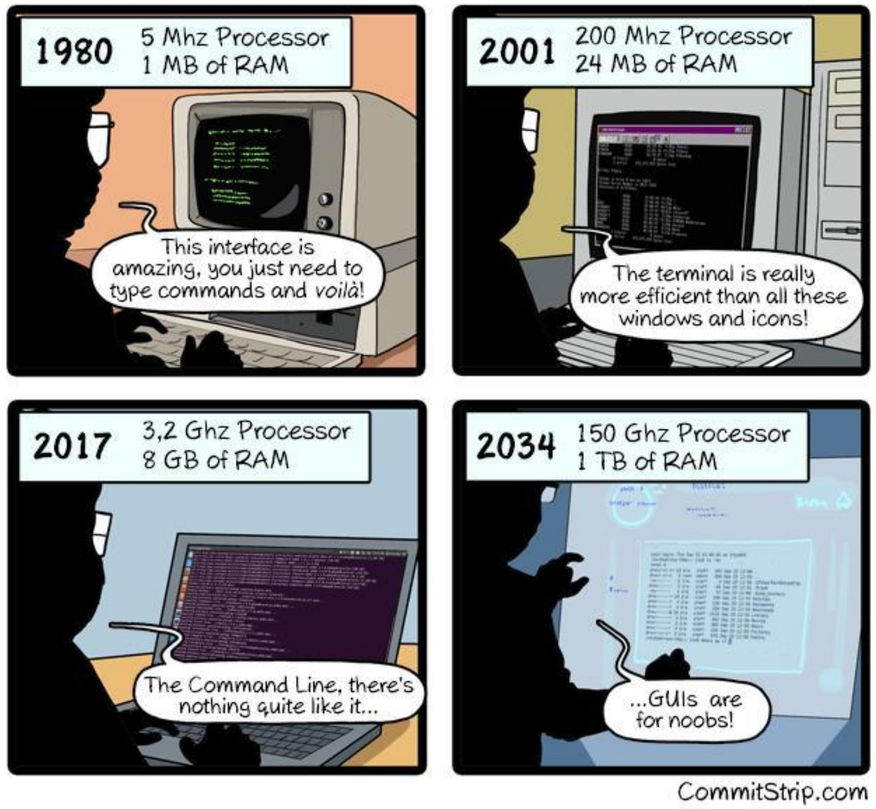
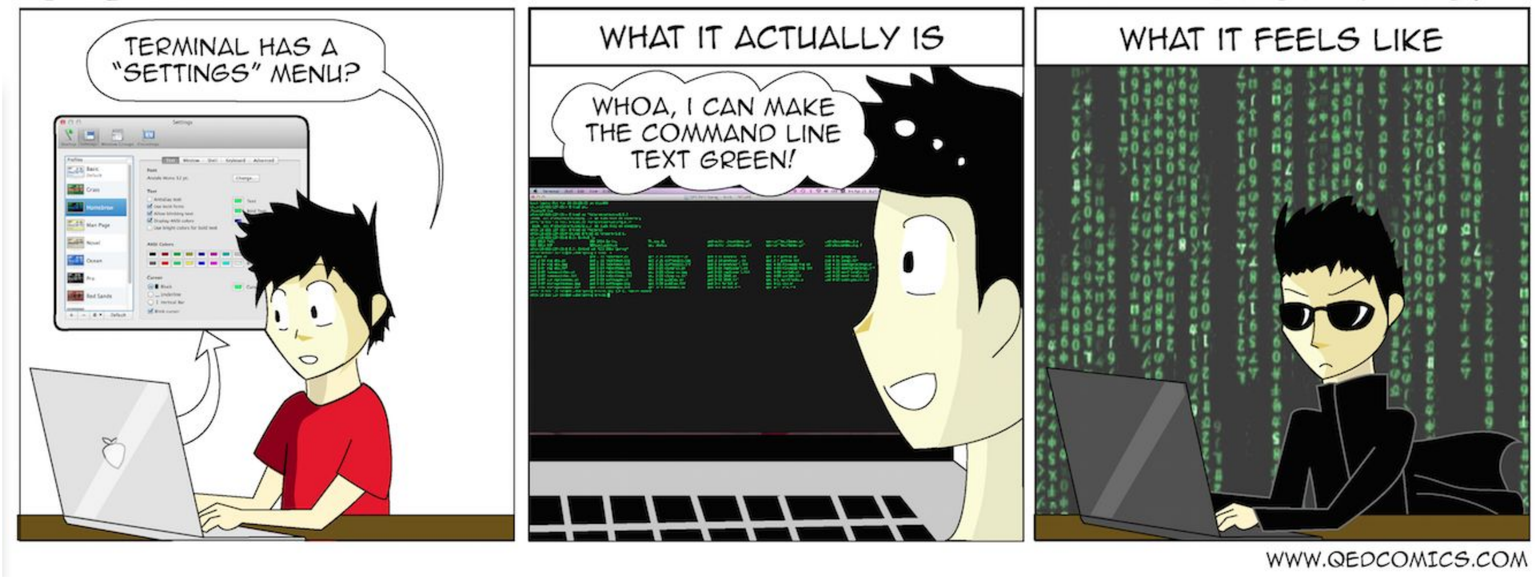
Interacting with the Shell

