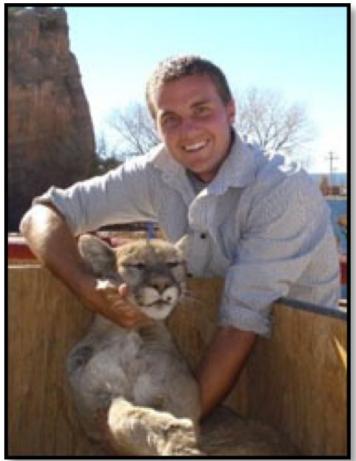


Who Am I?



Bob Fitak, PhD

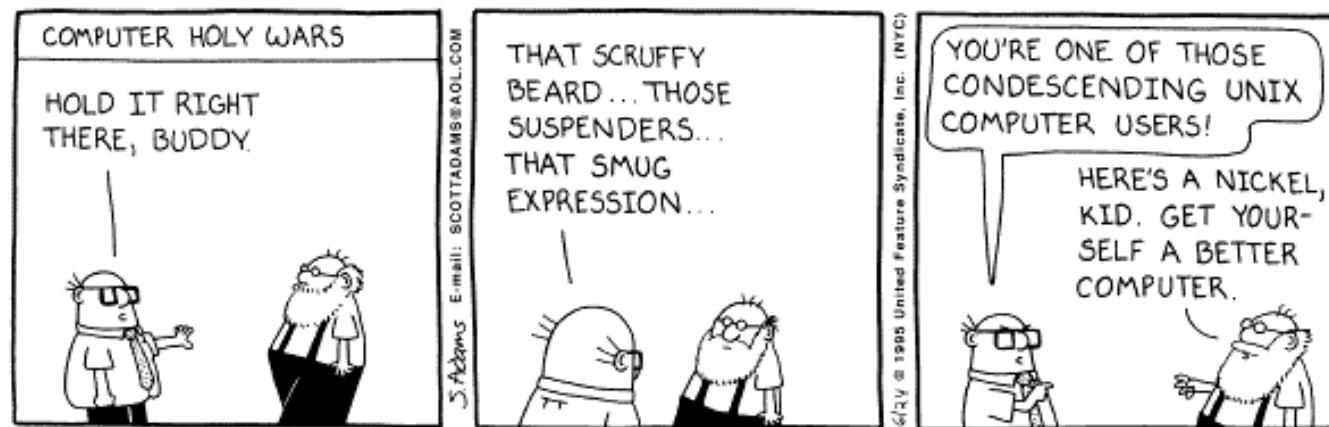
Genomics and Bioinformatics Cluster
Department of Biology
University of Central Florida



The Command Line

a.k.a The terminal

a.k.a. ‘My worst nightmare’ (but really?)



Interacting with a computer

WIMPs

- Windows
- Icons
- Mice
- Pointers



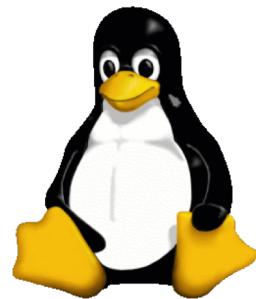
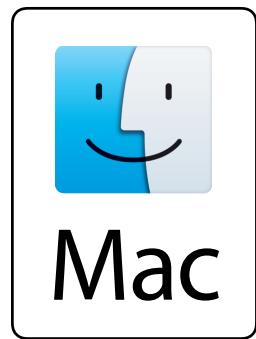
This is probably why
you are here

- Keyboard
- Text only
 - Letters, numbers, and punctuation



Session Goals

- What is the command line interface (**CLI**)?
- Learn fundamental commands of a **UNIX** operating system
 - Basis for Mac and Linux operating systems

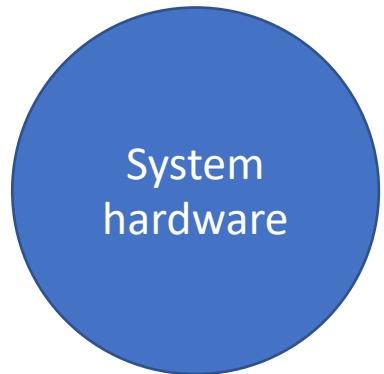


What is UNIX?

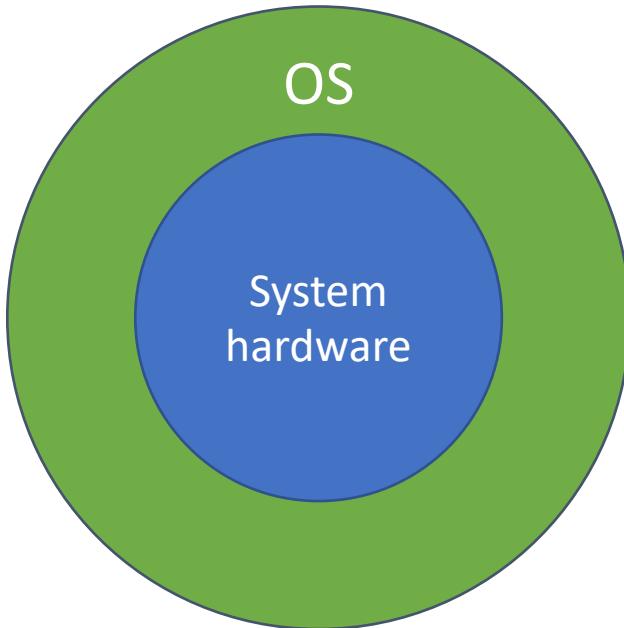
- An Operating System – (OS)
 - Developed in the 1960's by AT&T
 - Flexible and stable
 - Allows users to
 - Run Programs
 - Manage Resources
 - Access the folders and files
 - Communicate with other computer systems
 - Multi-user (e.g., server)
 - multi-tasking (do several things concurrently)



