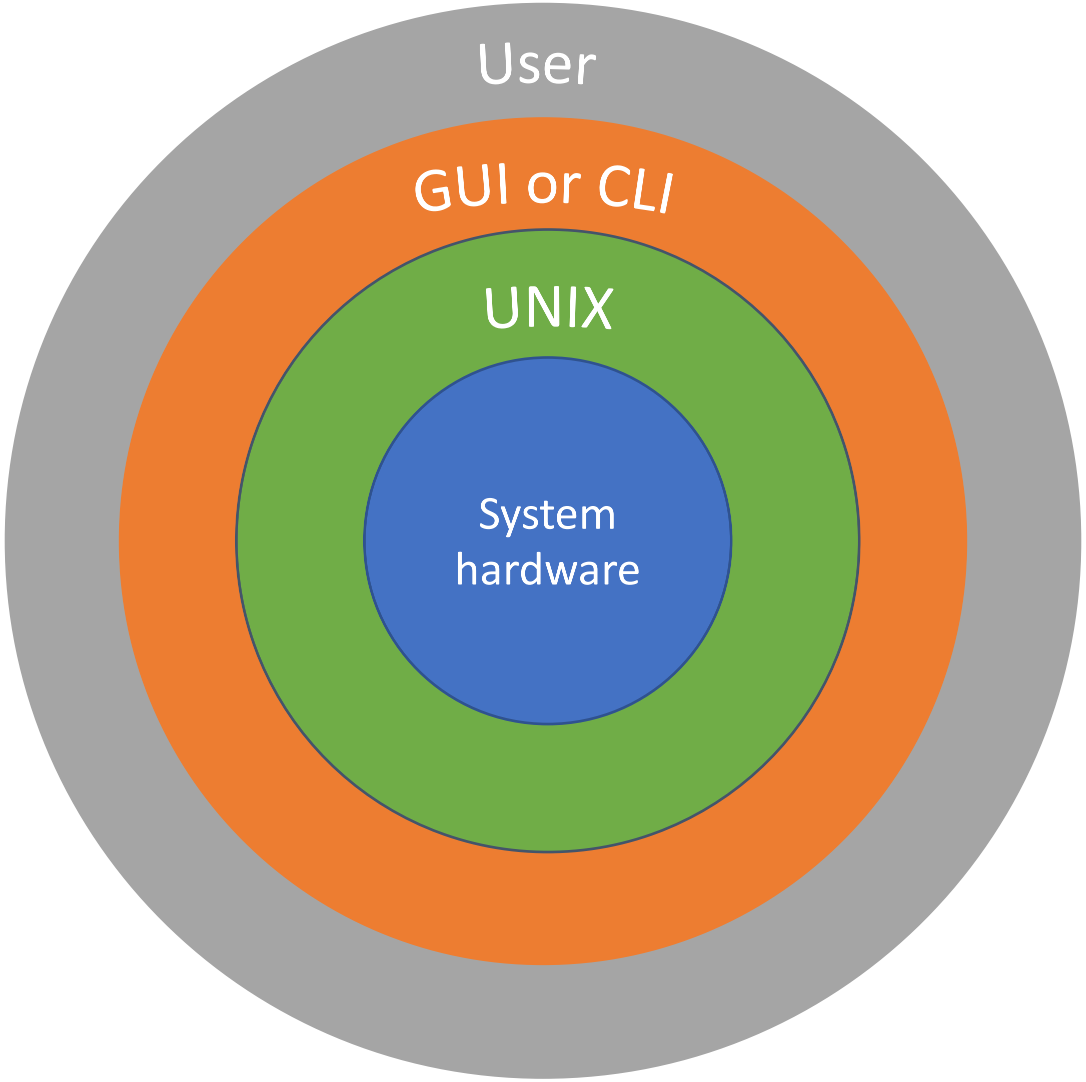
UNIX


GUI or CLI
UNIX
System hardware

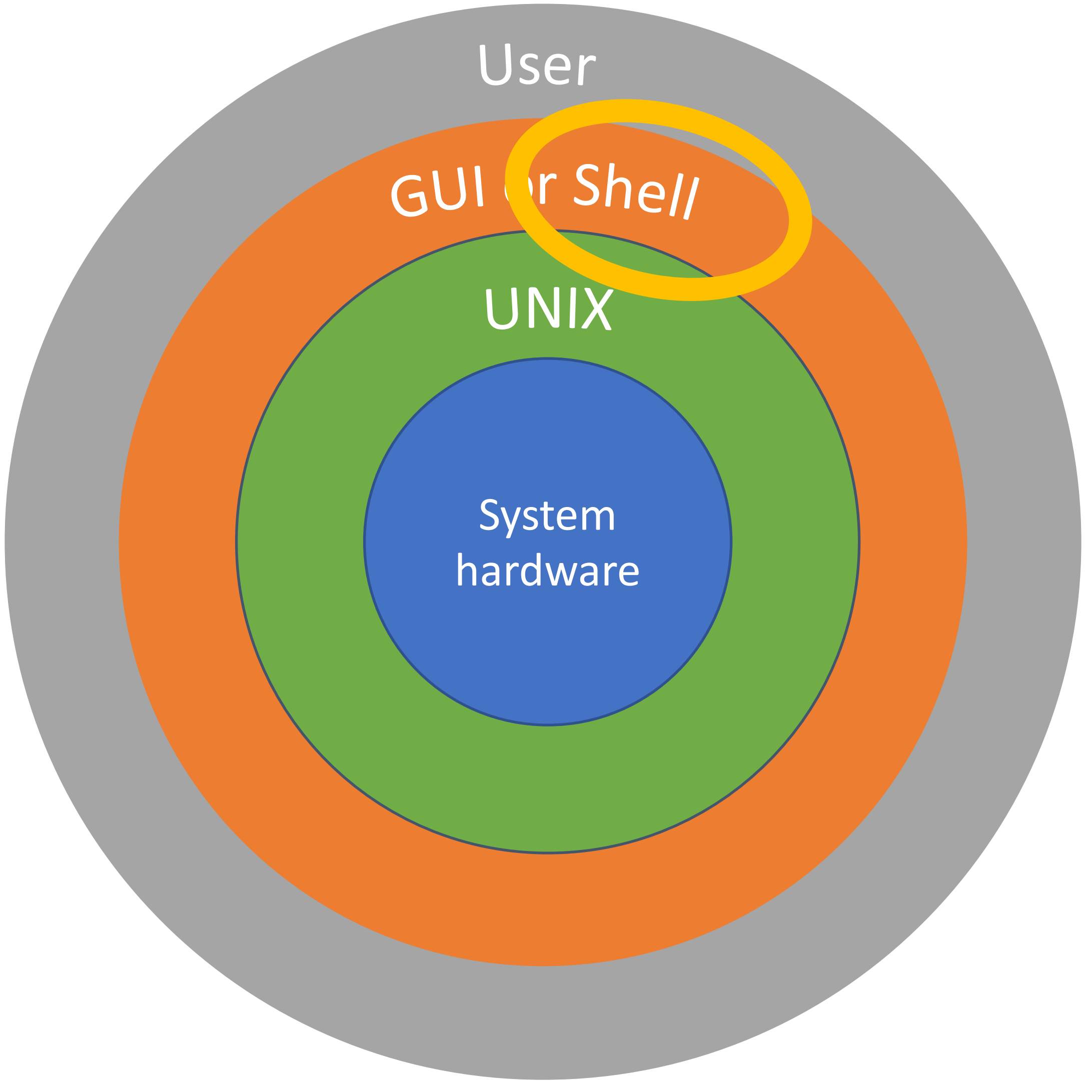
UNIX

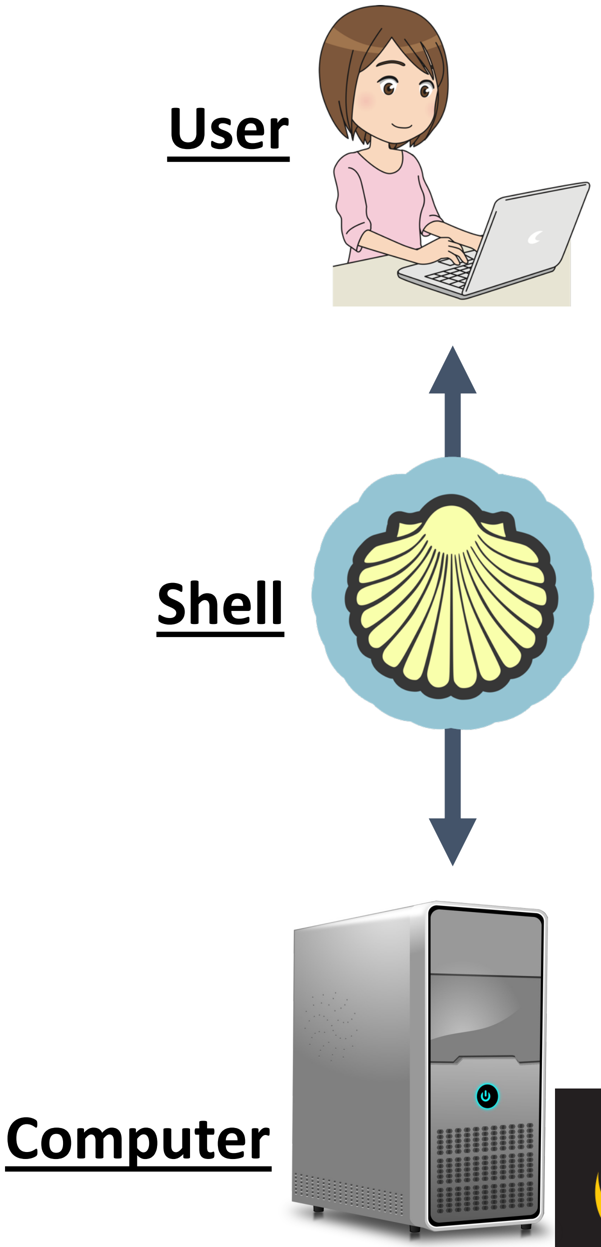

Windows
Mac
GUI or CLI
UNIX
System hardware

UNIX


User
GUI or CLI
UNIX
System hardware

UNIX


User
GUI or Shell
UNIX
System hardware

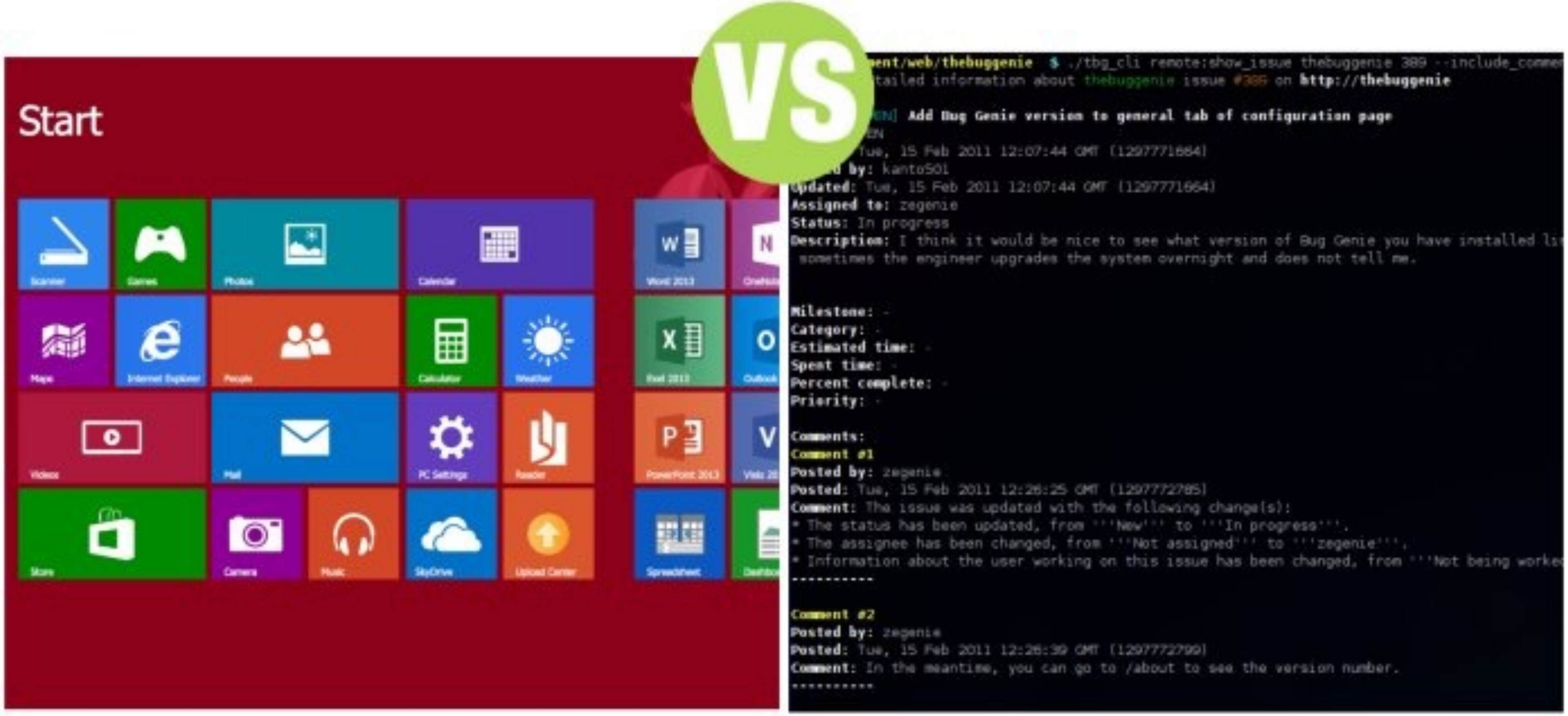

User
Shell
Computer

SHELL (a.k.a. terminal)

- The shell interprets text commands the user types and manages their execution
    - The shell communicates with the core operating system called the **kernel**
    - The most popular shells are: **bash** (default), tcsh, csh, korn
    - The differences are generally subtle
    - For this tutorial, we are using **bash**

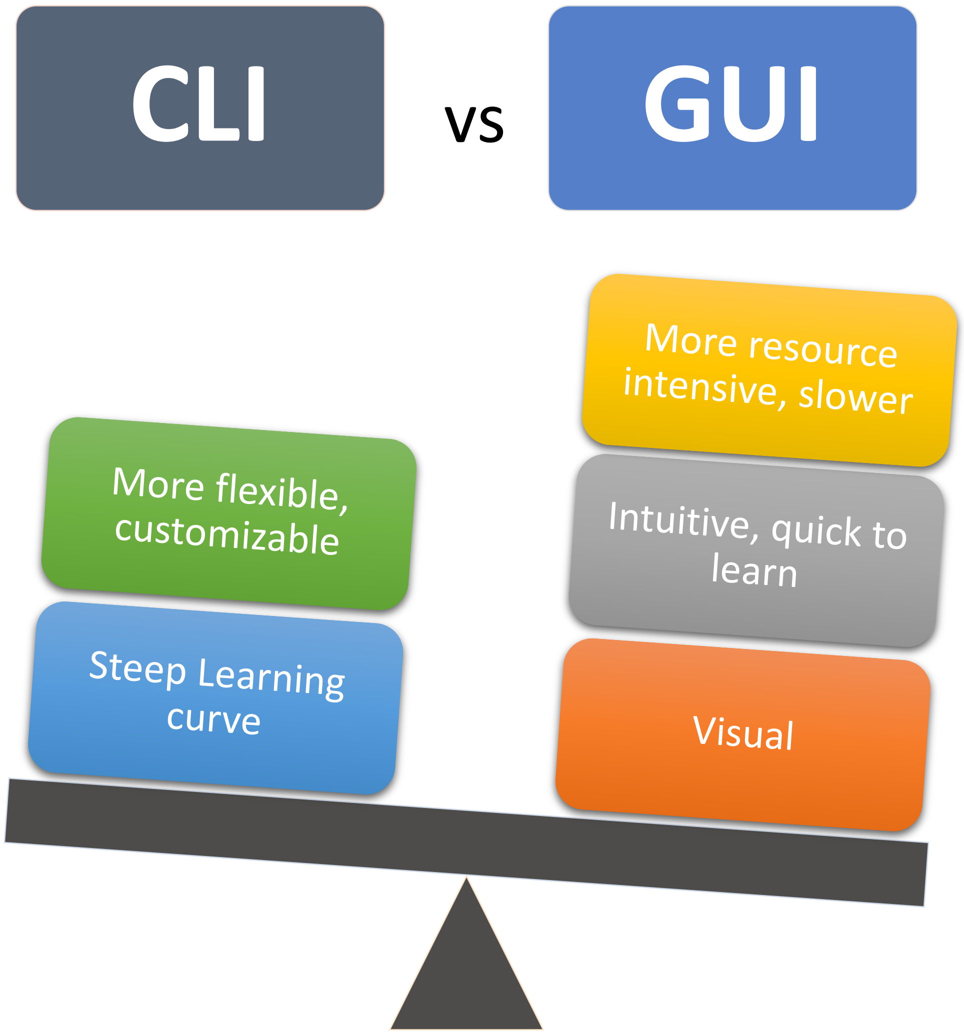
- WARNING: Shell commands are **CASE SENSITIVE!**
    - So “cat” and “Cat” are two different things

Command Line Interface (CLI): Advantages vs Disadvantages


Start
VS
Scanner
Games
Photos
Calendar
Word 2013
Maps
Internet Explorer
People
Calculator
Weather
Excel 2013
Outlook
Videos
Mail
PC Settings
Reader
PowerPoint 2013
Store
Camera
Music
SkyDrive
Upload Center
Spreadsheet

```
ent/web/thebuggenie  $ ./tbg_cli remote:show_issue thebuggenie 389 --include_commen
tailed information about thebuggenie issue #386 on http://thebuggenie

N] Add Bug Genie version to general tab of configuration page
EN
Tue, 15 Feb 2011 12:07:44 GMT (1297771664)
d by: kanto501
Updated: Tue, 15 Feb 2011 12:07:44 GMT (1297771664)
Assigned to: zegenie
Status: In progress
Description: I think it would be nice to see what version of Bug Genie you have installed li
 sometimes the engineer upgrades the system overnight and does not tell me.


Milestone: -
Category: -
Estimated time: -
Spent time: -
Percent complete: -
Priority: -

Comments:
Comment #1
Posted by: zegenie
Posted: Tue, 15 Feb 2011 12:26:25 GMT (1297772785)
Comment: The issue was updated with the following change(s):
* The status has been updated, from '''New''' to '''In progress'''.
* The assignee has been changed, from '''Not assigned''' to '''zegenie'''.
* Information about the user working on this issue has been changed, from '''Not being worke
----------

Comment #2
Posted by: zegenie
Posted: Tue, 15 Feb 2011 12:26:39 GMT (1297772799)
Comment: In the meantime, you can go to /about to see the version number.
----------
```