Spring 2023
PCfB Class 2
January 27, 2023





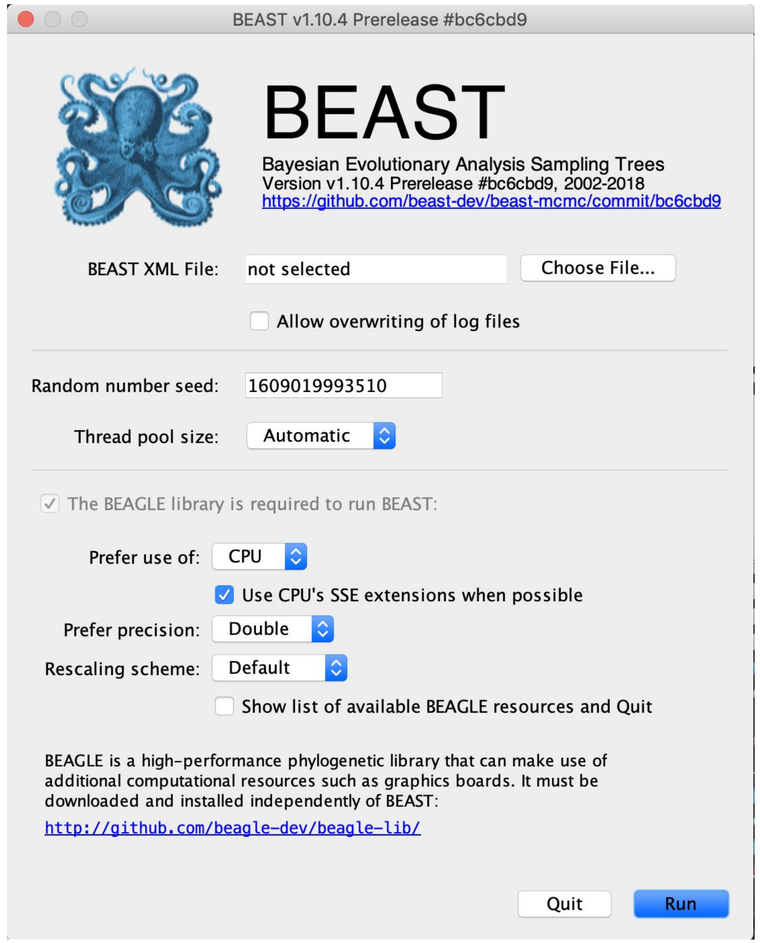
Outline

- Intro to Unix shell
- Configuration files
- Useful commands
- Assignment

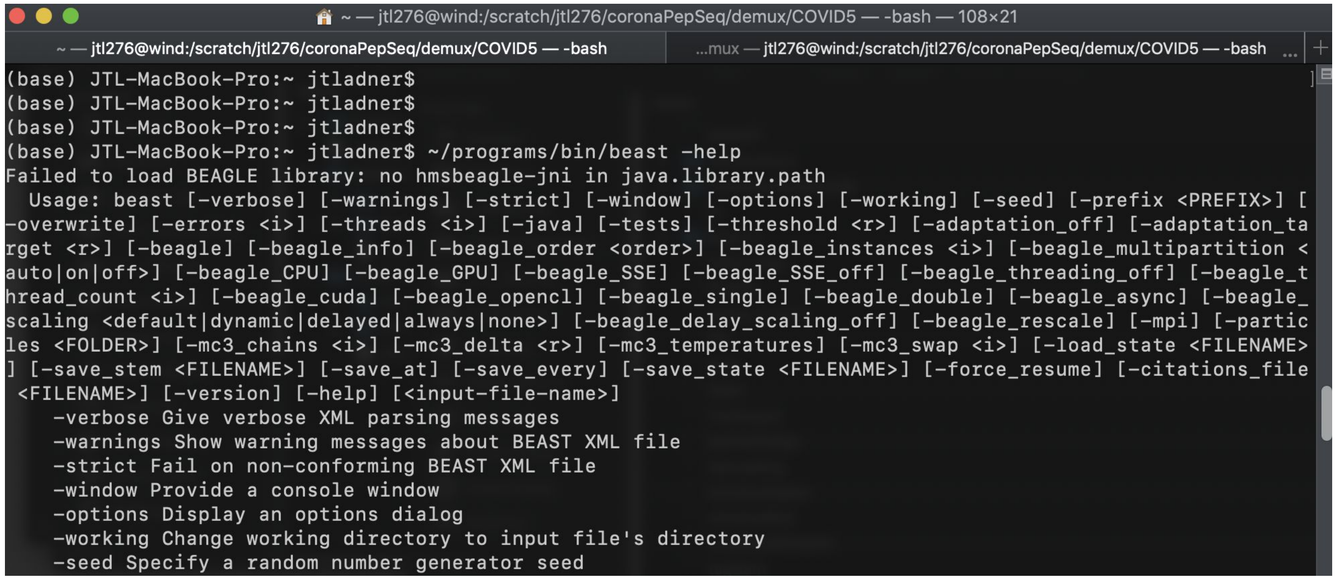
Intro to unix shell

GUI vs. Command line

Graphical user interface



Command line/Terminal



Unix Shell

- Command-line interpreter
- A programming language
- Commands can be entered by a user or read from a file