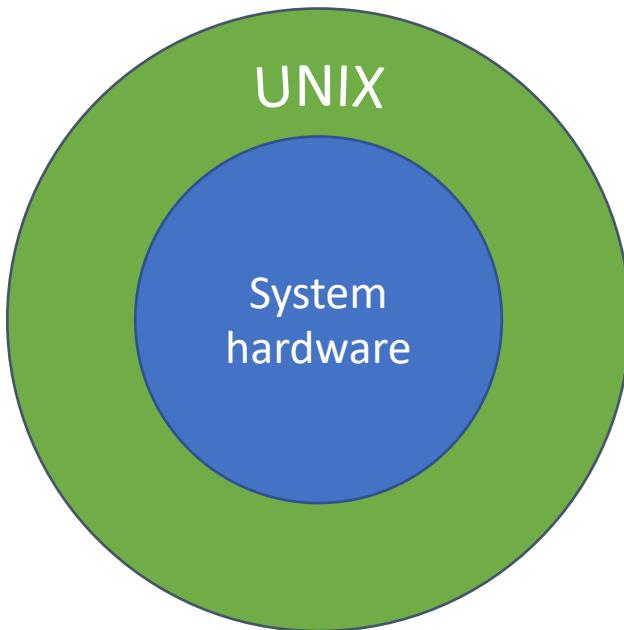
UNIX



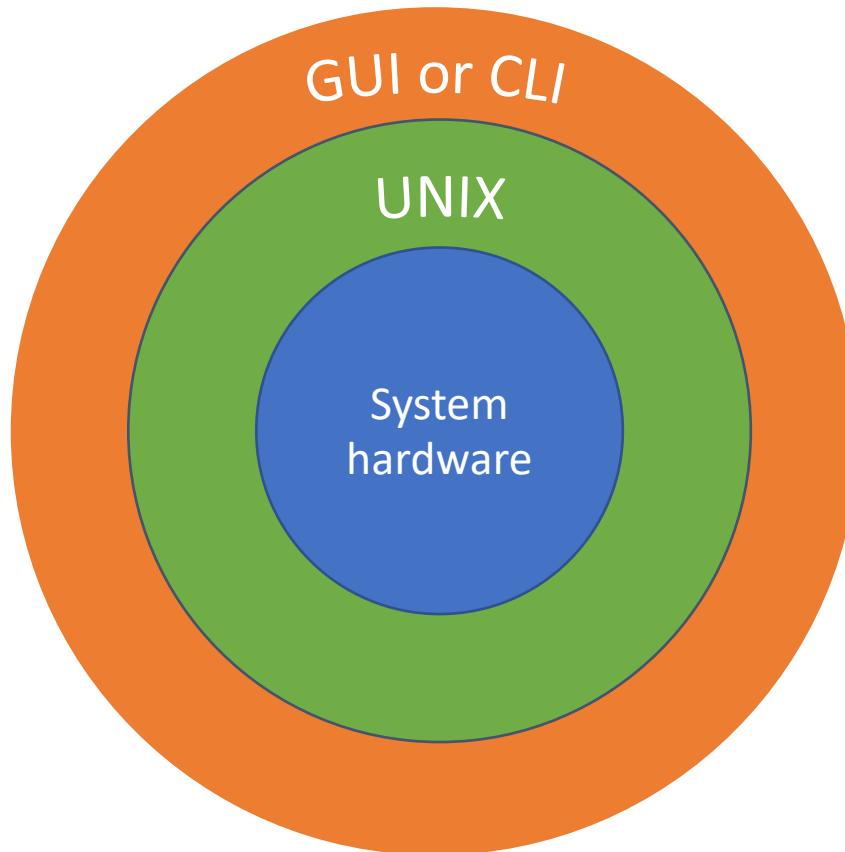
UNIX



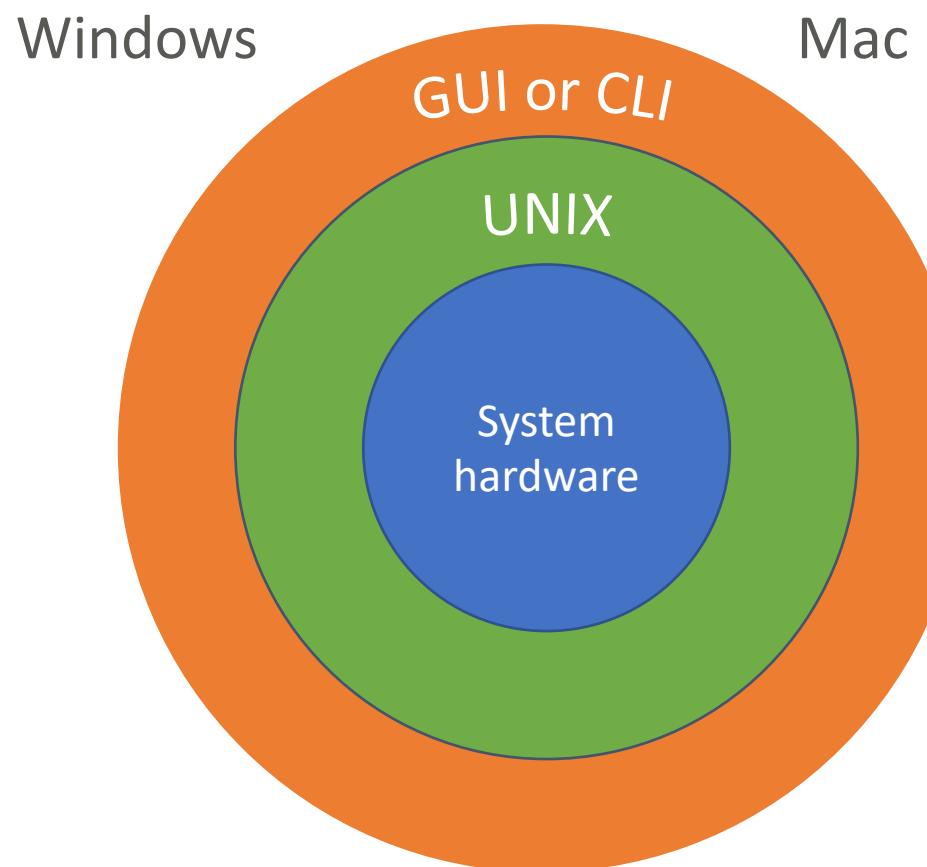
UNIX



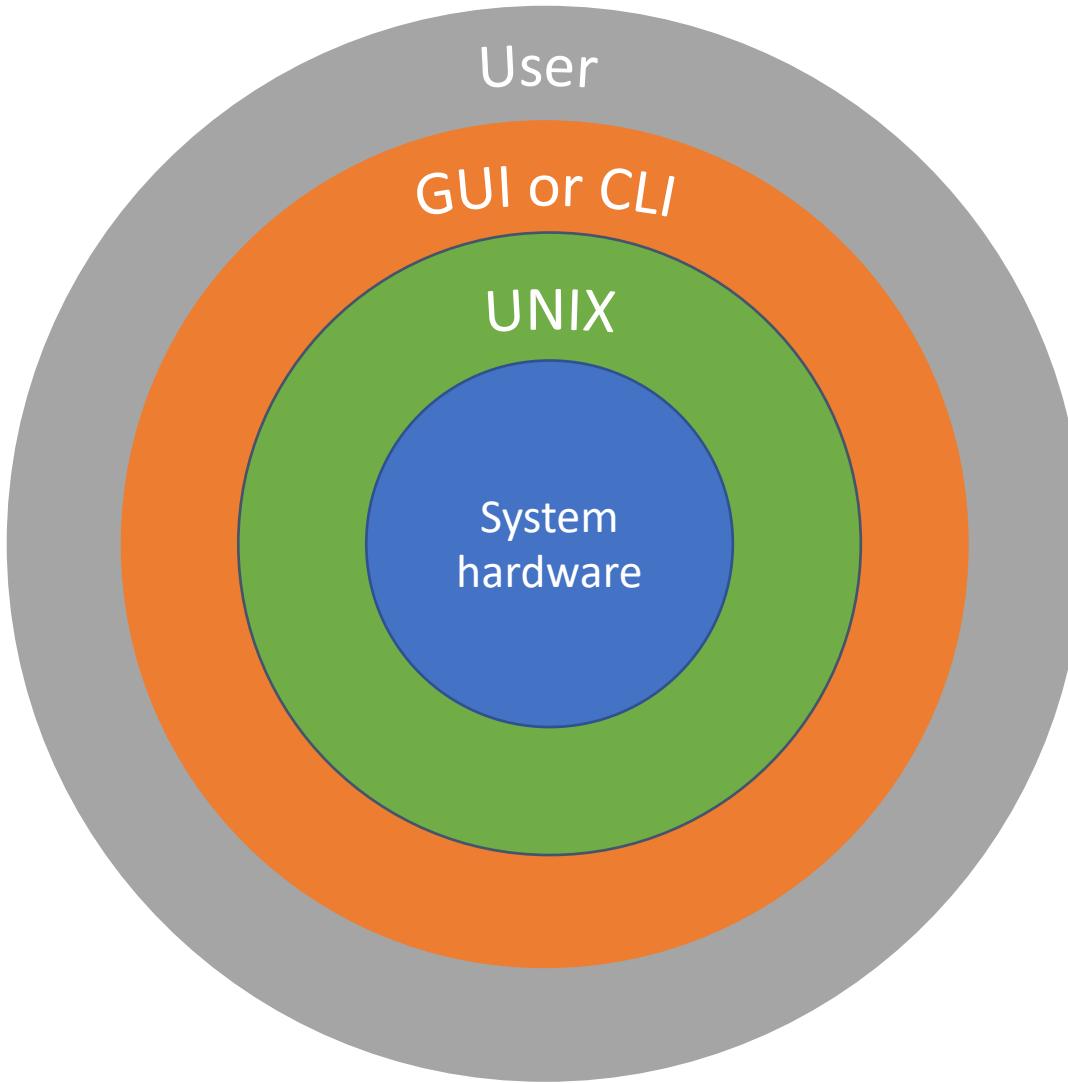
UNIX



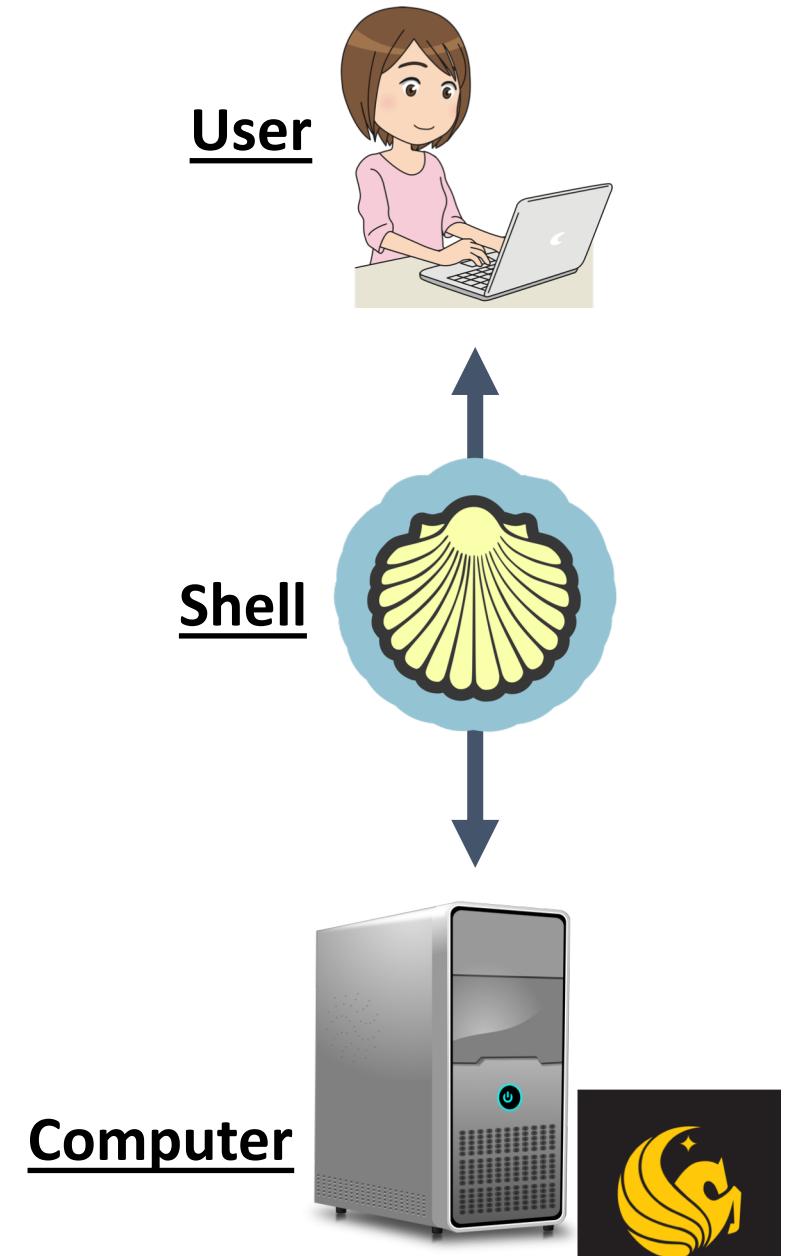
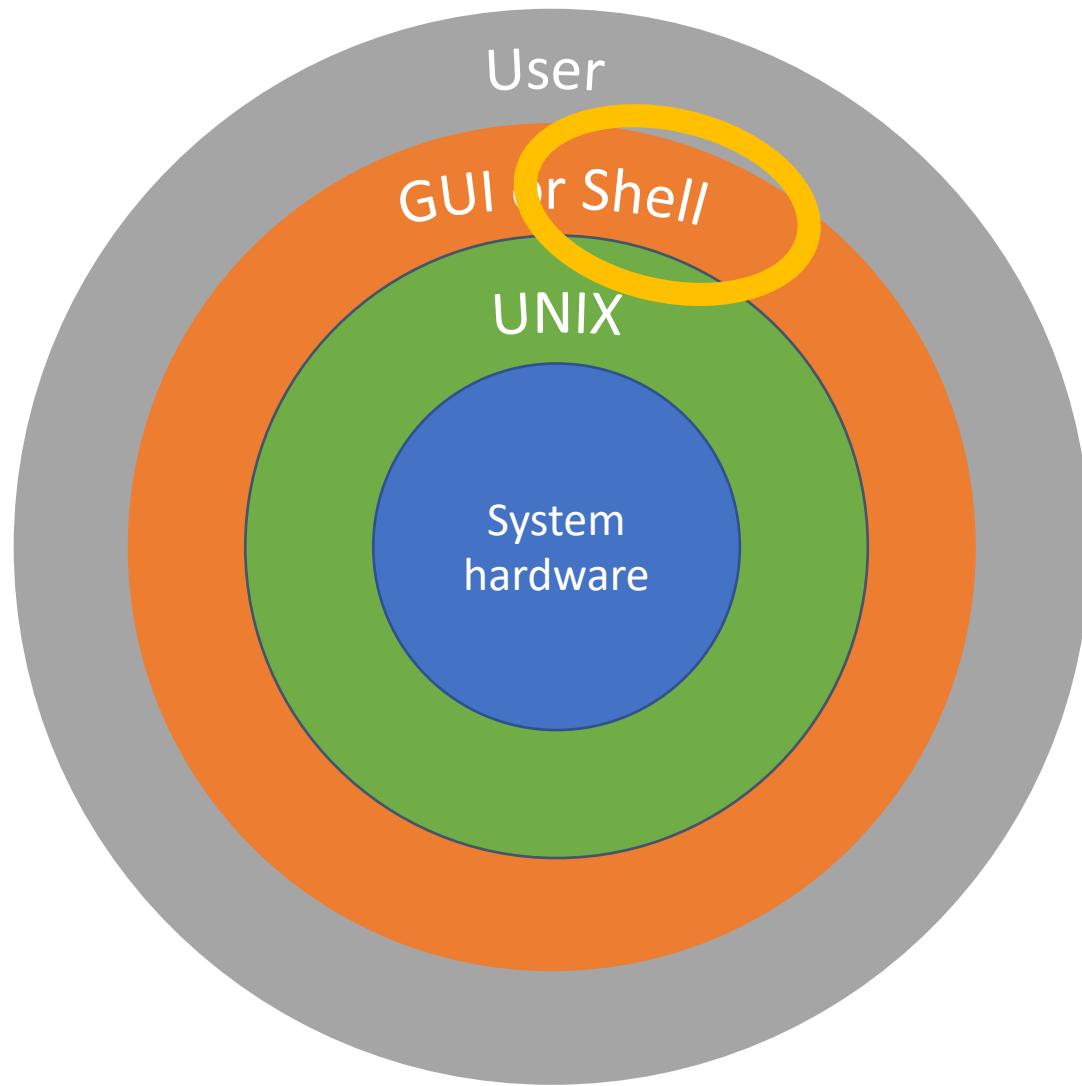
UNIX



UNIX



UNIX



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

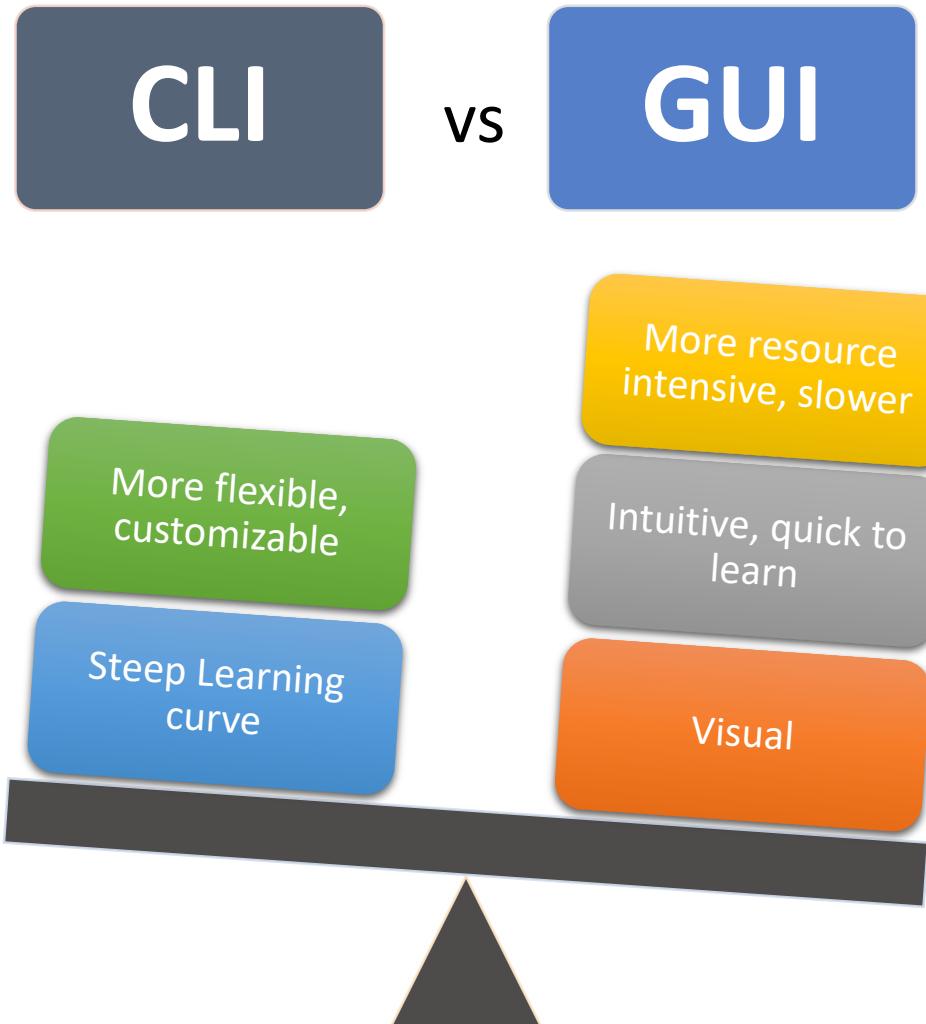
The diagram illustrates a comparison between a graphical user interface (Windows Start menu) and a command-line interface (CLI terminal). On the left, the Windows Start menu is displayed with a grid of icons for various applications like Scanner, Games, Photos, Calendar, Word 2013, OneDrive, etc. On the right, a terminal window shows a command-line session. The terminal output includes a command to show issue details from a bug tracking system, followed by the issue's description, milestones, category, estimated time, spent time, percent complete, priority, and two comments. The comments discuss the status update, assignee change, and a note about checking the version number.

```
pent/web/thebuggenie $ ./tbg_cli remote;show_issue thebuggenie 389 --include_comments
Detailed information about thebuggenie issue #389 on http://thebuggenie.com
[EN] Add Bug Genie version to general tab of configuration page
[EN]
Tue, 15 Feb 2011 12:07:44 GMT (1297771664)
Created 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 list sometimes the engineer upgrades the system overnight and does not tell me.

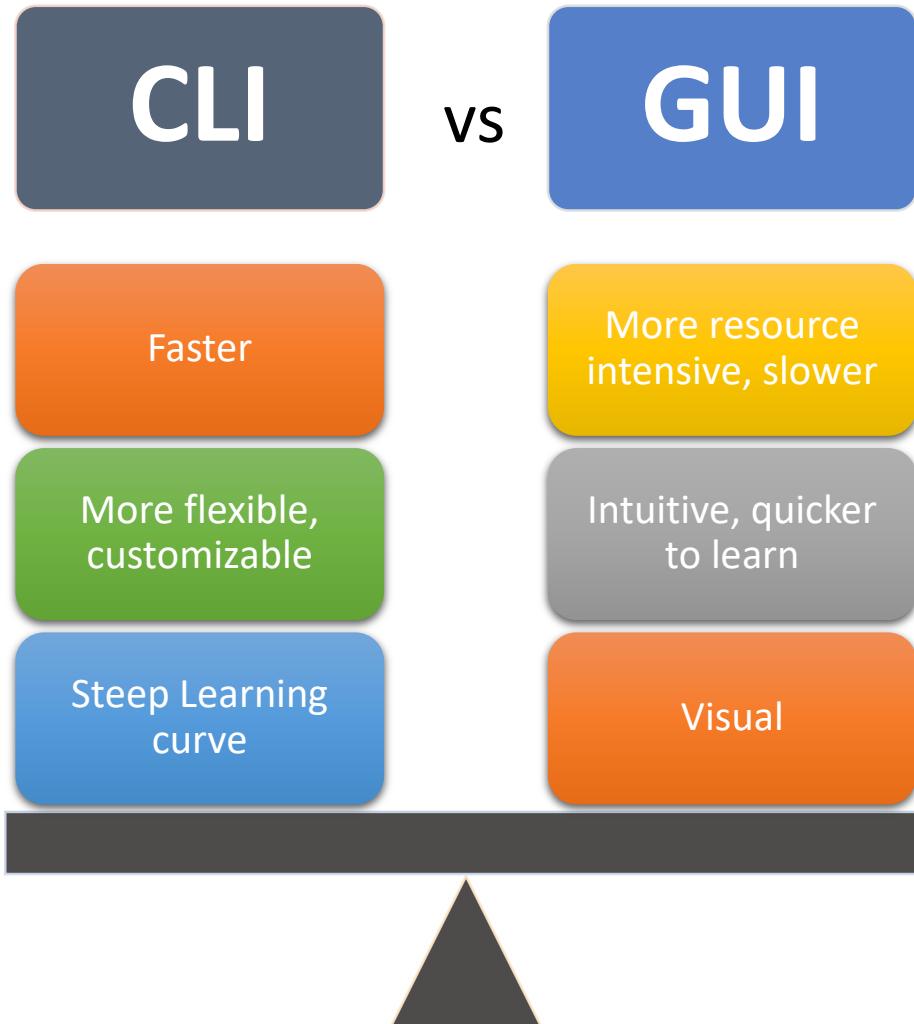
Milestone: -
Category: -
Estimated time: -
Spent time: -
Percent complete: -
Priority: -
Comments:
Comment #1
Posted by: zegenie
Posted: Tue, 15 Feb 2011 12:26:25 GMT (1297772785)
Comment: The issue was updated with the following change(s):
* The status has been updated, from "New" to "In progress".
* The assignee has been changed, from "Not assigned" to "zegenie".
* Information about the user working on this issue has been changed, from "Not being worked on" to "Working on it".
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.
*****
```



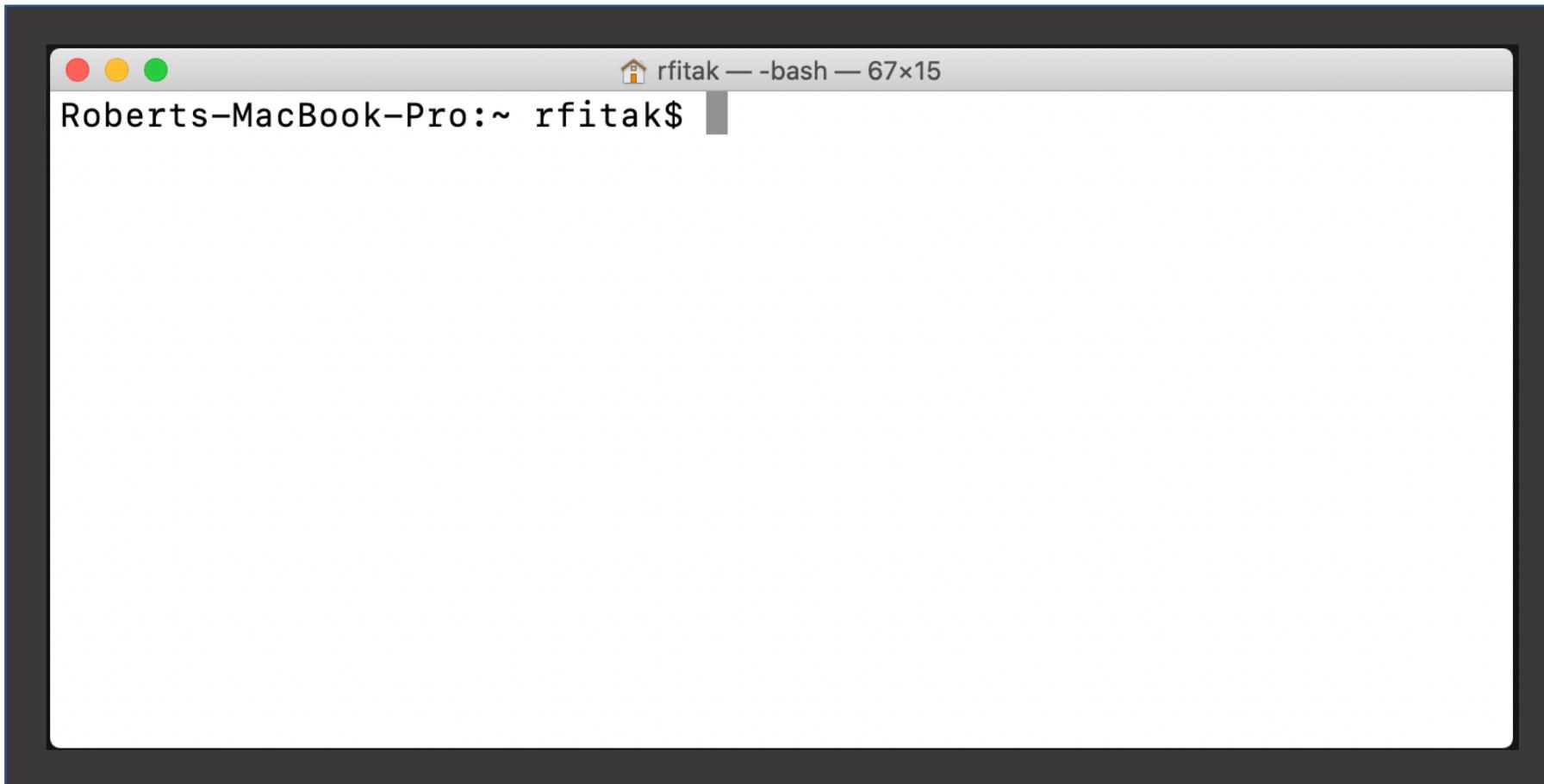
Command Line Interface (CLI): Advantages vs Disadvantages



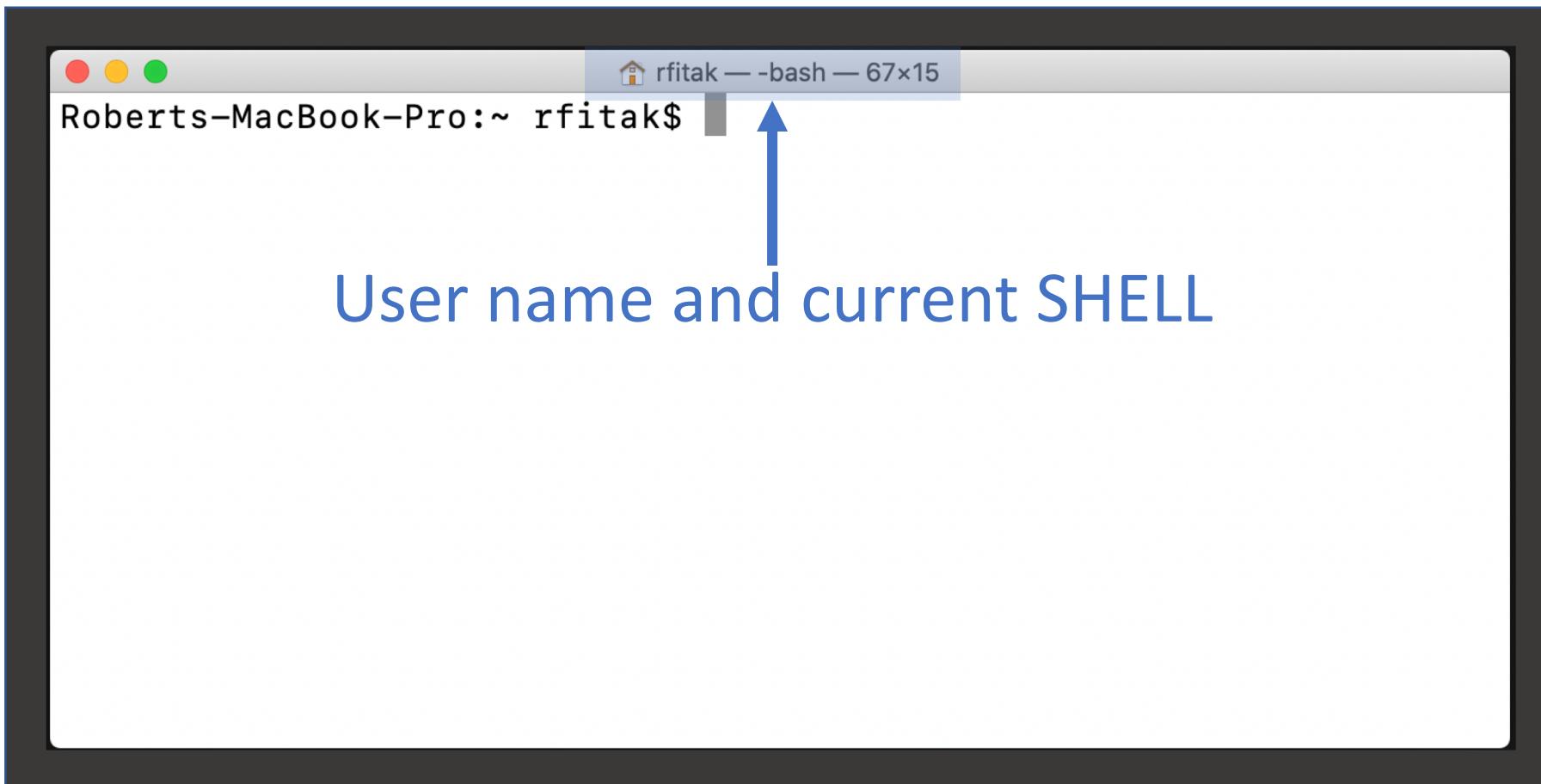
Command Line Interface (CLI): Advantages vs Disadvantages



