# QTM (DSci) 151: Introduction to Statistical Computing II

Dr. Peter Sentz

# Agenda

INTRODUCTIONS

CLASS DETAILS

COMPUTING ENVIRONMENT

INSTALLATION

# About me

- My name is Peter Sentz
  - Calling me “Peter” is fine
  - If you’re too scared to do that, “Prof. Sentz” or “Dr. Sentz” works as well.

- Academic Background
  - Studied Mathematics (minoring in Economics) at University of Wisconsin-Milwaukee
  - Master’s degree in Applied Mathematics at University of Washington
  - PhD in Computer Science at University of Illinois Urbana-Champaign
  - Postdoc in Applied Mathematics at Brown University.
  - This is my first semester at Emory University

- My daughter is two months old today!

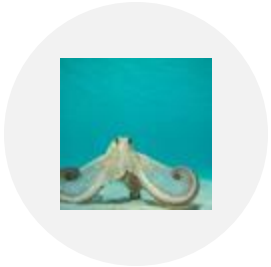
- My research background is in the numerical solution of differential equations and scientific machine learning.

# Teaching Assistants

- Molly Murphy (Section 1)
- Shuyang Yu (Section 1)
- Minh Bao Truong (Section 2)
- Sarah Shao (Section 2)

They will be answering questions during our lectures and holding office hours (see Canvas for office hours information).

# Agenda



INTRODUCTIONS

CLASS DETAILS

COMPUTING ENVIRONMENT

INSTALLATION

# Learning Objectives

- Learn how to code effectively in Python and SQL
- Learn about key programming principles
- Learn how to manipulate and visualize data

**For more details and class schedule, review syllabus on course Canvas page!**

# Grades

- **Assignments (x 10):** 50%
  - Practice class concepts
- **Quizzes (x5):** 30%
  - Questions are given in advance
  - Data is provided in the class
- **Final Project:** 20 %
  - Will provide guidelines on Canvas
  - Due at the end of the semester
- **Midsemester Survey:** + 0.5% (Extra)
- **Final Course Evaluations:** + 0.5% (Extra)

# Late submissions

- Late assignments will automatically be graded for half-credit
- To account for unforeseen circumstances, we will drop the worst assignment and the worst quiz
- Watch out for the assignments to install software. You will need these to be able to use the lectures notes.

# Coding ability is not innate

- Coding ability can be developed.
- Academic skills and abilities are acquired through hard work, **mistakes**, and perseverance.
- My only goal here is that you learn the material. Please ask me questions!

# Questions about the logistics

# Agenda

INTRODUCTIONS

CLASS DETAILS

COMPUTING ENVIRONMENT

INSTALLATION

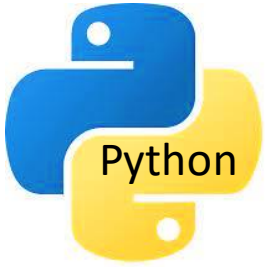
# Two components:

ANACONDA

**Virtual Environment**

VS Code
Integrated
Development
Environment (IDE)

+



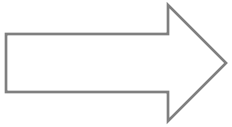

(in background)

**Programming language** we use to write the instructions

The “front-end” software that you open every time you code something in Python

A “back-end” software that you install once and hardly open again.

