INTRO TO BASH

THE BOURNE-AGAIN SHELL

Valentina Erastova
Tonia Mey
Claire Hobday

Salome Llabres, Mario Antonioletti,
David McKain, Jenke Scheen, Sofia Bariami

https://edcarp.github.io/2019-09-26-edinburgh-swc/

School of Chemistry: Python and Unix Shell

26-27 Sep 2019

9:00 pm - 1:00 pm (Thursday) and 9:00 pm - 5:00 pm (Friday)

Instructors: Valentina Erastova, Claire Hobday, Antonia Mey

Helpers: Salome Llabres, Mario Antonioletti, David McKain, Jenke Scheen, Sofia Bariami

We will use this collaborative document for chatting, taking notes, and sharing URLs and bits of code.

General Information

Software Carpentry aims to help researchers get their work done in less time and with less pain by teaching them basic research computing skills. This hands-on workshop will cover basic concepts and tools, including program design, version control, data management, and task automation. Participants will be encouraged to help one another and to apply what they have learned to their own research problems.

For more information on what we teach and why, please see our paper "Best Practices for Scientific Computing".

Who: The course is aimed at 4th and 5th year student with a computational component in their project as well as PhD students. **You don't need to have any previous knowledge of the tools that will be presented at the workshop.**

Schedule

Day 1: 26/09/2019: Joseph Black Building T40

Before	Pre-workshop survey
09:00	Automating Tasks with the Unix Shell
10:30	Coffee break
12:50	Wrap-up
13:00	END
13:00	Potential trouble shooting Python installation

SYLLABUS

- Files and Directories
- History and Tab Completion
- Pipes and Redirection
- Looping Over Files
- Creating and Running Shell Scripts
- Finding Things

SHELL - 🤔?

WHAT?

- Command line interface between YOU and UNIX (& its friends)

WHY?

- Introduce some fundamental ideas of using computers

repetitive tasks be gone!

- Things depend on it – supercomputers, installing programs, …
- Gives you access to tools/resources 😃

https://swcarpentry.github.io/shell-novice/

The Unix Shell

The Unix shell has been around longer than most of its users have been alive. It has survived so long because it's a power tool that allows people to do complex things with just a few keystrokes. More importantly, it helps them combine existing programs in new ways and automate repetitive tasks so they aren't typing the same things over and over again. Use of the shell is fundamental to using a wide range of other powerful tools and computing resources (including "high-performance computing" supercomputers). These lessons will start you on a path towards using these resources effectively.

Prerequisites

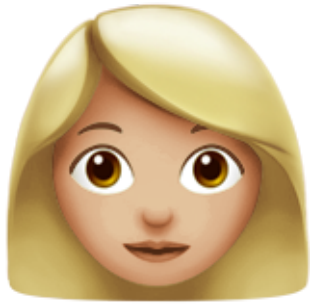
This lesson guides you through the basics of file systems and the shell. If you have stored files on a computer at all and recognize the word "file" and either "directory" or "folder" (two common words for the same thing), you're ready for this lesson.

If you're already comfortable manipulating files and directories, searching for files with `grep` and `find`, and writing simple loops and scripts, you probably want to explore the next lesson: shell-extras.