Command Line Interface (CLI): Advantages vs Disadvantages



CLI

vs

GUI

More flexible, customizable

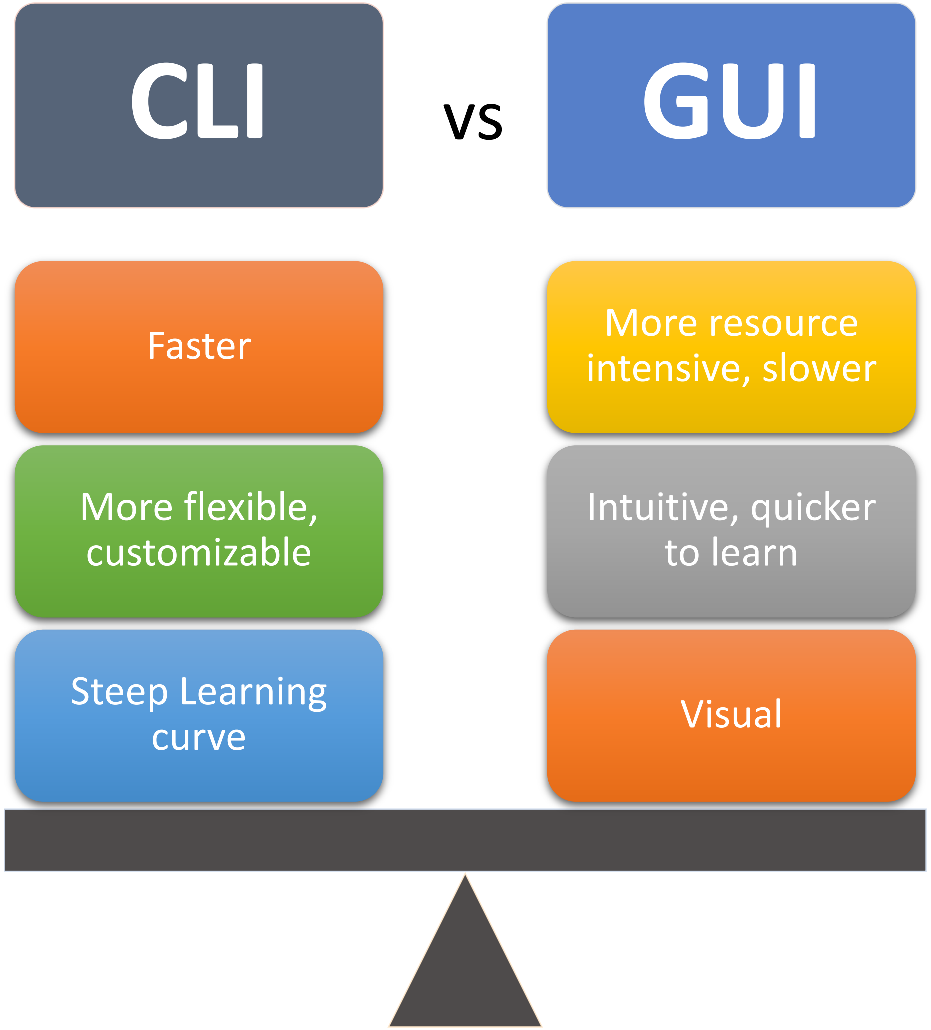
Steep Learning curve

More resource intensive, slower

Intuitive, quick to learn

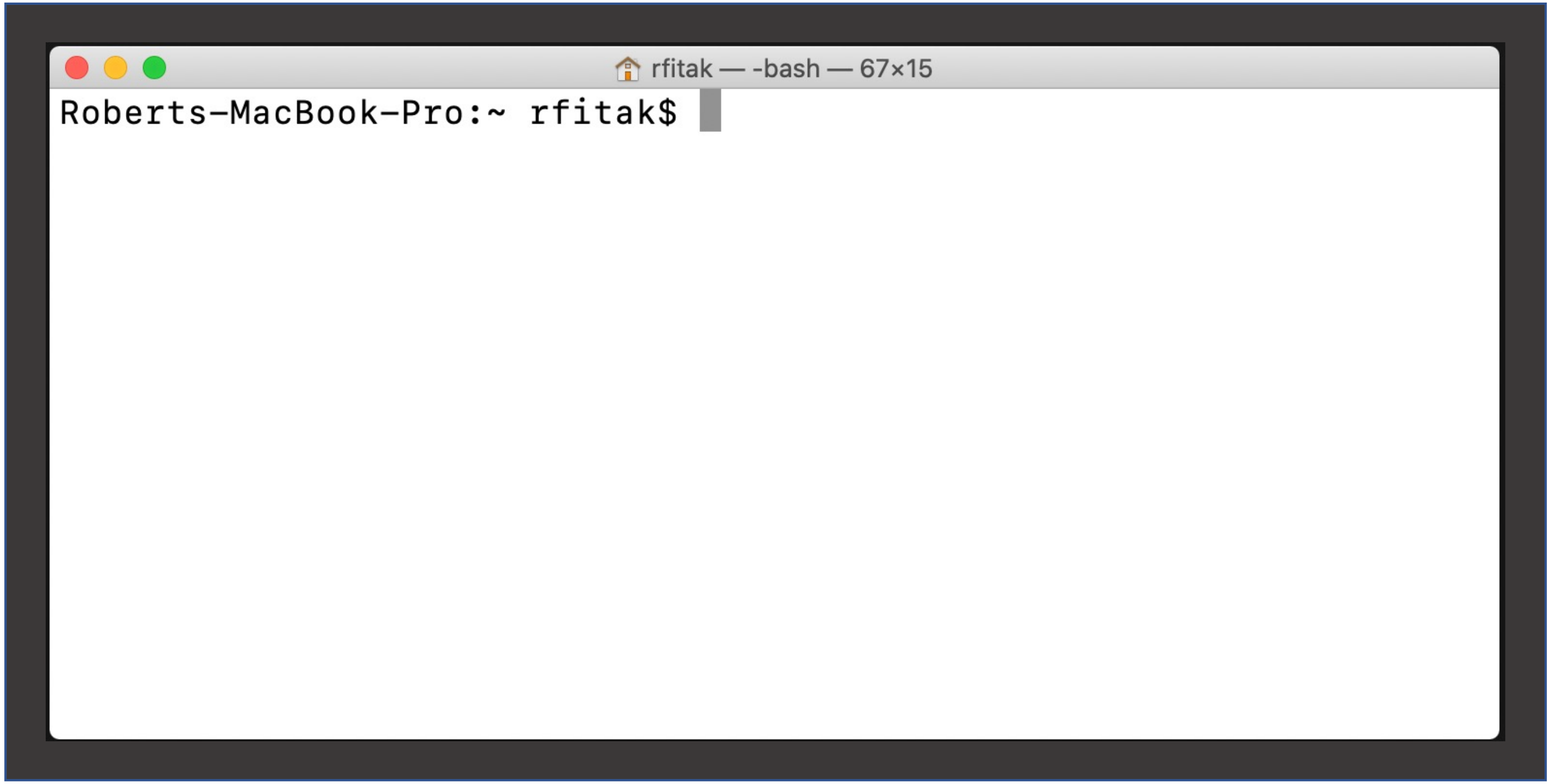
Visual

Command Line Interface (CLI): Advantages vs Disadvantages



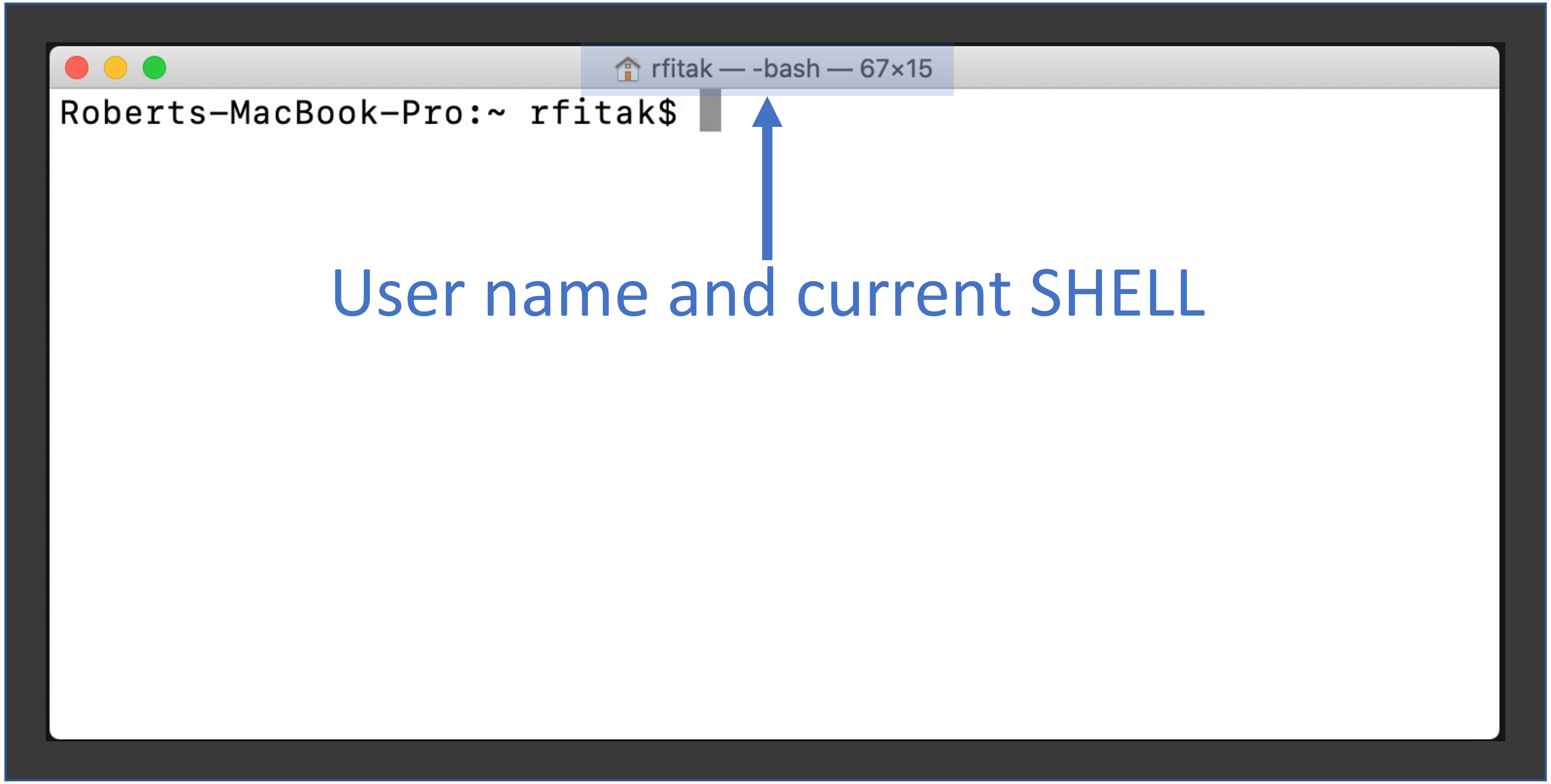
CLI	vs	GUI
Faster		More resource intensive, slower
More flexible, customizable		Intuitive, quicker to learn
Steep Learning curve		Visual

The Terminal


rfitak — -bash — 67×15

```
Roberts-MacBook-Pro:~ rfitak$ 
```

The Terminal

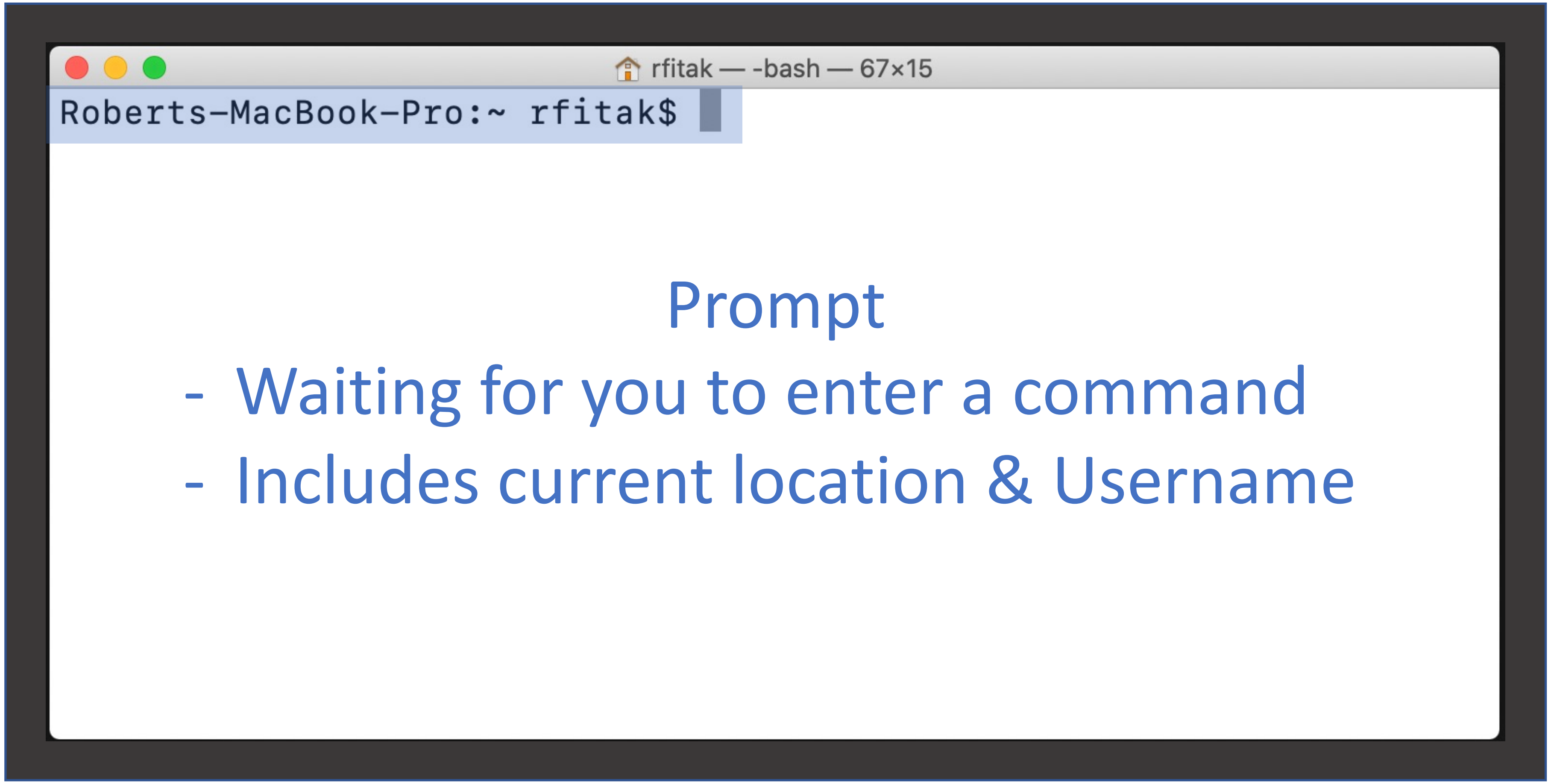


rfitak — -bash — 67×15

```
Roberts-MacBook-Pro:~ rfitak$
```

User name and current SHELL

The Terminal

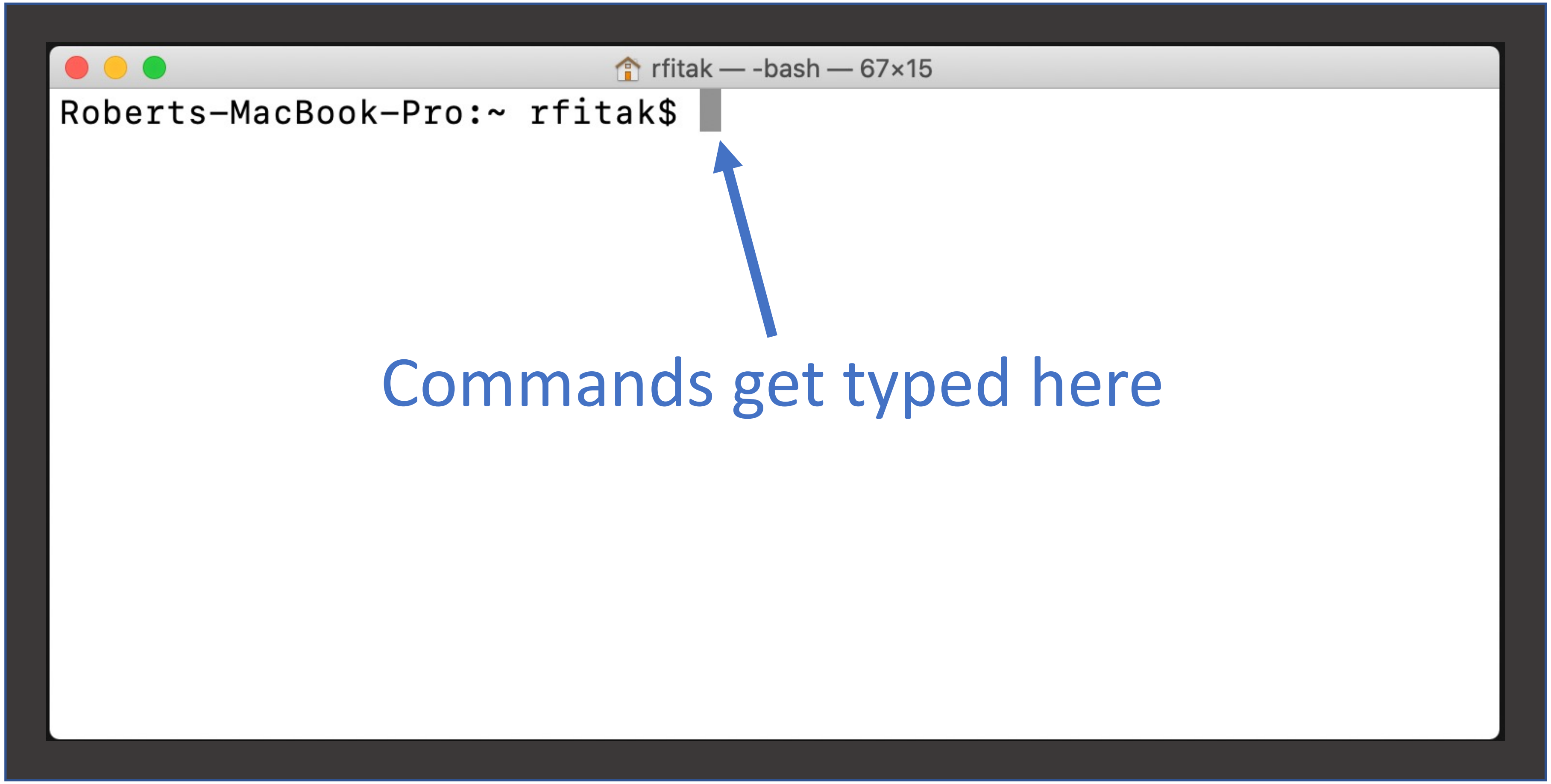


```
Roberts-MacBook-Pro:~ rfitak$ 
```

Prompt

- Waiting for you to enter a command
- Includes current location & Username

The Terminal


rfitak — -bash — 67×15

```
Roberts-MacBook-Pro:~ rfitak$ 
```

Commands get typed here

Commands

UNIX commands can be very simple one word commands, or have many additional *arguments* (a.k.a. parameters).