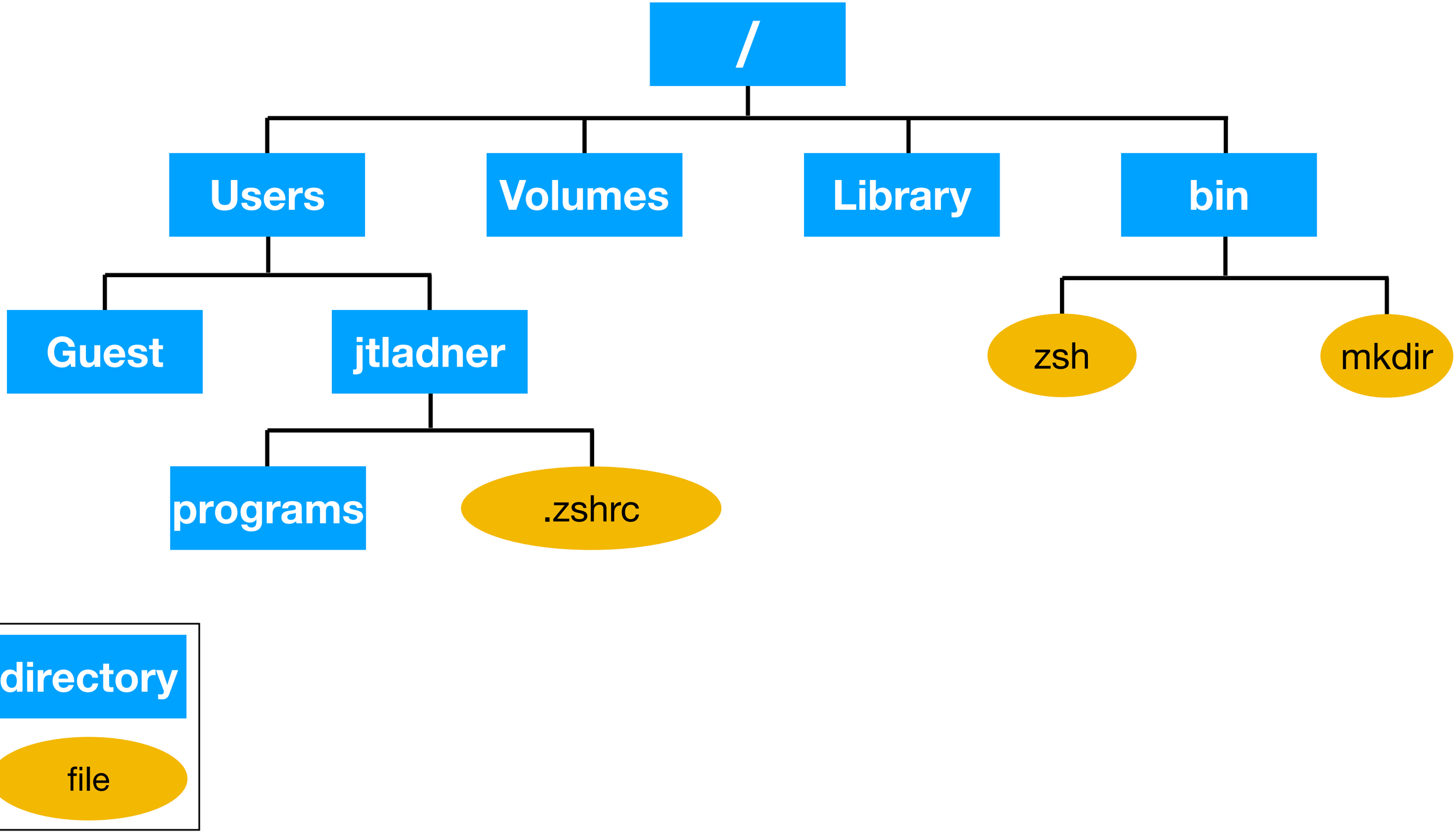
Available shells on my computer

```
(base) jtladner@mggen231 matrices % ls -l /bin/*sh
-r-xr-xr-x  1 root  wheel  1296704 Jan  1  2020 /bin/bash
-rwxr-xr-x  1 root  wheel  1106144 Jan  1  2020 /bin/csh
-rwxr-xr-x  1 root  wheel   277440 Jan  1  2020 /bin/dash