Schedule

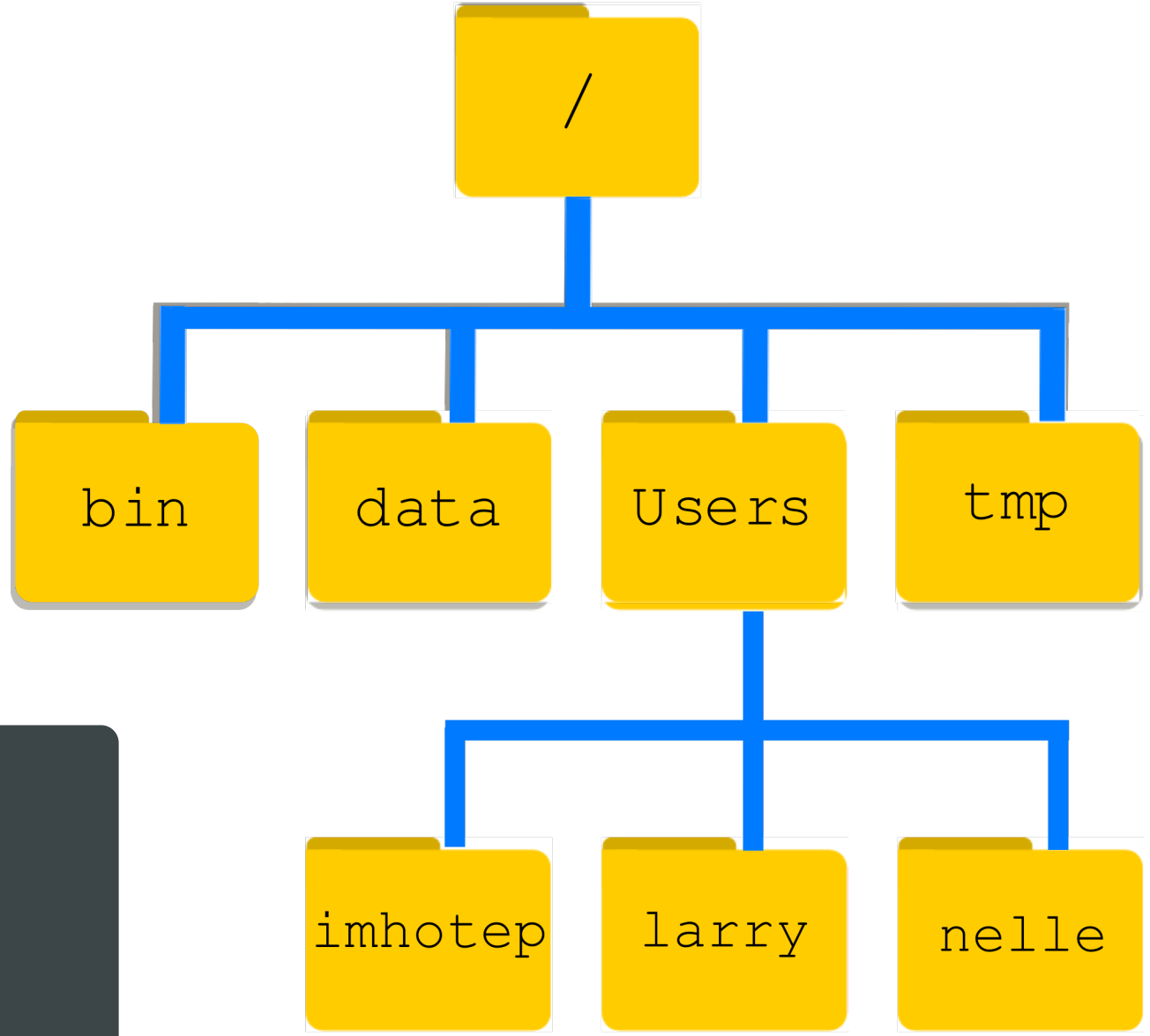
	Setup	Download files required for the lesson
00:00	1. Introducing the Shell	What is a command shell and why would I use one?
00:05	2. Navigating Files and Directories	How can I move around on my computer? How can I see what files and directories I have? How can I specify the location of a file or directory on my computer?
00:45	3. Working With Files and Directories	How can I create, copy, and delete files and directories? How can I edit files?

```
~/Desktop ››› pwd
/Users/valentina/Desktop
~/Desktop ››› cd data-shell
~/D/data-shell ››› ls
creatures           molecules           notes.txt           solar.pdf
data                north-pacific-gyre  pizza.cfg           writing
~/D/data-shell ››› cd north-pacific-gyre
~/D/d/north-pacific-gyre ››› ls
2012-07-03
~/D/d/north-pacific-gyre ››› cd 2012-07-03
~/D/d/n/2012-07-03 ››› ls
NENE01729A.txt NENE01751B.txt NENE01971Z.txt NENE02040A.txt NENE02043B.txt
NENE01729B.txt NENE01812A.txt NENE01978A.txt NENE02040B.txt goodiff
NENE01736A.txt NENE01843A.txt NENE01978B.txt NENE02040Z.txt goostats
NENE01751A.txt NENE01843B.txt NENE02018B.txt NENE02043A.txt
~/D/d/n/2012-07-03 ››› ls -lrth
total 280
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE02043B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE02043A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE02040Z.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE02040B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE02040A.txt
-rw-r--r--@ 1 valentina  staff   3.4K  8 Aug 13:13 NENE02018B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01978B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01978A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01971Z.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01843B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01843A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01812A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01751B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01751A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01736A.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01729B.txt
-rw-r--r--@ 1 valentina  staff   4.3K  8 Aug 13:13 NENE01729A.txt
-rwxr-xr-x@ 1 valentina  staff   218B  8 Aug 13:14 goostats
-rwxr-xr-x@ 1 valentina  staff   345B  8 Aug 13:14 goodiff
~/D/d/n/2012-07-03 ›››
```



nelle

nelle's computer



nelle's folder

```
$ pwd
/users/nelle
```

How to Name files and directories?

