Introductions

COGS 108 Spring 2025
Jason Chen
Week 1

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OH: Thu 3-5 pm

Discussion slides and materials adapted from Sam Lau (TA: WI20)

About Me

- Jason Chen
- MS student in Data Science
- BS in Cognitive Science ML & Neurobiology @ UCSD
- Graduate student researcher in Computational Neural DNA Dynamics Lab
- Email: xic007@ucsd.edu
- Office Hours: Thu 3-5 pm @ Zoom

FEEL FREE TO REACH OUT IF YOU HAVE ANY QUESTIONS!

Section Philosophy

- Attendance is not required
- But we recommend to come for
  - Review and guidance
  - Work on the assignment and projects
  - Asking questions directly (to TA/IA, and your classmates!)

Discussions

- Use EdStem for discussions
- Feel free to ask questions and we will try our best to answer ASAP!

Programming

This course assumes basic programming knowledge

- But not much!
- Do you have prior experience with Python?

Programming

Resources:

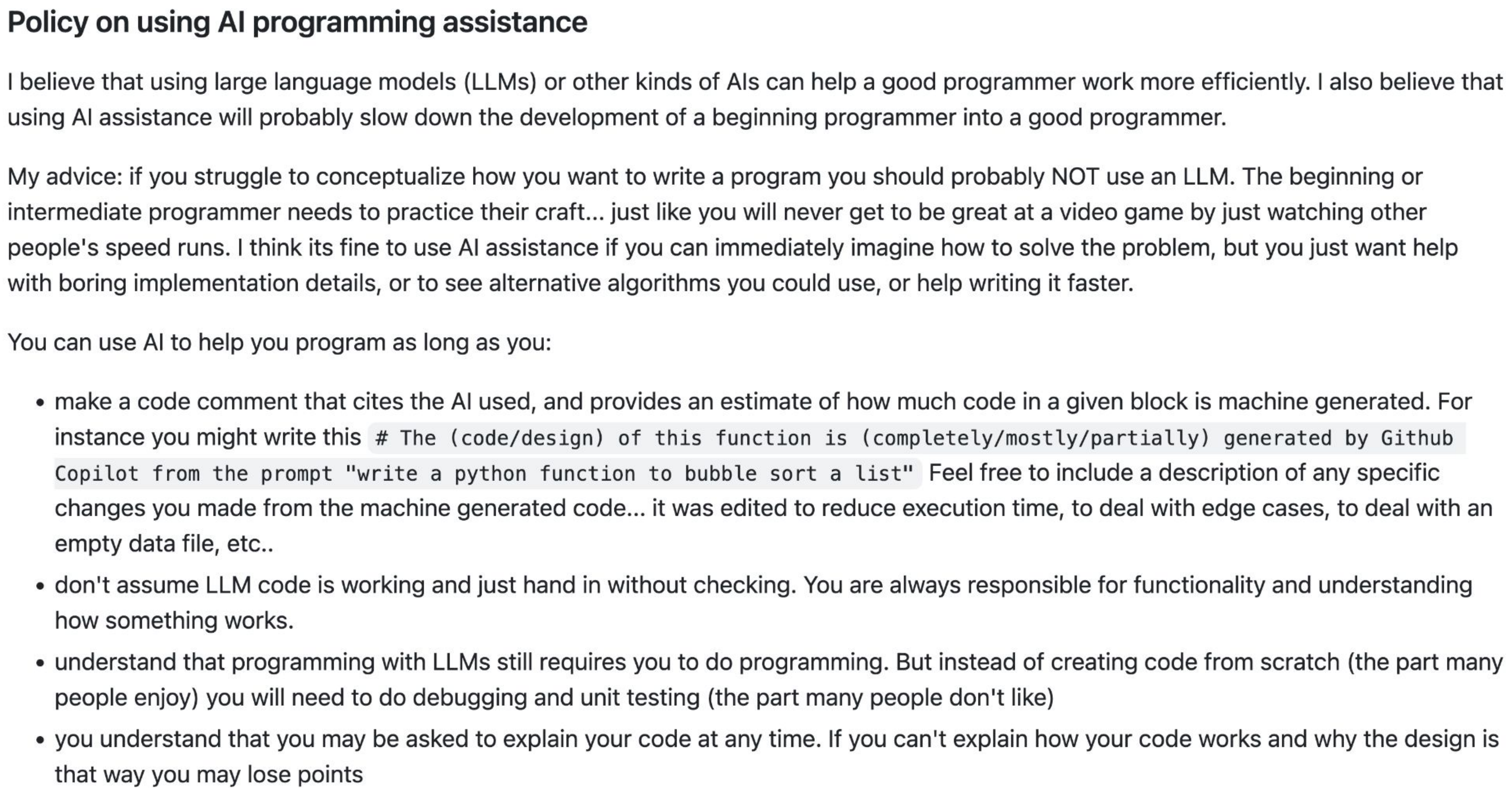
- Codeacademy
- You can also start Here: https://github.com/COGS108/Tutorials
- Python in detail: https://jakevdp.github.io/PythonDataScienceHandbook/
- Pandas: https://www.dataschool.io/python-pandas-tips-and-tricks/
- Git: https://guides.github.com/activities/hello-world/
- Stack Overflow: https://stackoverflow.com/

