

Software Carpentry Workshop NIH Library

Dec 14th, 15th, 16th, & 18th (No class on Thurs!)

Instructors:

Adam Thomas, SFIM, NIMH

Giovanni Torres, HPC Core Facility (Biowulf), CIT

Helpers:

David McGaughey, Staff Scientist, OGVFB, NEI

Sponsored by Office of Data Science

Future Courses:

<https://datascience.nih.gov/community/workforce/upcoming>

Name tags? Sticky notes?

What is Software Carpentry?

- Mission
 - To make researchers in science, engineering, and medicine more productive by teaching them basic lab skills for scientific computing

What is Software Carpentry?

- The Problem
 - Scientists spend more and more time building and using software
 - Most are primarily self-taught
 - Hard to measure how well they do things, but anecdotal evidence suggests "not very"

What is Software Carpentry?

- The Solution
 - Scientists teaching scientists
 - Two days of hands-on learning:
 - The Unix shell ⇒ automate repetitive tasks
 - Git and GitHub ⇒ track and share work
 - Python or R ⇒ build modular code
 - SQL ⇒ structure & manage data

What is Software Carpentry?

- Outcomes
 - 10-20% improvement in productivity is common
 - 10X isn't rare
 - Do the old things faster
 - Tackle new problems
 - Ready for High Performance Computing (HPC), the cloud, big data, ...
 - Start doing open science

What is Software Carpentry?

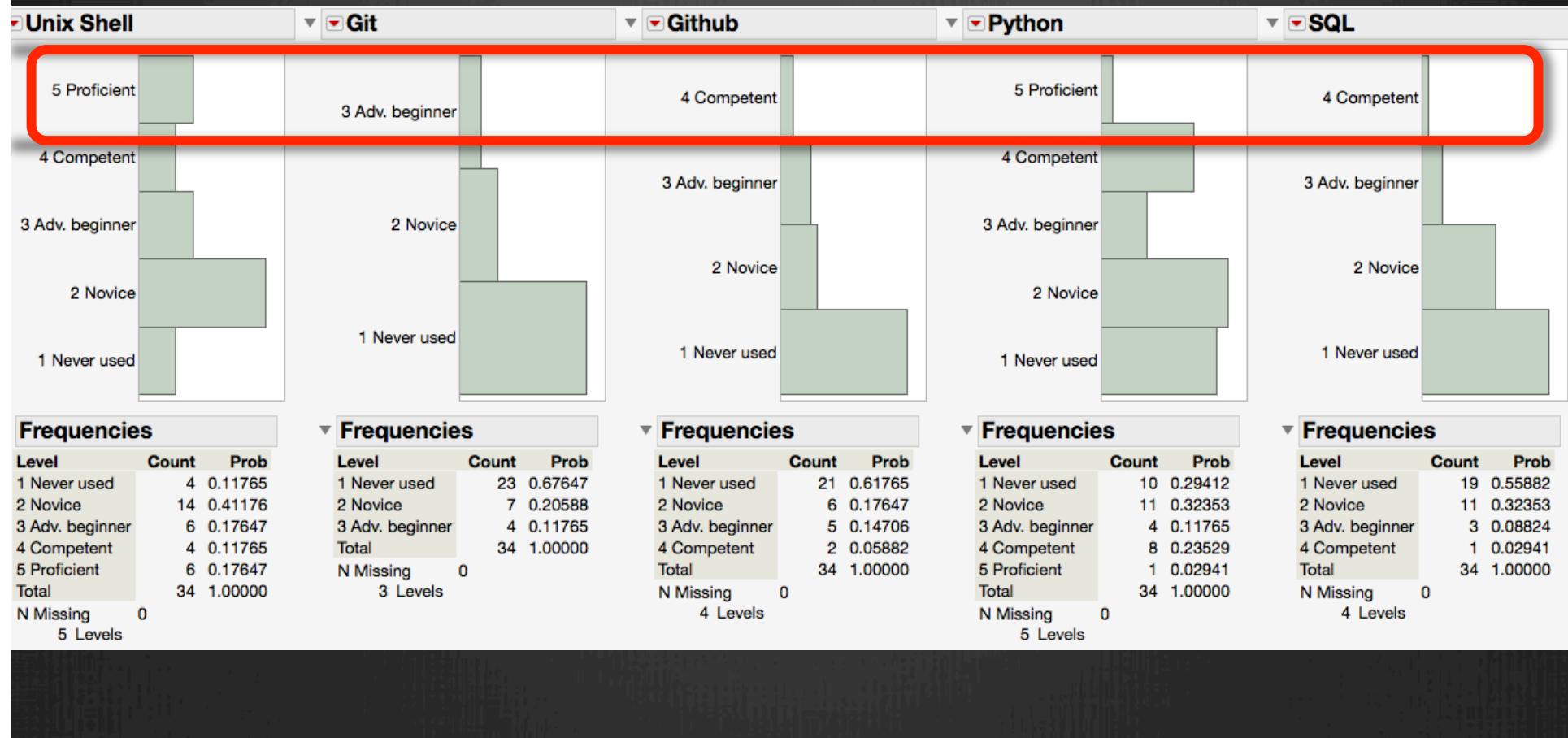
- The Details
 - Materials are all open access
 - Instructors are volunteers
 - Not for profit
- How to get Involved
 - Become an instructor
 - Create and improve lessons
 - Help build tools
 - Learn more at <http://www.swcarpentry.org>