In general, a UNIX command has the following form:

```
Roberts-MacBook-Pro:~ rfitak$   command   options(s)   filename(s)
```

Commands

UNIX commands can be very simple one word commands, or have many additional *arguments* (a.k.a. parameters).

In general, a UNIX command has the following form:

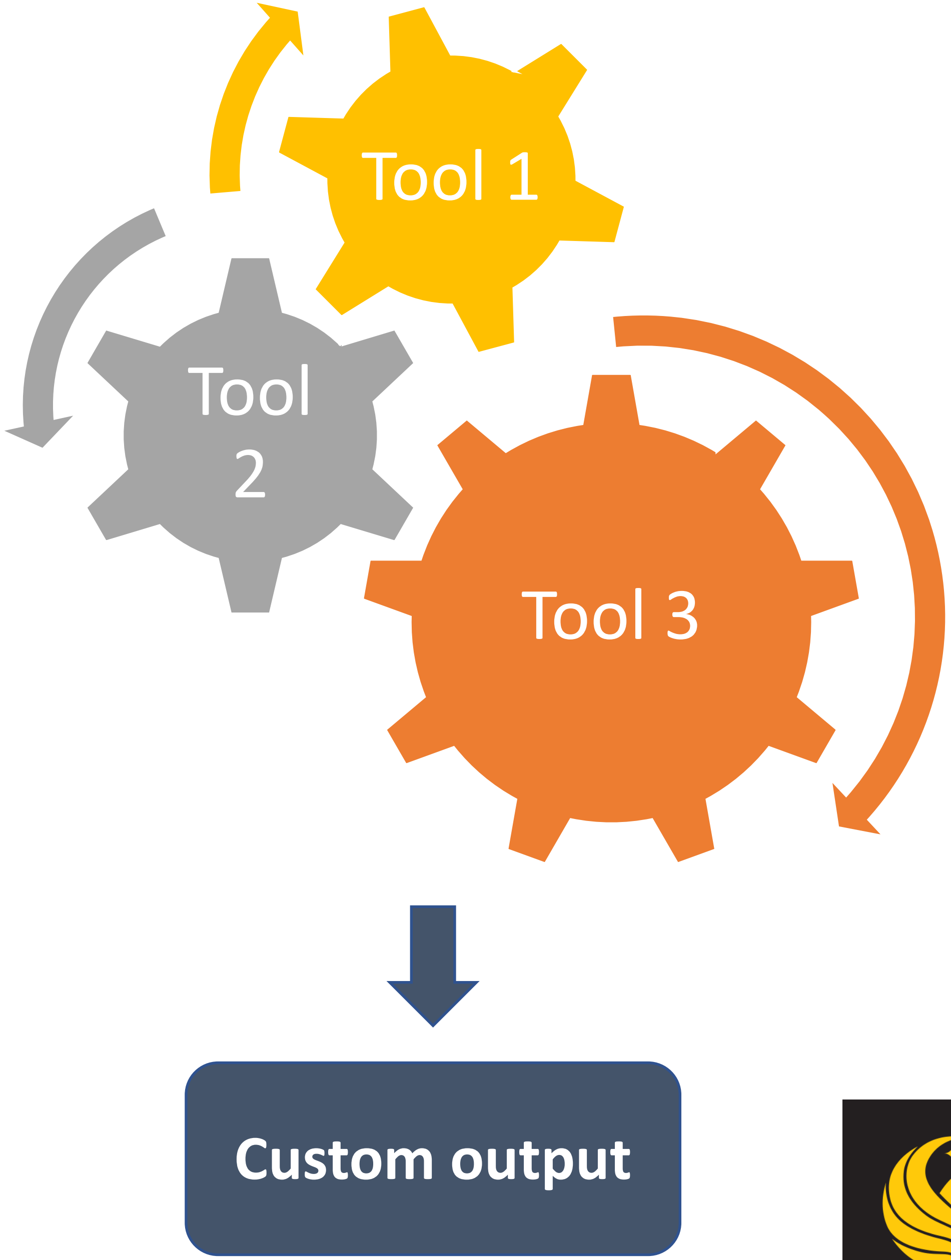
Roberts-MacBook-Pro:~ rfitak$ **command options(s) filename(s)**

- The *command* is the name of the program that we are going to execute.
- The *options* modify the way the command works. Options are typically indicated by one or two hyphens: e.g. **-a** or **--input**.
- The *filename* is the last argument for many UNIX commands.

SCRIPTING

Scripting

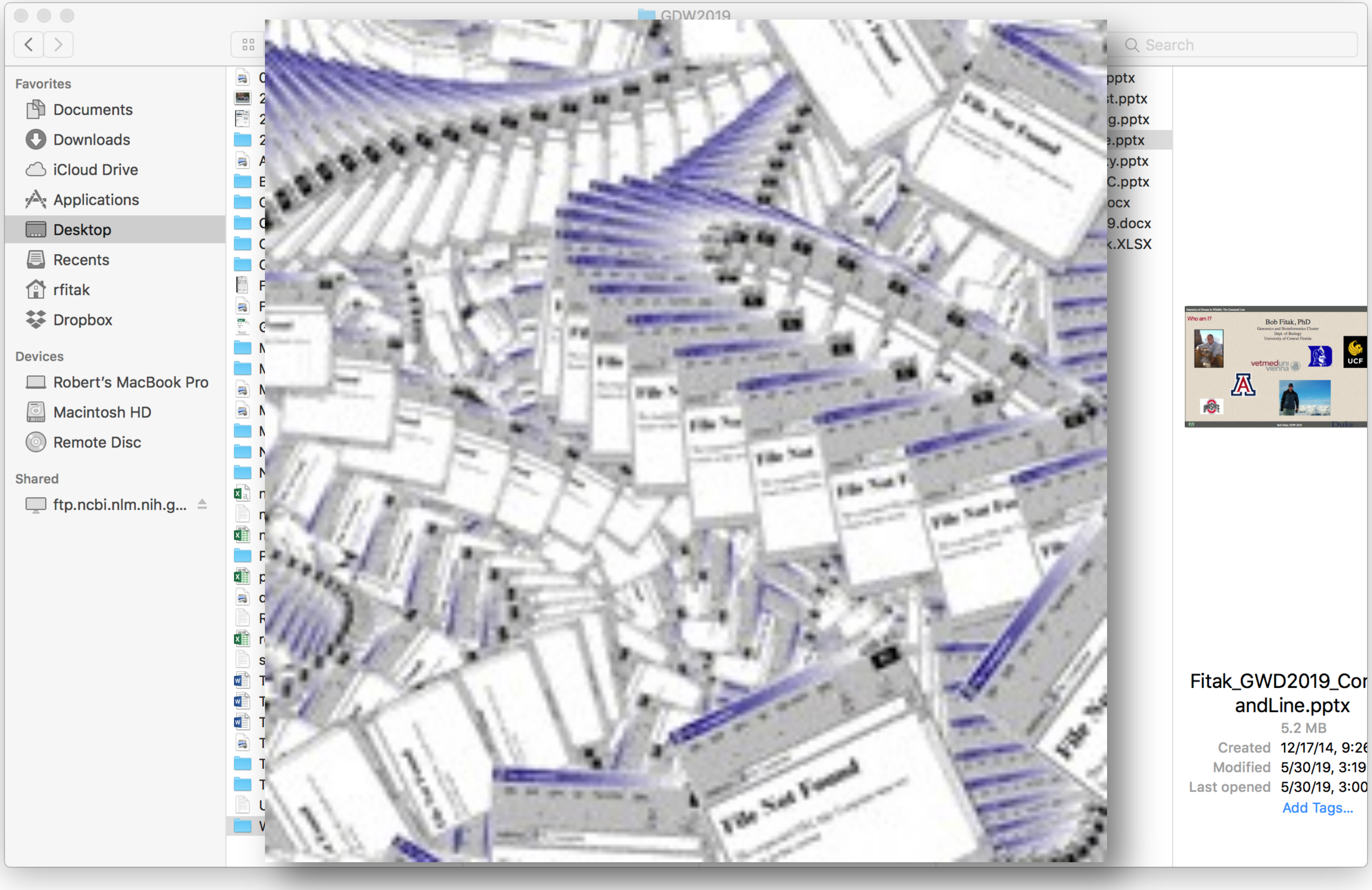
- Many tools (*especially in genomics*) ONLY have a CLI
- Combining tools in powerful new ways


Tool 1
Tool 2
Tool 3
Custom output

Navigating your computer

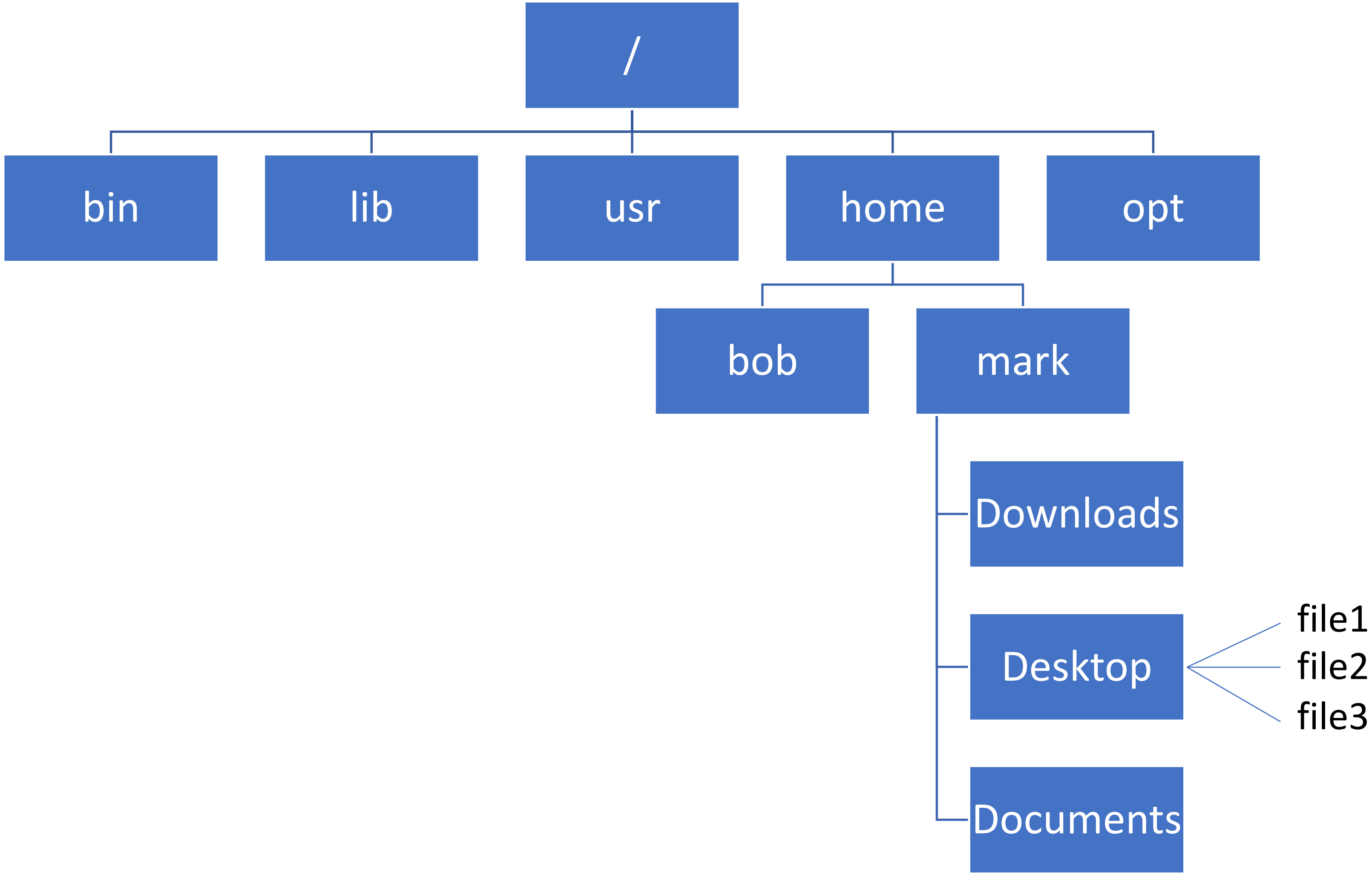
Using the command line

Navigating your computer

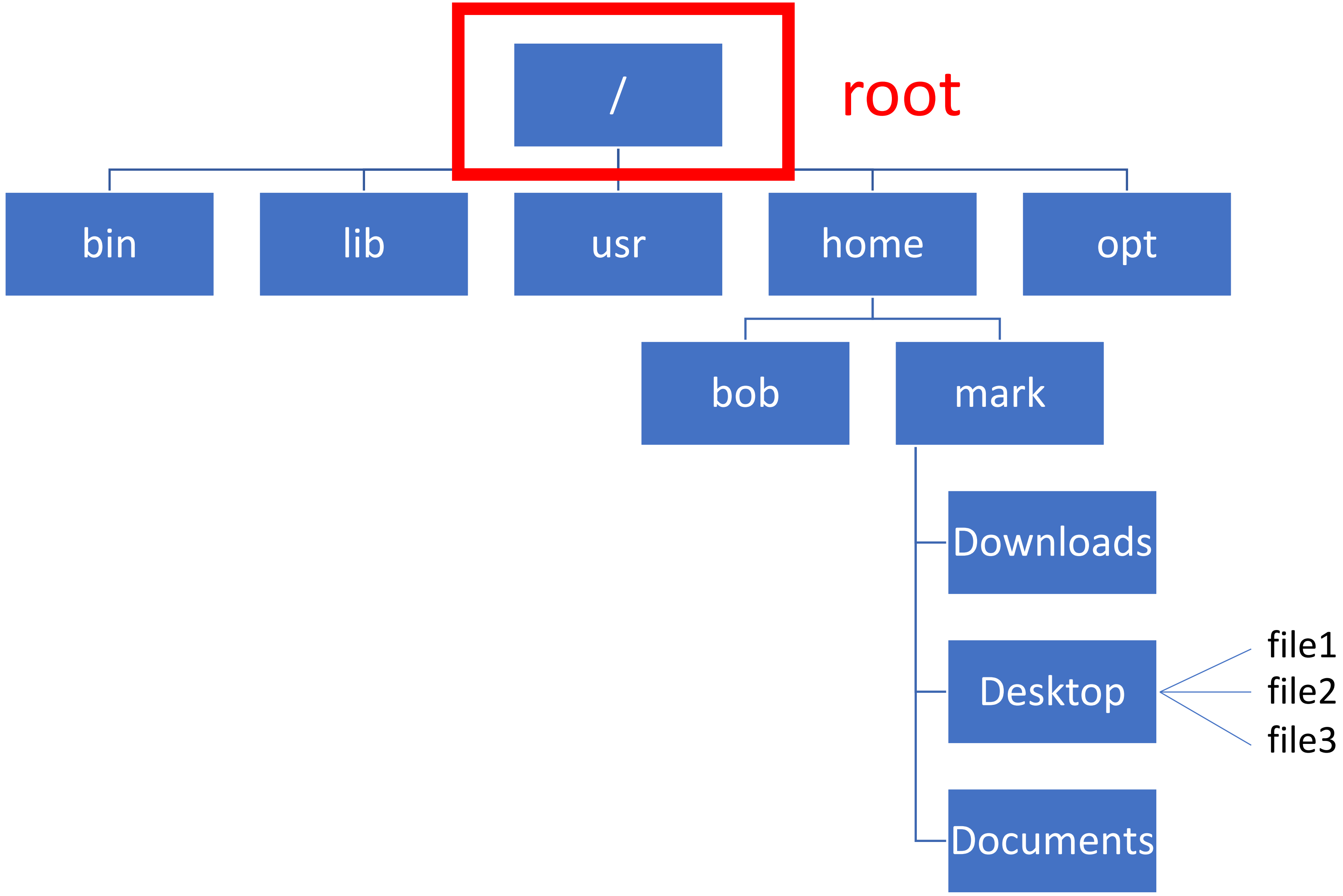

GDW2019
Search
Favorites
Documents
Downloads
iCloud Drive
Applications
Desktop
Recents
rfitak
Dropbox
Devices
Robert's MacBook Pro
Macintosh HD
Remote Disc
Shared
ftp.ncbi.nlm.nih.g...
pptx
t.pptx
g.pptx
e.pptx
y.pptx
C.pptx
ocx
9.docx
x.XLSX
File Not Found
Bob Fitak, PhD
Who am I?
UCF
Add Tags...