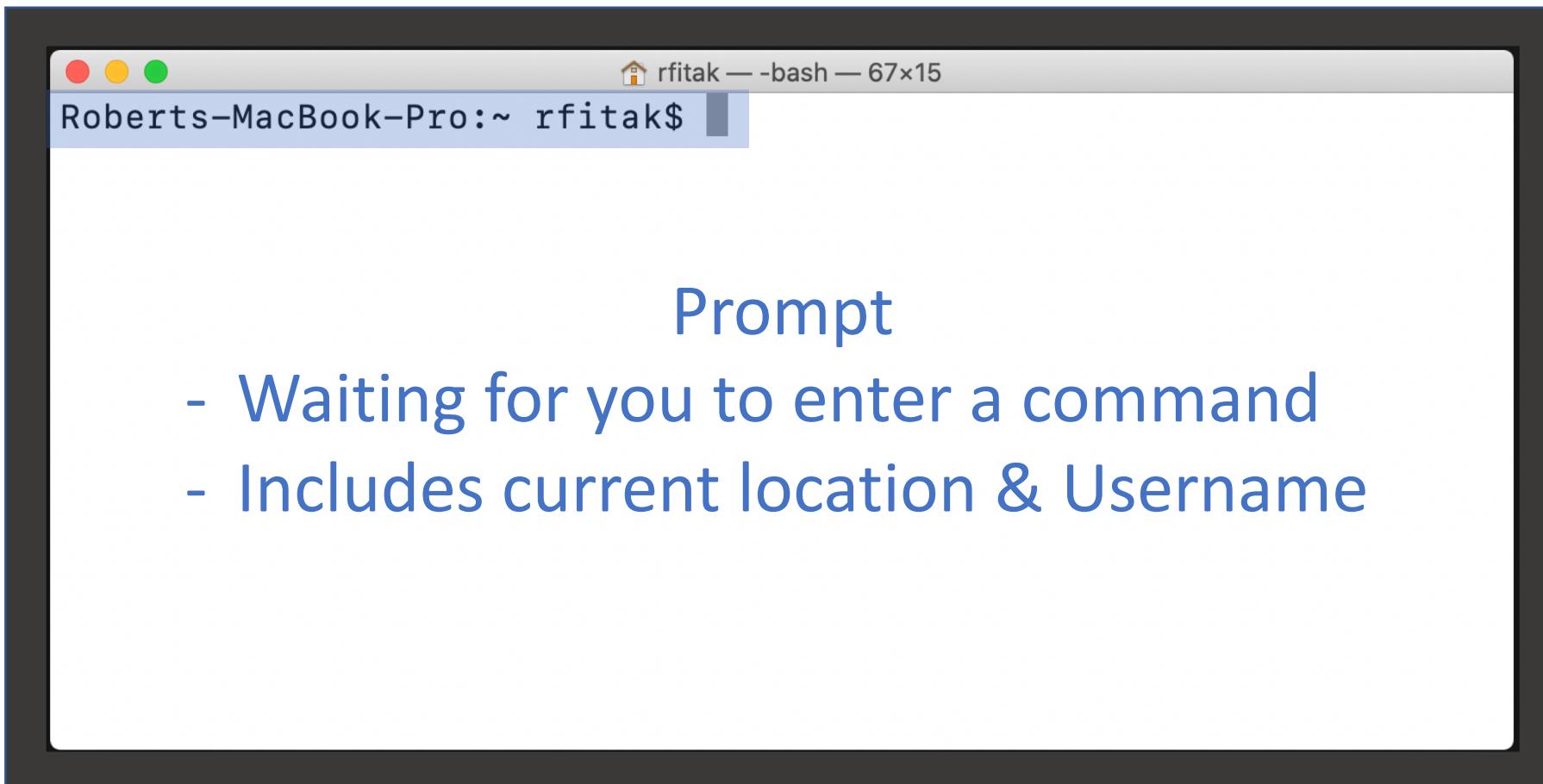
The Terminal



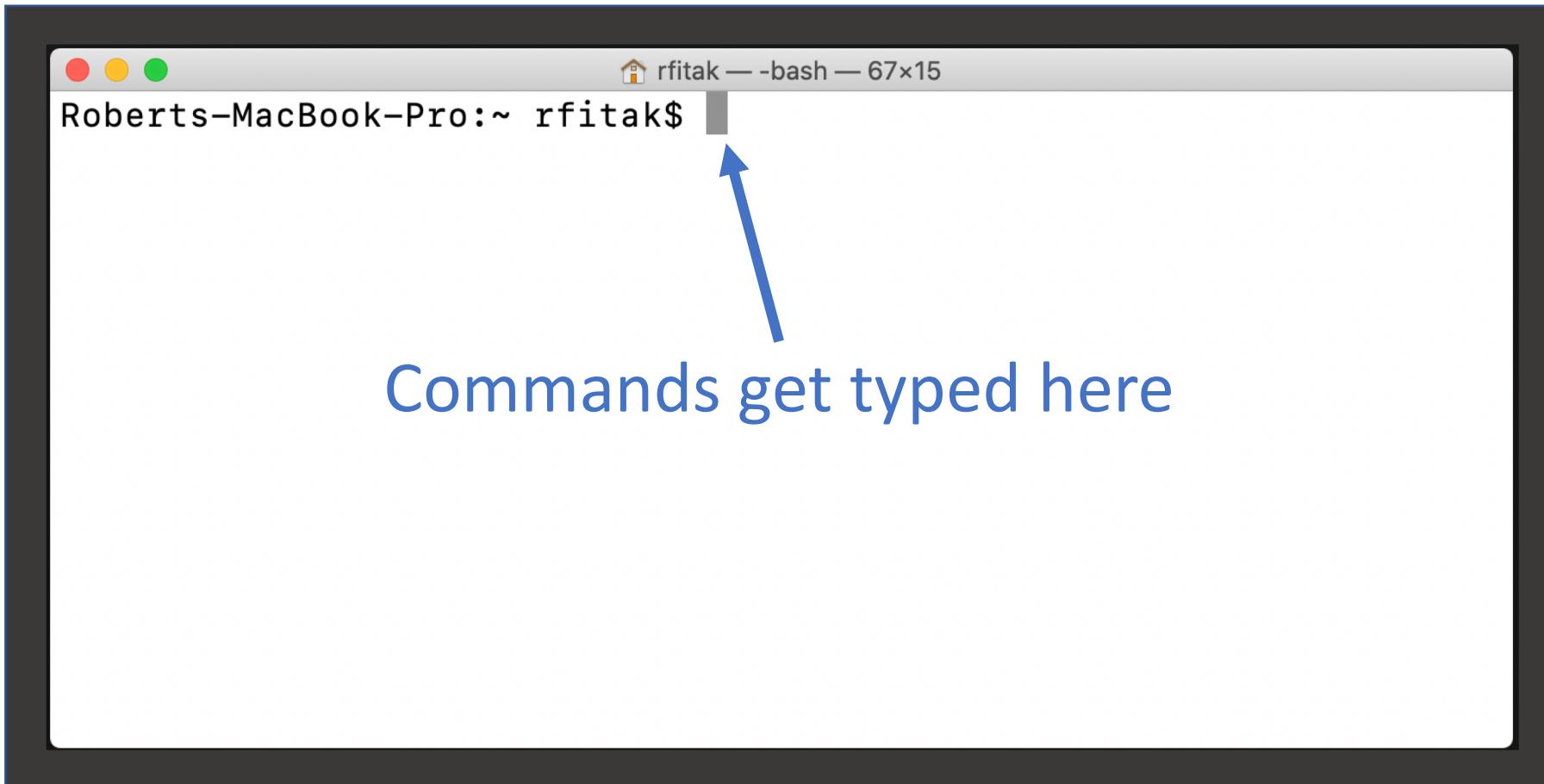
The Terminal



The Terminal



The Terminal



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:

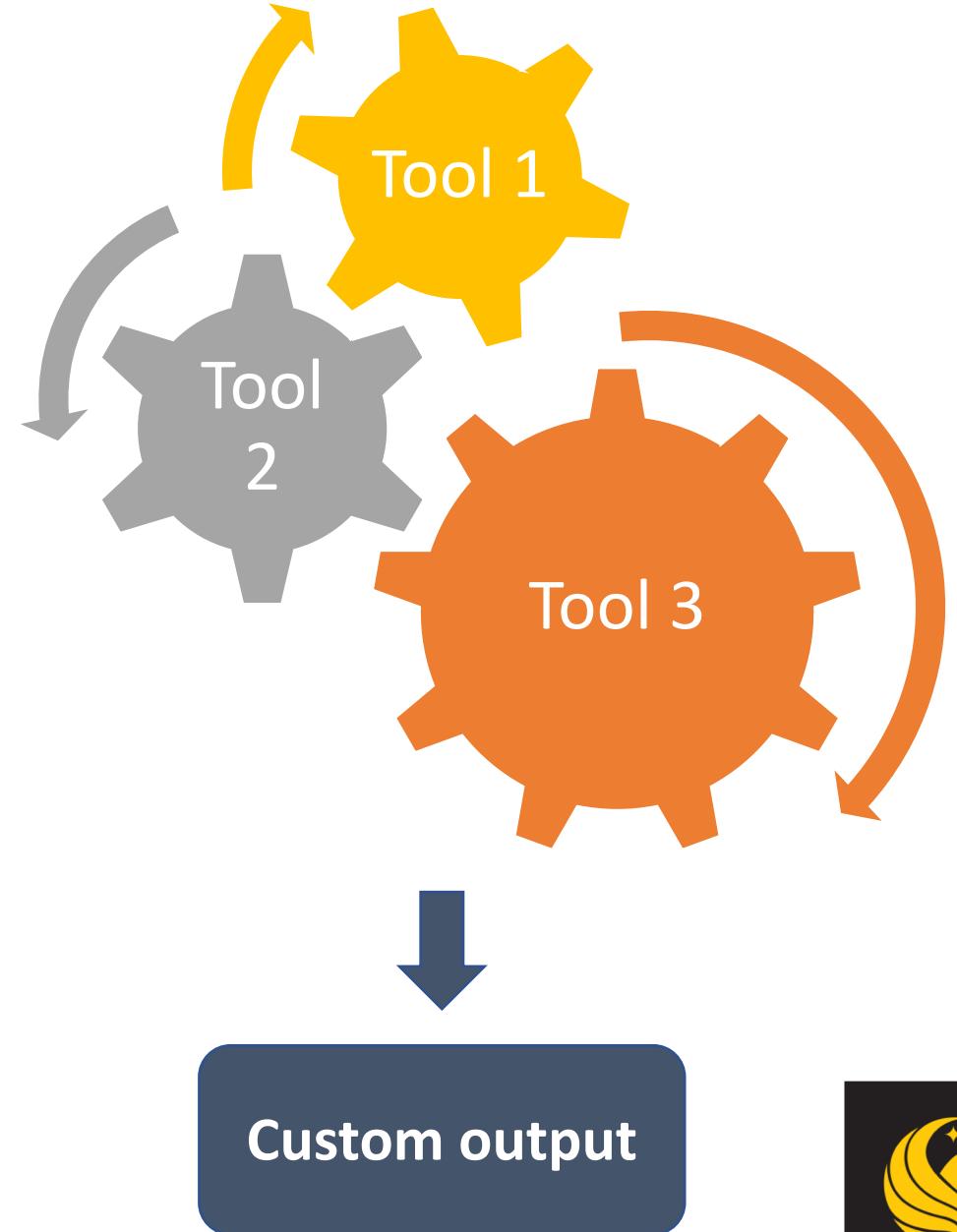
command options(s) filename(s)

