Software Carpentry Workshop

Tennessee Tech University, Brown Hall Room 315, March 16–17, 2020
Course website: https://www.hpc.tntech.edu/workshop-2020-03-16/
This Etherpad: https://pad.carpentries.org/2020-03-16-tntech

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Before We Get Started

Please fill out the Pre-workshop survey at https://carpentries.typeform.com/to/wi32rS?slug=2020-03-16-tntech

Who are these people?

In the upper right corner of your browser, you'll see a colored circle by a box labeled "Enter your name". Pick a color, and enter your name so we know who wrote what (like Mike wrote this part). Then fill out whatever you're comfortable sharing with the class.

Attendees (Name, department or affiliation, email or other contact info, what do you want to get out of this workshop?)

- List starts here, just click at the end of this line, hit Enter or Return, then start typing your info.
- David Chesson, Mechanical Engineering Graduate Student, dachesson42@students.tntech.edu; I have done most of my data analysis in Matlab up until now and would like to work towards transitioning to Python due to its large number of data science-oriented libraries and open source-ness.
- Nastasia Allred, PhD Candidate in Chemical Engineering, anallred42@students.tntech.edu; My research has been based upon analytical and computational modeling, but I have only used programs like Matlab and Mathematica. I've always had interest in learning Python, but never really knew where to begin. Also, I think it would be good to get a base understanding so that it will be helpful in finding a job because I've found that most jobs I'm interested in list experience in Python as a preferred/required skill.
- Eduardo Minetto, Mechanical Engineering student, eminettov42@students.tntech.edu, Learn new skills and improve my Python knoledge to use in personal projects and future jobs.

Instructors

- Mike Renfro, Information Technology Services (and occasionally Computer Science, Mechanical Engineering, or General/Basic Engineering), renfro@tntech.edu / @mikerenfro

Helpers

Basic Schedule

- Thursday: lunch at 11:15; short breaks at 9:45, 1:45, 3:40
- Friday: lunch at 11:50; short breaks at 10:00 and 2:20

Restrooms and Elevator

- All restrooms are adjacent to the stairwells on each end of the hallway. Turn right when exiting the classroom to find the east stairwell, and turn left when exiting the classroom to find the west stairwell.
- The elevator is adjacent to the east stairwell.
- Men's: same floor, one floor up, and one floor down (wheelchair-accessible). All by the west stairwell.
- Women's: same floor by the east stairwell, one floor down by the east stairwell (wheelchair-accessible), two floors down by the west stairwell.

Day 1, Part 1: The Unix Shell

Files you need: download http://swcarpentry.github.io/shell-novice/data/data-shell.zip to your **Desktop** folder and extract all the files in it. You should end up with a **data-shell** folder in your **Desktop** folder, and the **data-shell** folder should contain folders named **creatures, data**, **molecules**, **north-pacific-gyre**, and **writing**, plus files named **notes.txt**, **pizza.cfg**, and **solar.pdf**.

Introduction

Navigating Files and Folders

Working with Files and Directories

Pipes and Filters

Loops

Shell Scripts

Finding Things

Day 1, Part 2: Version Control with Git

Files you need: none.

Automated Version Control

Setting up Git

Creating a Repository

Tracking Changes

Exploring History

Ignoring Things

Remotes in Github

Collaborating

Conflicts

Open Science

Licensing

Citation

Hosting

Day 2: Programming with Python

Files you need: https://swcarpentry.github.io/python-novice-inflammation/data/python-novice-inflammation-data.zip and https://swcarpentry.github.io/python-novice-inflammation/code/python-novice-inflammation-code.zip

Create a folder on your **Desktop** folder named **swc-python**, then copy the contents of each zip file there. You should end up with a **code** folder and a **data** folder inside the **swc-python** folder. The **code** folder will contain 18 files including **argv_list.py** and **sys_version.py**, and the data folder will contain 15 CSV files: 12 starting with the word **inflammation**, and 3 starting with the word **small**.

Python Fundamentals

Analyzing Patient Data

Visualizing Tabular Data

Repeating Actions with Loops

Storing Multiple Values in Lists

Analyzing Data from Multiple Files

Making Choices

Creating Functions

Errors and Exceptions

Defensive Programming

Debugging

Command-Line Programs