- **no spaces**


`north pacific gyre`


`north-pacific-gyre`

- **no strange symbols**


`Peter & Mary`


`Peter_Mary`

- **with extensions**


`mydocument`


`mydocument.txt`

Removing on Linux is for **REAL**!

```
$ rm text.txt
```

will remove the file completely (no Bin/Trash/..)

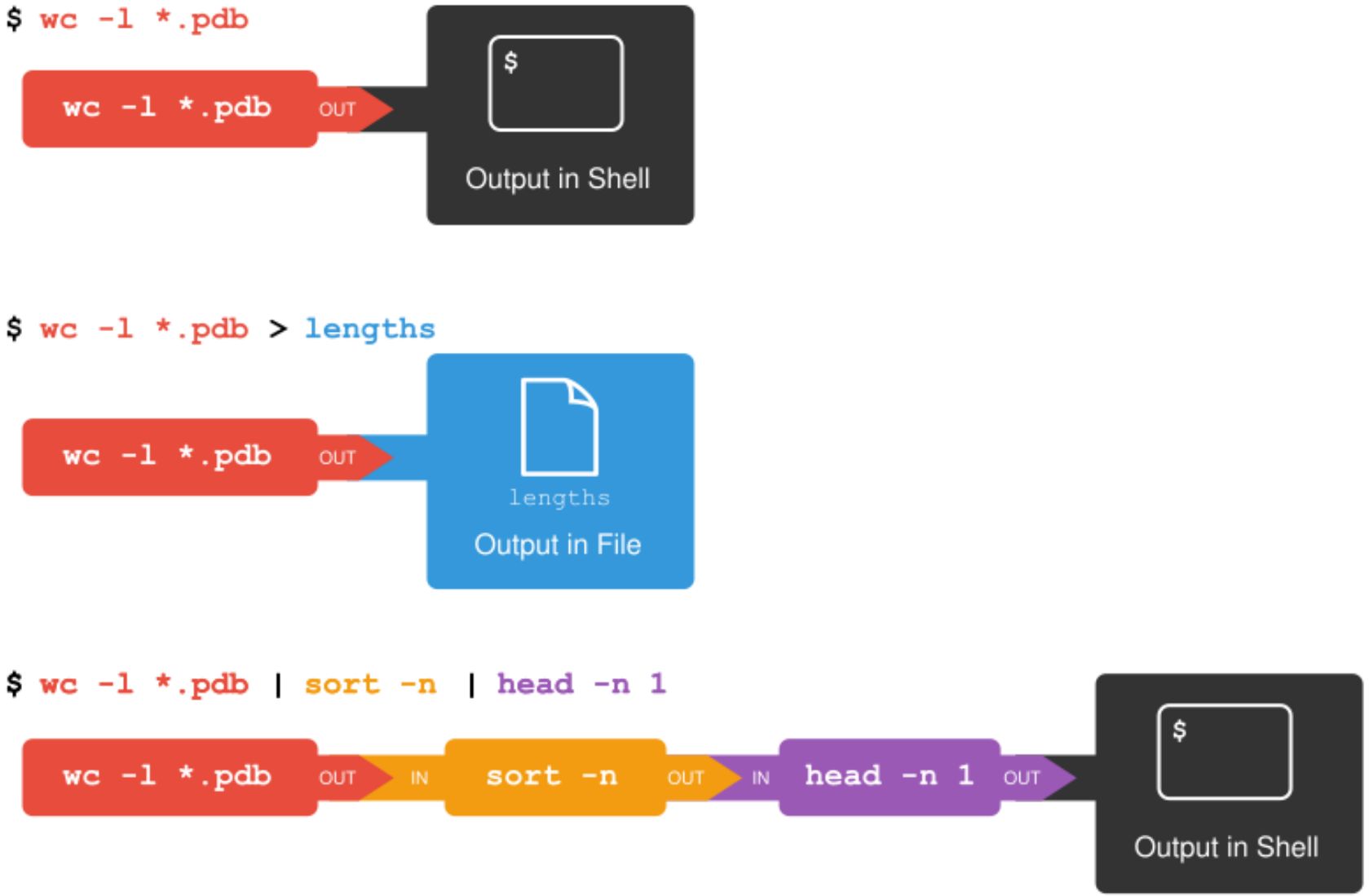
```
$ rm -i text.txt
  rm: remove regular file ‘text.txt’?
```