This weeks course

You are not alone!

Results from pre-workshop questionnaire

Peer Learning!



Course Tools

- Exercise #1: Introduce yourself to your two neighbors
- Exercise #2:
 - Open the etherpad link in your browser
<http://pad.software-carpentry.org/2015-12-14-NIH>
<http://bit.ly/nih-epad>
 - Type your name in the upper right hand corner
 - Type “Hi” in the chat box in the lower right hand corner
 - Summarize in your job/research as a single #hashtag in the main window on the left
 - Put a green sticky note on the back of your laptop

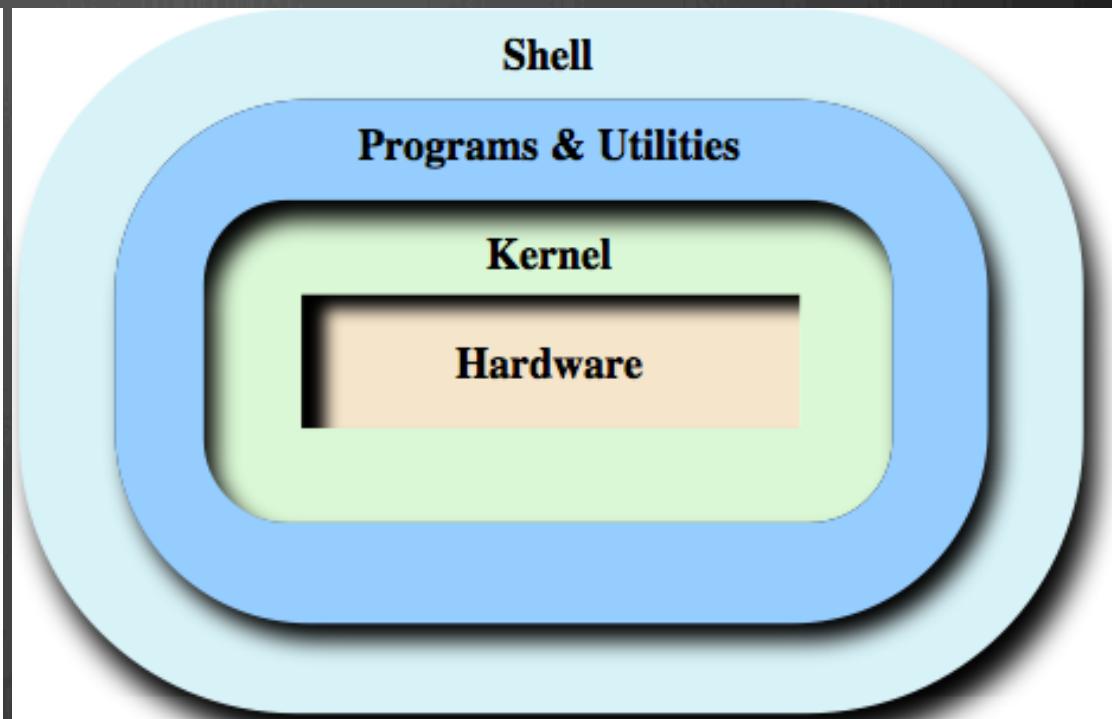
Course Tools

- The instructors, helpers, and students will add helpful things to the etherpad regularly, so check it frequently
- If you have a question but don't want to interrupt the instructor, type it in the chat window
- Put up a green sticky when prompted, put up a red sticky if you're stuck and need help
- <http://www.socratic.com>
- All of the commands Adam types are in Dropbox here: <http://bit.ly/agtCommands>