-r-xr-xr-x  1 root  wheel  2585424 Jan  1  2020 /bin/ksh
-rwxr-xr-x  1 root  wheel   120912 Jan  1  2020 /bin/sh
-rwxr-xr-x  1 root  wheel  1106144 Jan  1  2020 /bin/tcsh
-rwxr-xr-x  1 root  wheel  1347856 Jan  1  2020 /bin/zsh
```

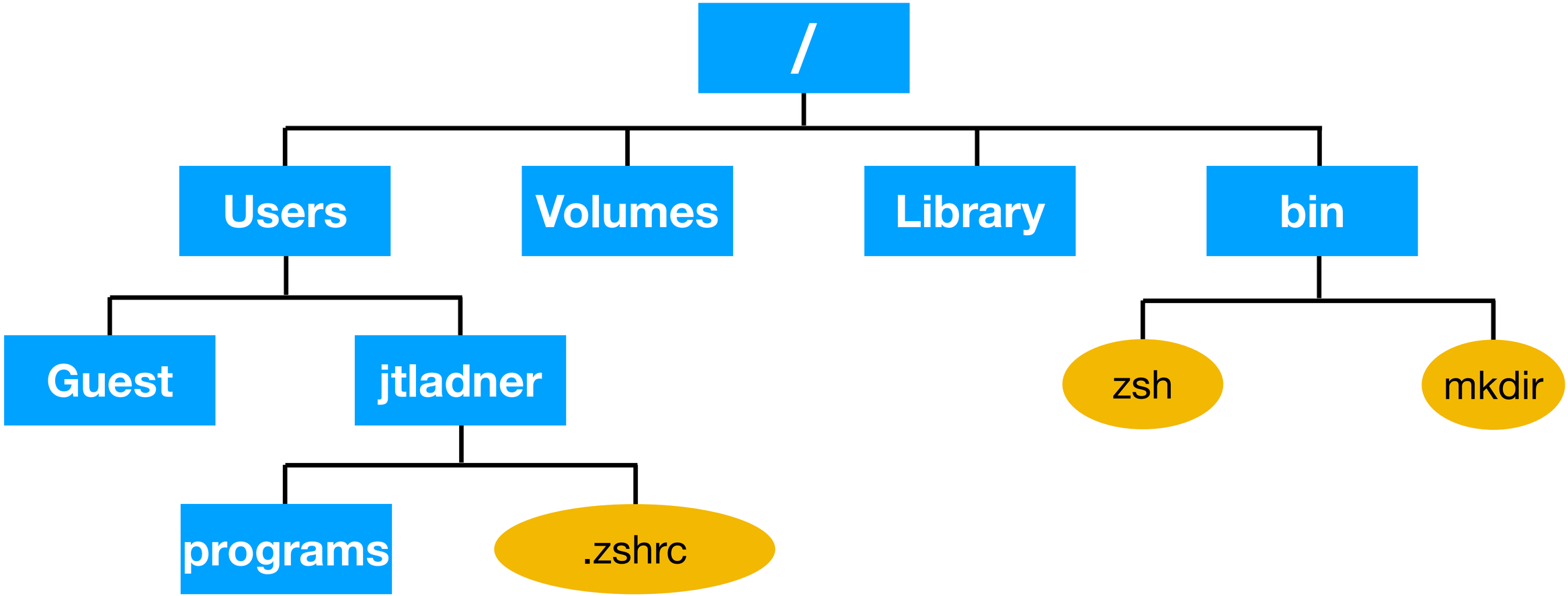
Be careful!

