

UNIX SHELL

SOFTWARE CARPENTRY WORKSHOPS

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SOFTWARE CARPENTRY MATERIALS

- ▶ Today's lesson: <https://swcarpentry.github.io/shell-novice/>
- ▶ Data used in this lesson: <https://swcarpentry.github.io/shell-novice/data/data-shell.zip>
- ▶ Book: The Linux Command Line by William E. Shotts, Jr.

OBJECTIVES:

1. When and why shell should be used
2. Shell becomes a friend
3. Pain-free tasks

TOPICS:

1. Introduction to Shell
2. Navigating Directories
3. Working with Files
4. Pipes and Filters
5. Loops
6. Scripts (automation)

WHAT IS THE SHELL?

- ▶ Command-line user interface.
- ▶ Other names: command-line or terminal.
- ▶ Shell is an interface between user and operating system (computer).
- ▶ Shell takes keyboard commands (user) and passes them to the computer.
- ▶ *Bash* is a commonly used shell program.

WHY LEARN SHELL?

- ▶ Because you can...
 - ▶ Perform complex tasks with few commands.
 - ▶ Automate repetitive tasks.
 - ▶ High-performance computer.

WHERE CAN I FIND MY SHELL?

- ▶ Linux and Mac OS have a default unix shell program - usually Bash.
- ▶ Windows OS do not have a default unix shell program :(
 - ▶ Git for Windows is a emulator that gives access to both Bash and Git (topic of another workshop).

1. INTRODUCTION TO SHELL

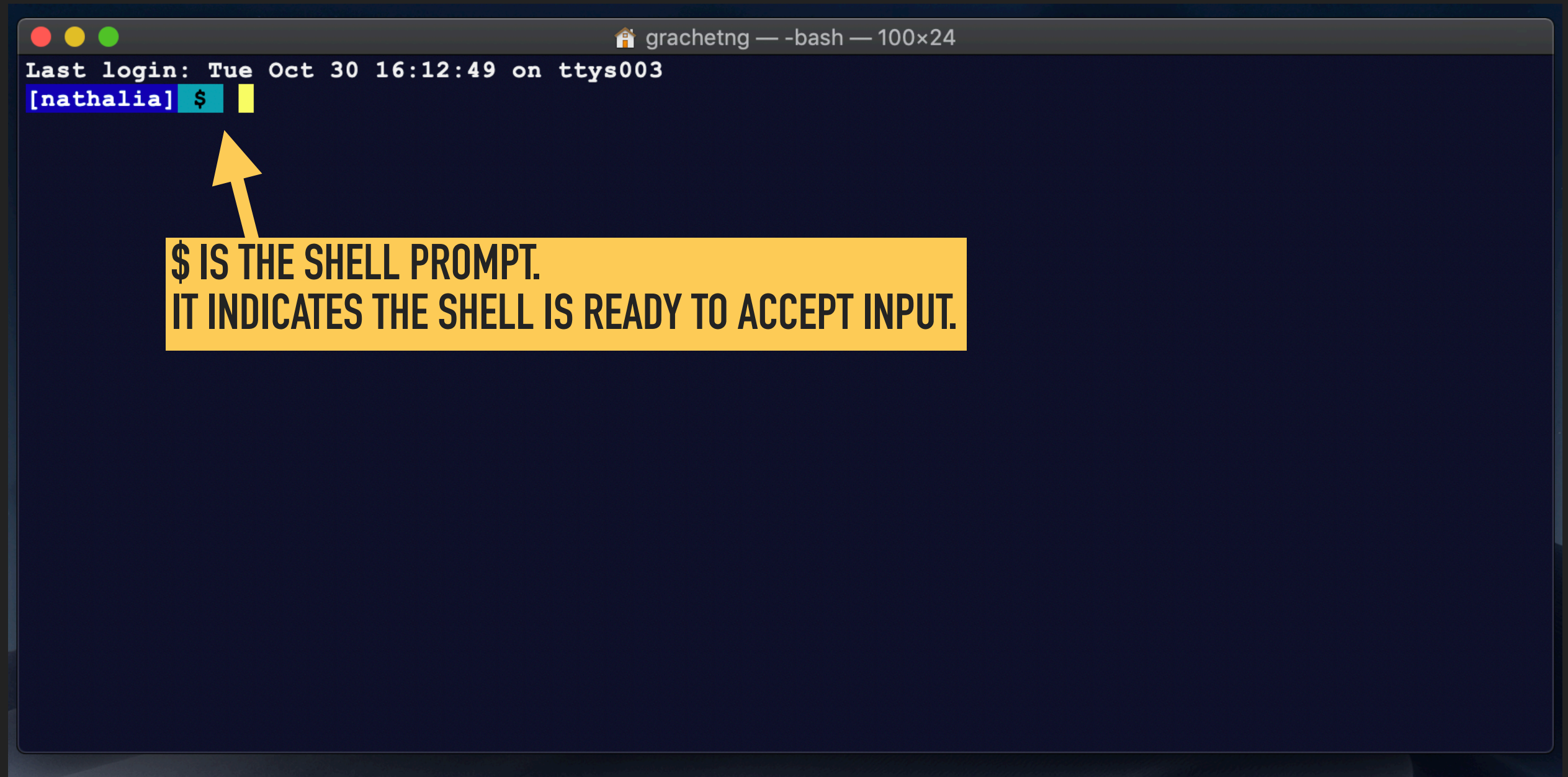
WHAT DOES SHELL LOOK LIKE?