Fitak_GWD2019_Cor
andLine.pptx
5.2 MB
Created 12/17/14, 9:26
Modified 5/30/19, 3:19
Last opened 5/30/19, 3:00

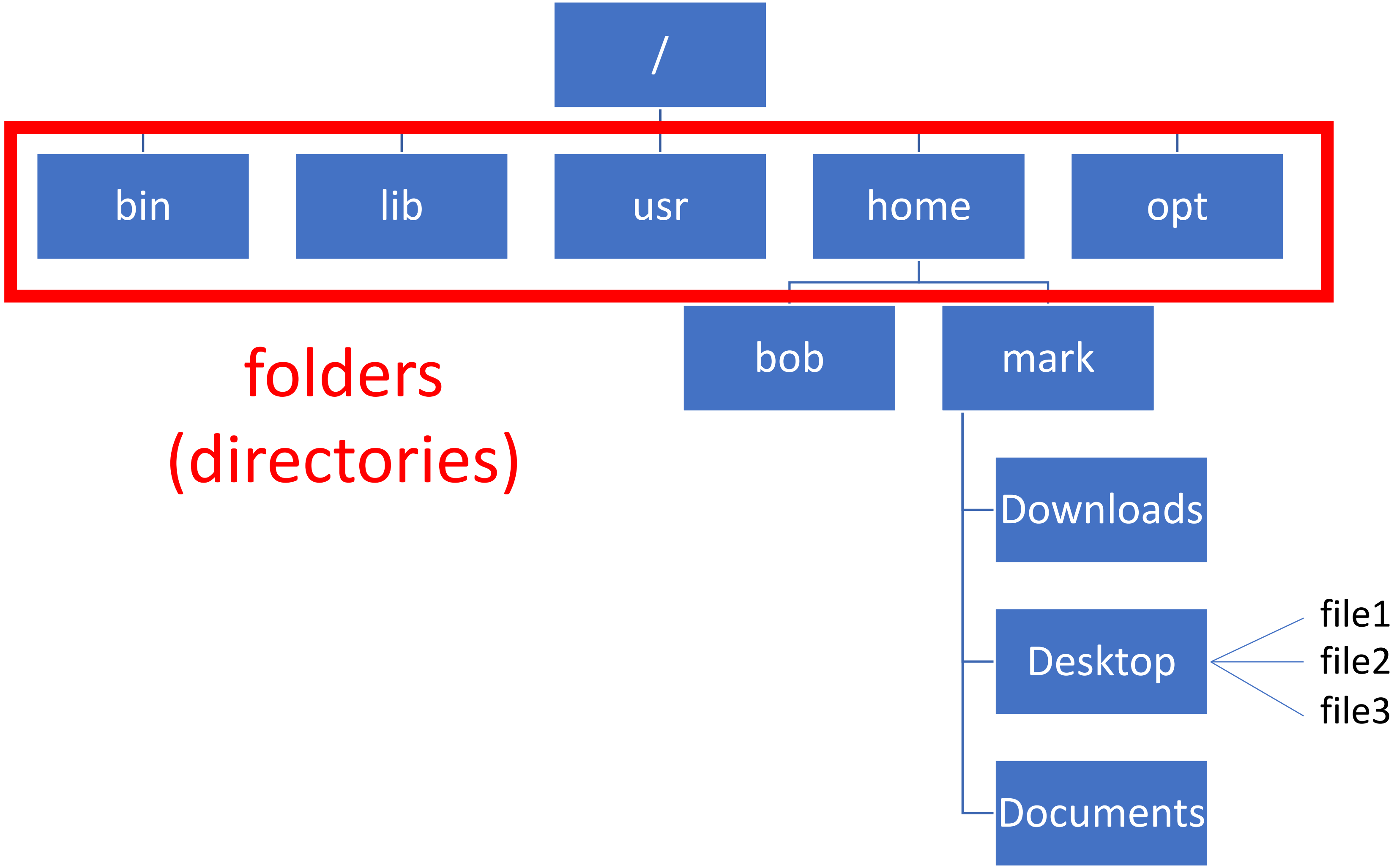
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

The File System

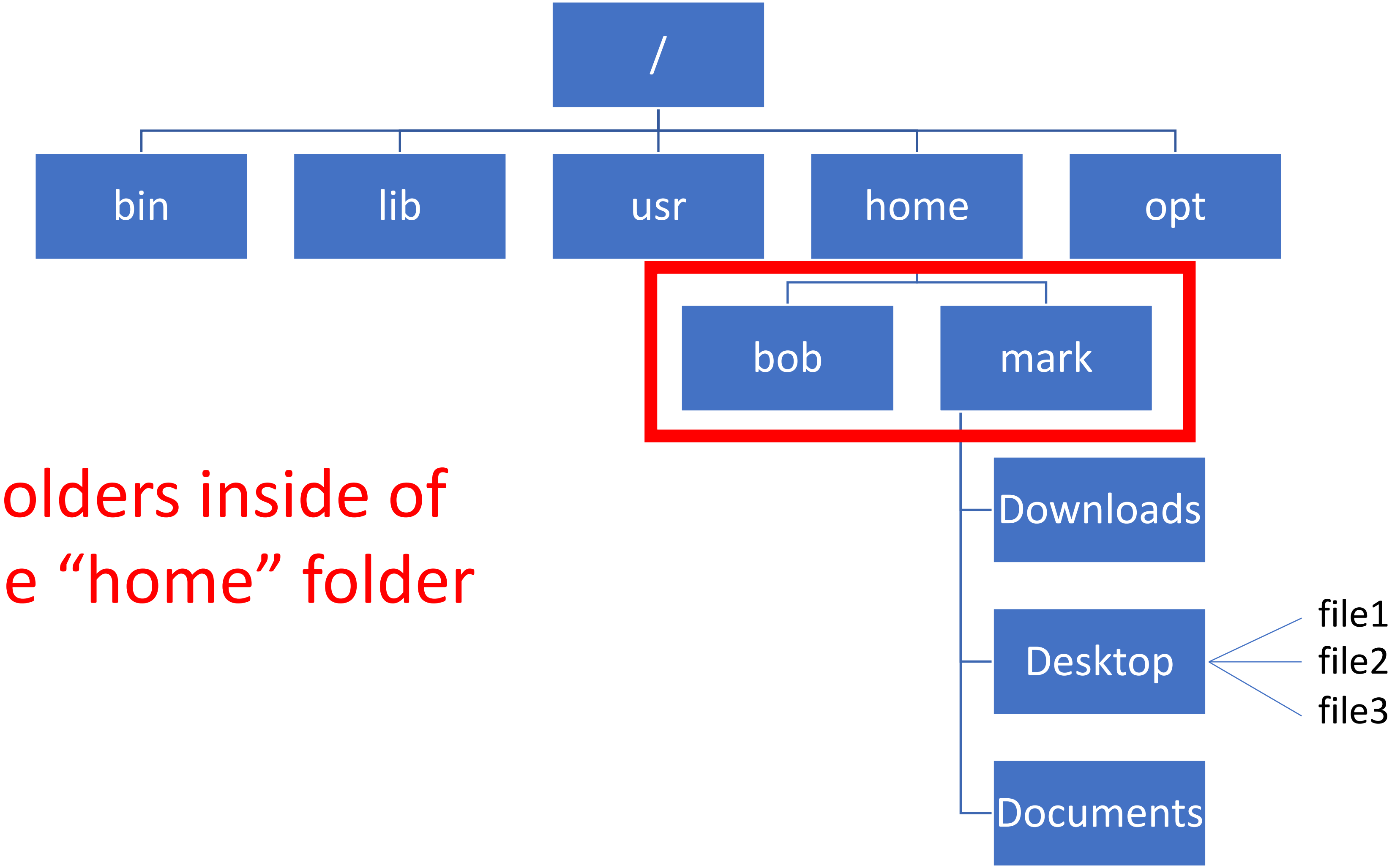

/
root
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

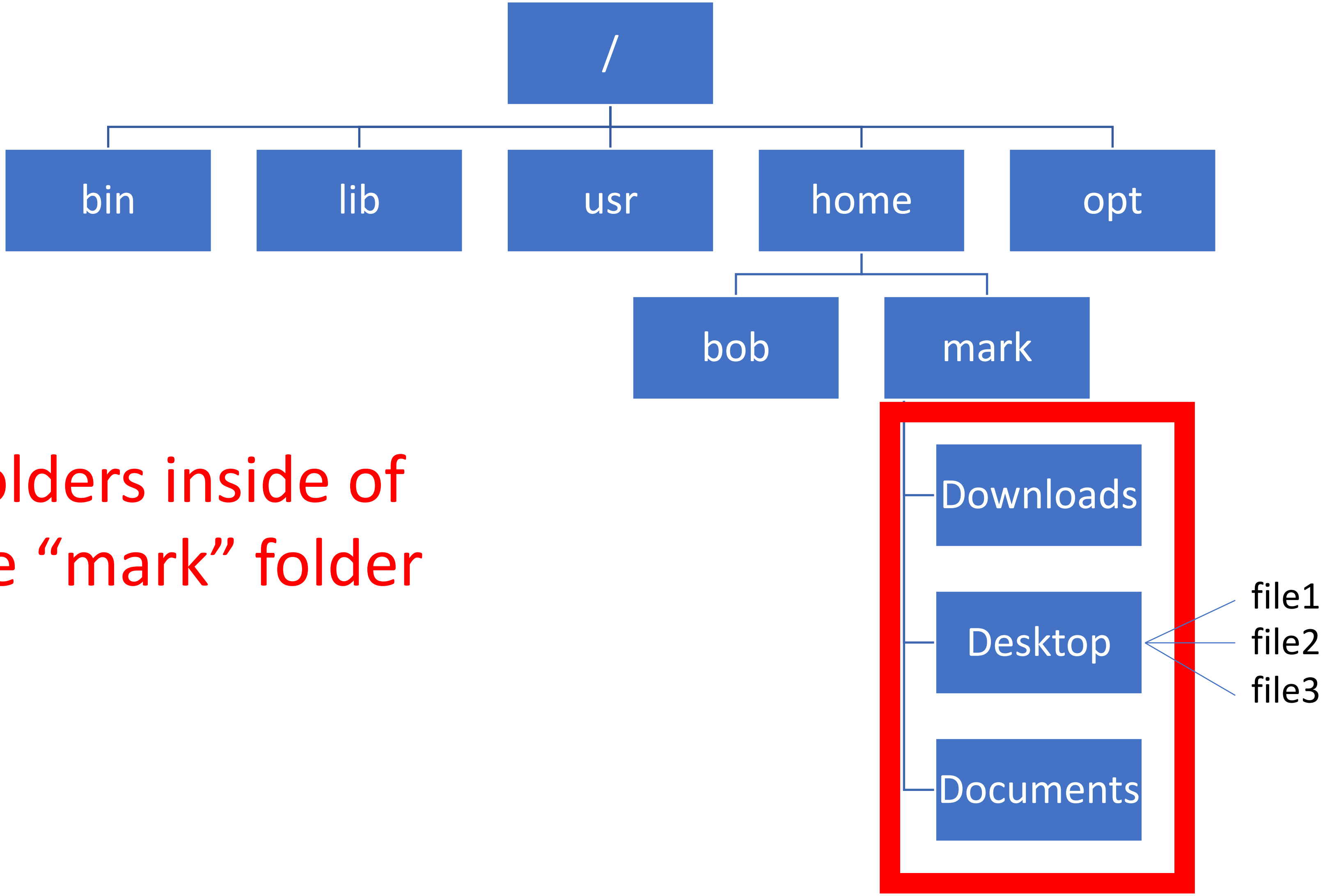
folders
(directories)