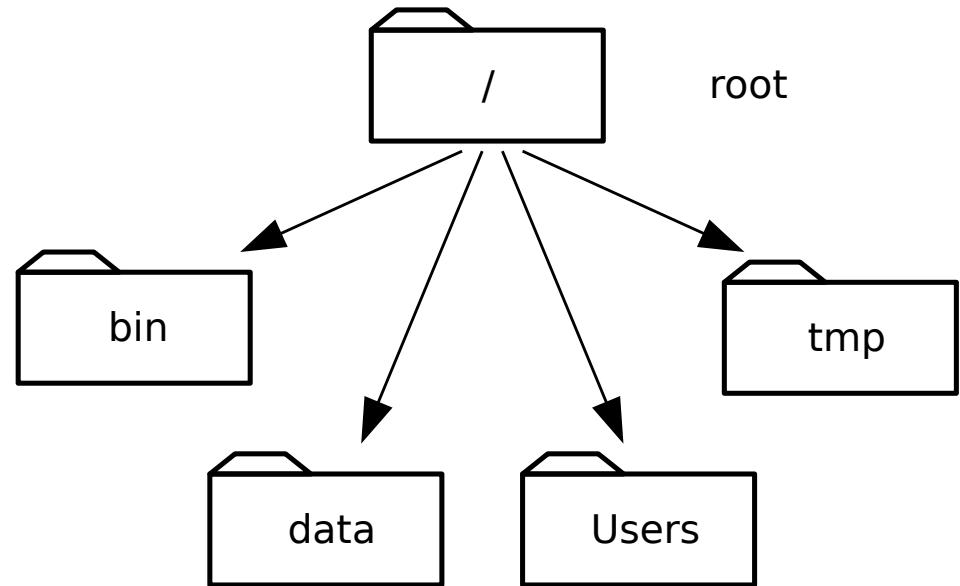
Exercise #3

- Make a new folder on your desktop called **shell-novice**
- Download this file <http://bit.ly/nih-sn-zip> and put it in your new folder
- Uncompress this file
- Open a terminal