A screenshot of a terminal window with a dark blue background. The window title bar at the top shows three colored window control buttons (red, yellow, green) on the left, and a home icon followed by the text 'grachetng — -bash — 100x24' on the right. The terminal content shows the message 'Last login: Tue Oct 30 16:12:49 on ttys003' in white text. Below this, the prompt '[nathalia] \$' is displayed in white, with a yellow cursor block positioned after the dollar sign.

```
grachetng — -bash — 100x24
Last login: Tue Oct 30 16:12:49 on ttys003
[nathalia] $
```

1. INTRODUCTION TO SHELL

WHAT DOES SHELL LOOK LIKE?



A terminal window titled "grachetng — -bash — 100x24" displays the login message "Last login: Tue Oct 30 16:12:49 on ttys003" and the prompt "[nathalia] \$". A yellow callout box with an arrow pointing to the "\$" symbol contains the text: "\$ IS THE SHELL PROMPT. IT INDICATES THE SHELL IS READY TO ACCEPT INPUT."

```
grachetng — -bash — 100x24
Last login: Tue Oct 30 16:12:49 on ttys003
[nathalia] $
```

\$ IS THE SHELL PROMPT.
IT INDICATES THE SHELL IS READY TO ACCEPT INPUT.

FILESYSTEM

- ▶ Directory = folder
- ▶ Filesystem is a term that describes how files and directories are organized in the computer.
- ▶ It is a hierarchical directory structure in a tree-like structure.
- ▶ First directory (origin of everything) is the *root*.