- The shell will not ask for confirmation before permanently deleting files from your computer
- Deleted files are NOT moved to the trash
- No Undo (ctrl-z)

Filesystem structure


/
Users
Volumes
Library
bin
Guest
jtladner
zsh
mkdir
programs
.zshrc
directory
file

Types of paths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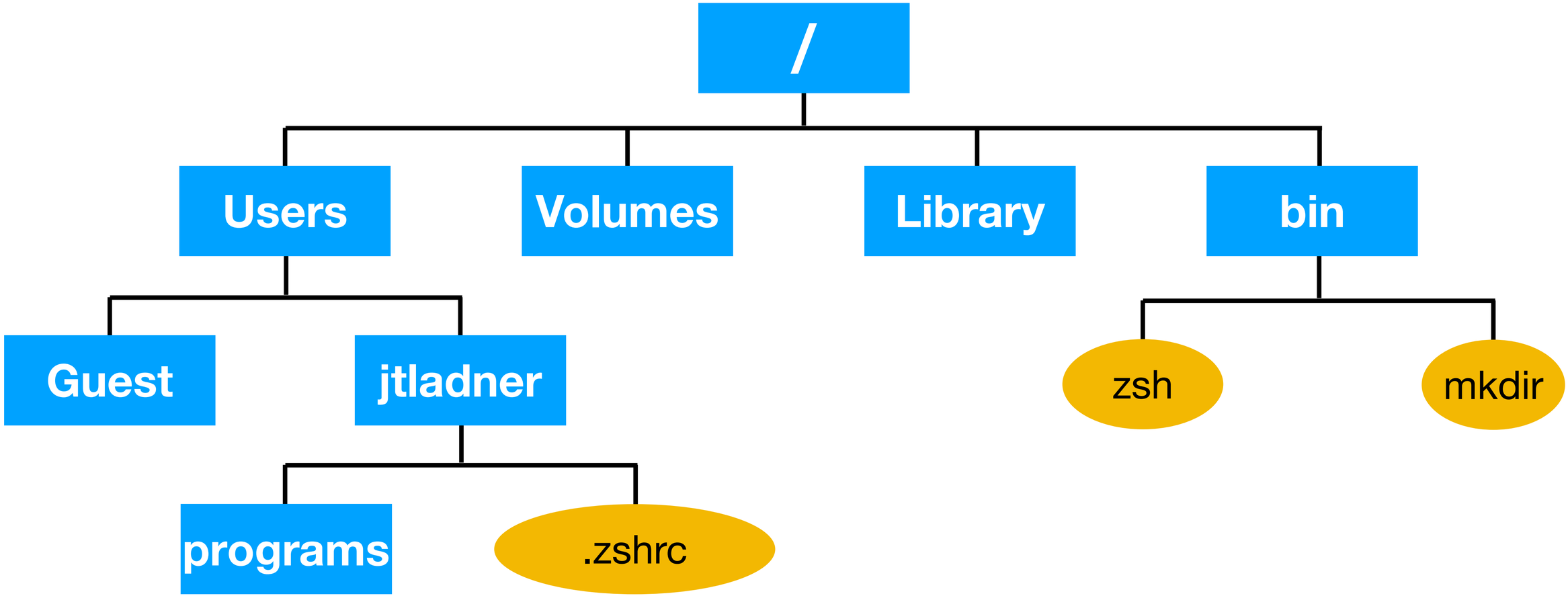