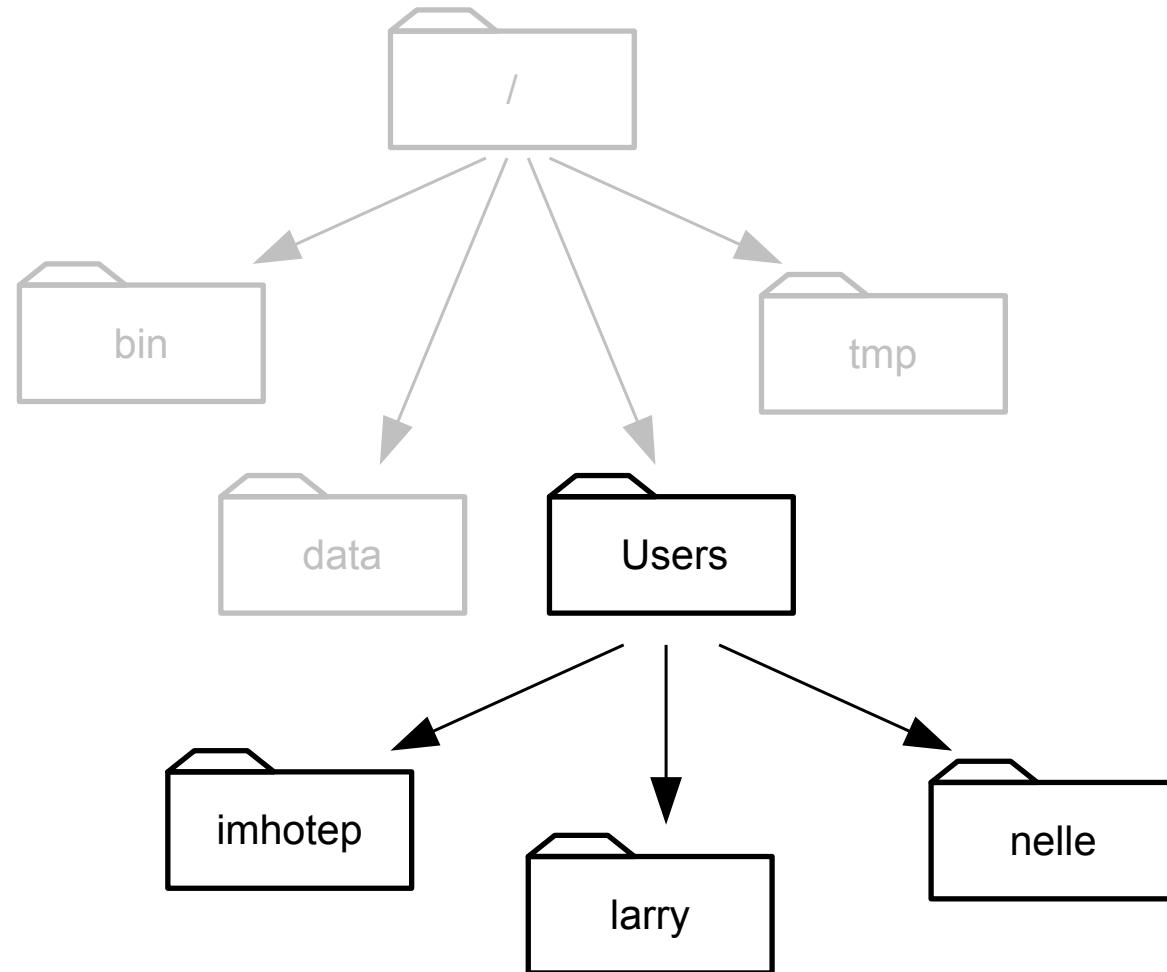
The Unix Shell



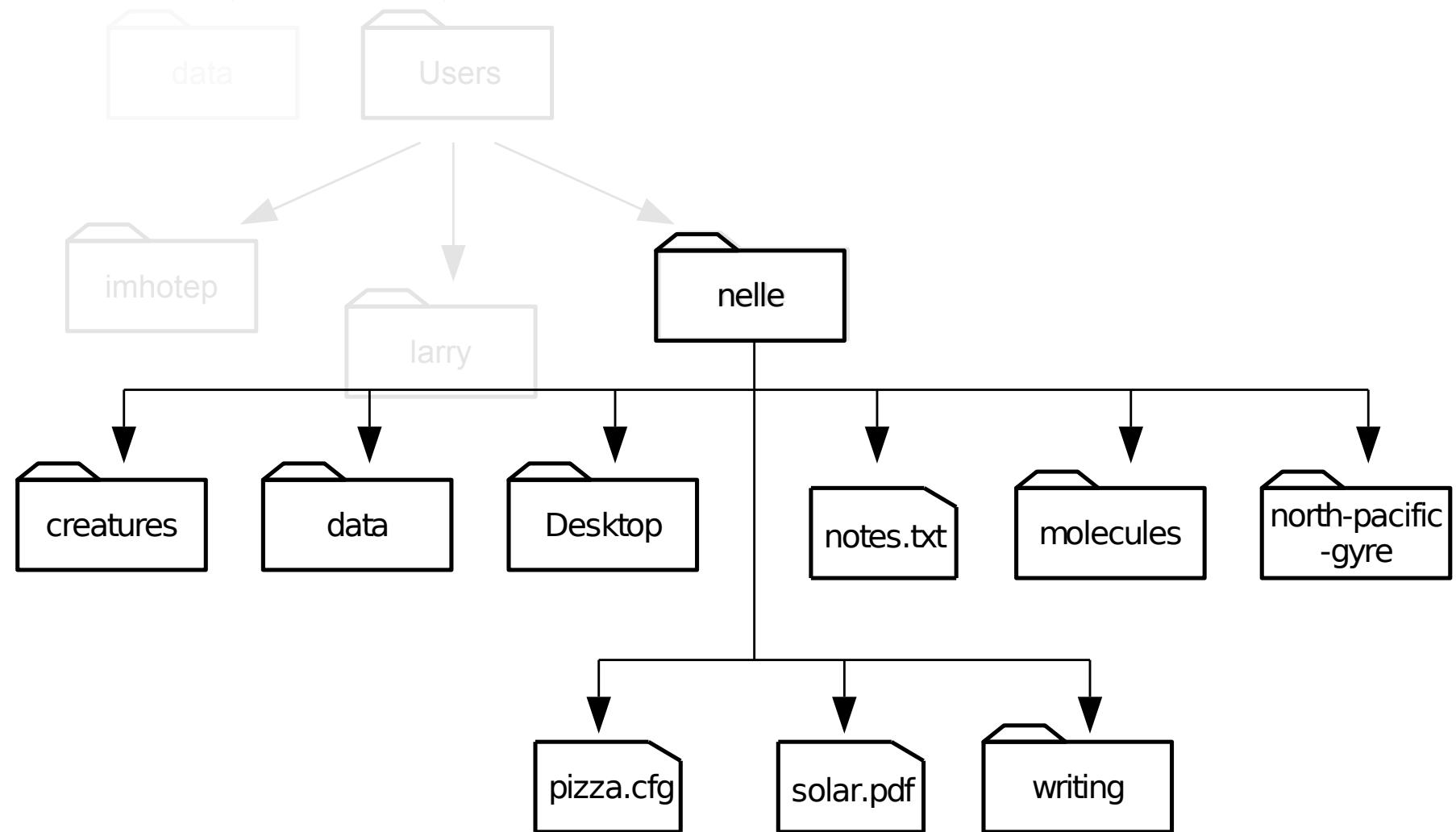
The File System



The File System

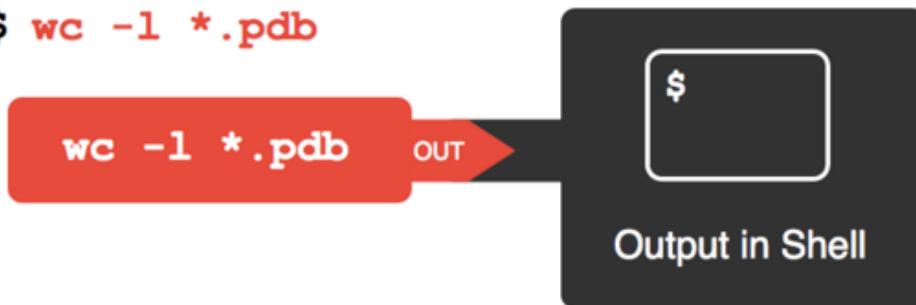


The File System

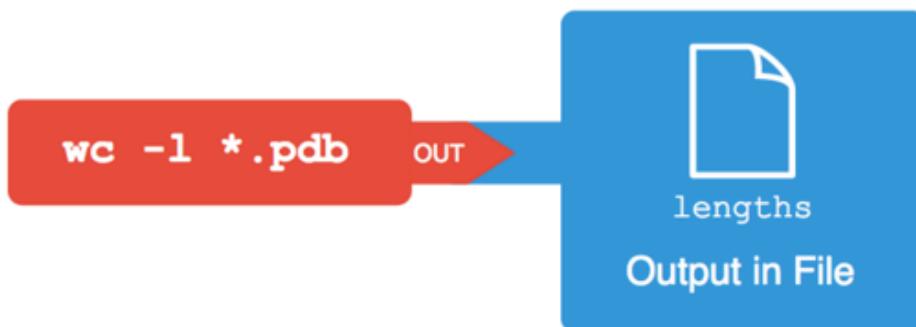


Connecting things: pipes and redirectors

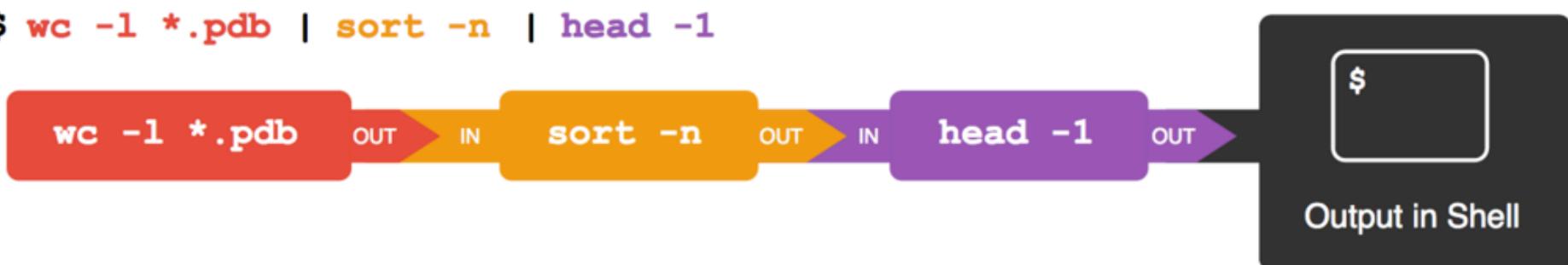
```
$ wc -l *.pdb
```



```
$ wc -l *.pdb > lengths
```



```
$ wc -l *.pdb | sort -n | head -1
```



Resources

- All of this material is online:
- There are youtube videos of other people teaching it:
- The internet is filled with smart, procrastinating people who actually enjoy helping people like you
- Learning how to ask good questions

<http://www.catb.org/esr/faqs/smart-questions.html>