2. NAVIGATING DIRECTORIES

FILESYSTEM

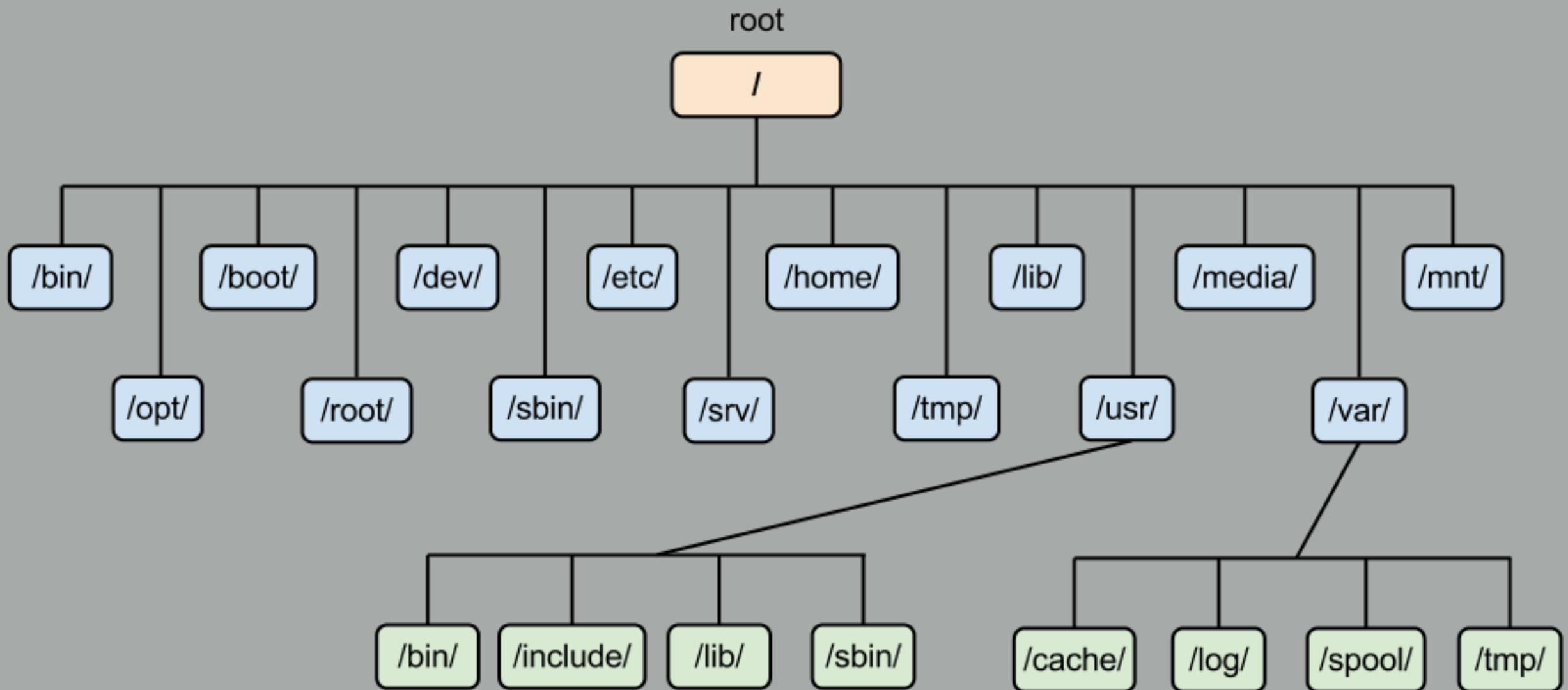
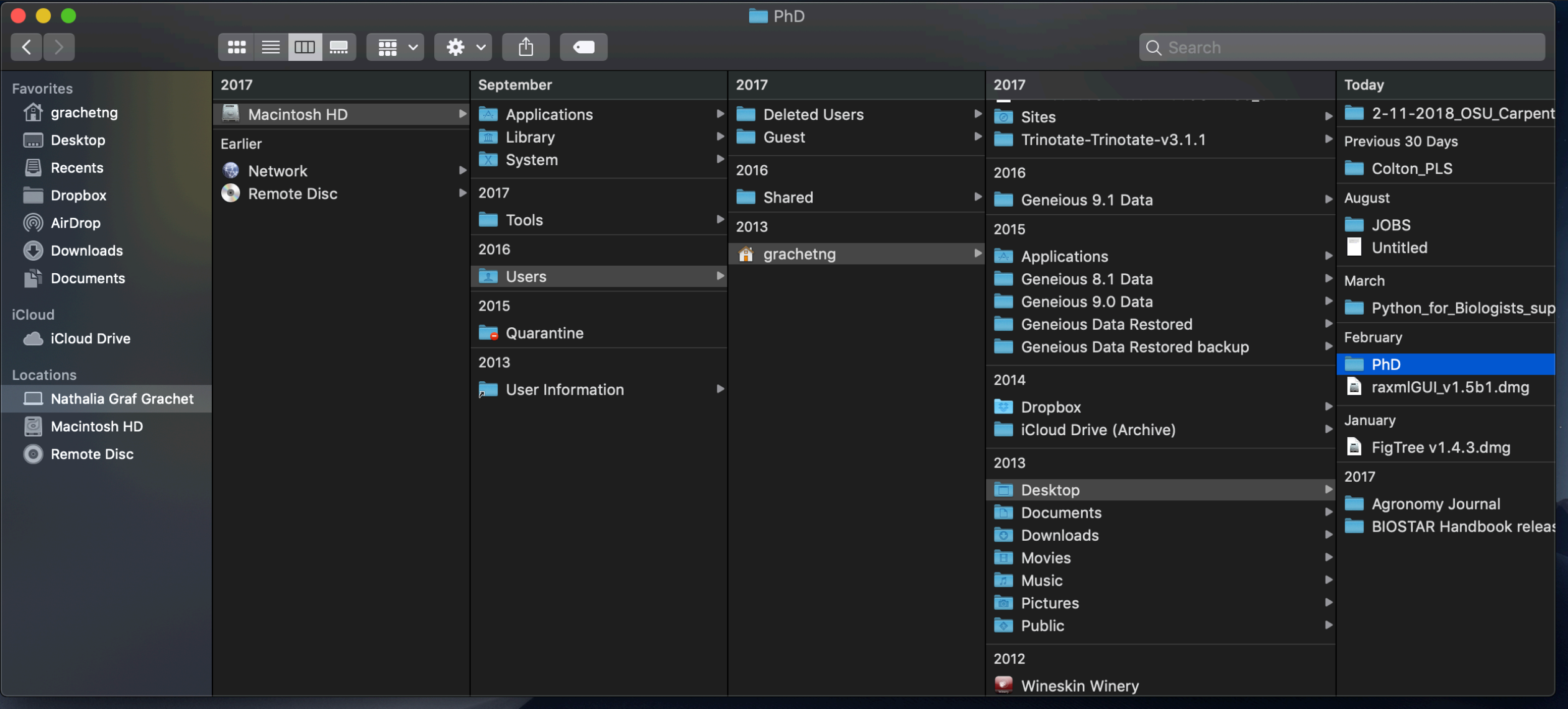