will prompt you to

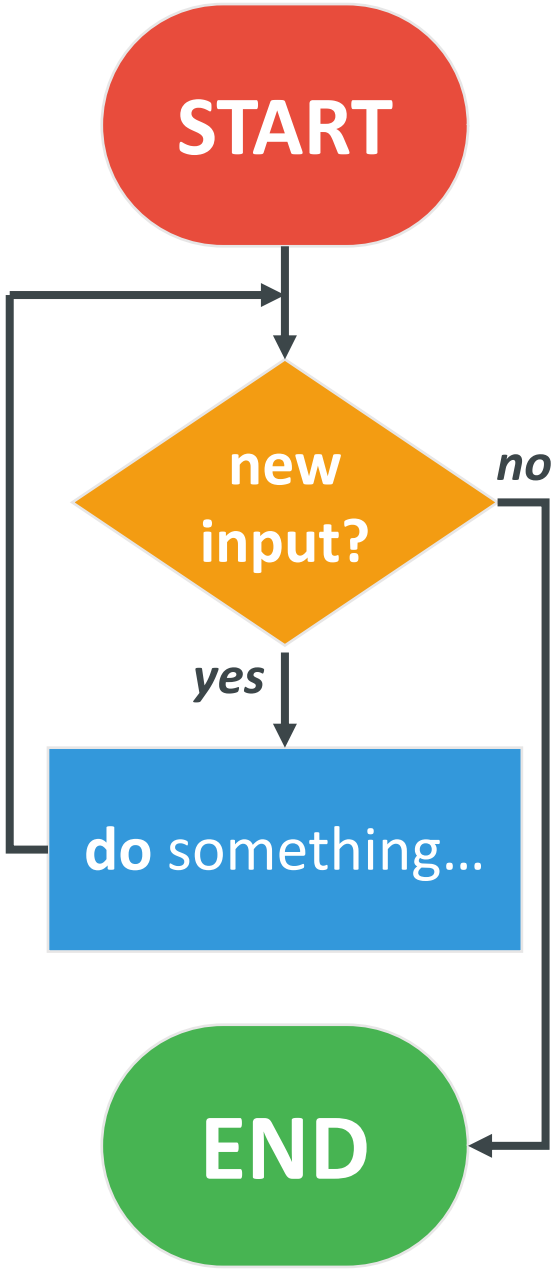
confirm by typing `y`

or cancel by typing `n`

Pipe lines with Filters



Loops



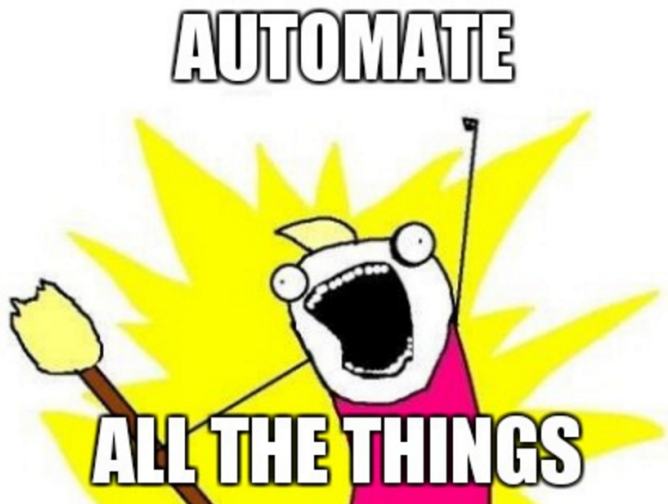

```
for filename in *.dat




do
    echo $filename
    head -n 100 $filename | tail -n 20
done
```

Save it for later!

`do-it.sh`



more...

Tomorrow, 27th September, 9am – 5pm
G.09 in Murchison House, KB

intro to python™

Edinburgh Carpentries

edcarp.github.io

THE UNIVERSITY of EDINBURGH

THE CARPENTRIES

software carpentry

DATA CARPENTRY

Software Sustainability Institute

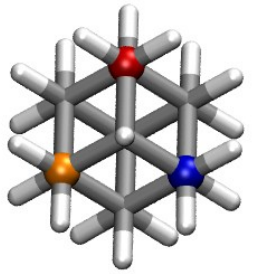
explainshell.com

about

theme

write down a command-line to see the help text that matches each argument

try showthedocs for explaining other languages



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