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

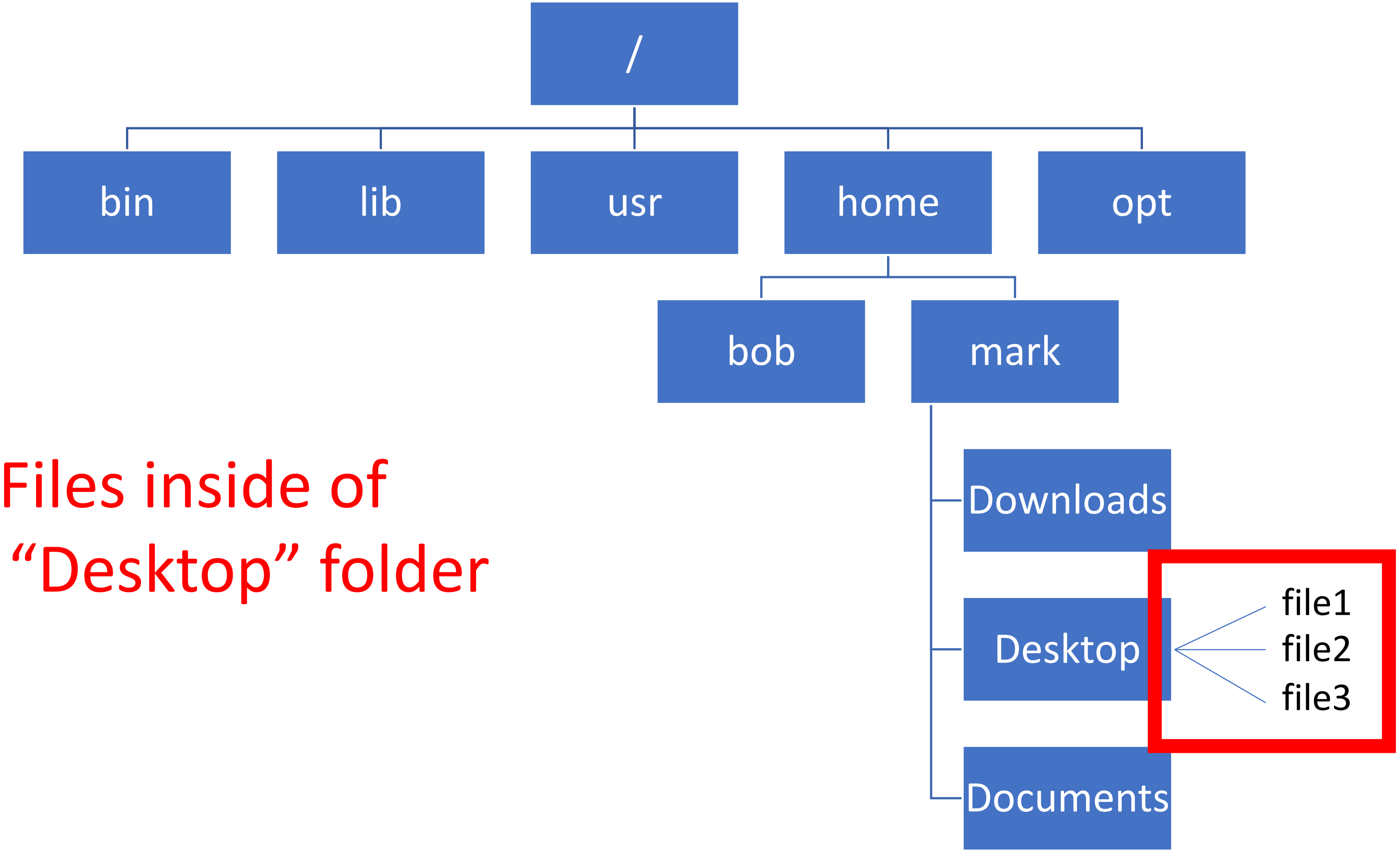
Folders inside of the “home” folder

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

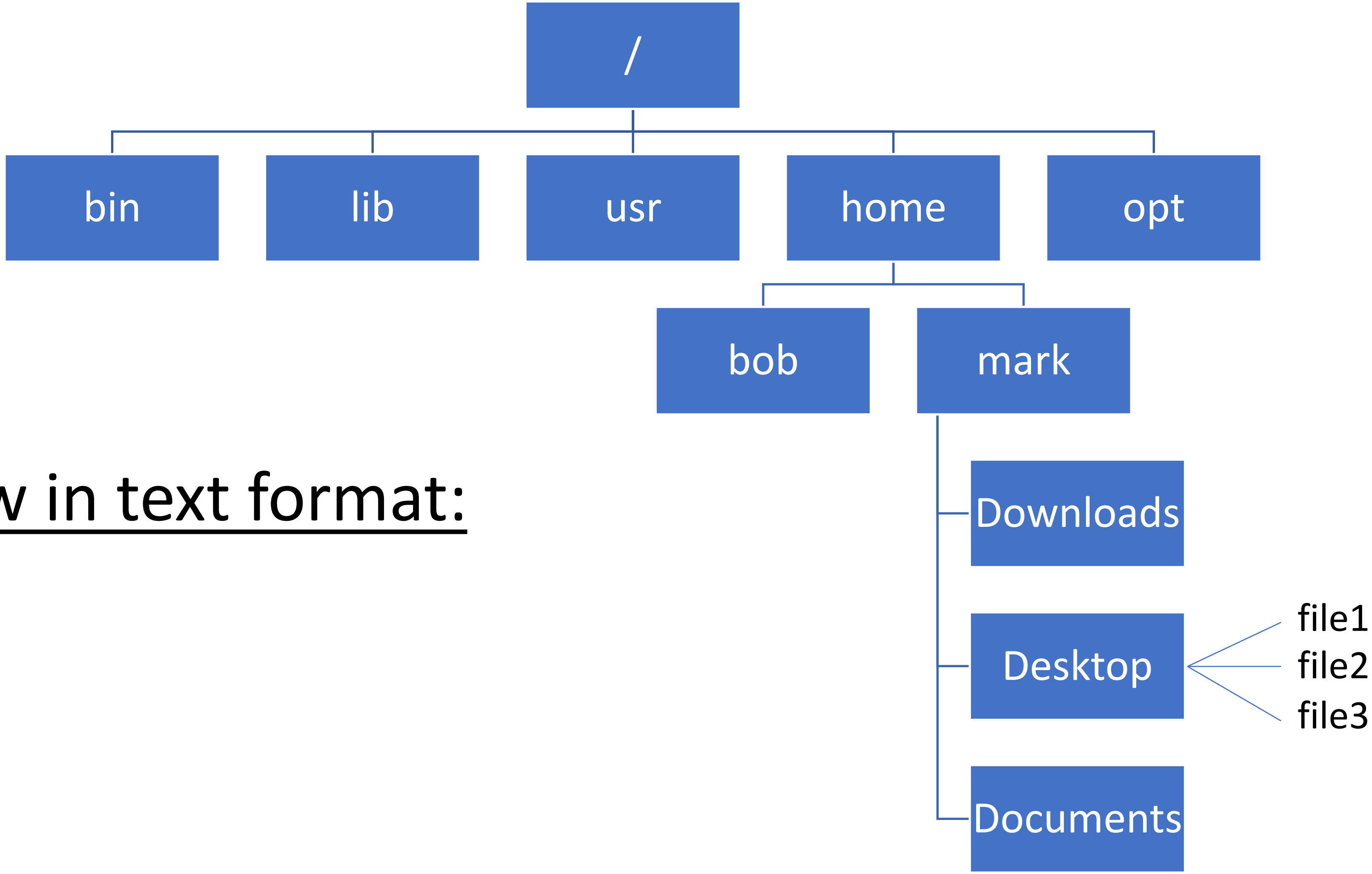
Folders inside of the “mark” folder

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

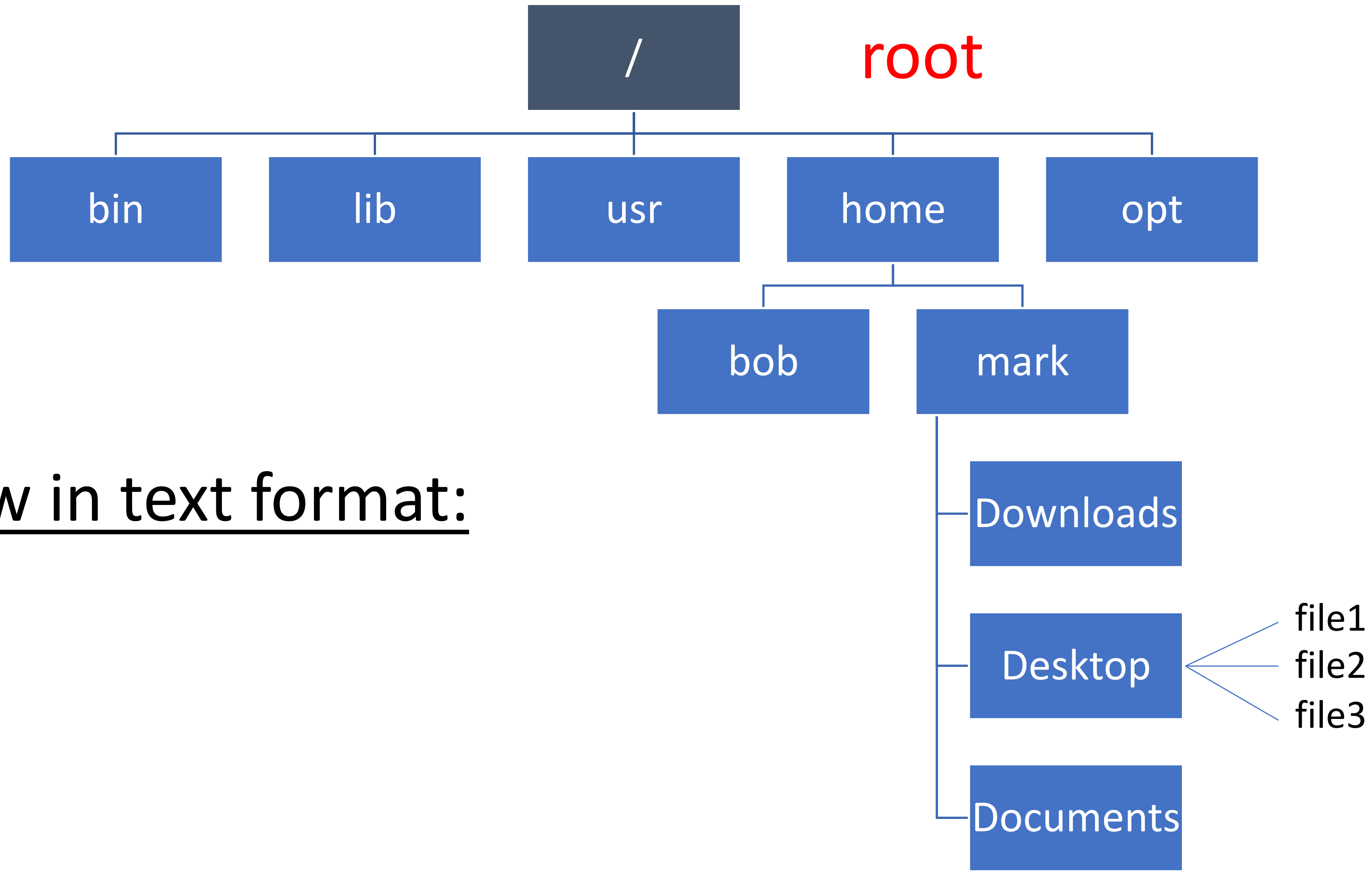
Files inside of the “Desktop” folder

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

The File System



/

root

bin

lib

usr

home

opt

bob

mark

Downloads

Desktop

file1

file2

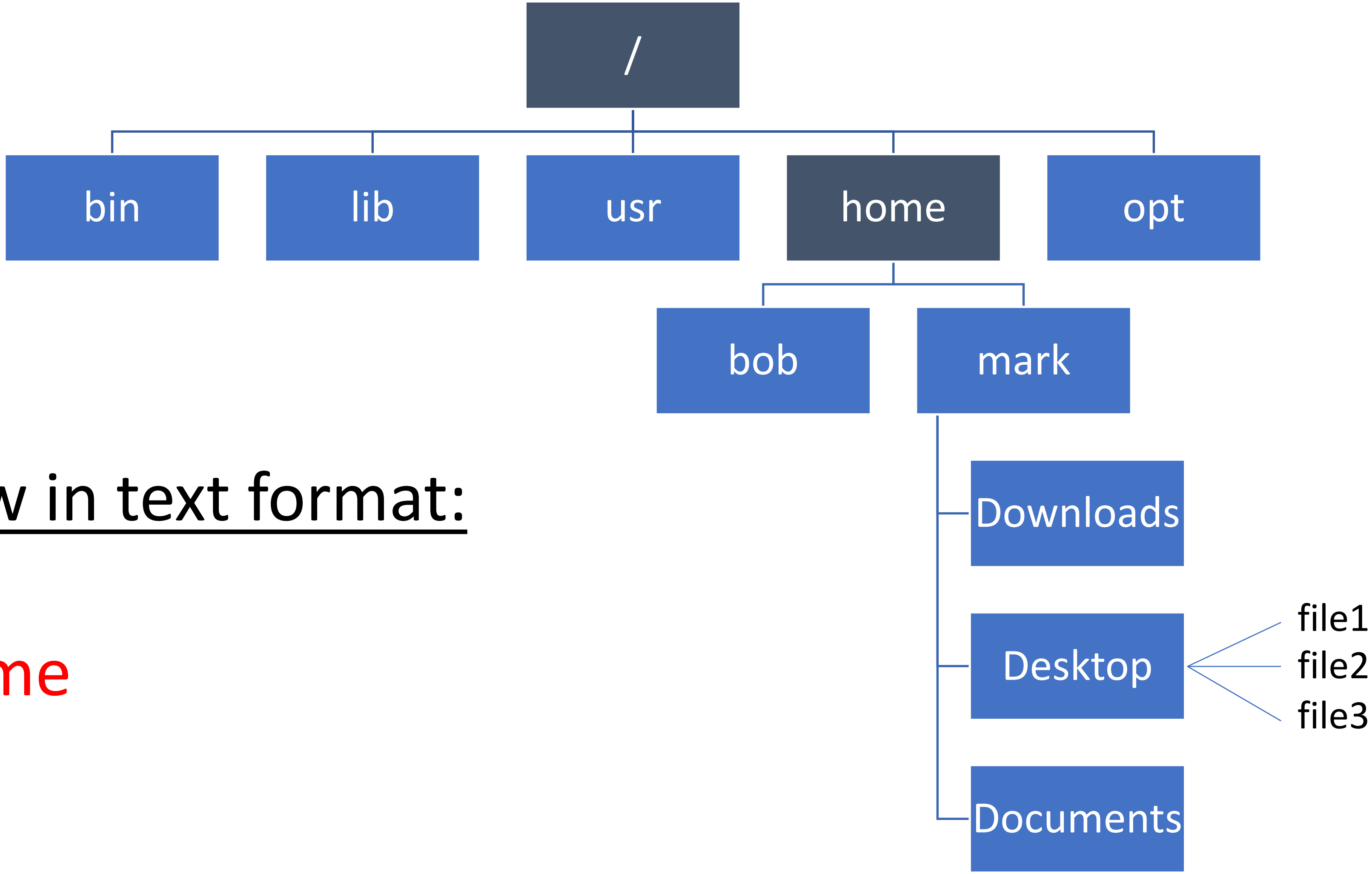
file3

Documents

Now in text format:

/

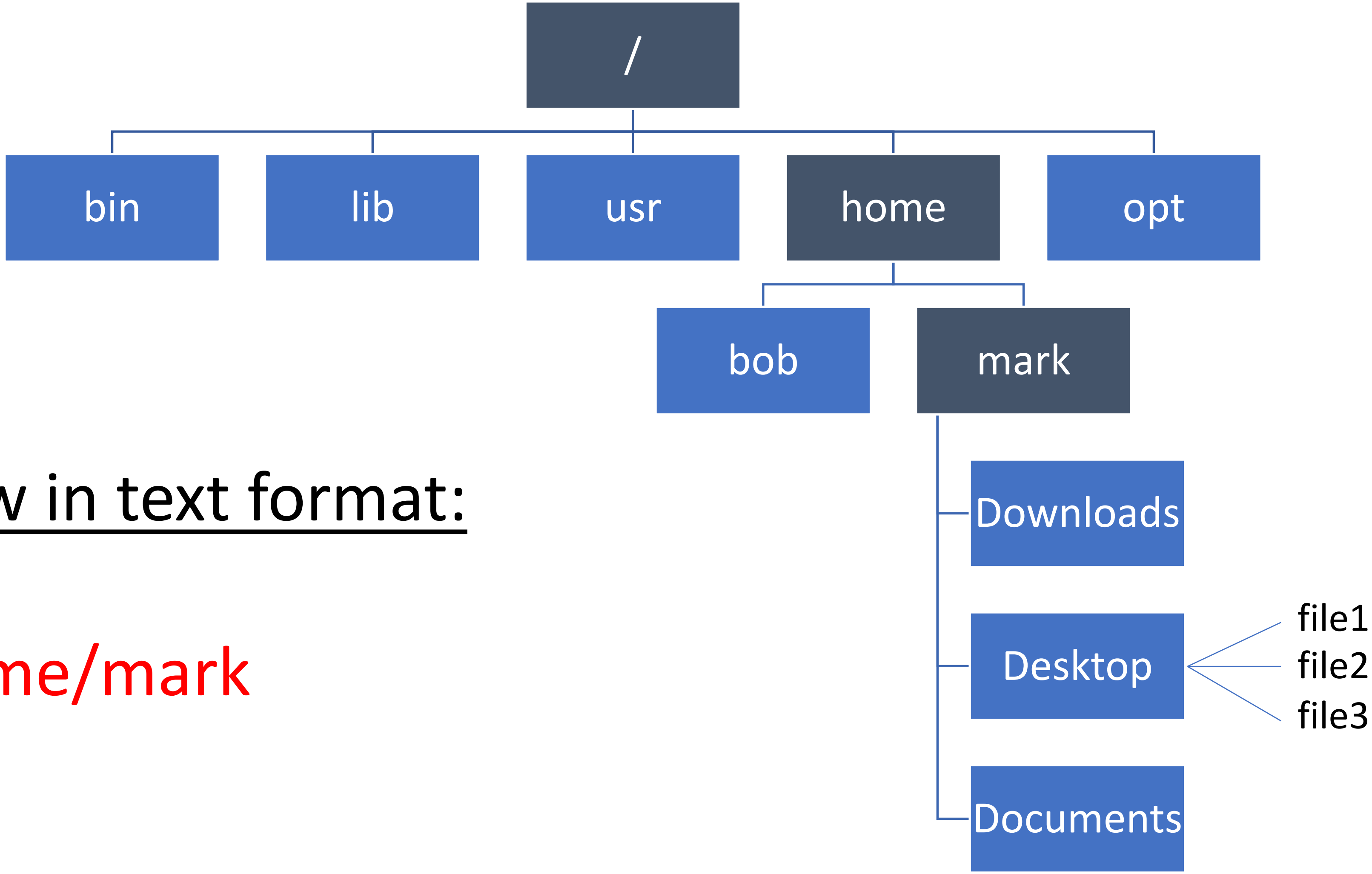
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home

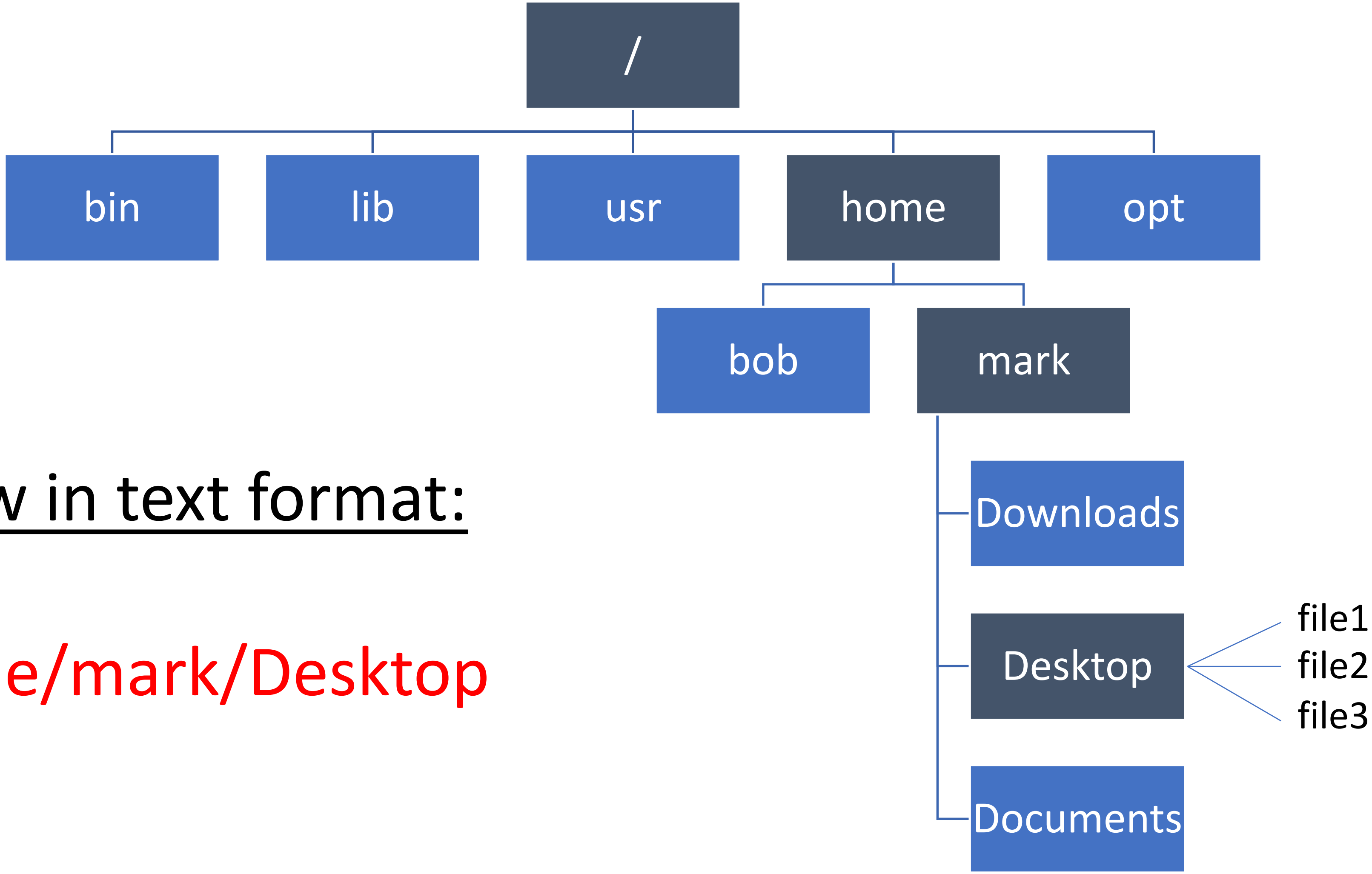
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark

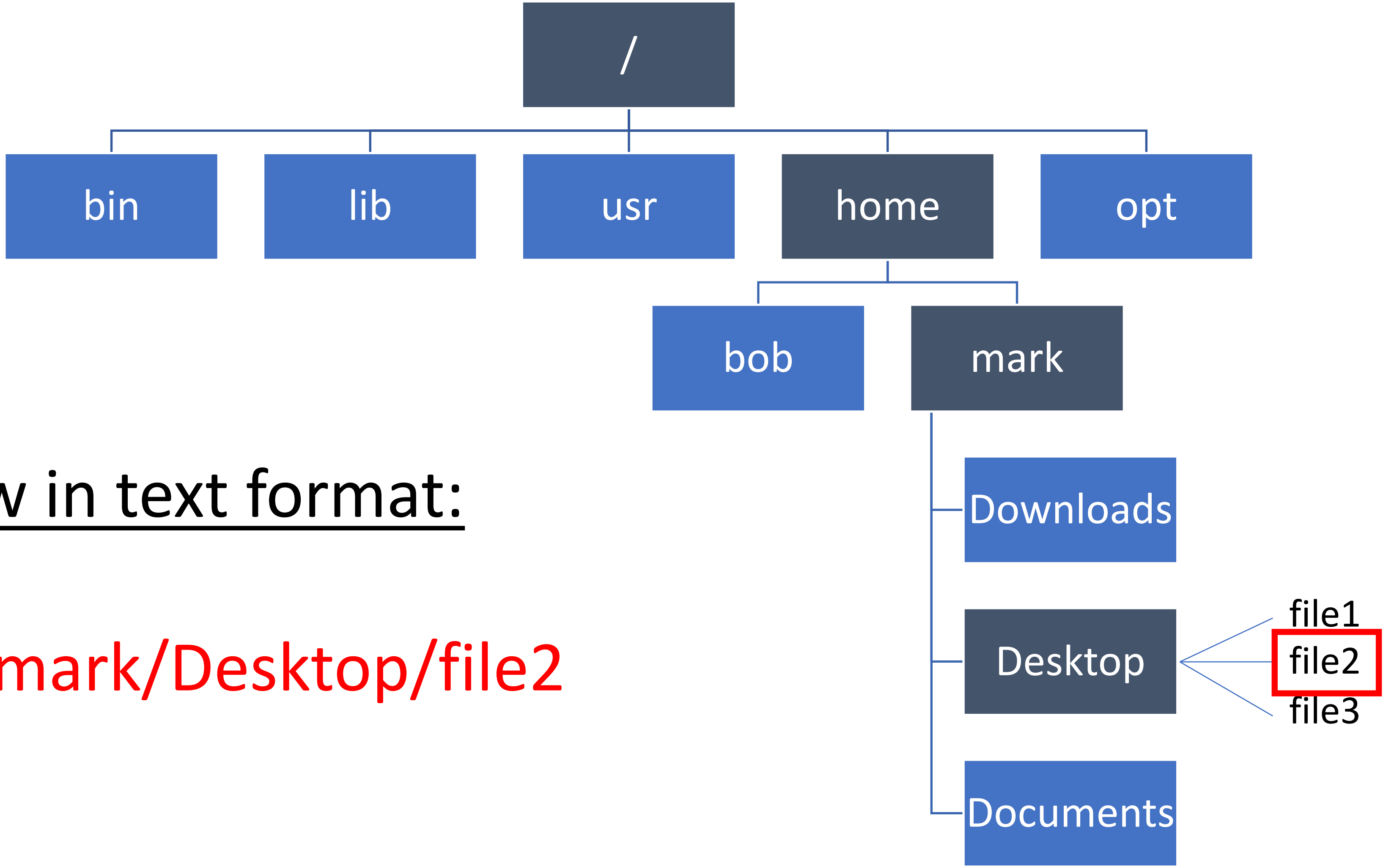
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark/Desktop