- 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

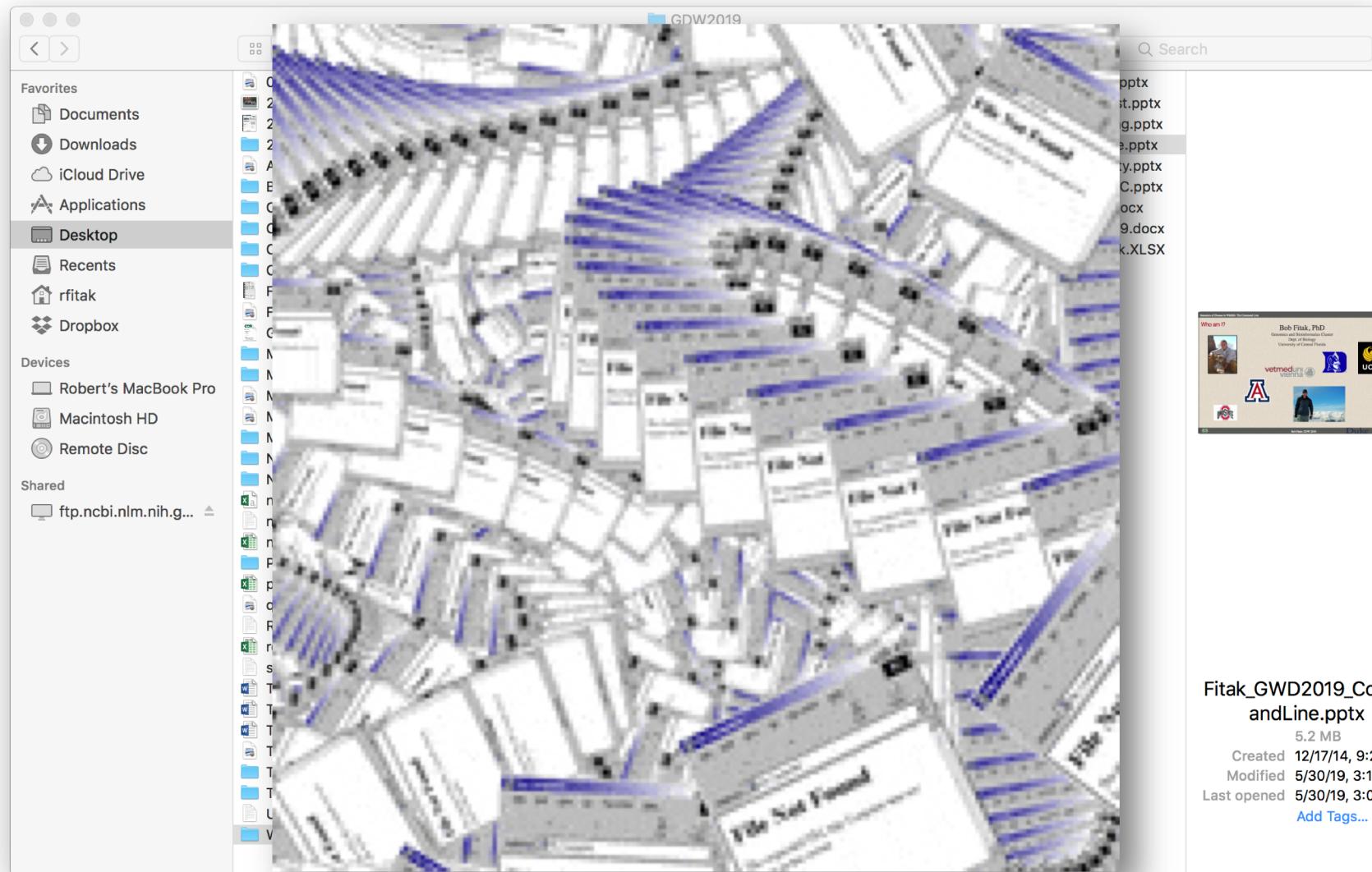


Navigating your computer

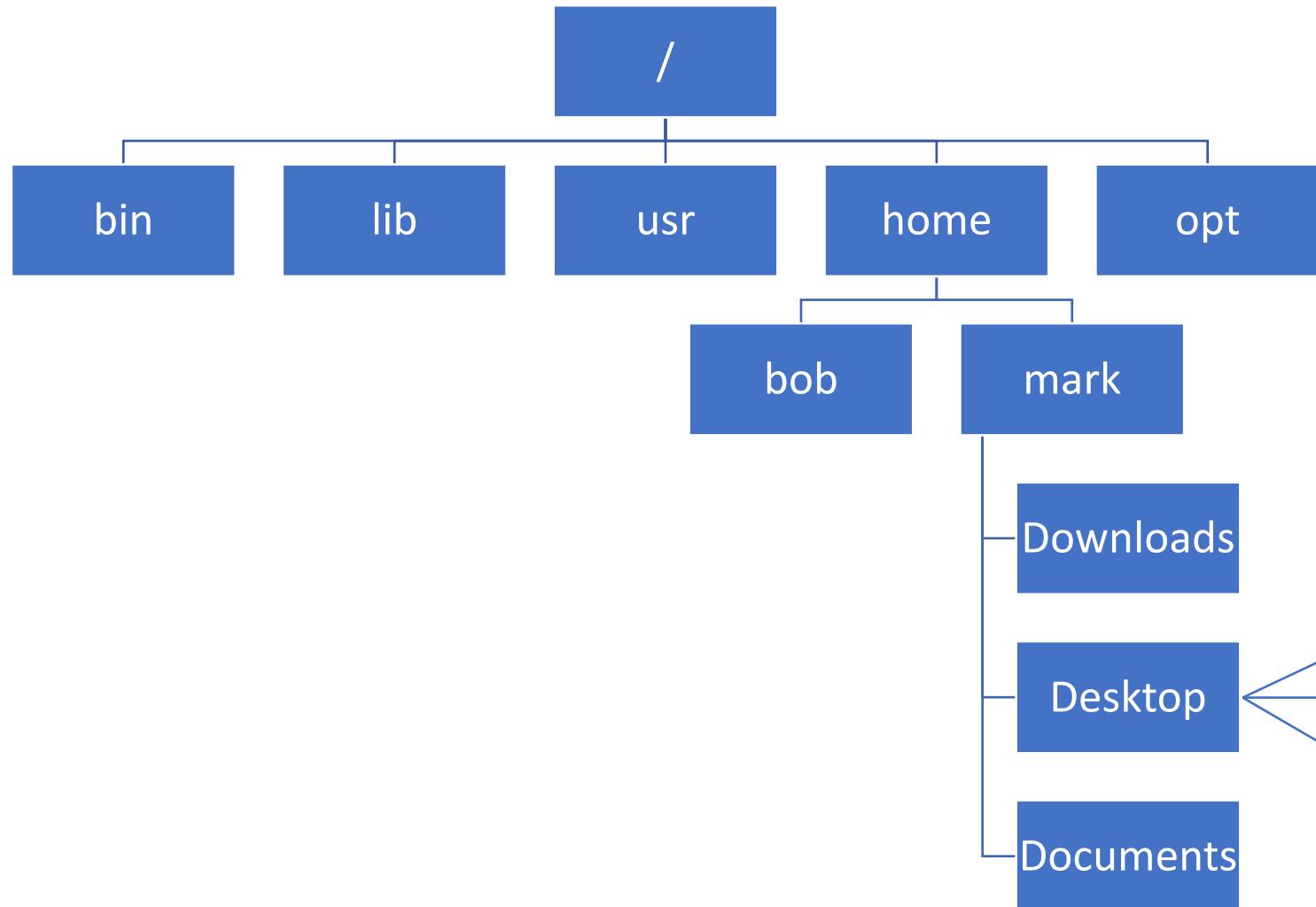
Using the command line



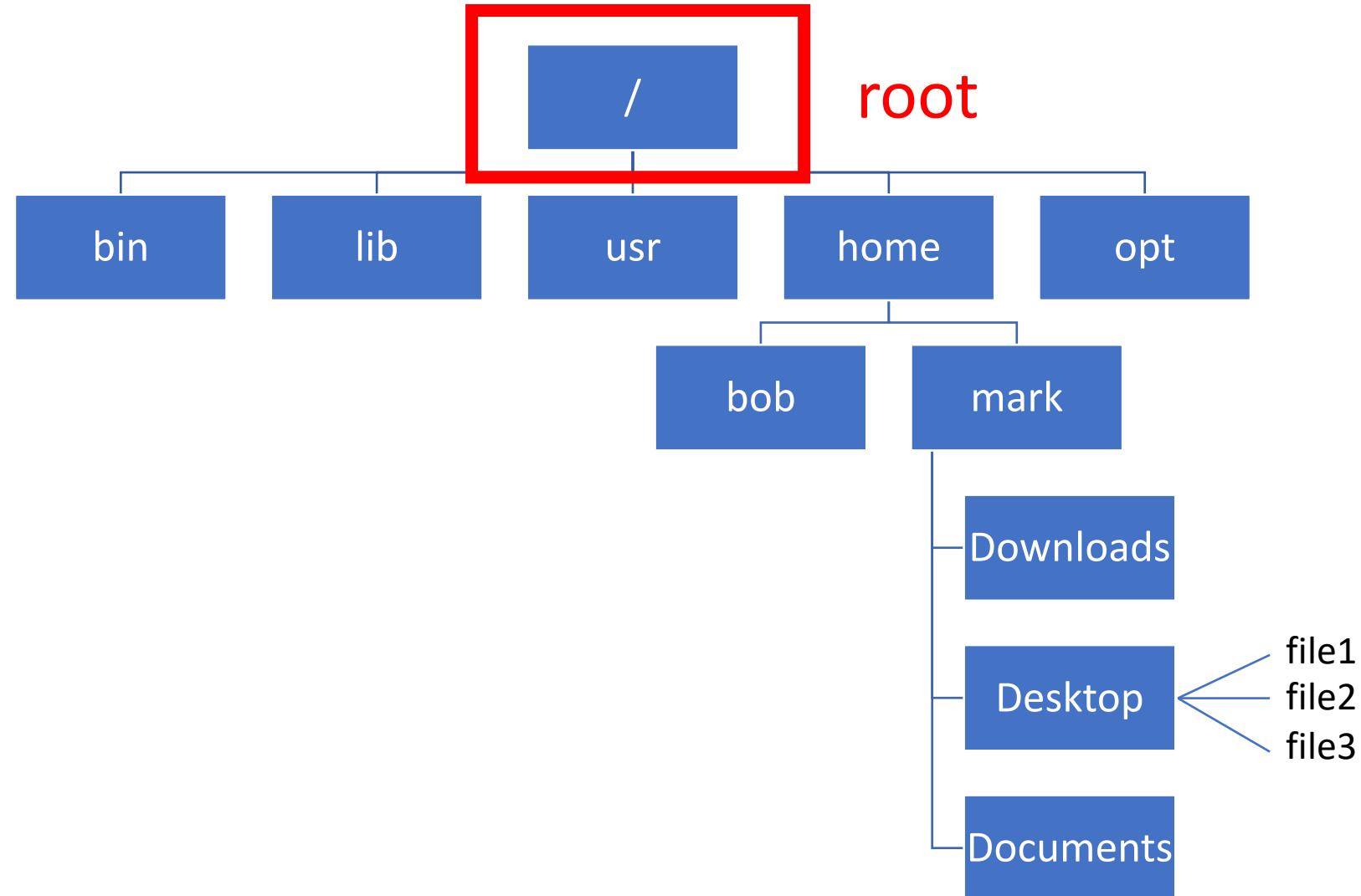
Navigating your computer



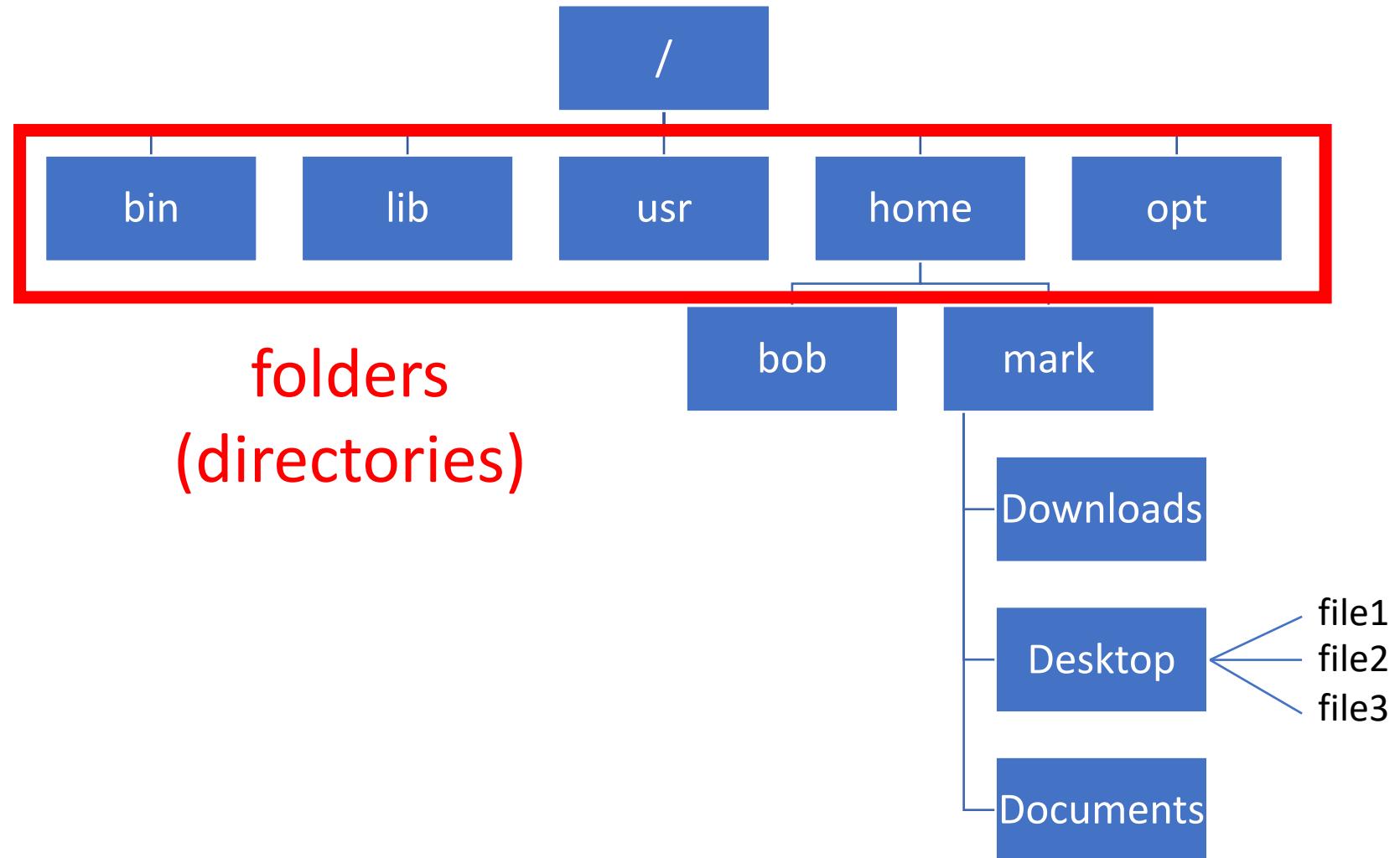
The File System



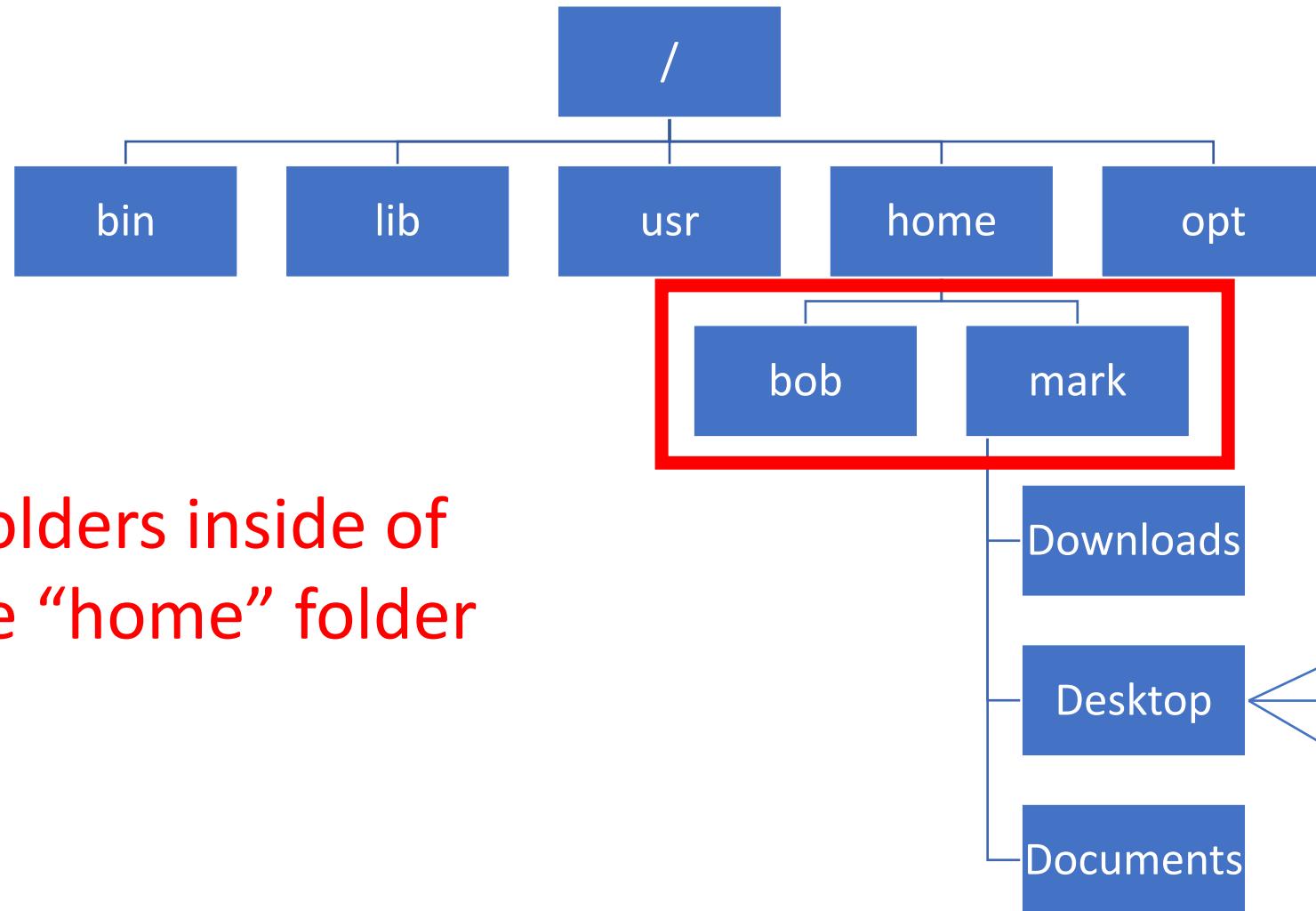
The File System



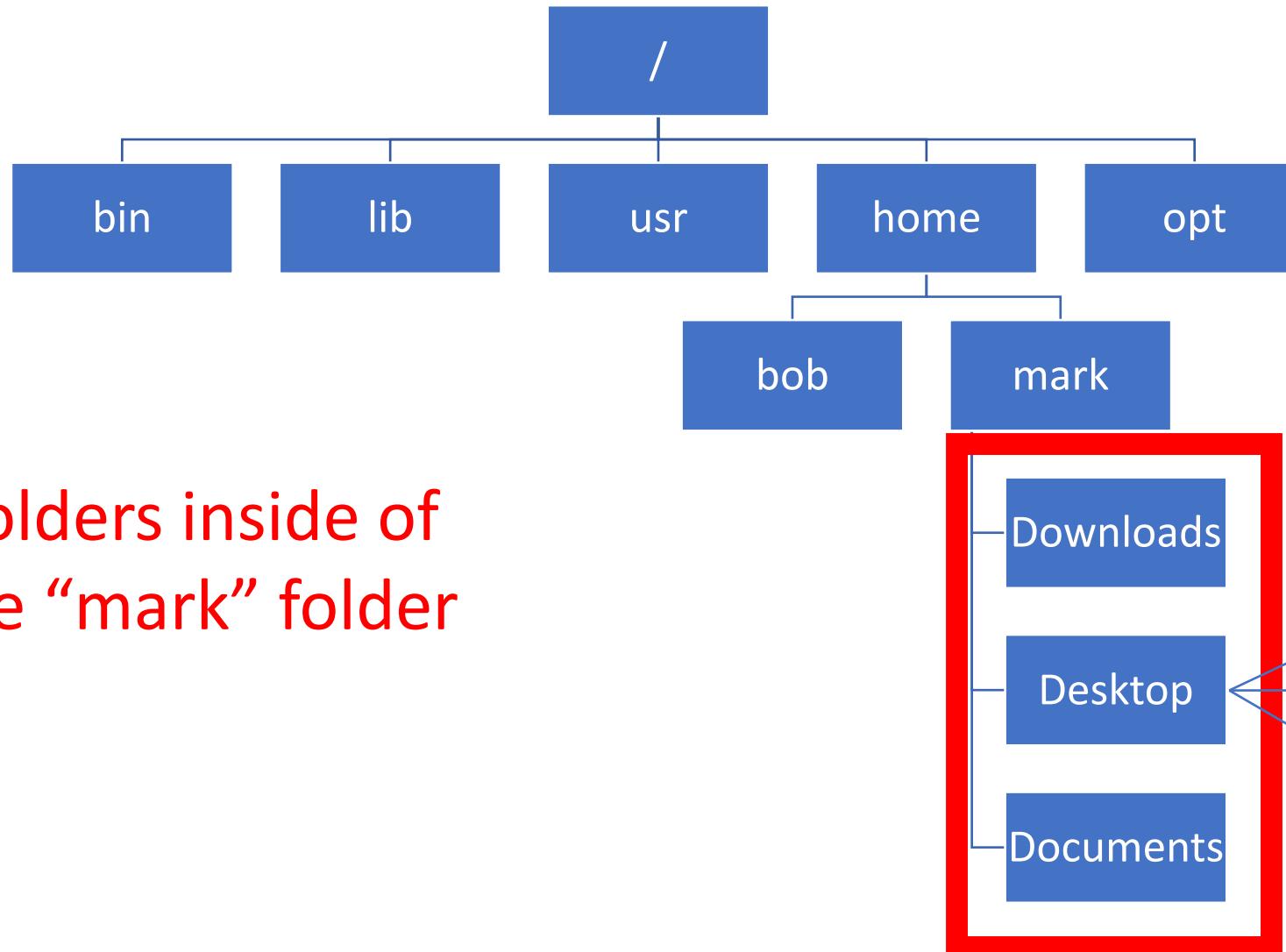