Programming

Cheatsheets

- Google: ‘python cheatsheet’, ‘pandas cheatsheet’, ‘git cheatsheet’ (find one that’s good for you)

Policy on AI Generated Content



Policy on using AI programming assistance

I believe that using large language models (LLMs) or other kinds of AIs can help a good programmer work more efficiently. I also believe that using AI assistance will probably slow down the development of a beginning programmer into a good programmer.

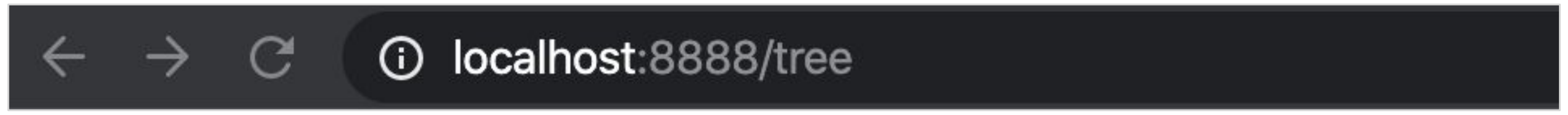
My advice: if you struggle to conceptualize how you want to write a program you should probably NOT use an LLM. The beginning or intermediate programmer needs to practice their craft... just like you will never get to be great at a video game by just watching other people's speed runs. I think its fine to use AI assistance if you can immediately imagine how to solve the problem, but you just want help with boring implementation details, or to see alternative algorithms you could use, or help writing it faster.

You can use AI to help you program as long as you:

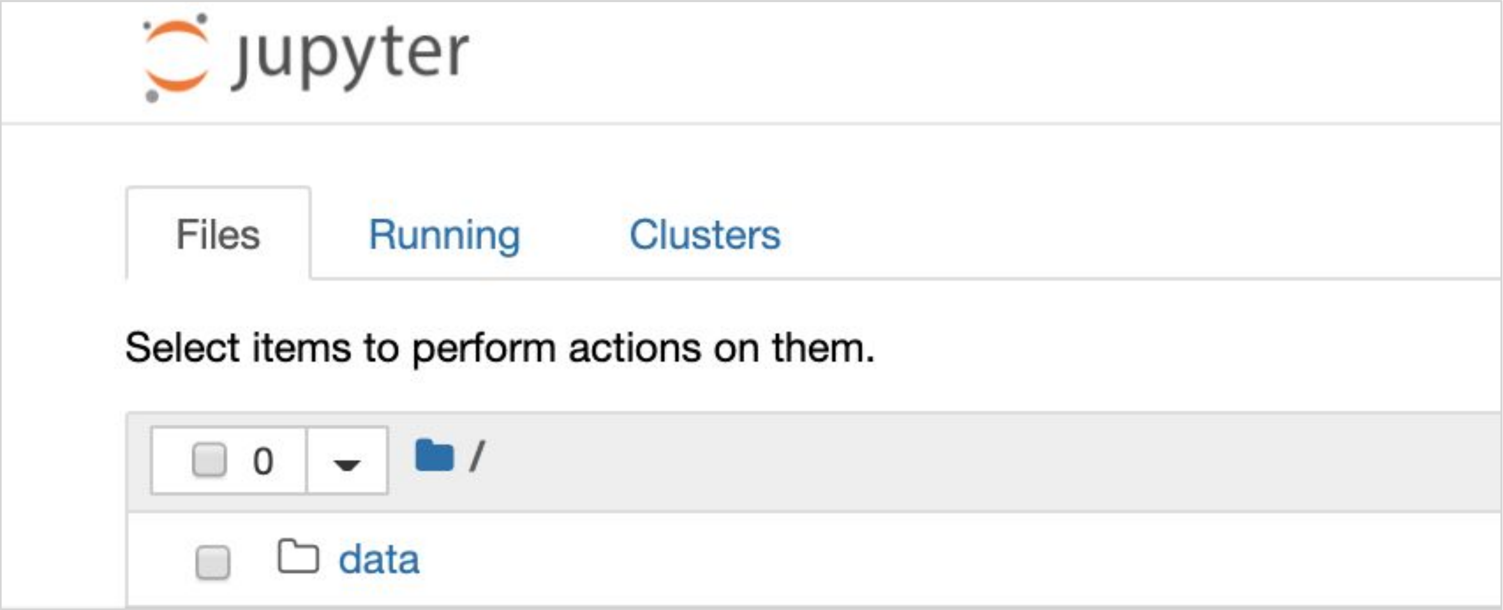
- make a code comment that cites the AI used, and provides an estimate of how much code in a given block is machine generated. For instance you might write this `# The (code/design) of this function is (completely/mostly/partially) generated by Github Copilot from the prompt "write a python function to bubble sort a list"` Feel free to include a description of any specific changes you made from the machine generated code... it was edited to reduce execution time, to deal with edge cases, to deal with an empty data file, etc..
- don't assume LLM code is working and just hand in without checking. You are always responsible for functionality and understanding how something works.
- understand that programming with LLMs still requires you to do programming. But instead of creating code from scratch (the part many people enjoy) you will need to do debugging and unit testing (the part many people don't like)
- you understand that you may be asked to explain your code at any time. If you can't explain how your code works and why the design is that way you may lose points