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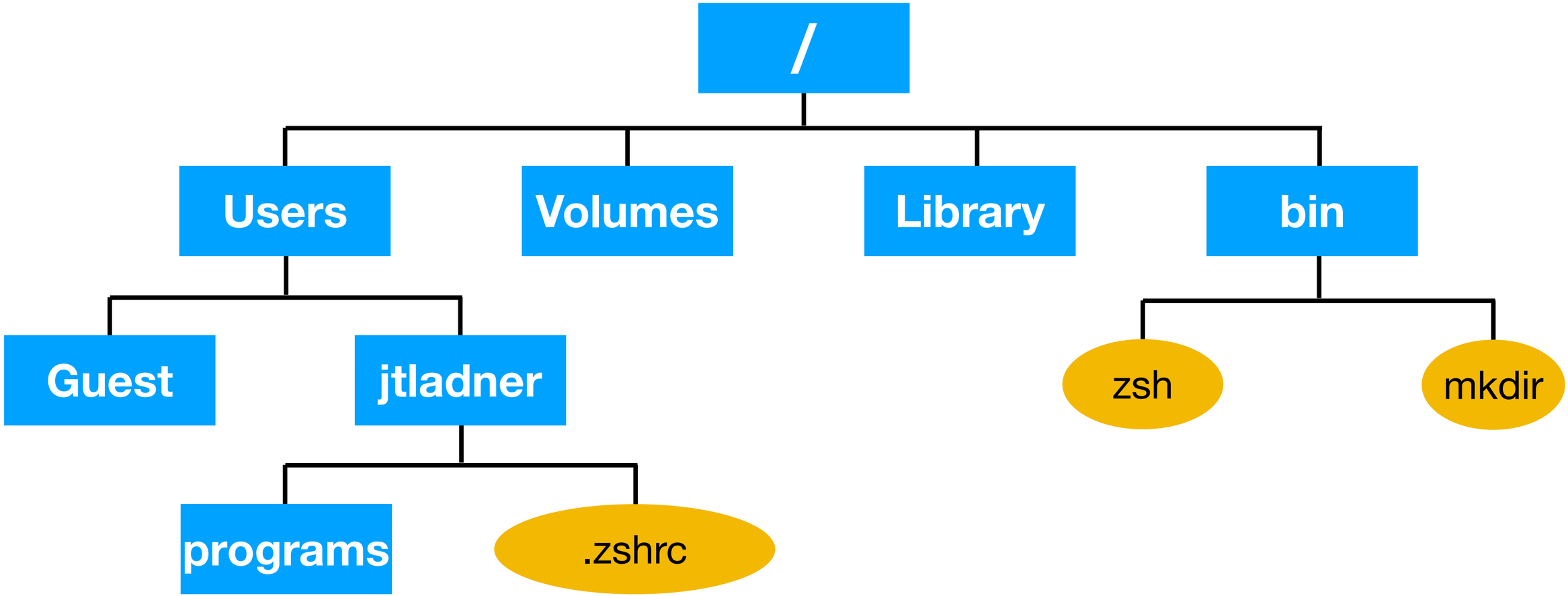
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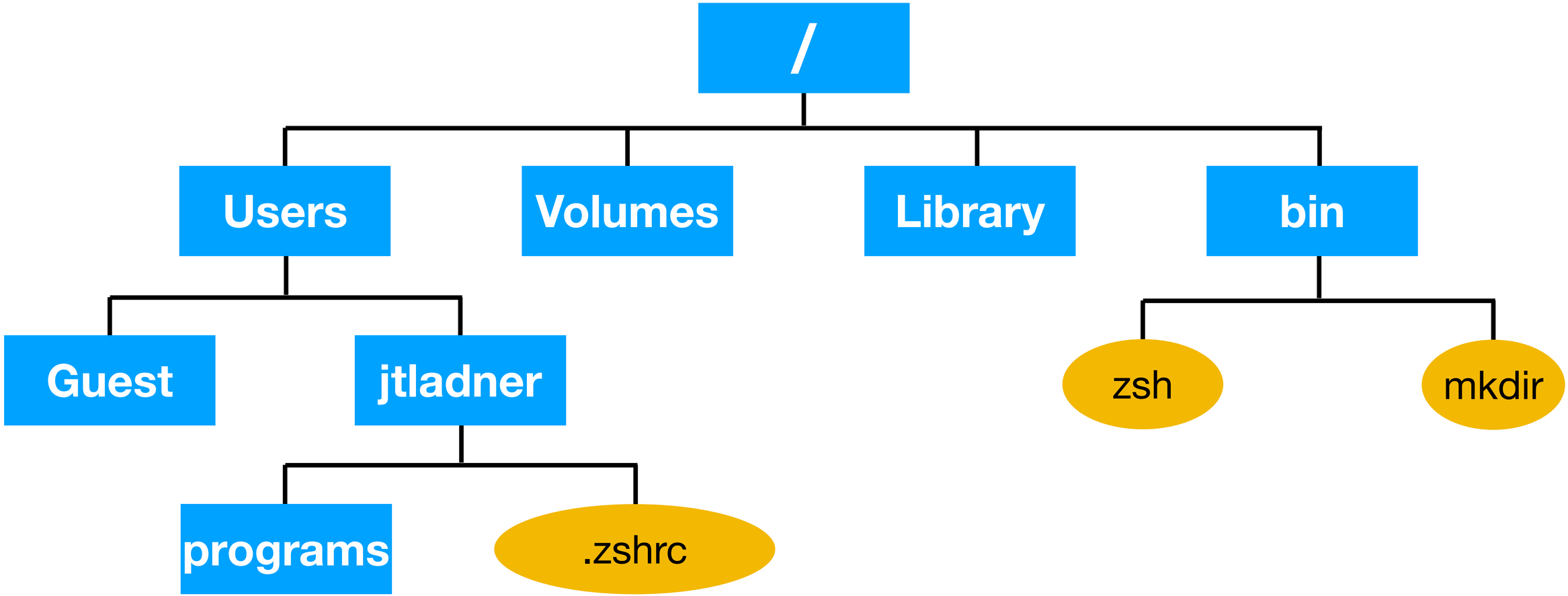
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programs
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Configuration files