The File System



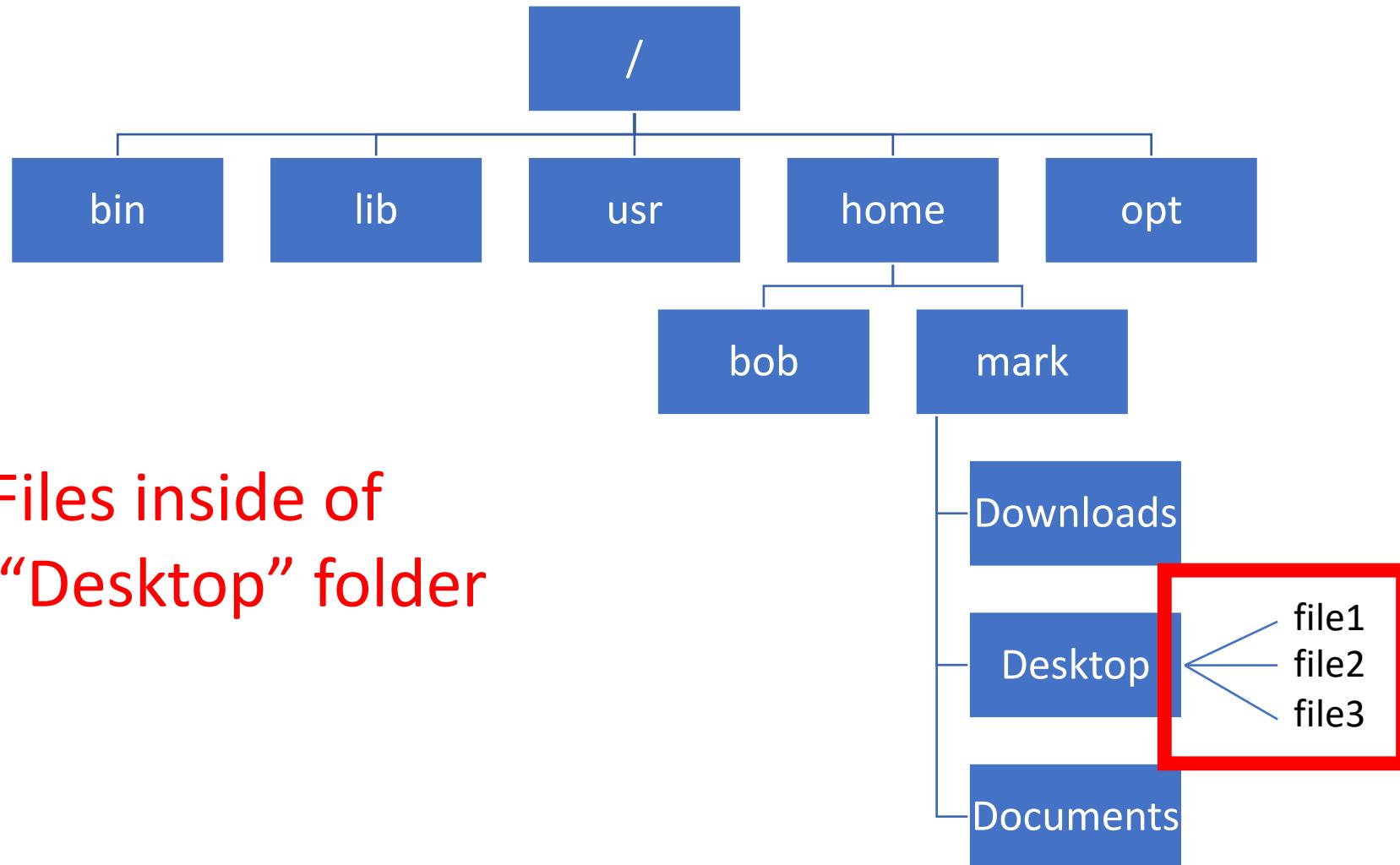
The File System



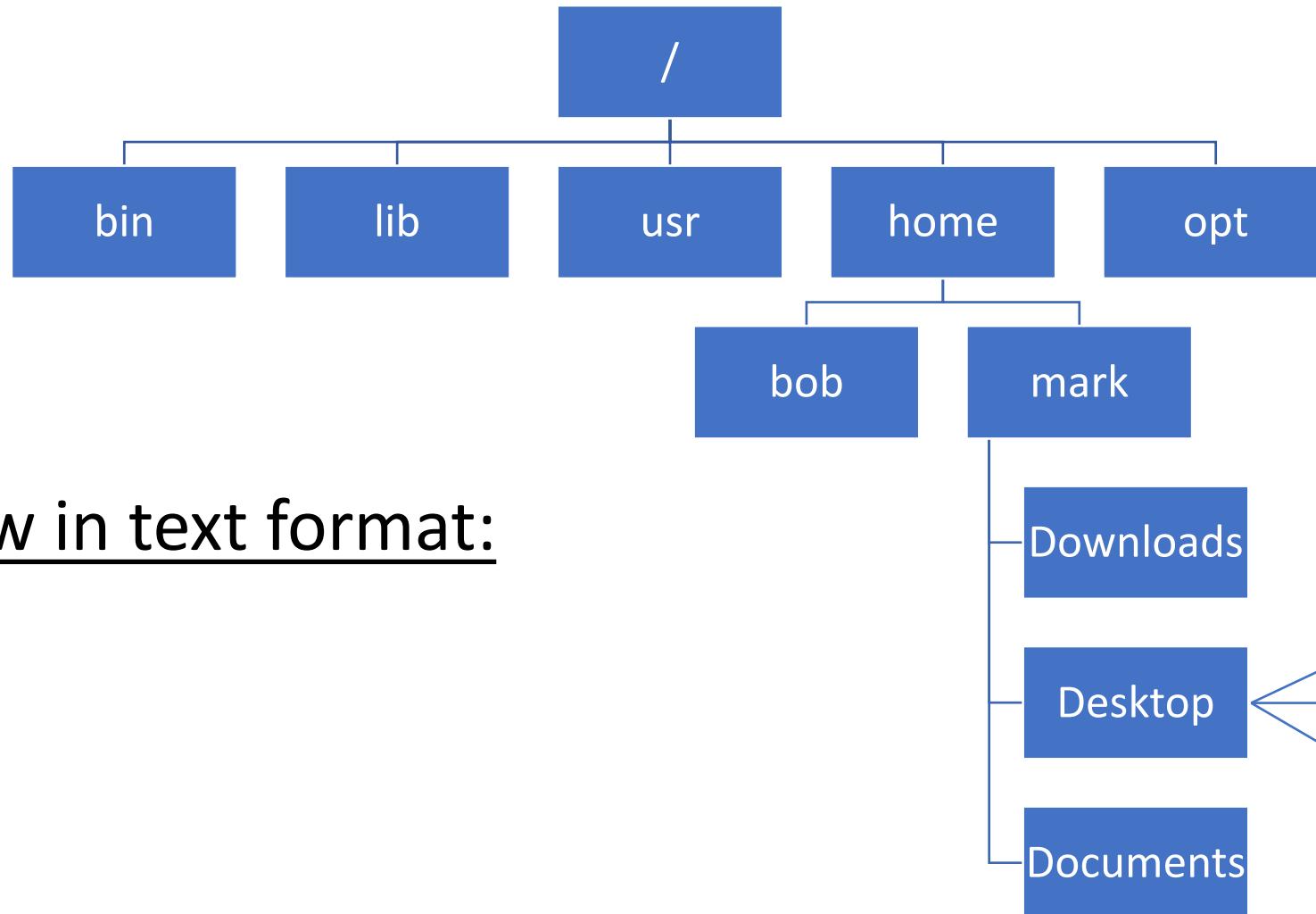
The File System



The File System

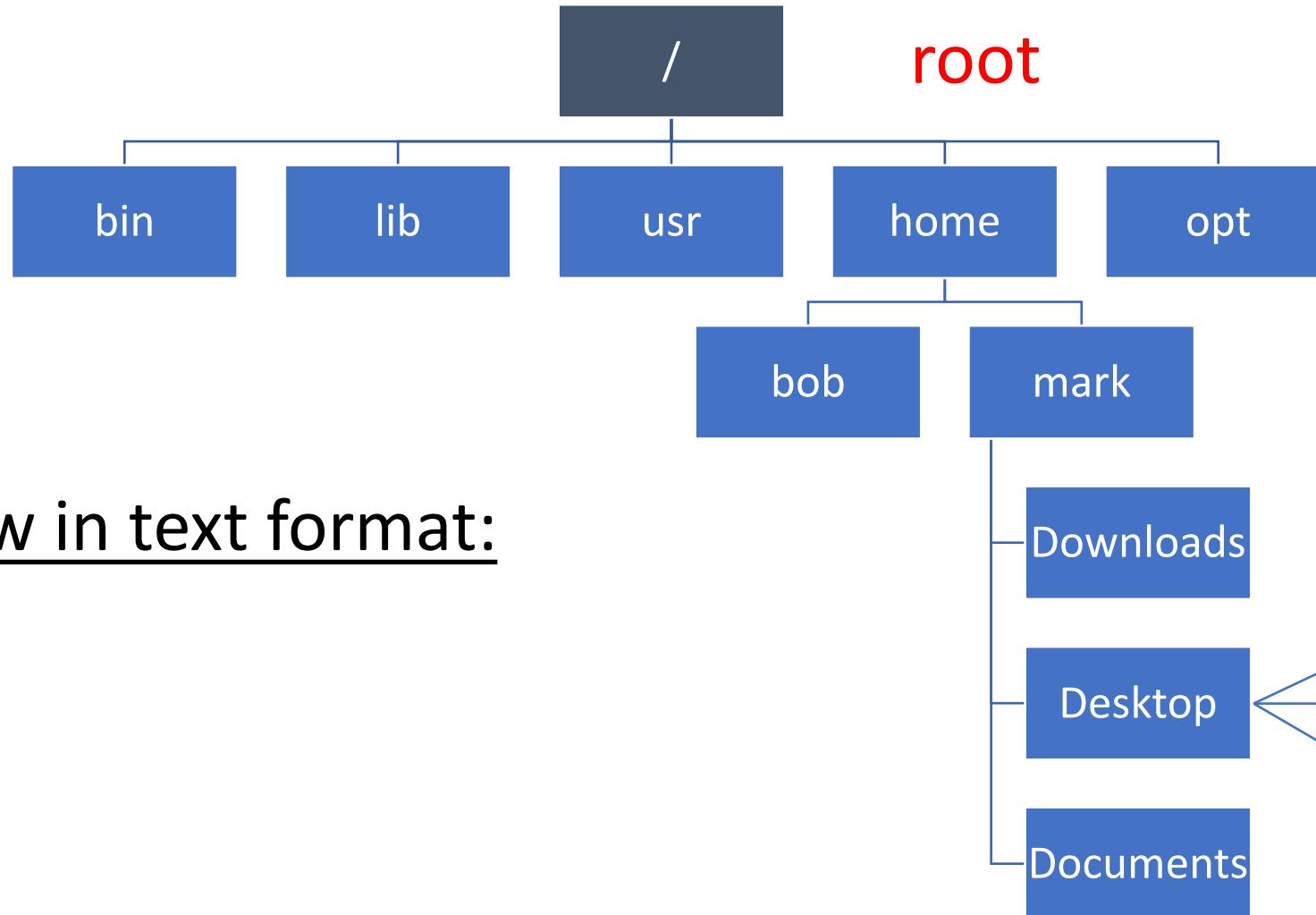


The File System



Now in text format:

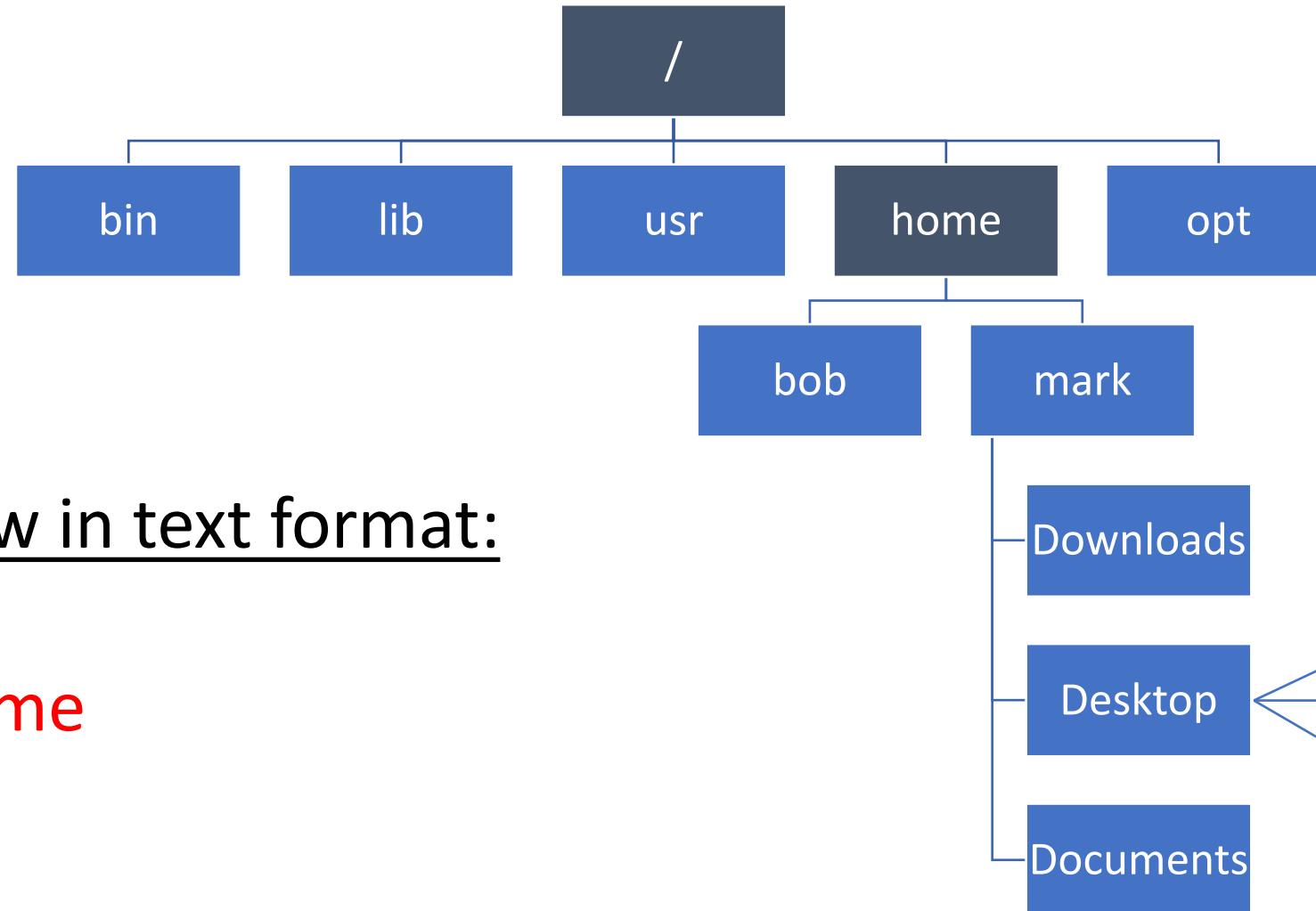
The File System



Now in text format:

/

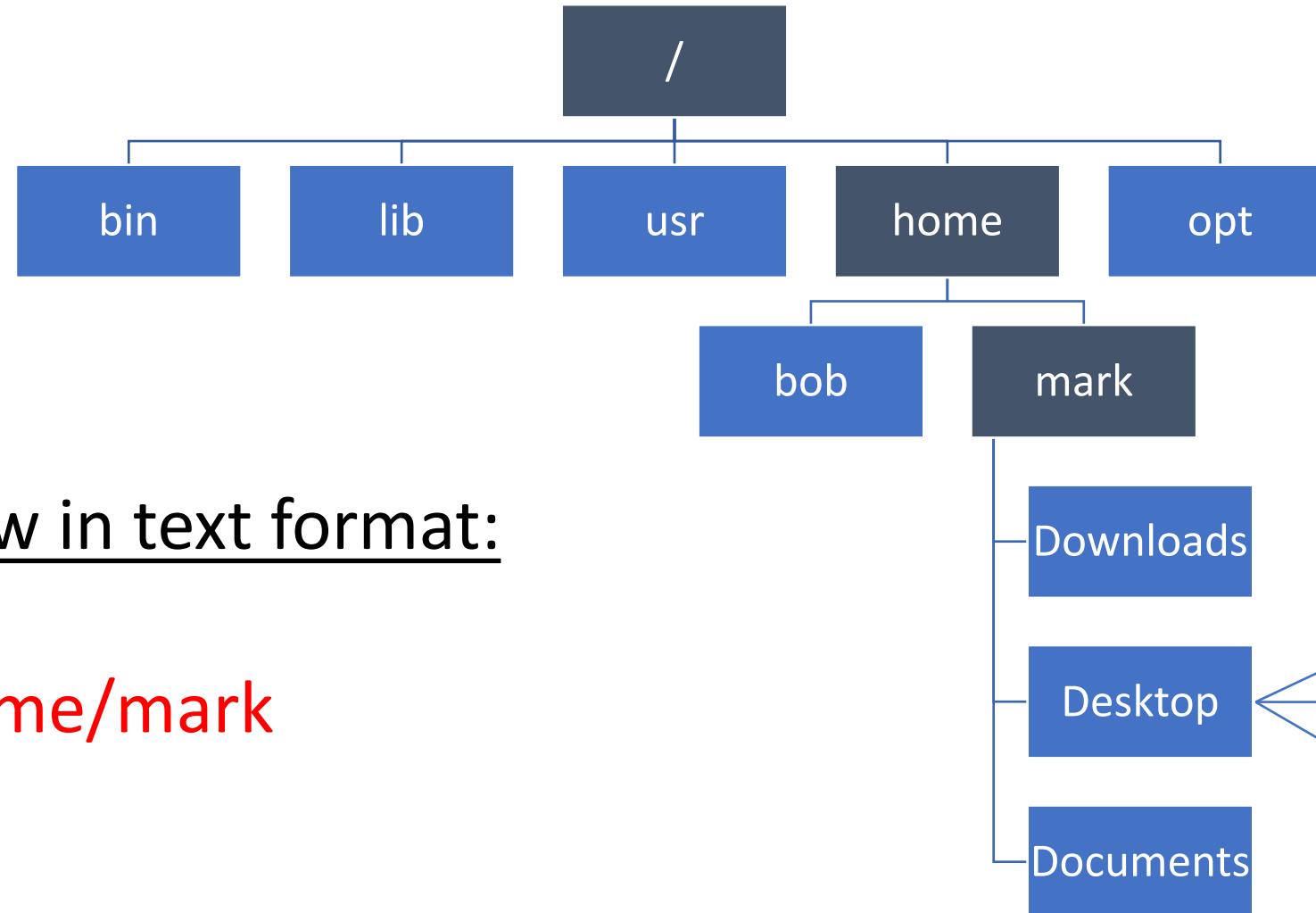
The File System



Now in text format:

/home

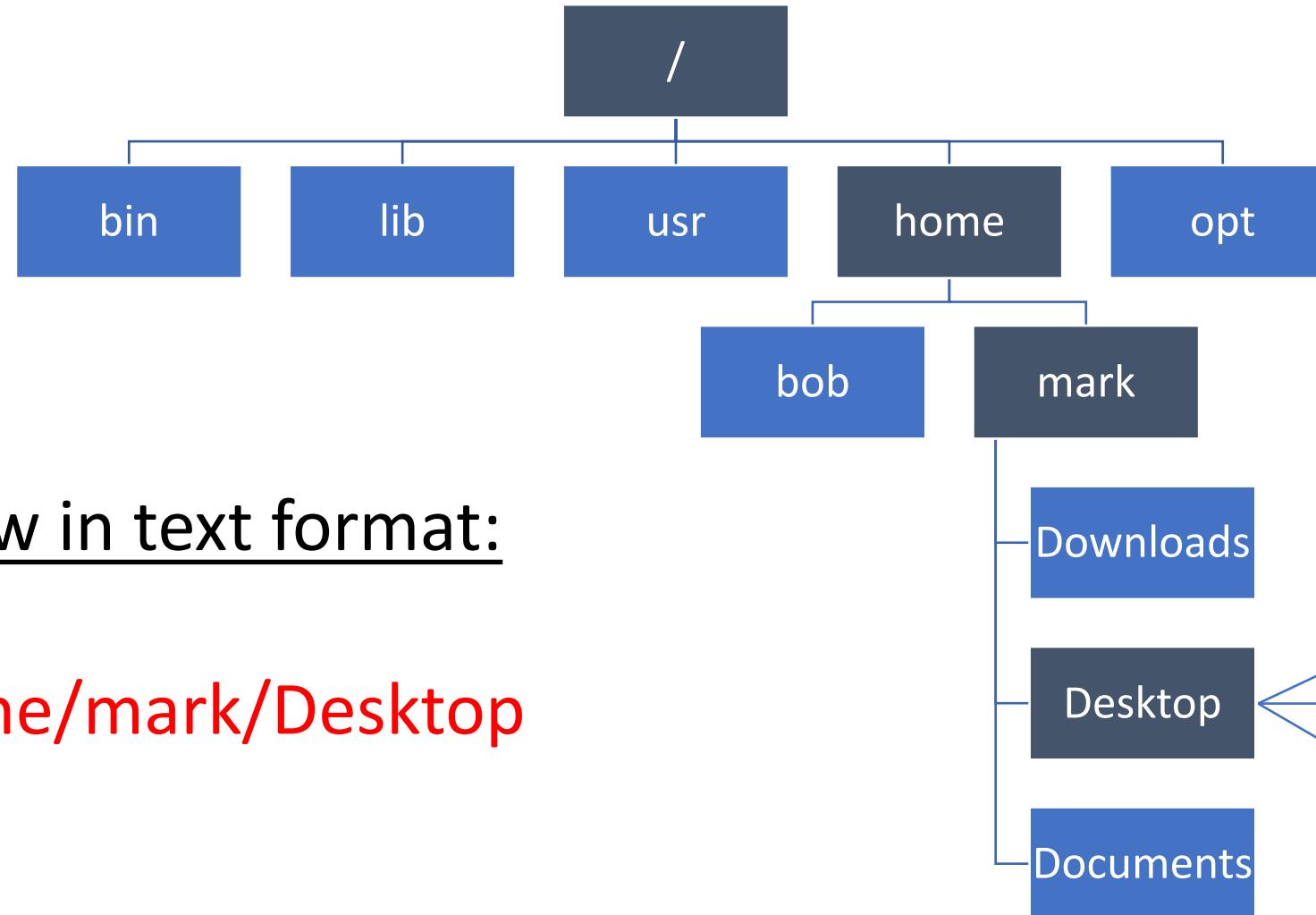
The File System



Now in text format:

/home/mark

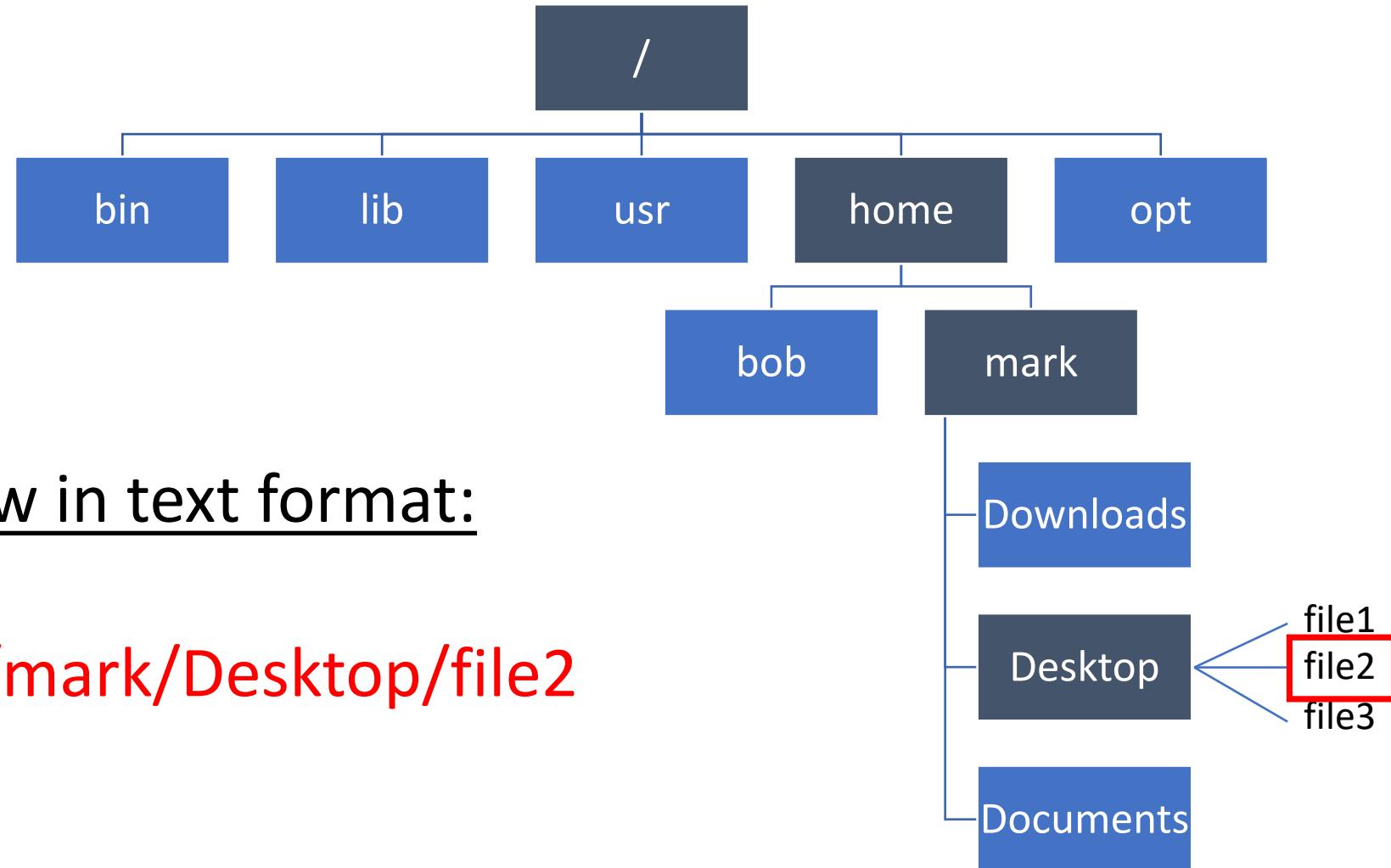
The File System



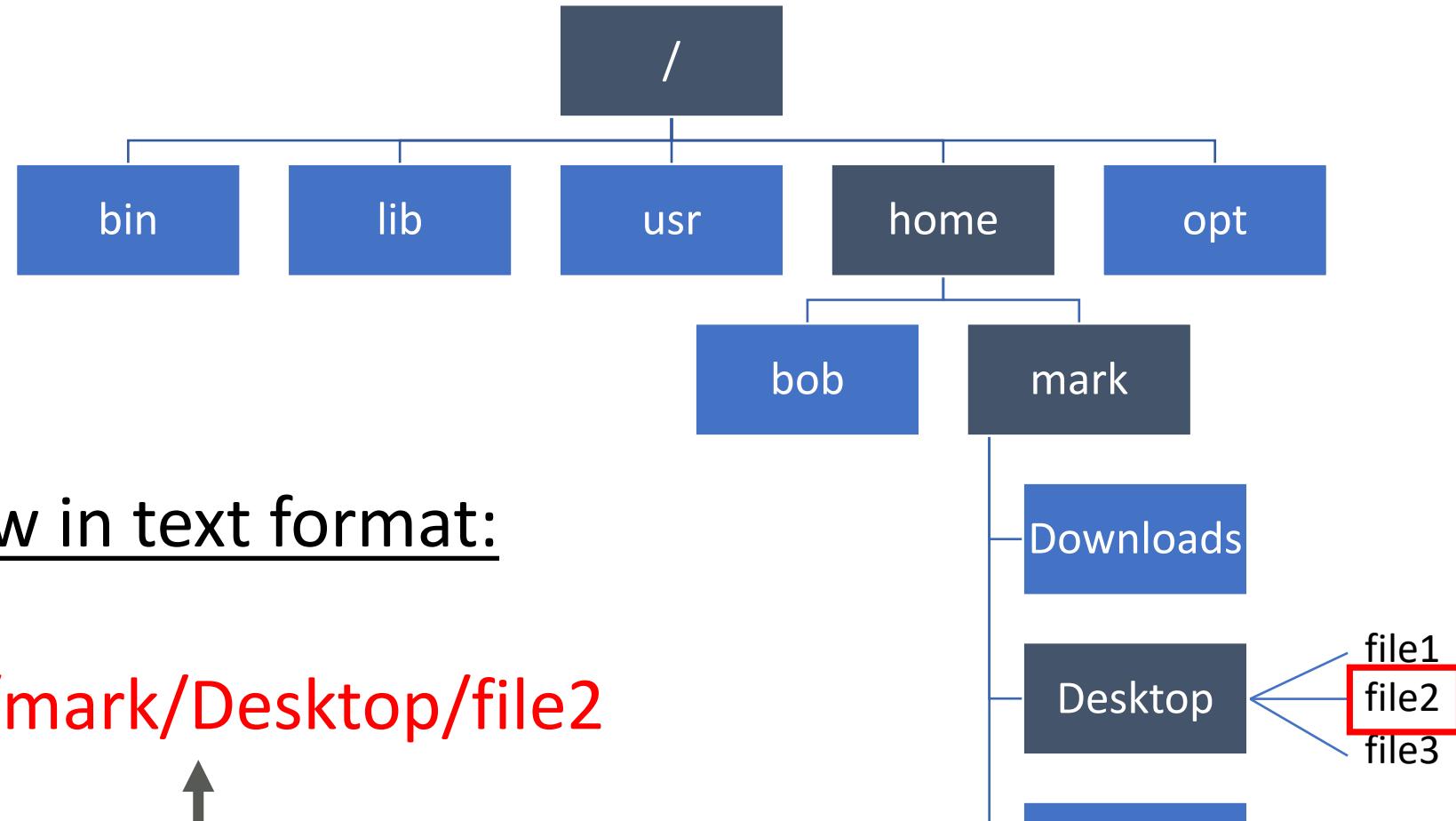
Now in text format:

/home/mark/Desktop

The File System



The File System

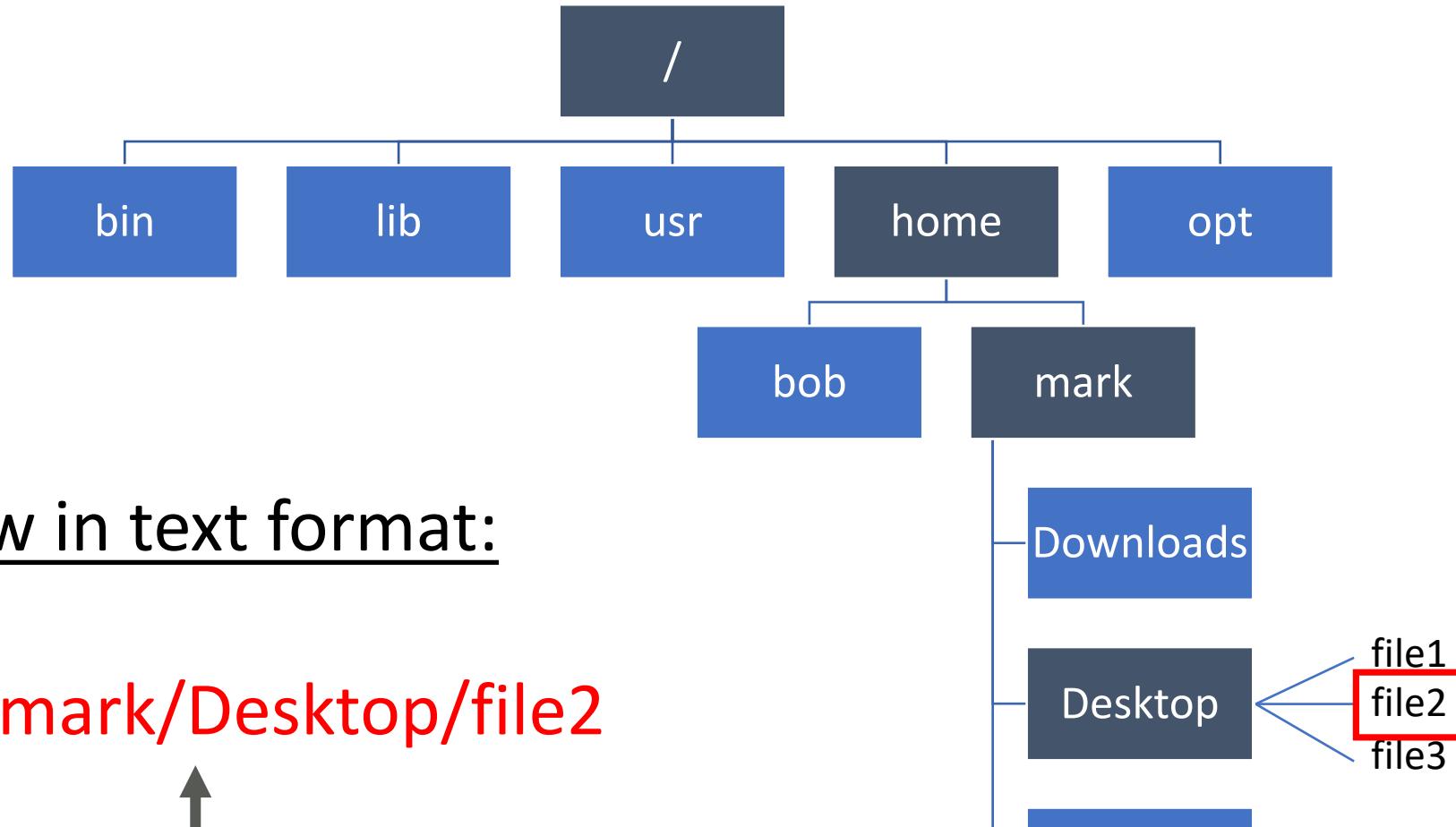


Now in text format:

/home/mark/Desktop/file2

↑
path

The File System

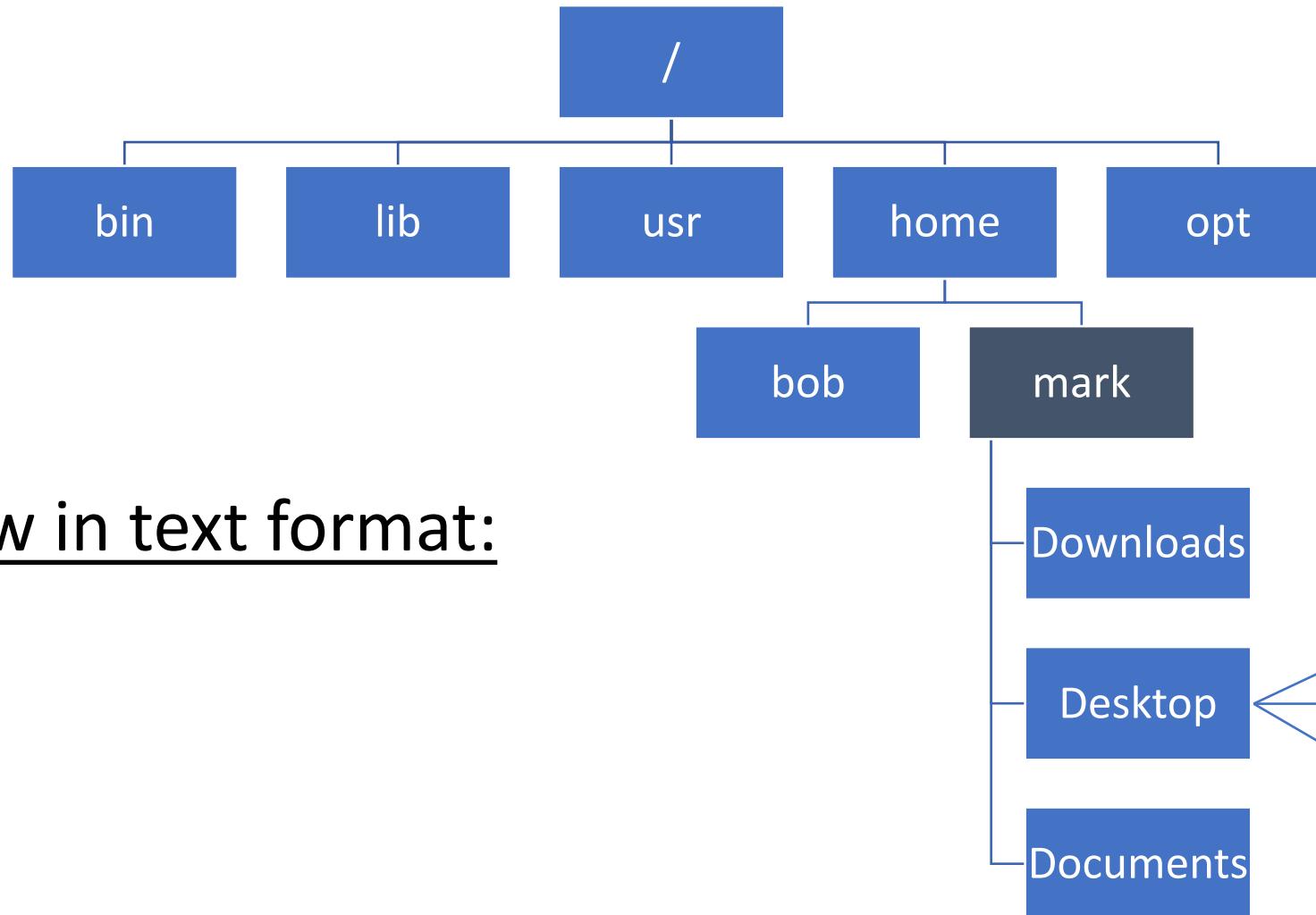


Now in text format:

/home/mark/Desktop/file2

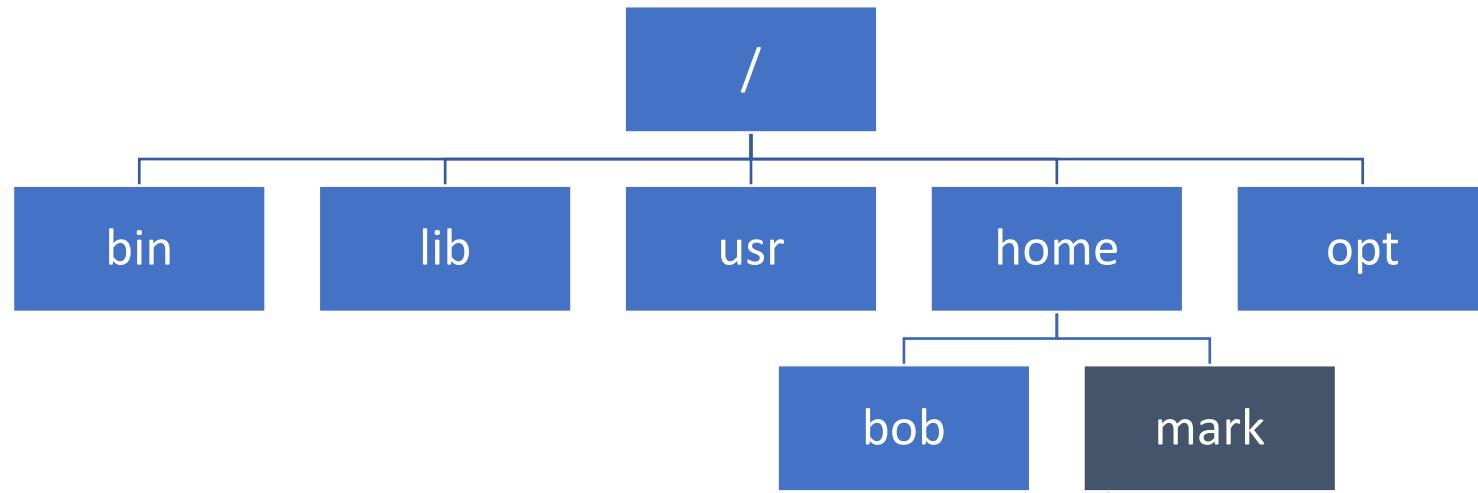
↑
absolute path

The File System



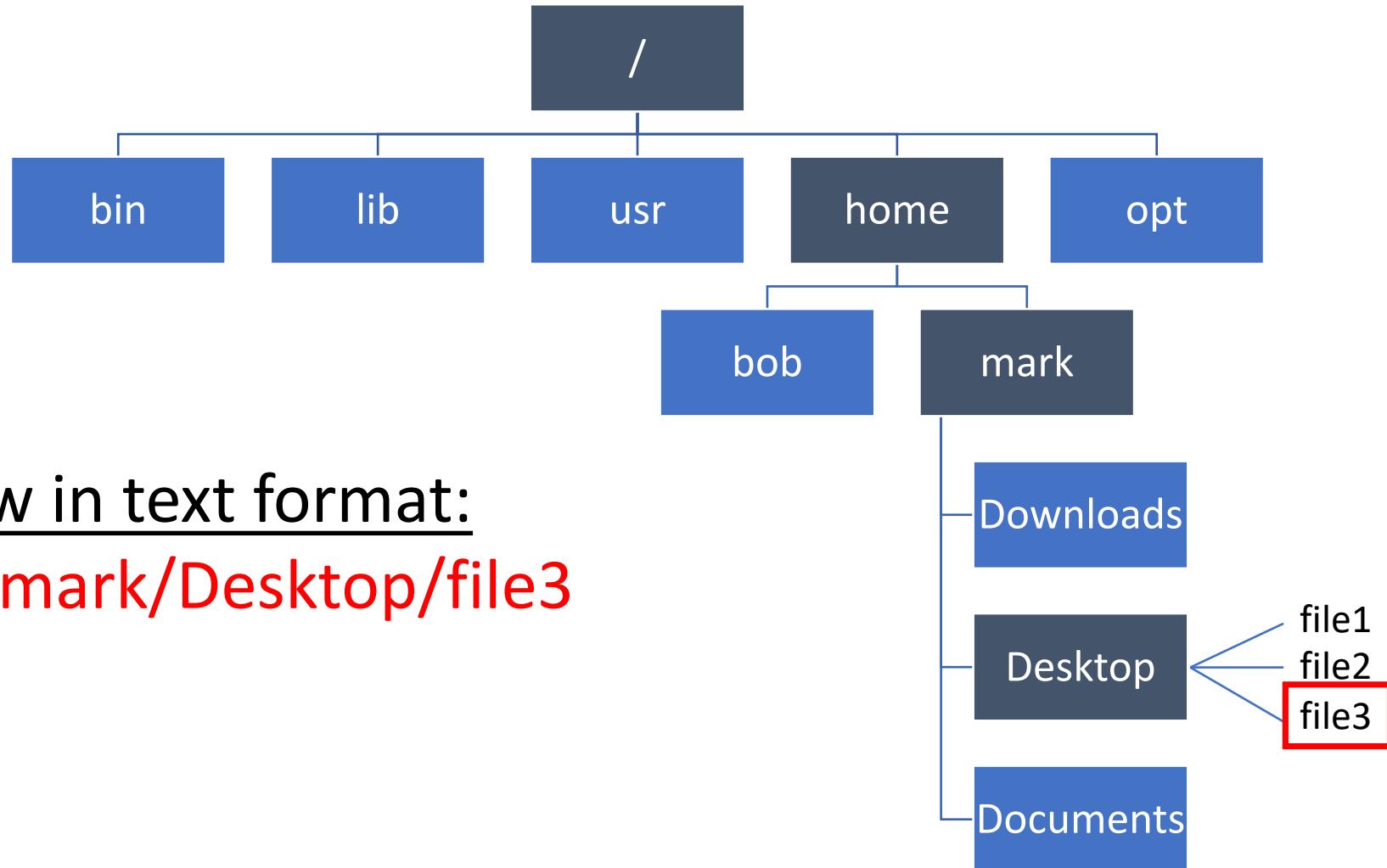
Now in text format:

The File System



Now in text format:

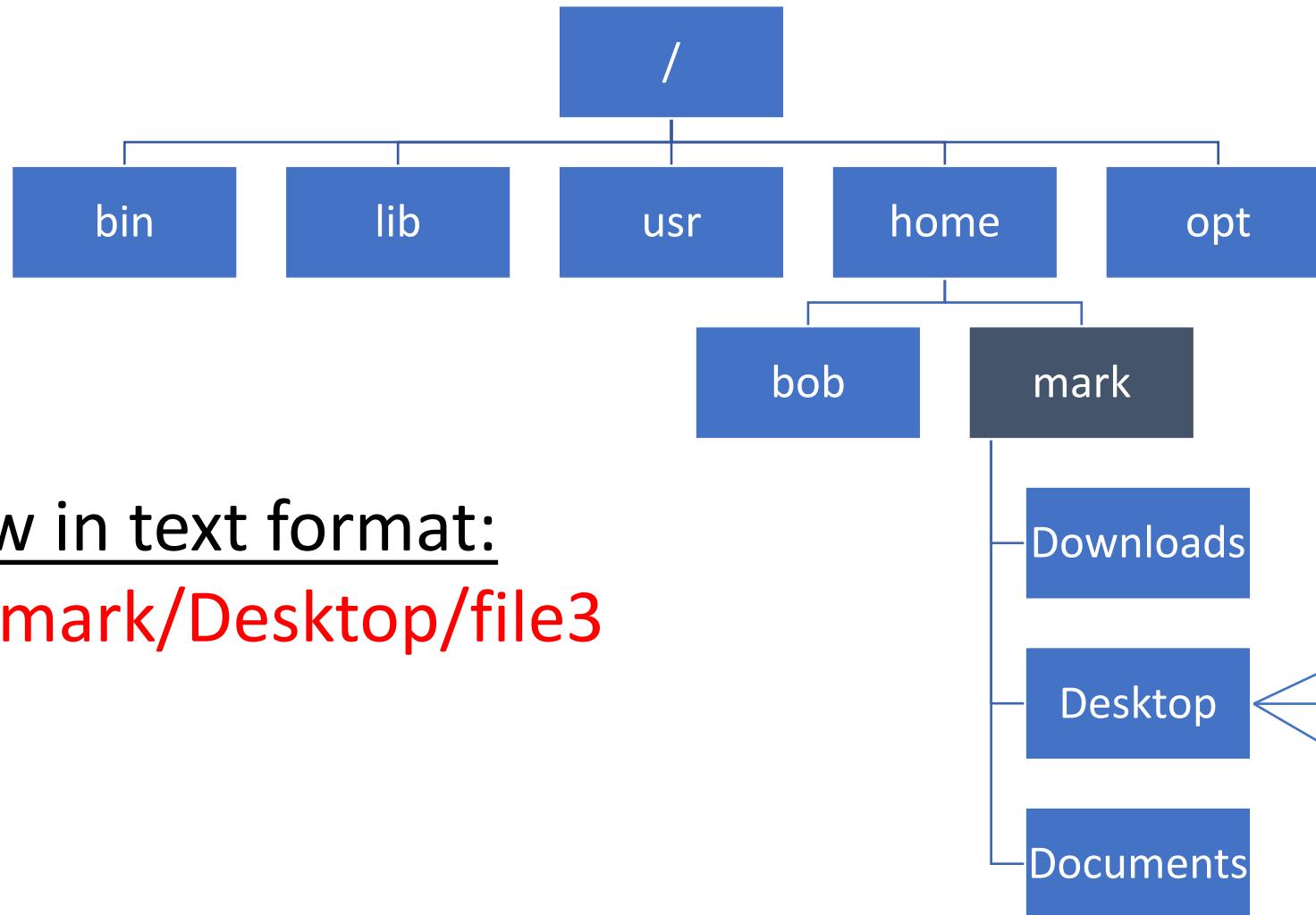
The File System



Now in text format:

/home/mark/Desktop/file3

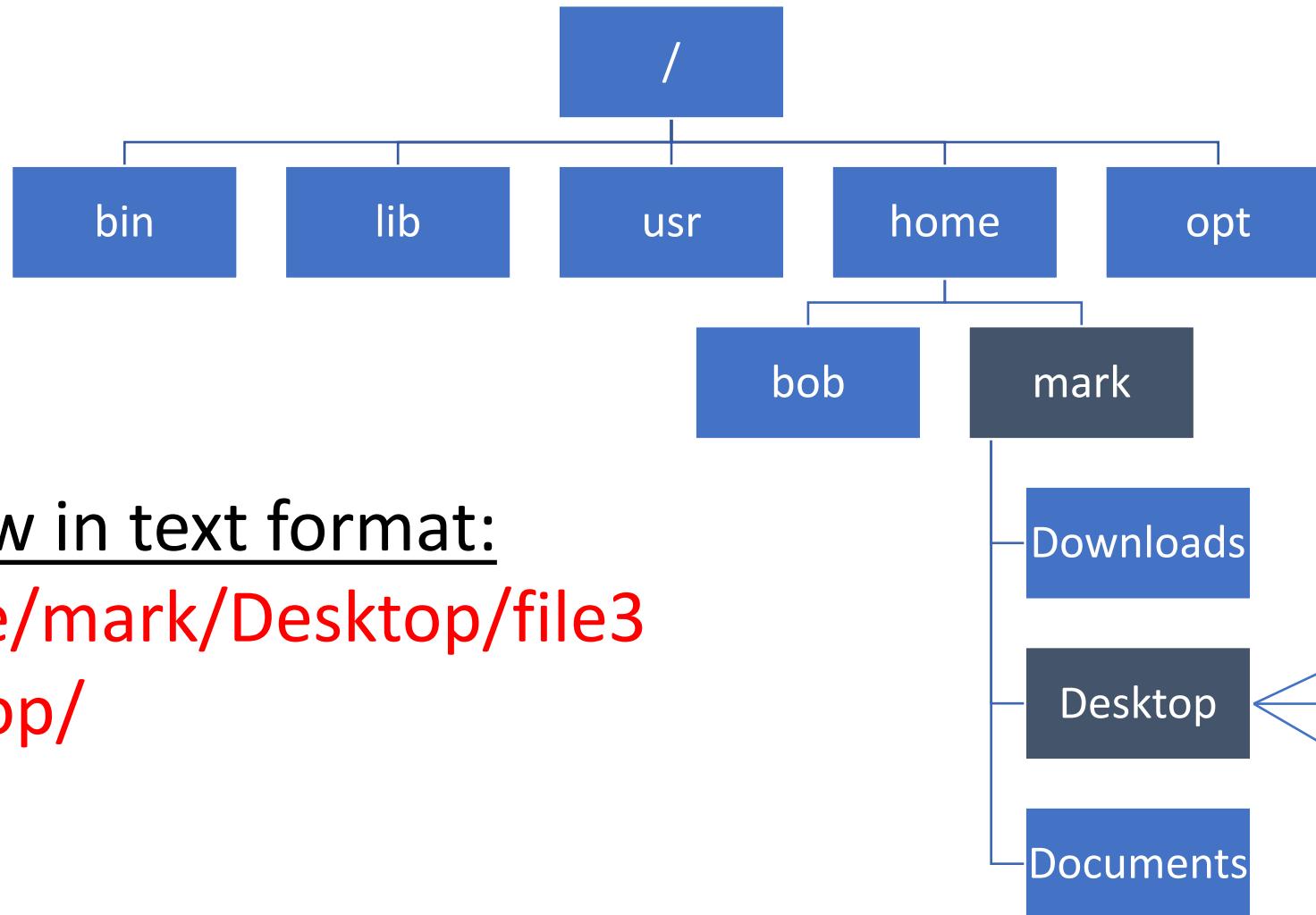
The File System



Now in text format:

/home/mark/Desktop/file3

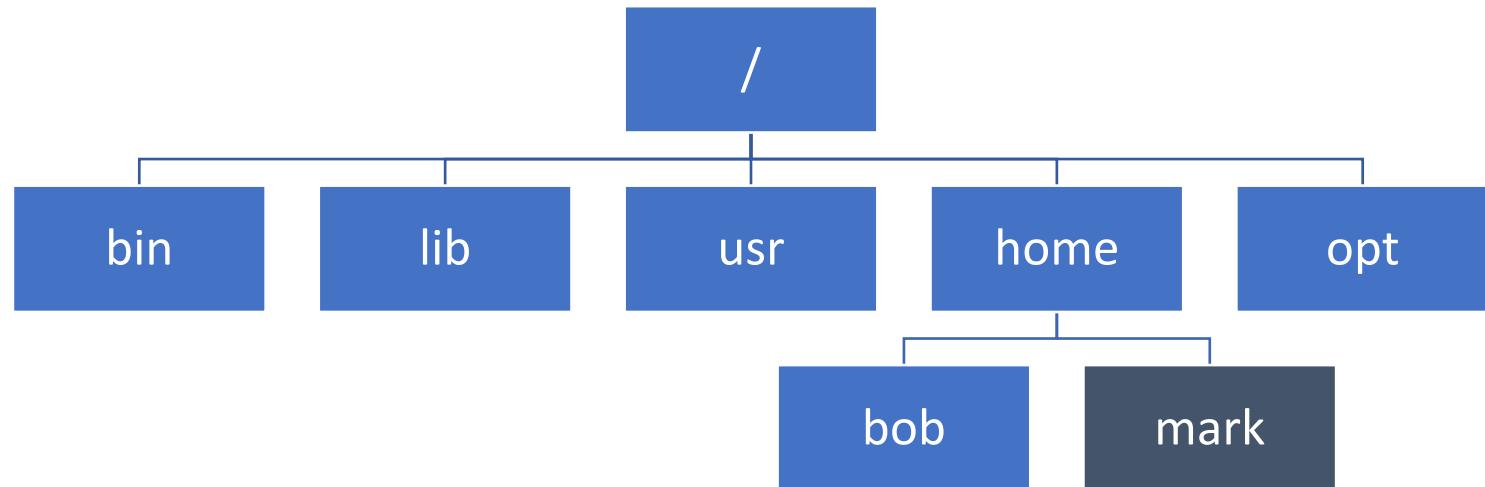
The File System



Now in text format:

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

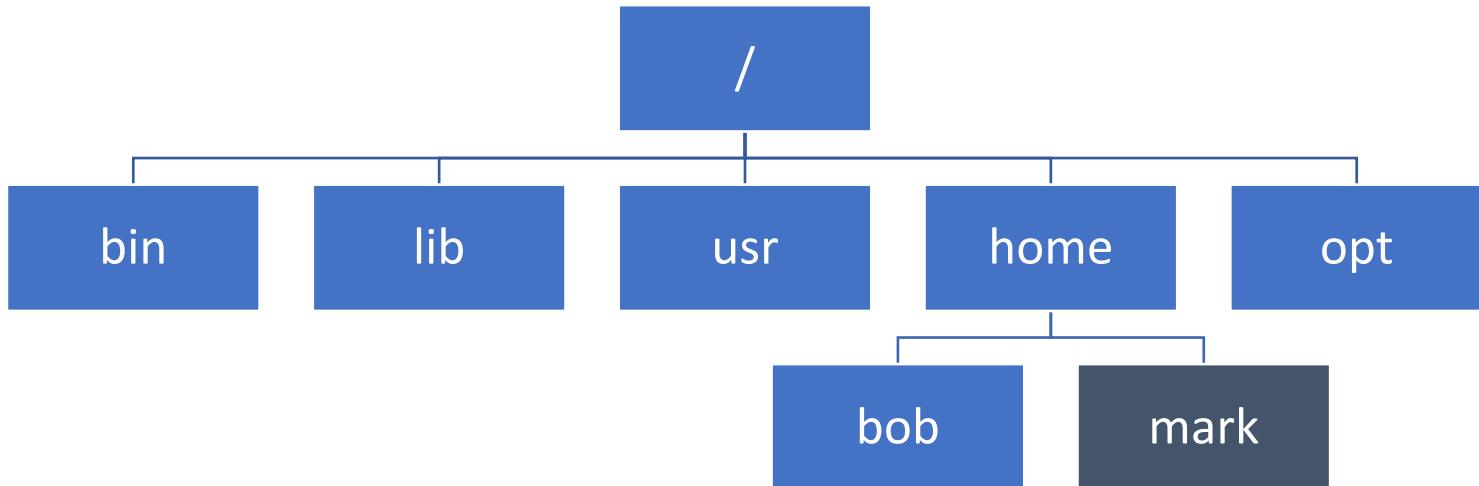
The File System



Now in text format:

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

The File System

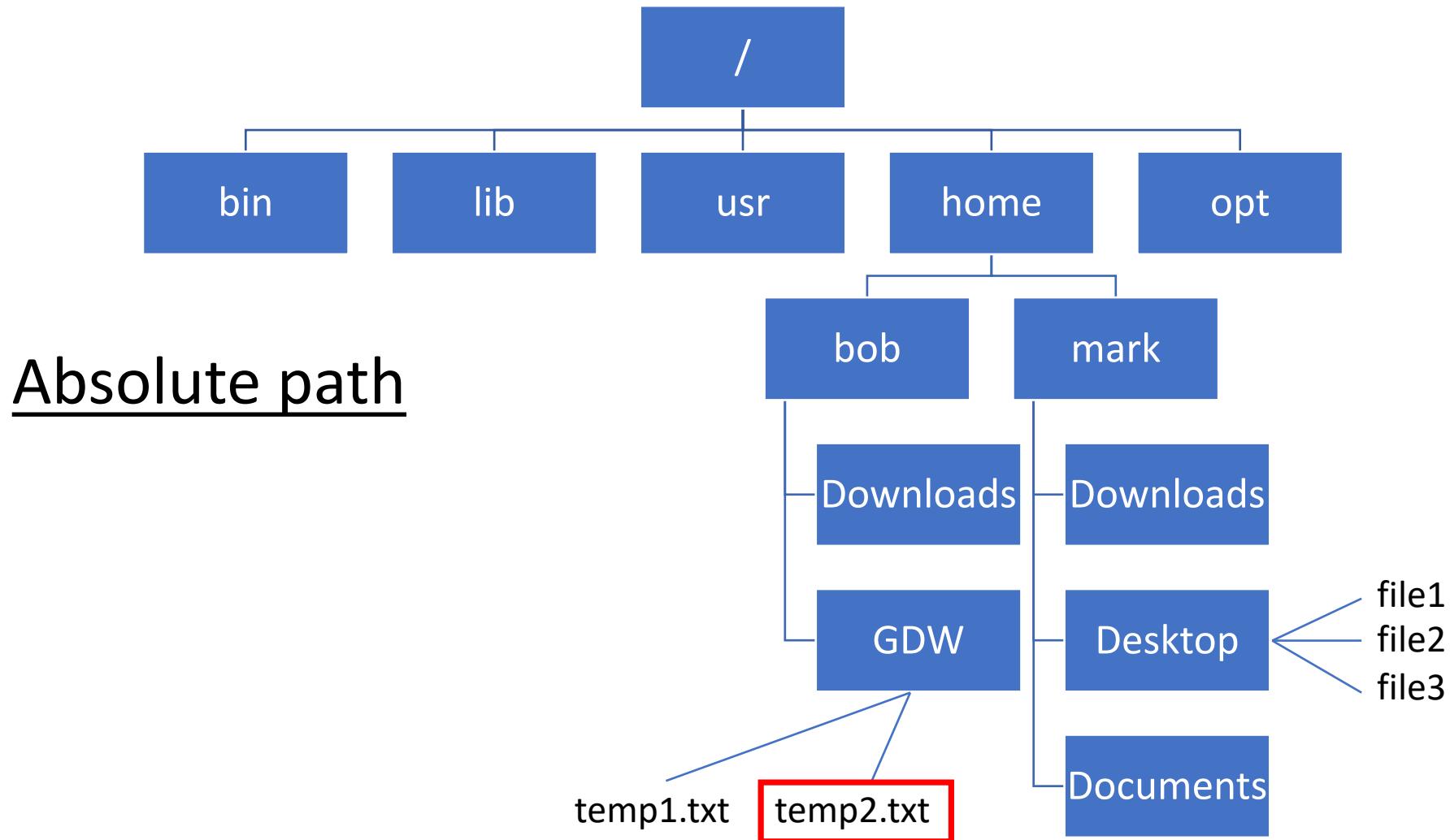


Now in text format:

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

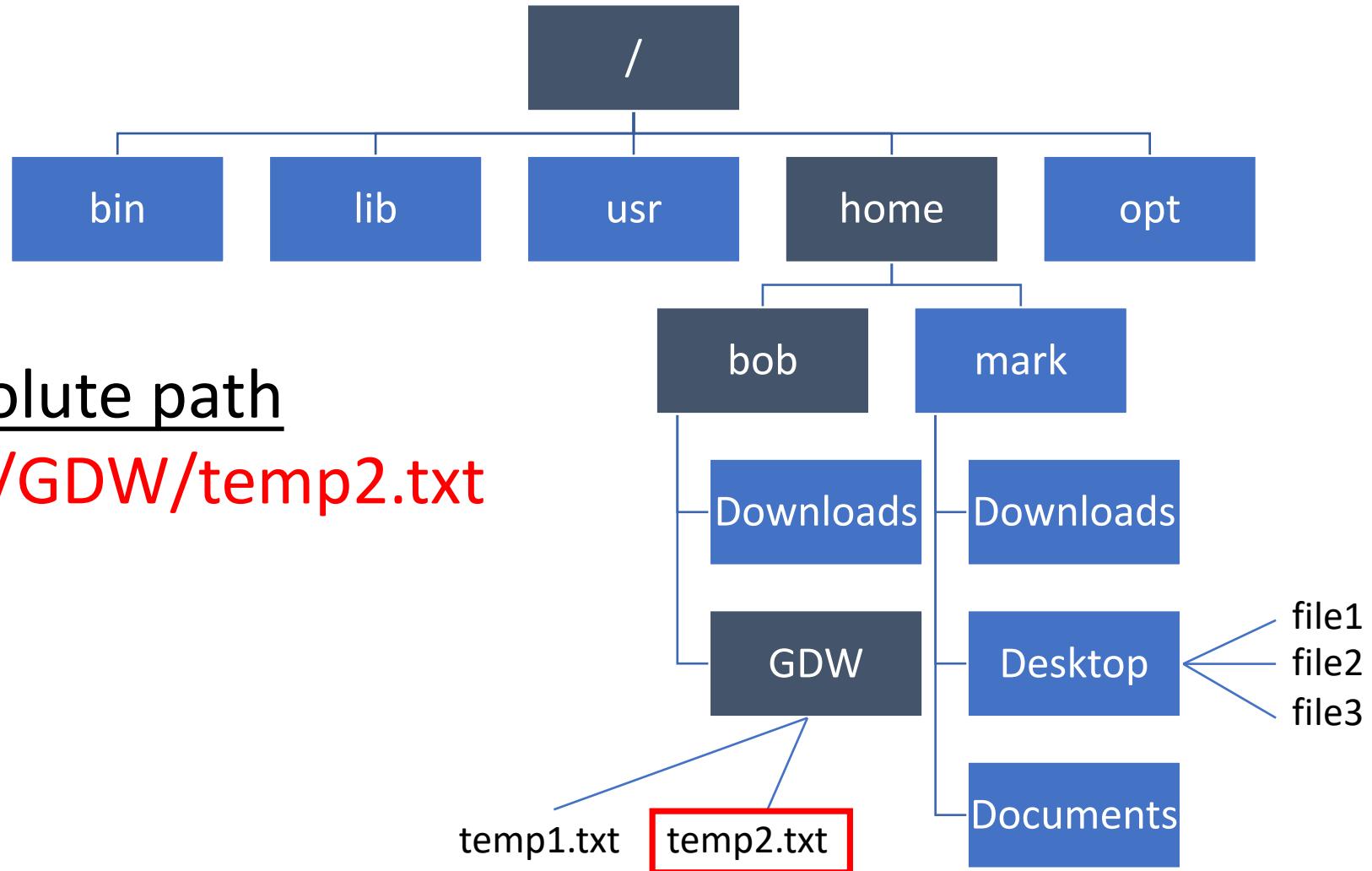
↑
relative path

Quiz Time!

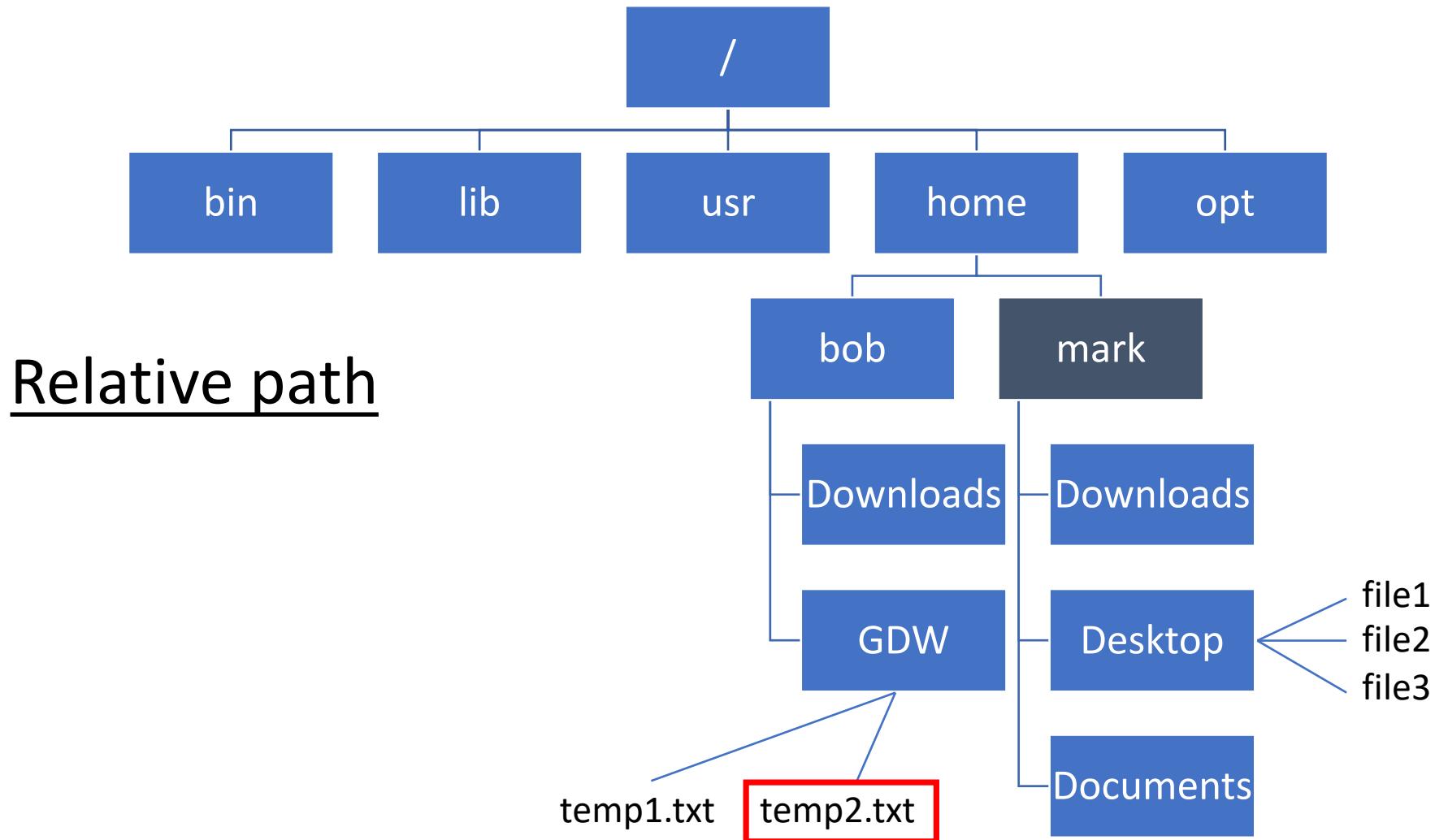


Quiz Time!

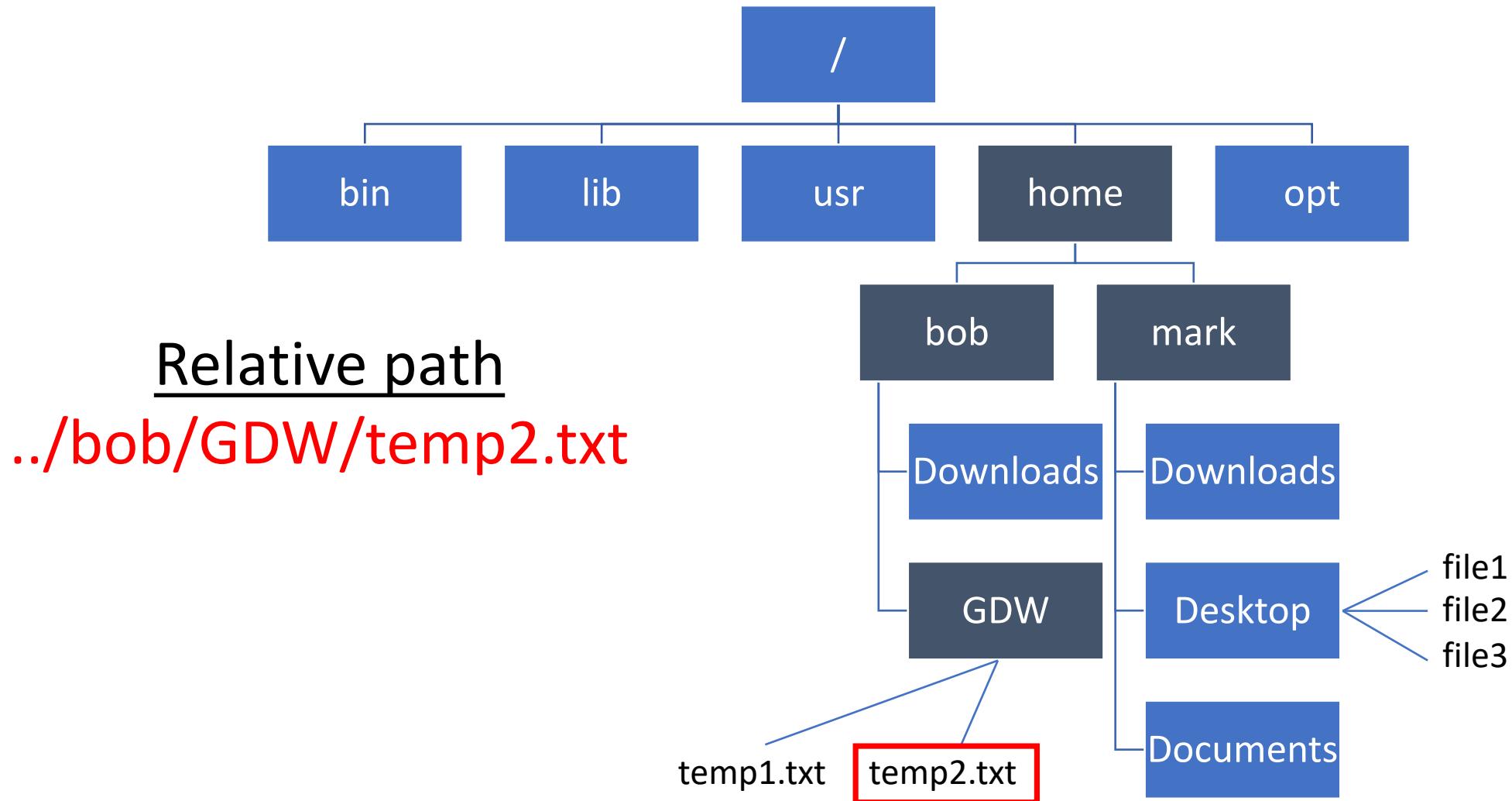
Absolute path
/home/bob/GDW/temp2.txt



Quiz Time!



Quiz Time!



To your terminals!!!

https://github.com/gdw-workshop/2021_GDW_Workshop