DO NOT rely on it too much as it can slow you down from being a good programmer!

Jupyter



- Python code is run on a python interpreter
- Jupyter is a program that creates an interface for typing python code in a browser, that also runs that code in a python interpreter
- What does this mean?!
  - Jupyter is a way of running python programs from a browser (like chrome) (hooray!)



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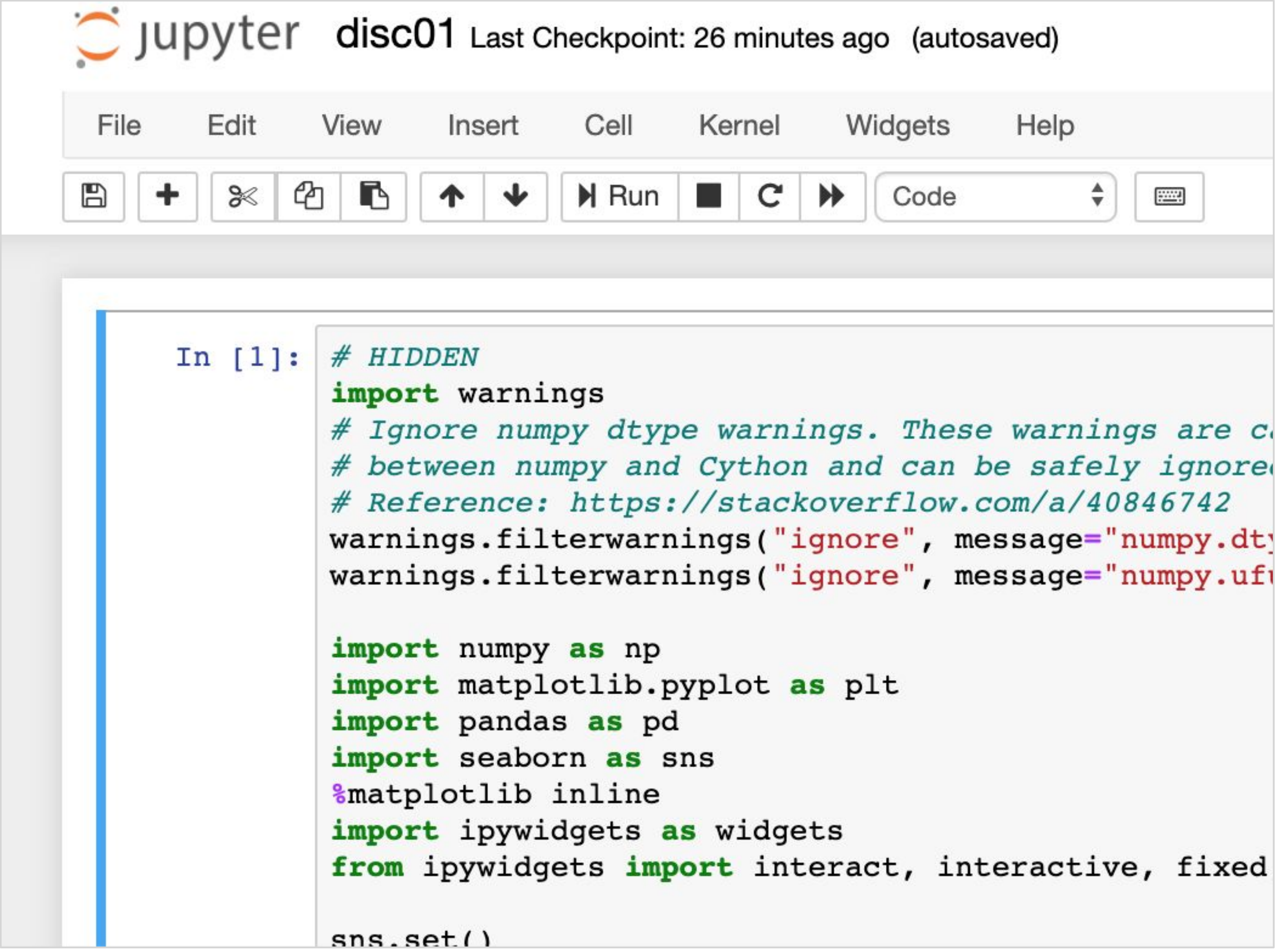