Bash:

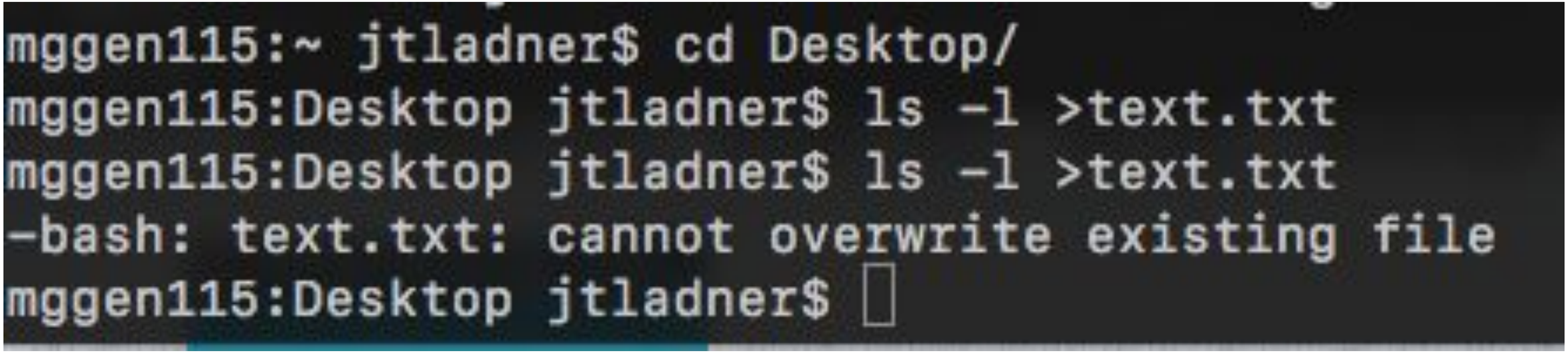
Zsh:

Practically speaking…

- For Mac OSX:
  - You only need .bash_profile or .zshrc
  - Terminal.app runs login shell for each new window, by default
- For Linux:
  - Use .bashrc for most settings
  - Execute .bashrc within .bash_profile (instructions on GitHub)

set -o noclobber

- Protects you from accidentally overwriting files that already exist



- Subtle change to behavior of up and down arrow keys

- Still scroll through command history…
  - but now if you start typing a command, you will only scroll through commands that match what you have started typing

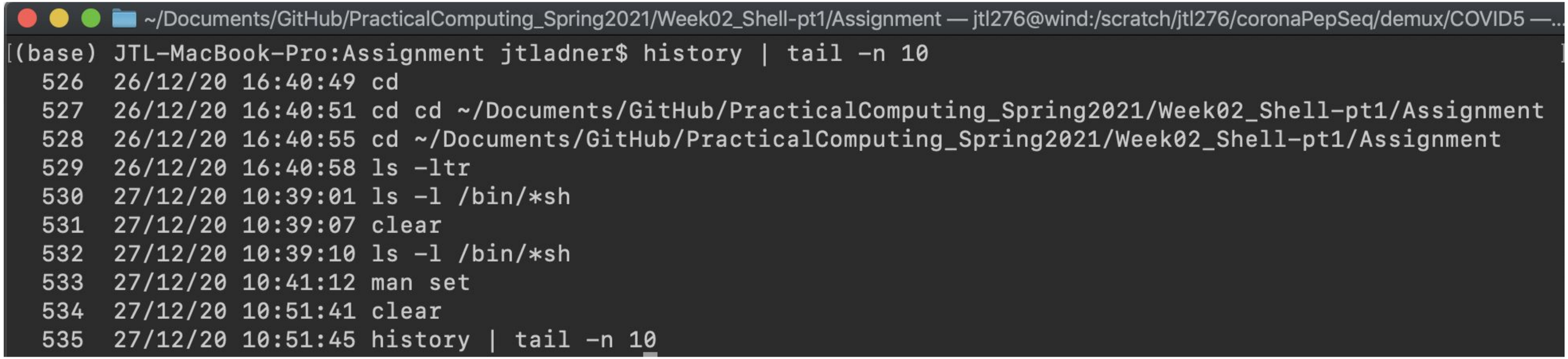
Bash:

```
bind '"\e[A": history-search-backward'
bind '"\e[B": history-search-forward'
```

Zsh:

```
bindkey '\eOA' history-beginning-search-backward
bindkey '\e[A' history-beginning-search-backward
bindkey '\eOB' history-beginning-search-forward
bindkey '\e[B' history-beginning-search-forward
```

Add time stamp to each command from `history`




```
HISTTIMEFORMAT="%d/%m/%y %T "
```

`fc -li`

- Alternative to `history` for zsh

`source` command

- Changes to your .bash_profile/.bashrc/.zshrc will not automatically take effect within your current session

- 2 options:
  1. Open a new terminal window
  2. `source ~/.bashrc`

Configuration demo

Useful commands

Getting around

```
pwd

 ls

 cd
```

Create/modify/delete files

`cp`

`mv`

`rm`

Create/delete directories

`mkdir`

`rmdir`

history

Commands covered in reading

Getting around

- `cd`
- `ls`
- `pwd`

Creating/deleting files

- `cp`
- `mkdir`
- `mv`
- `rmdir`
- `rm`

Other

- `grep`
- `cat`
- `curl`
- `man (-k)`
- `history`

View/edit text

- `less`
- `nano/pico`

Data flow

- `>`
- `|`
- `>>`

Questions?

Other useful commands

Extracting parts of files

`head`

`tail`

Quantify file contents

`wc`

`grep -c`

rename

Keyboard shortcuts

ctrl-a

ctrl-e

ctrl-u

ctrl-k

Terminal demos