

Software Carpentry Workshop

University of Nebraska – Lincoln
Holland Computing Center

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Setup Instructions

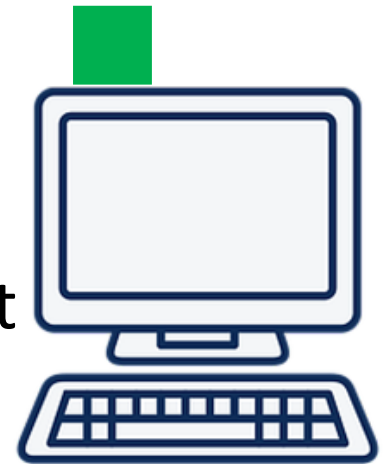
Please complete these steps before the lessons start at 9:00 AM:

Setup instructions: <https://unlhcc.github.io/2017-03-27-UNL/#setup>



If you need help with the setup, please put a **red** sticky note at the top of your laptop.

When you are done with the setup, please put a **green** sticky note at the top of your laptop.



Schedule

Monday, March 27th

08:30-09:00 Set-up

09:00-10:30 [Automating tasks with the Unix Shell](#)

10:30-10:45 Coffee break

10:45-12:00 [Automating tasks with the Unix Shell \(continued\)](#)

12:00-13:00 Lunch break

13:00-14:00 [Automating tasks with the Unix Shell \(continued\)](#)

14:00-14:30 [Version Control with Git](#)

14:30-14:45 Coffee break

14:45-16:30 [Version Control with Git \(continued\)](#)

16:30 Wrap-up

Tuesday, March 28th

08:30-09:00 Set-up

09:00-10:30 [Programming in Python](#)

10:30-10:45 Coffee break

10:45-12:00 [Programming in Python \(continued\)](#)

12:00-13:00 Lunch break

13:00-14:30 [Programming in Python \(continued\)](#)

14:30-14:45 Coffee break

14:45-16:30 [Programming in Python \(continued\)](#)

16:30 Wrap-up

Logistics

- Location:
 - UNL City Campus Union – Colonial Rooms A&B
- Lunch and coffee vouchers
- Name tags, sign-in sheet
- Sticky notes: **Red = need help**, **Green = all good**

Logistics

- Shell lessons:
 - <https://eharstad.github.io/shell-novice/>
- Git lessons:
 - <https://eharstad.github.io/git-novice/>
- Python lessons:
 - <https://djw8605.github.io/python-novice-inflammation/>
- Etherpad (take notes, ask questions, view previously entered commands):
 - <http://hcc.unl.edu/swc-history/index.html>

Introduction to Software Carpentry

- Non-profit organization - 1998 (Greg Wilson)
- Mission: Improve basic computing skills and practices of researchers (esp. science, engineering, medicine)
- Materials are open-source
- Instructors are volunteers

<http://software-carpentry.org>

admin@software-carpentry.org

Introduction to Software Carpentry

- Problem:
 - Most scientists' computing skills are self-taught
 - Learn computing skills on need-to-know basis, limited time
- Solution:
 - 2-day “bootcamp”-style workshop / Hands-on training, no slides
 - Core curriculum:
 - Unix Shell programming (automating tasks)
 - Version control (Git and GitHub)
 - R or Python (building modular, robust code)
- Results:
 - Good programming practices
 - Reproducible research, time-saving, efficient, re-usable
- For information on upcoming SWC workshops, sign up for the HCC Announce mailing list:
<https://hcc.unl.edu/subscribe-mailing-list>

Unix Shell

- What is the Command Shell?
 - Interact using CLI instead of GUI
 - A program
 - Interprets commands, orders computer to execute, and prints out result
- We will be using the Bash shell (most popular)
- Shell commands can look cryptic at first
- Only need to learn about 10-15 basic commands

Unix Shell

- Why use the Unix Shell?
 - Powerful toolset - automate repetitive tasks quickly
 - Easiest way to interact with remote machines
 - Unix-based operating systems are used on most High Performance Computing (HPC)

Git

- Software version control tool
- Manage files in a project (create repo.)
- Save all old revisions
- Track changes (who/what/when)
- Compare versions
- Difficult to overwrite
- Collaborate (GitHub: web-hosted repo.)