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```
# HIDDEN
import warnings
# Ignore numpy dtype warnings. These warnings are c
# between numpy and Cython and can be safely ignore
# Reference: https://stackoverflow.com/a/40846742
warnings.filterwarnings("ignore", message="numpy.dt
warnings.filterwarnings("ignore", message="numpy.uf

import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
%matplotlib inline
import ipywidgets as widgets
from ipywidgets import interact, interactive, fixed

sns.set()
```

Anaconda

ANACONDA

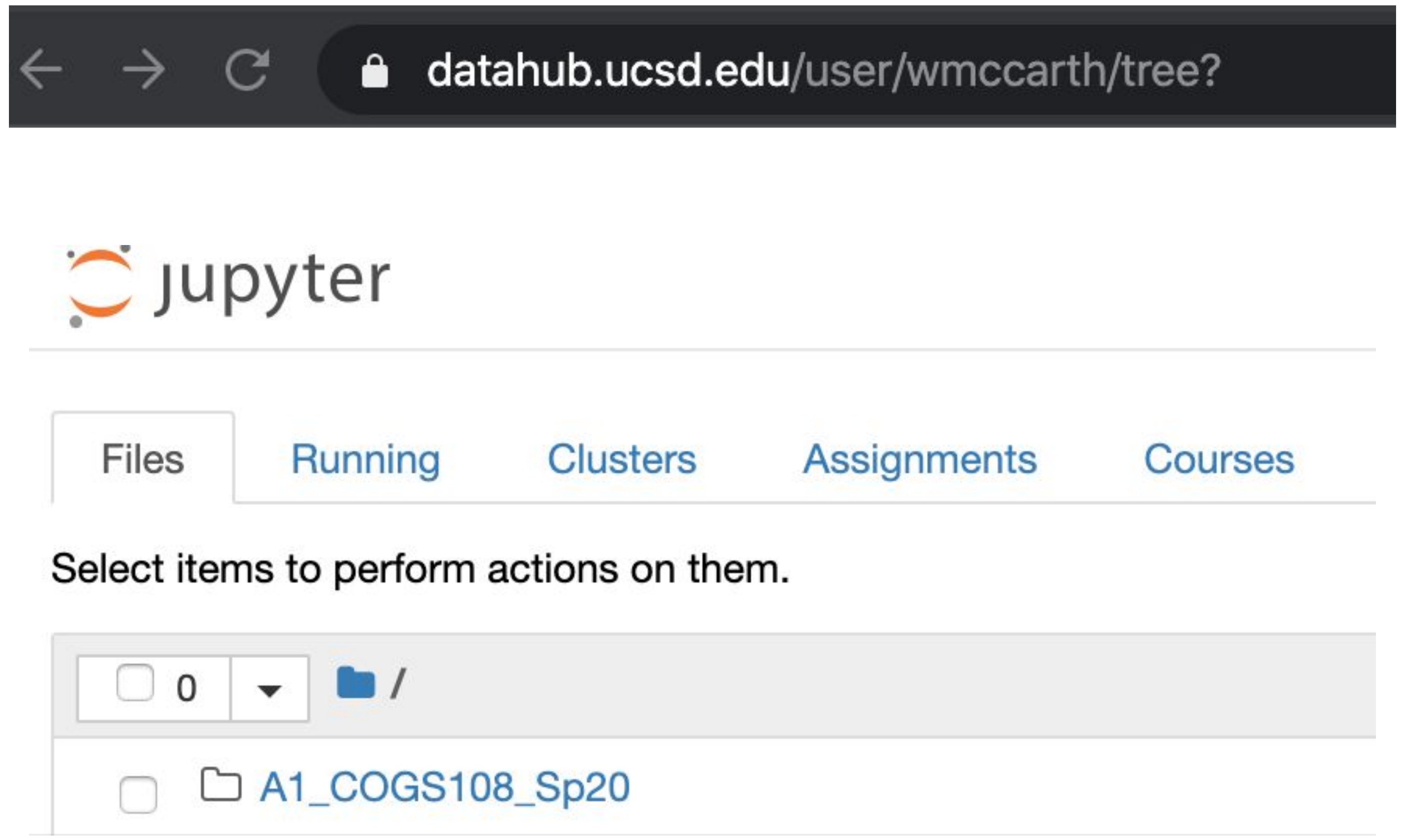
The Data Science Toolkit – contains Python and data science libraries (including jupyter notebooks)

- Download: https://www.anaconda.com/products/individual
- Installation: https://docs.anaconda.com/anaconda/install/
- Verify installation: https://docs.anaconda.com/anaconda/install/verify-install/
- Make sure anaconda is added to the system path: For mac:

```
export PATH="/usr/local/anaconda3/bin:$PATH"
```

Datahub

- Jupyter runs python code in a browser.
  - But Jupyter is itself just a program that's running on a computer somewhere.
- datahub lets you interact with Jupyter that's running somewhere else.



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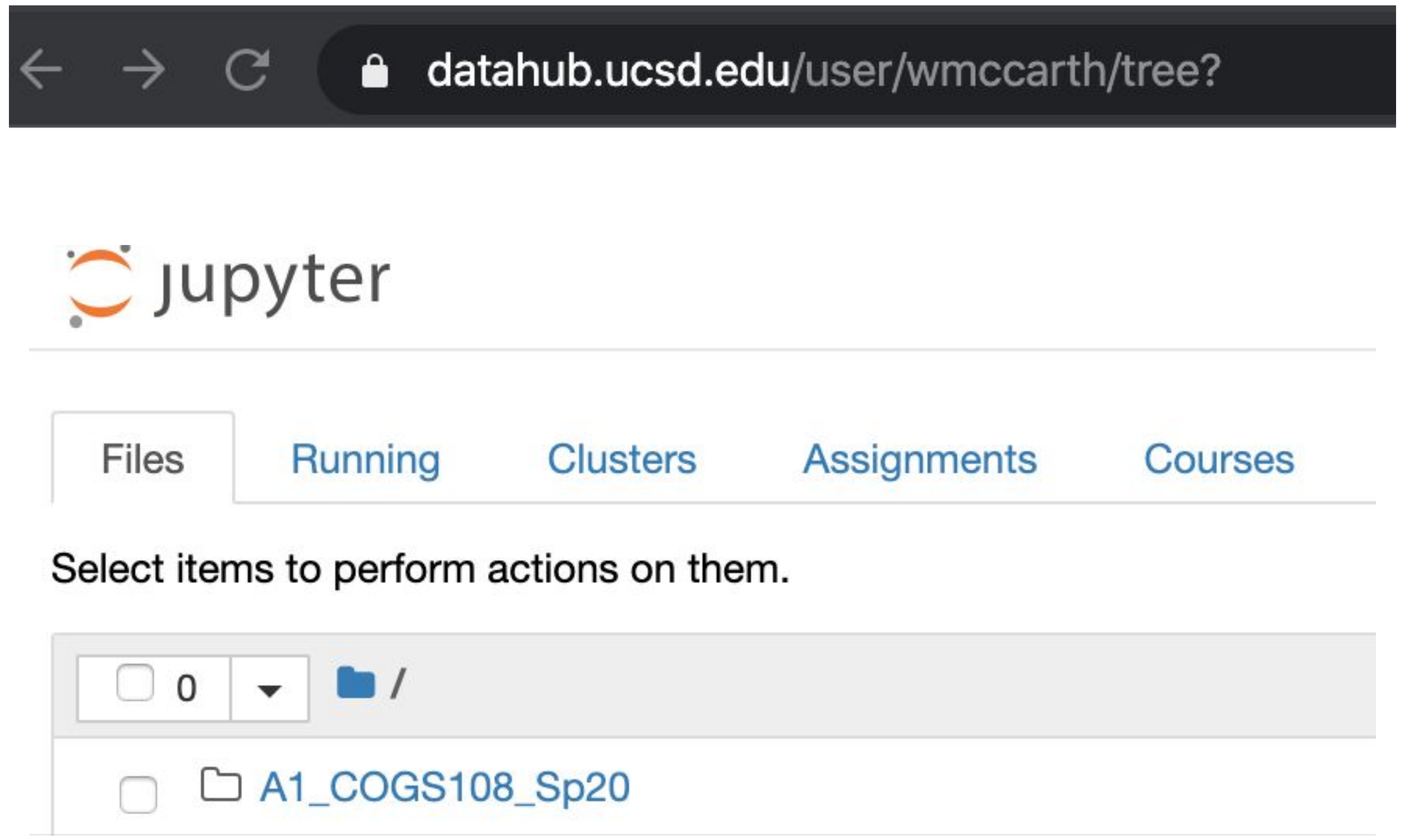
datahub.ucsd.edu

- What does this mean?!
  - You don’t need to worry about installing Jupyter