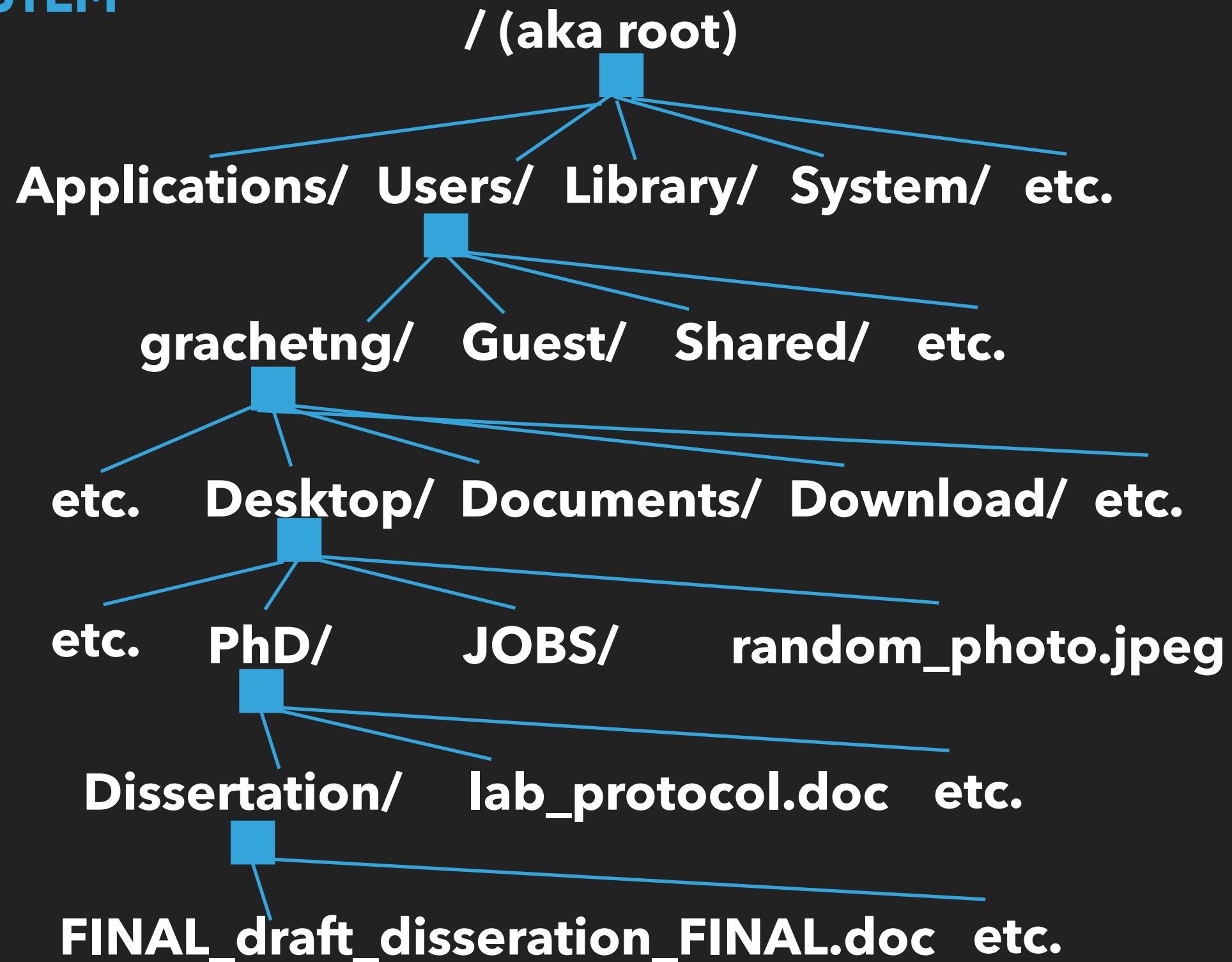
Image from: <https://freedompenguin.com/articles/how-to/learning-the-linux-file-system/>

2. NAVIGATING DIRECTORIES

FILESYSTEM



FILESYSTEM



PATHNAME

- ▶ Path is the route we take in the filesystem tree to get where we want.
- ▶ **Absolute path**: begins from the root directory.
`/Users/grachetng/Desktop/PhD/Dissertation/FINAL_draft.doc`
- ▶ **Relative path**: starts from the current working directory, e.g. Desktop.
`PhD/Dissertation/FINAL_draft.doc`

COMMANDS

- ▶ Type a command and press Enter/Return.
- ▶ Shell principle is **REPL** (read-evaluate-print loop):
 - ▶ 1. reads the command,
 - ▶ 2. evaluates it (*aka executes*),
 - ▶ 3. prints the output of that command to your screen,
 - ▶ 4. loops back, and waits for your next commands (*aka gives your prompt back*).

**Let's go to
the terminal!**