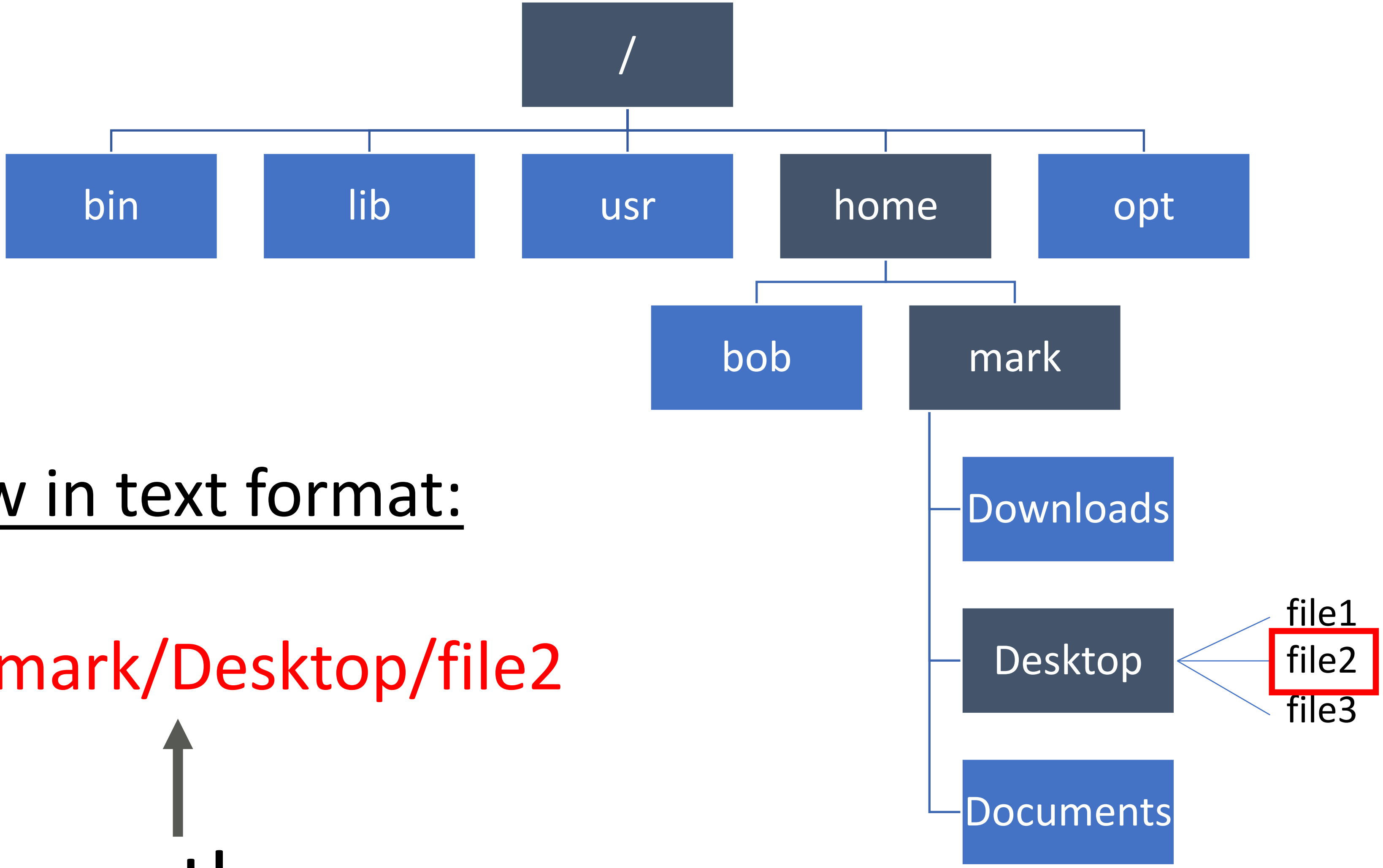
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

Now in text format:

/home/mark/Desktop/file2

The File System

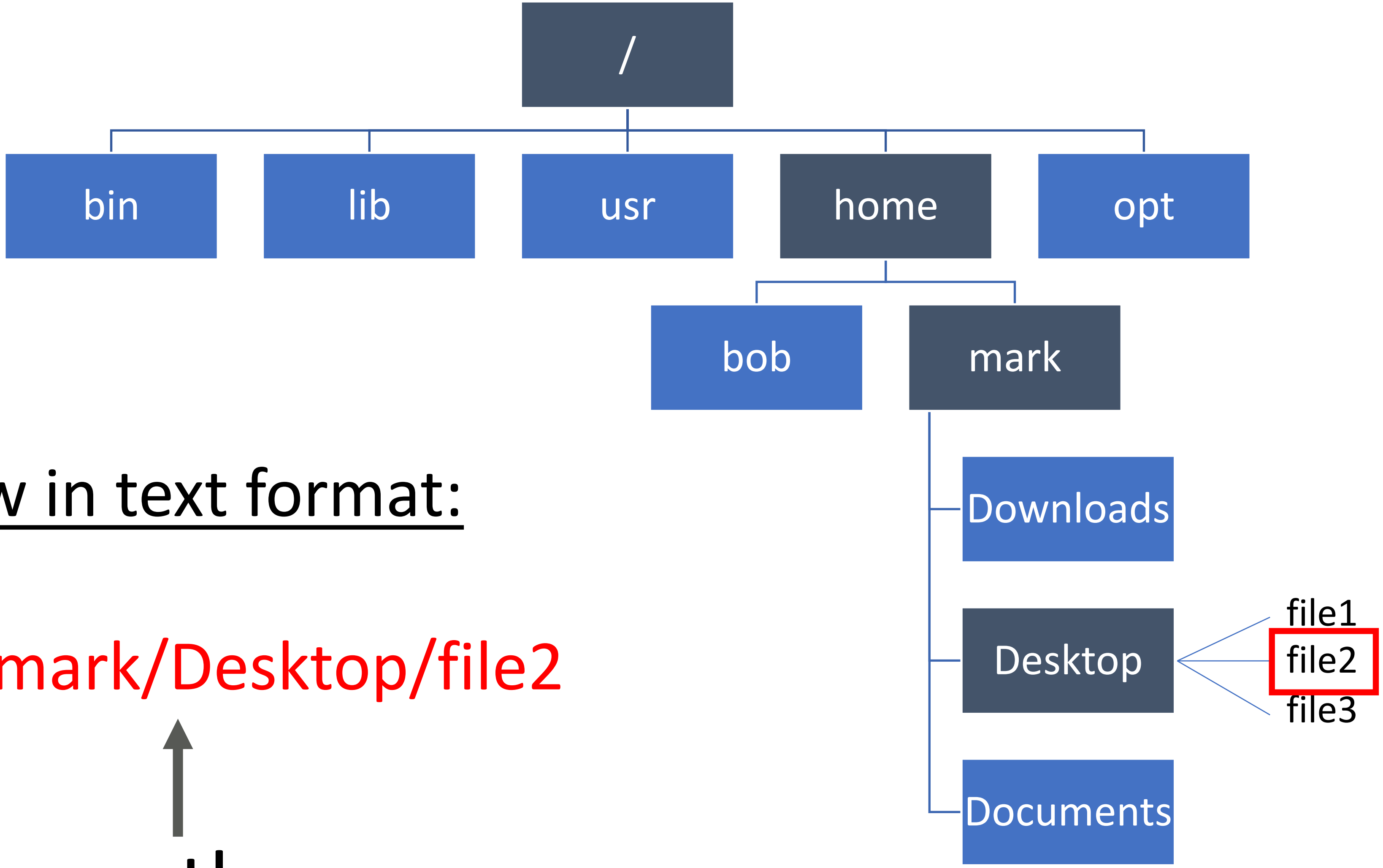

/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark/Desktop/file2

path

The File System

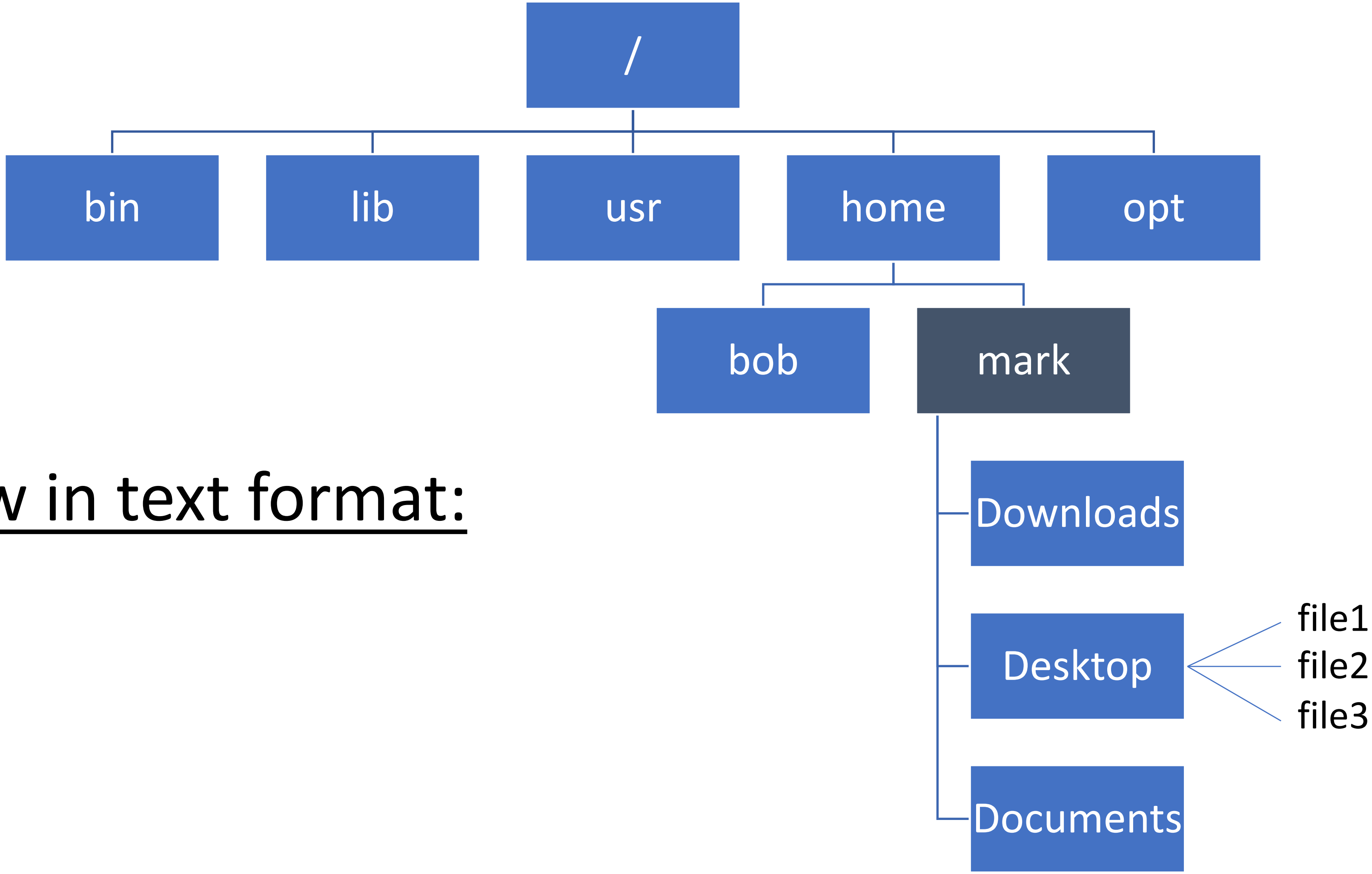

/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark/Desktop/file2

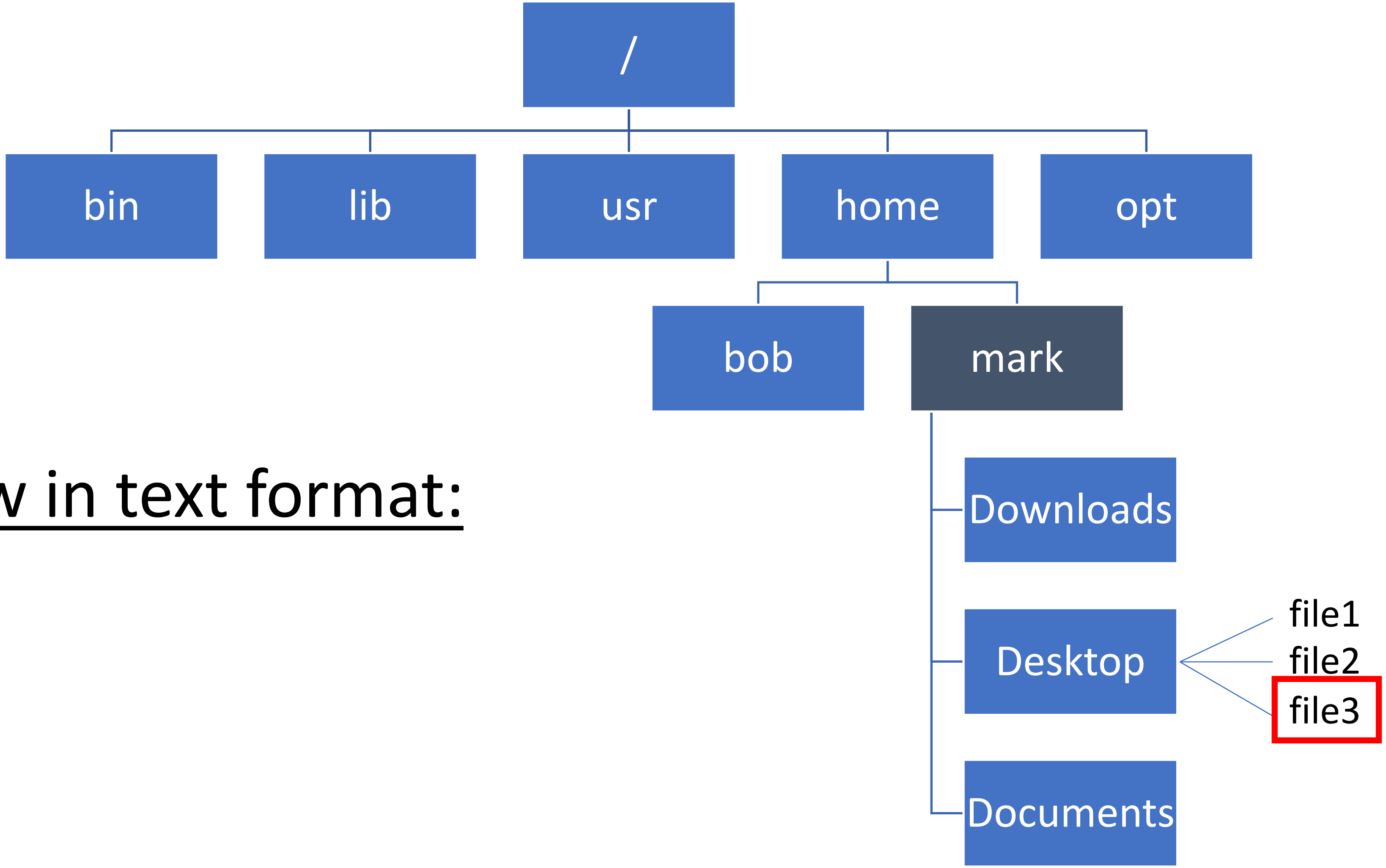
absolute path

The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

Now in text format:

The File System


/
bin
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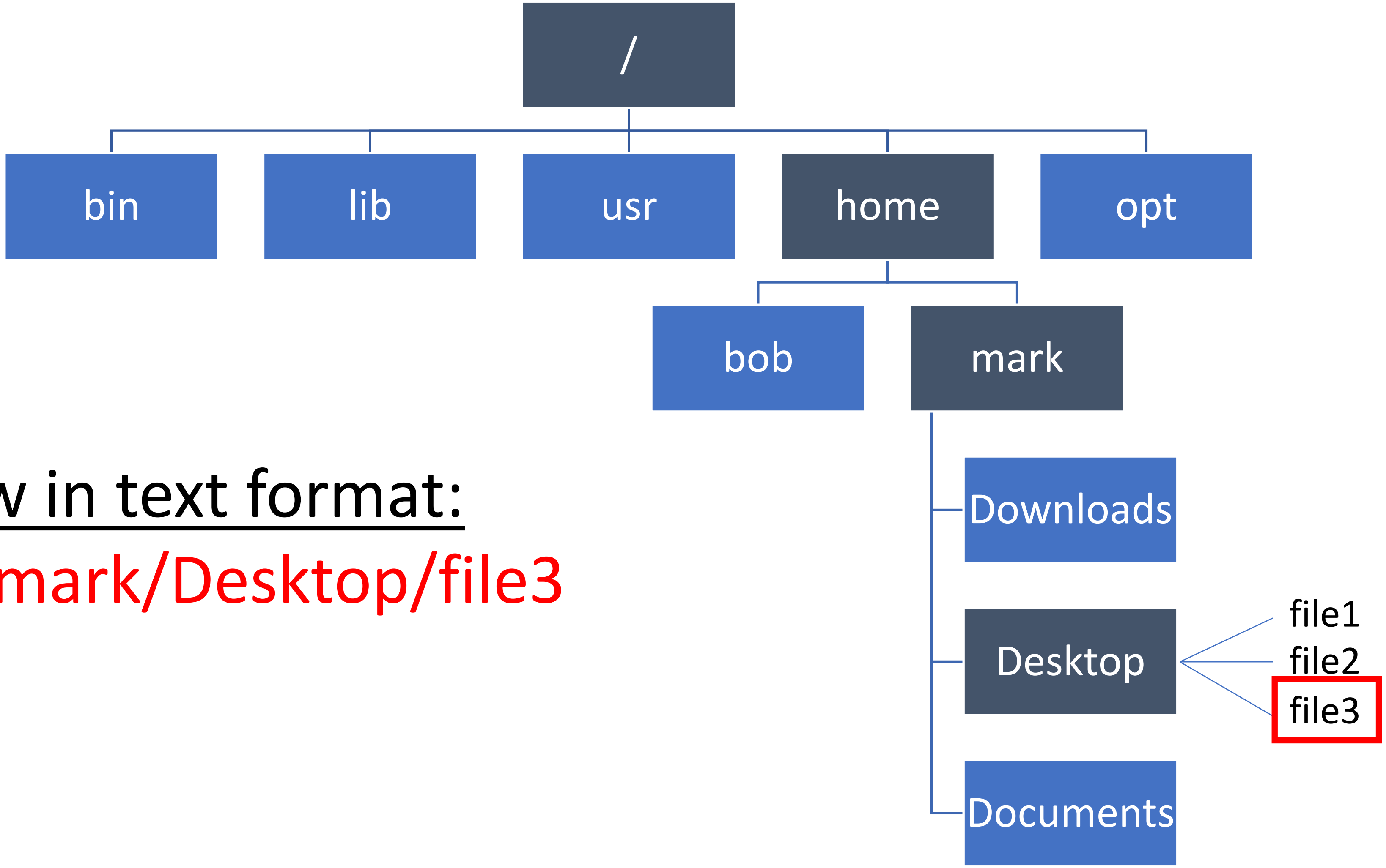
usr
home
opt
bob
mark
Downloads
Desktop
file1
file2
file3
Documents

Now in text format:

The File System


/
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lib
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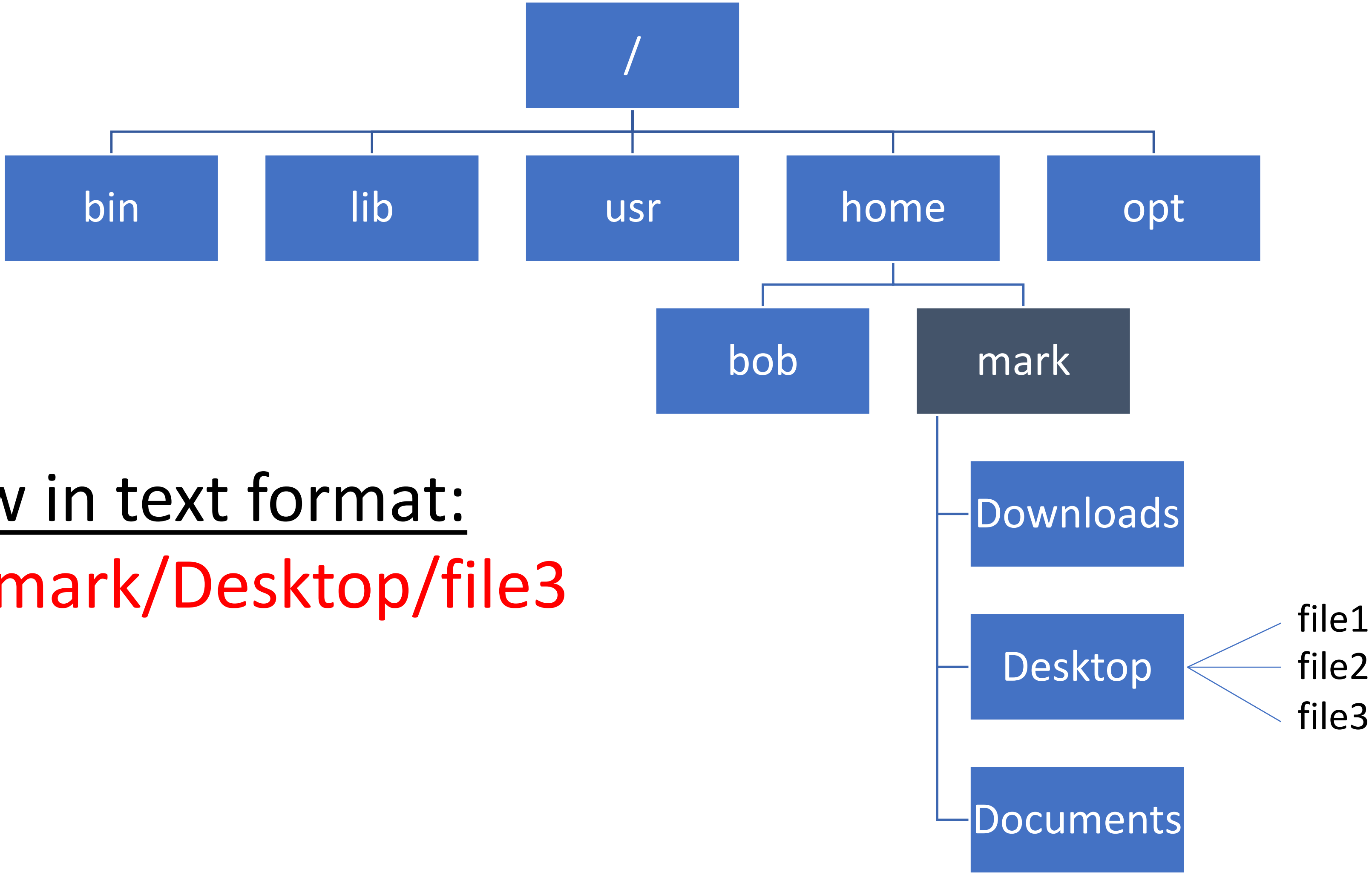
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark/Desktop/file3

The File System


/
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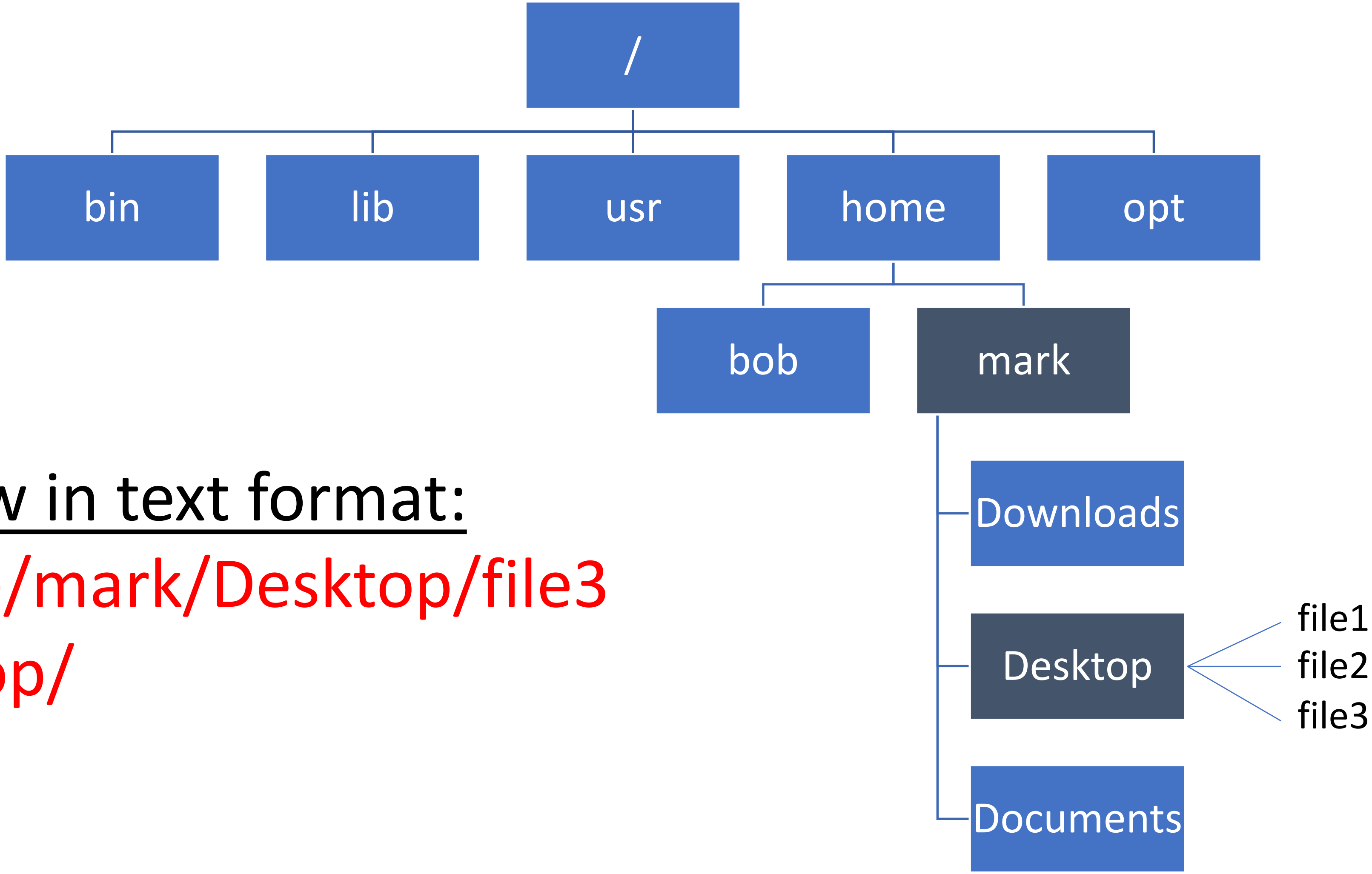
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

/home/mark/Desktop/file3

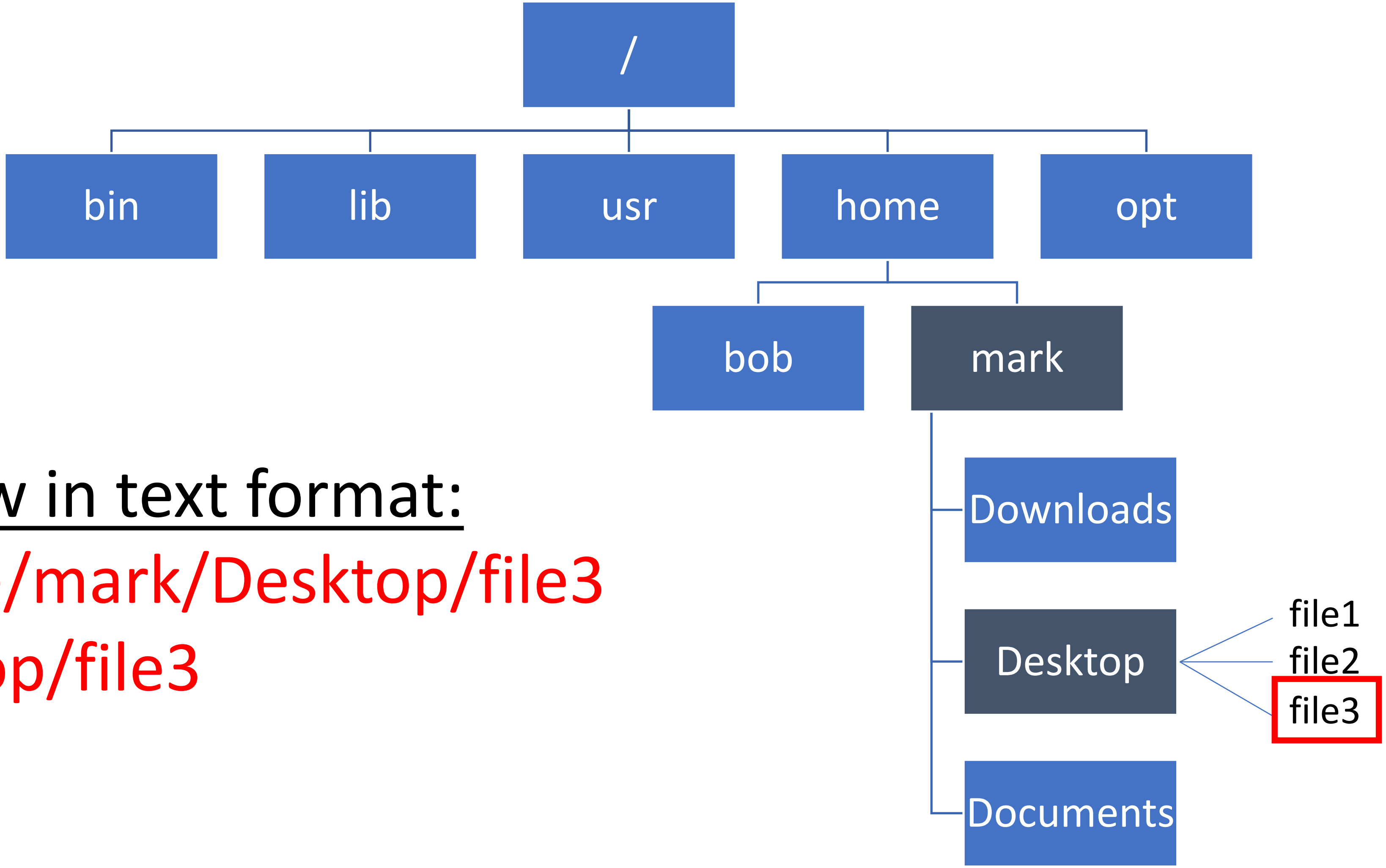
The File System


/
bin
lib
usr
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

- /home/mark/Desktop/file3
- Desktop/

The File System


/
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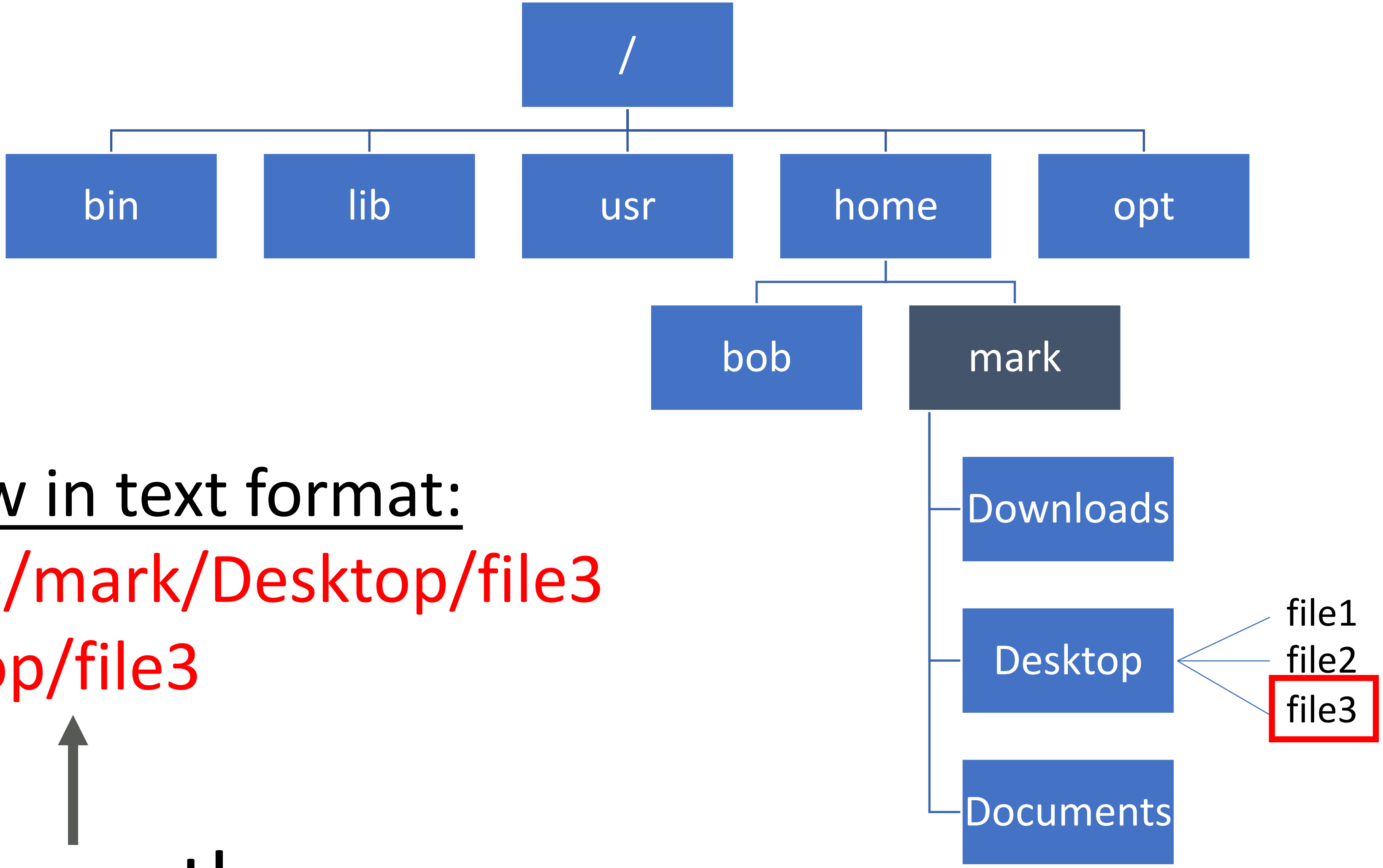
home
opt
bob
mark
Downloads
Desktop
Documents
file1
file2
file3

Now in text format:

- /home/mark/Desktop/file3
- Desktop/file3

The File System



/

bin

lib

usr

home

opt

bob

mark

Downloads

Desktop

file1

file2

file3

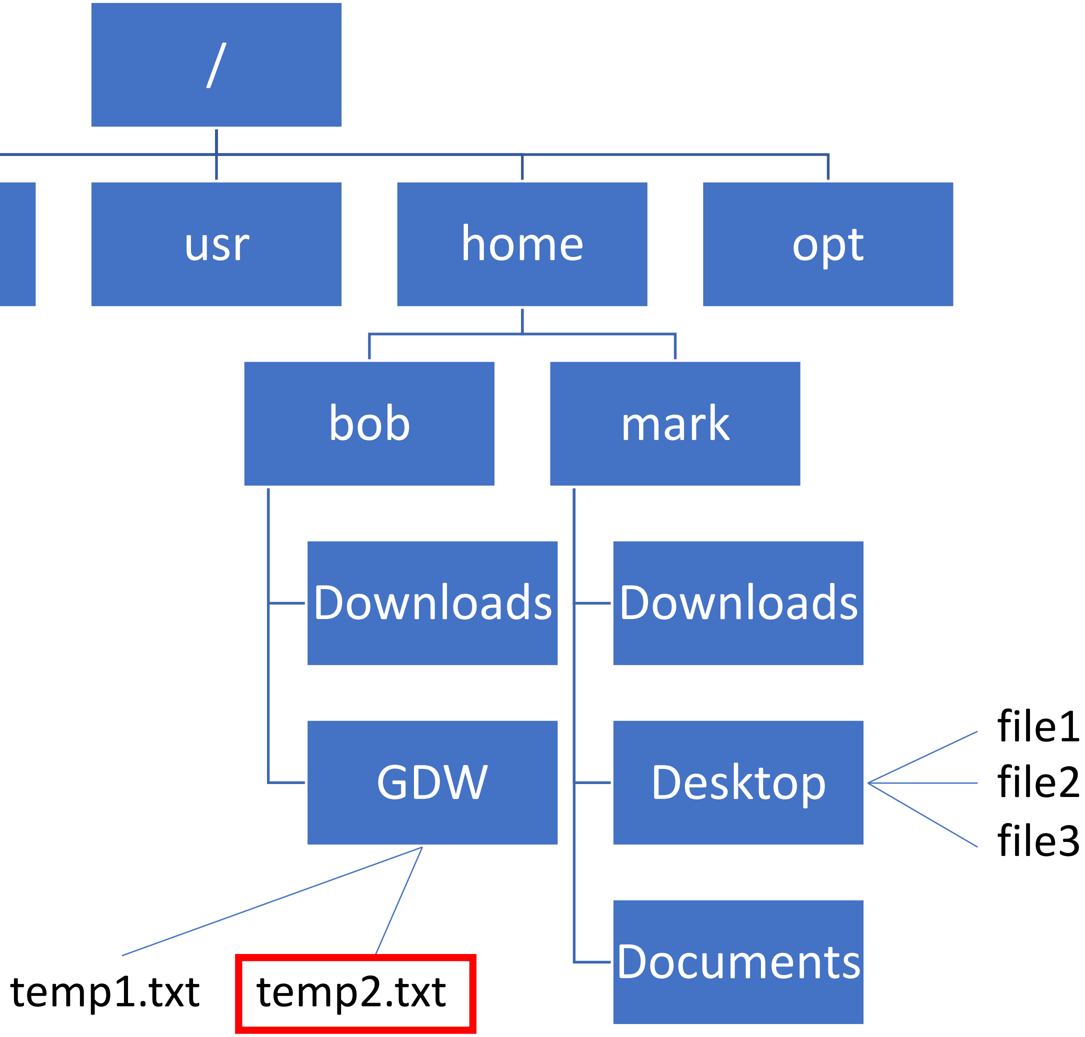
Documents

Now in text format:

- /home/mark/Desktop/file3
- Desktop/file3

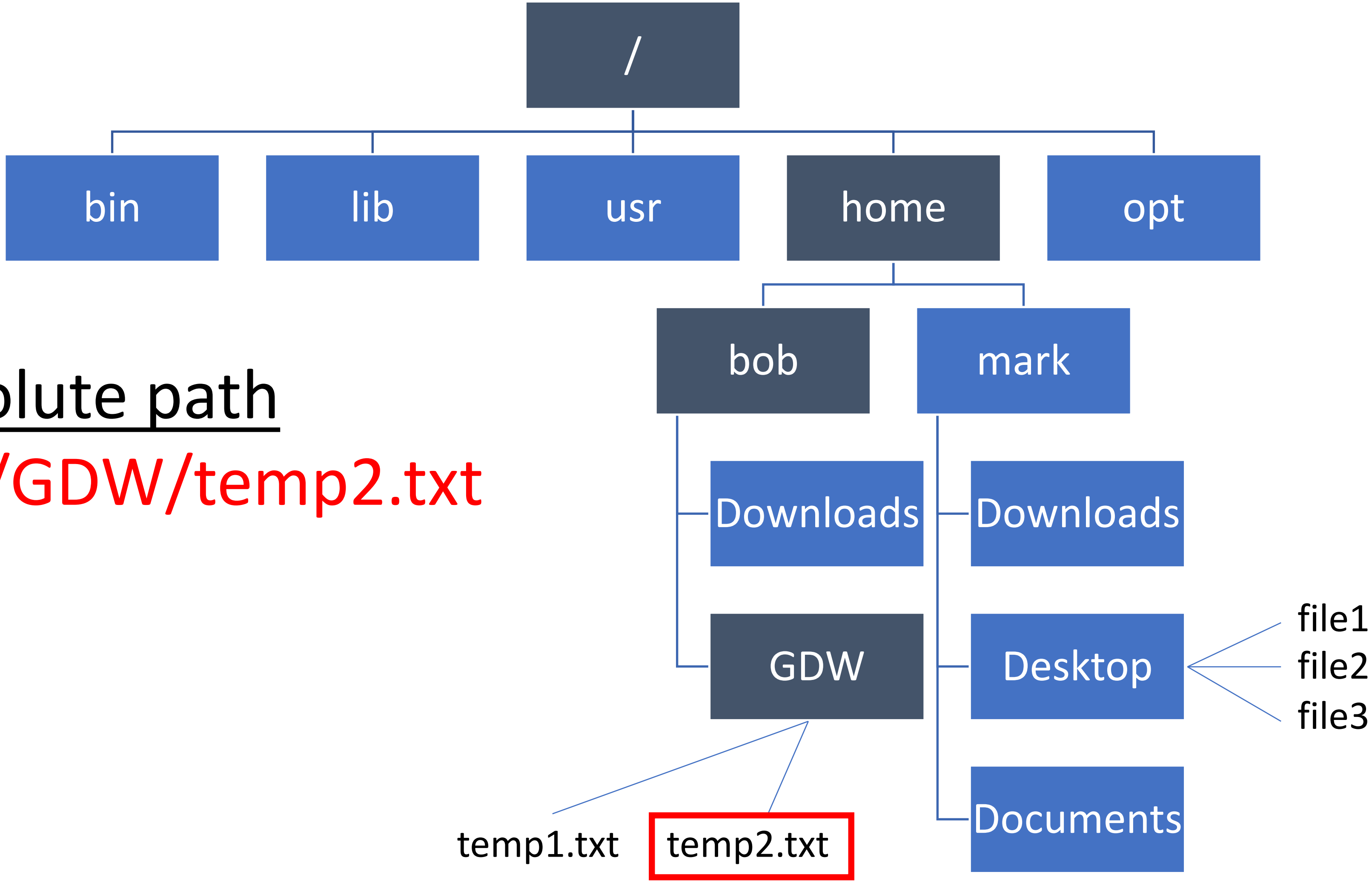
relative path

Quiz Time!


/
bin
lib
usr
home
opt
bob
mark
Downloads
GDW
Downloads
Desktop
Documents
file1
file2
file3
temp1.txt
temp2.txt

Absolute path

Quiz Time!

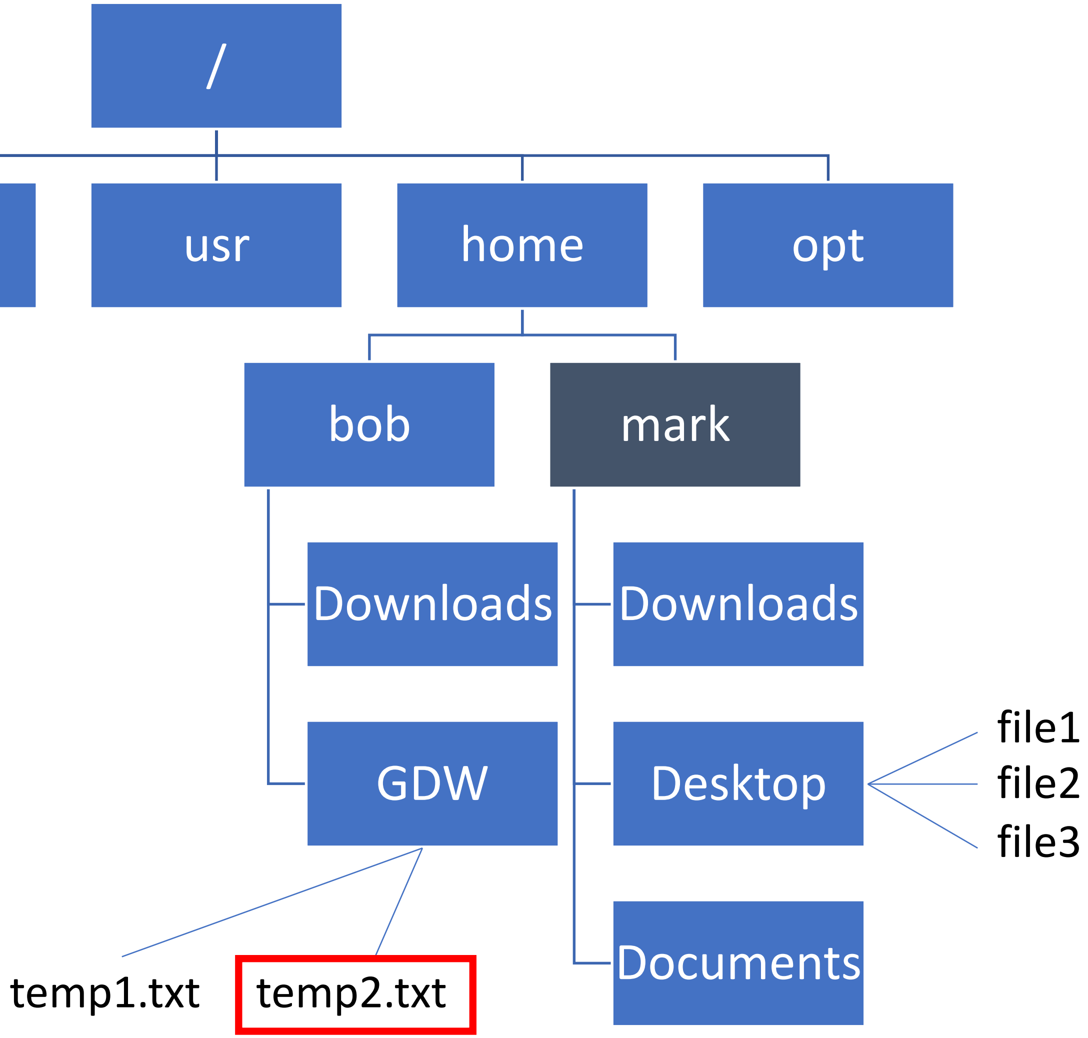

/
bin
lib
usr
home
opt
bob
mark
Downloads
GDW
temp1.txt
temp2.txt
Downloads
Desktop
Documents
file1
file2
file3

Absolute path

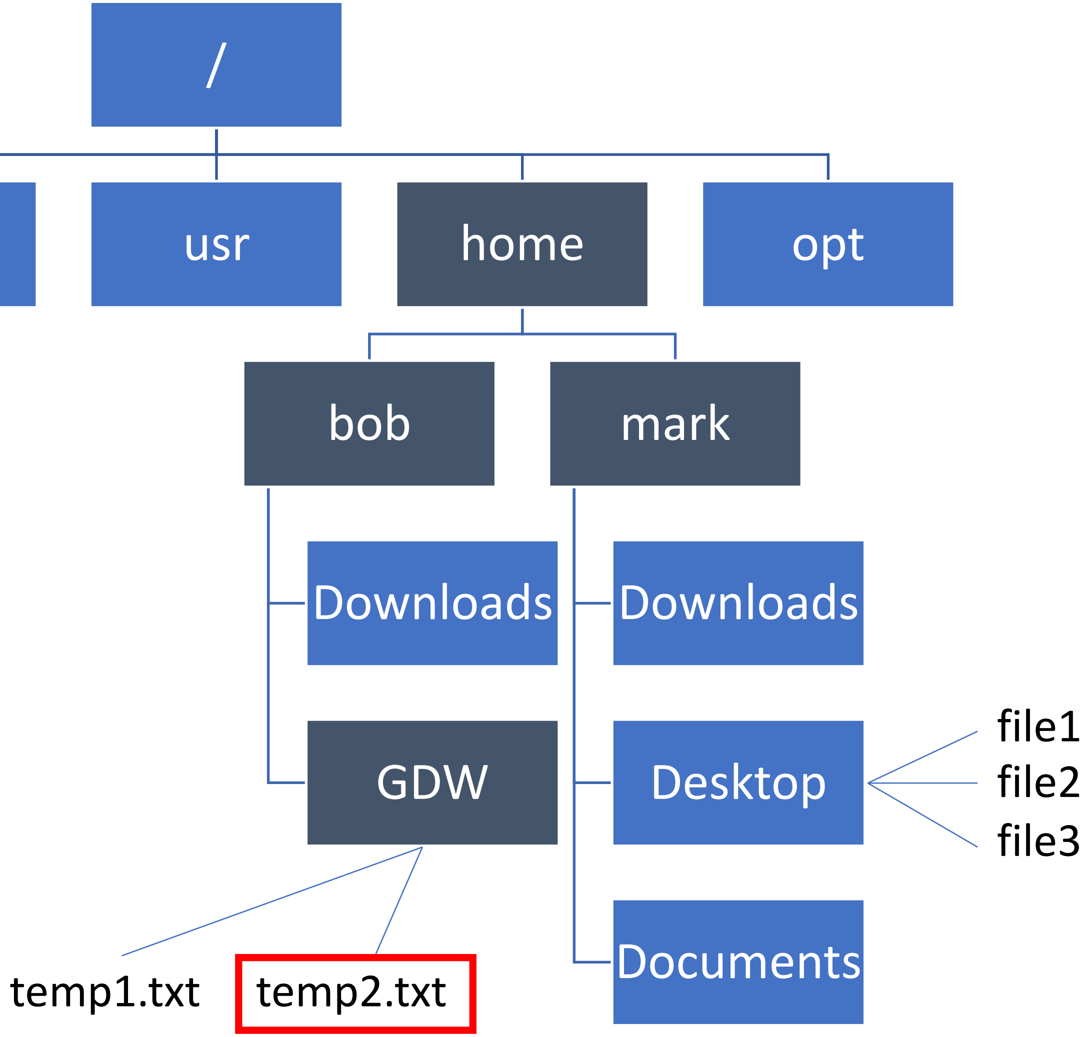
/home/bob/GDW/temp2.txt

Quiz Time!

Relative path


/
bin
lib
usr
home
opt
bob
mark
Downloads
GDW
Downloads
Desktop
Documents
file1
file2
file3
temp1.txt
temp2.txt

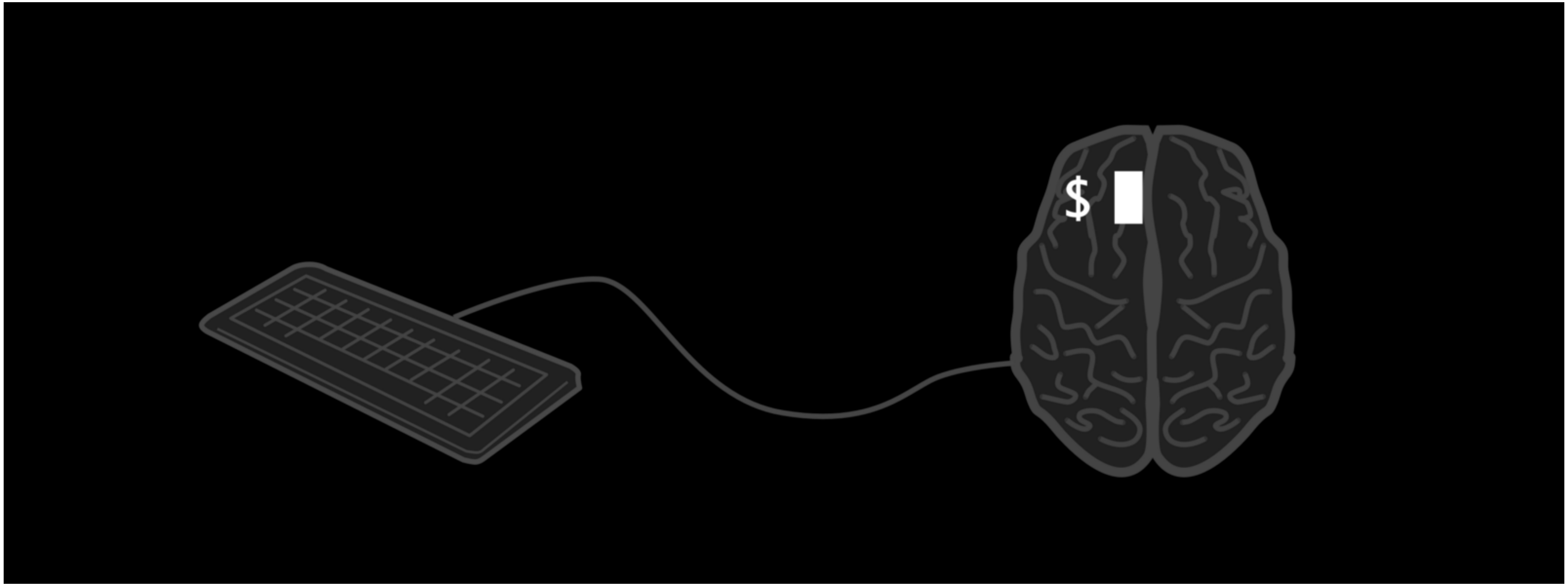
Quiz Time!


/
bin
lib
usr
home
opt
bob
mark
Downloads
GDW
Downloads
Desktop
Documents
file1
file2
file3
temp1.txt
temp2.txt

Relative path

../bob/GDW/temp2.txt

To your terminals!!!

https://github.com/gdw-workshop/2023_GDW_Workshop