  - You can use datahub to create and run python programs (online)
  - You can use this interface to fetch and submit assignments



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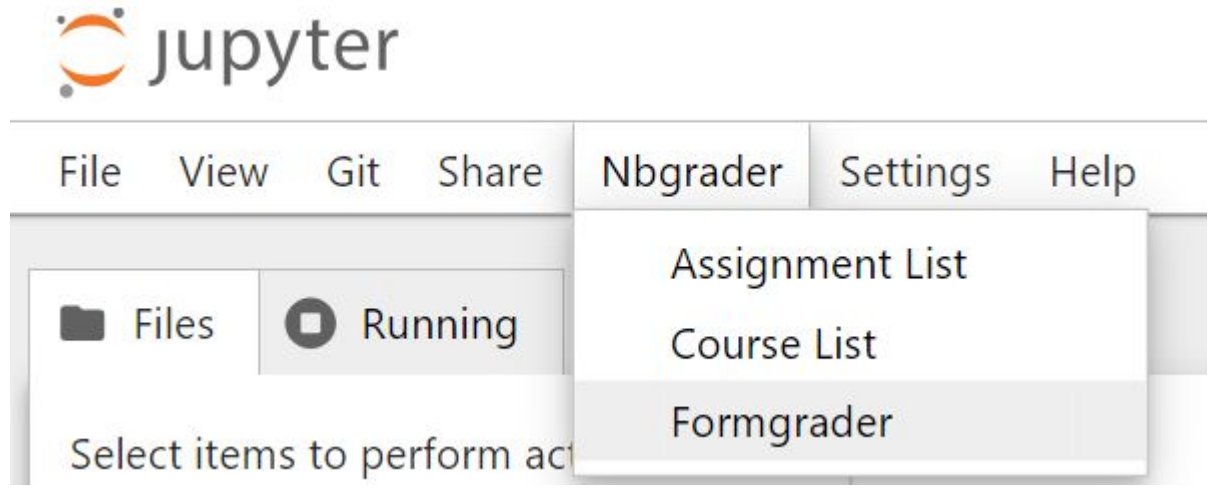
Working on your assignments

- Log into datahub.ucsd.edu
- Go to Assignments tab (or Nbgrader->Assignment List if you are using the new container)
- ‘fetch’ assignments you have access to -> Submit after completion



Python Review Notebook

https://tinyurl.com/yc7xs6pv

Questions?