# We open script files in VSCode

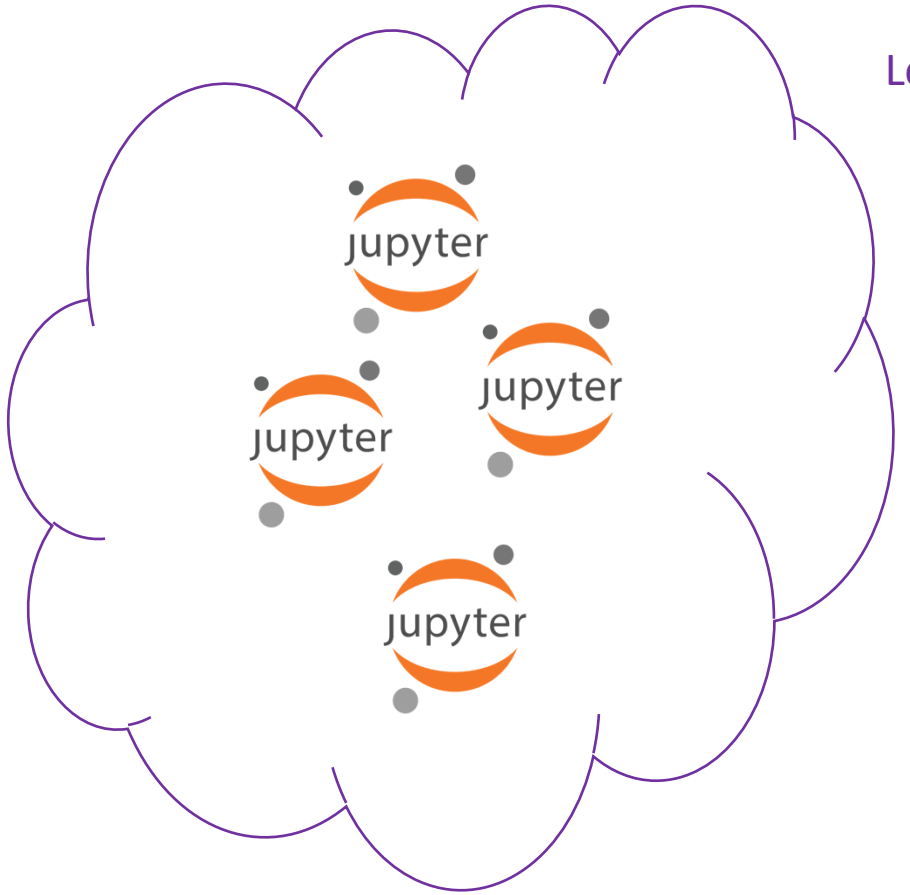
## Script* File

- File with code in the Python **programming language.**
- Instructions for the program to follow

## VS Code Integrated Development Environment (IDE)

Environment where the user writes the scripts

* Not really script files. Jupyter Notebook files




Lecture Notes

VS Code

Github:
A file management system in the cloud (with desktop app)

- Has version control
- Great for collaborative programming

VS Code

+

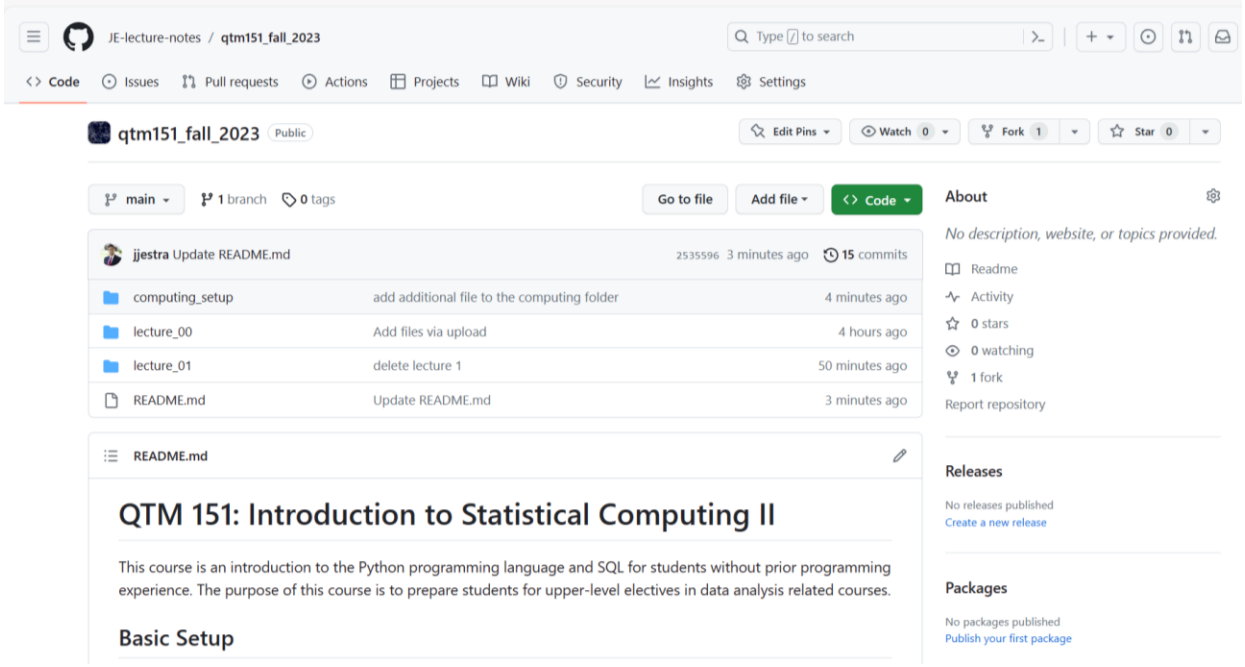

Towards the end of the class we'll also introduce SQL.

- Advanced database language
- Widely used in industry.
- Can be connected to Python and uses very similar ideas.

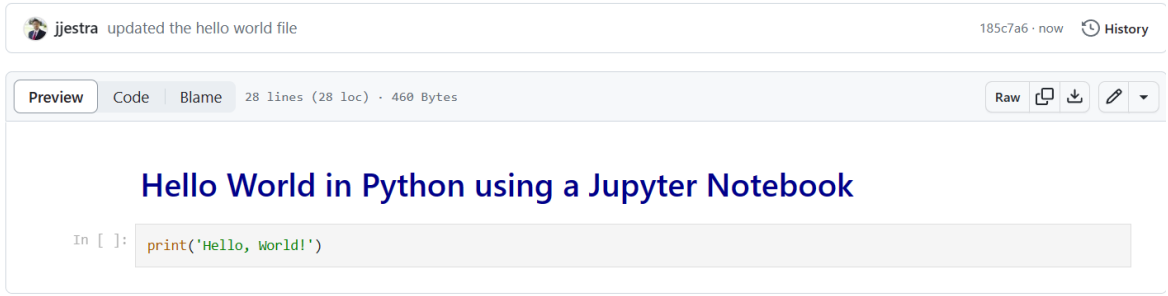
More details to come!

**Lecture notes are publicly available at my GitHub website (link posted on Canvas):**

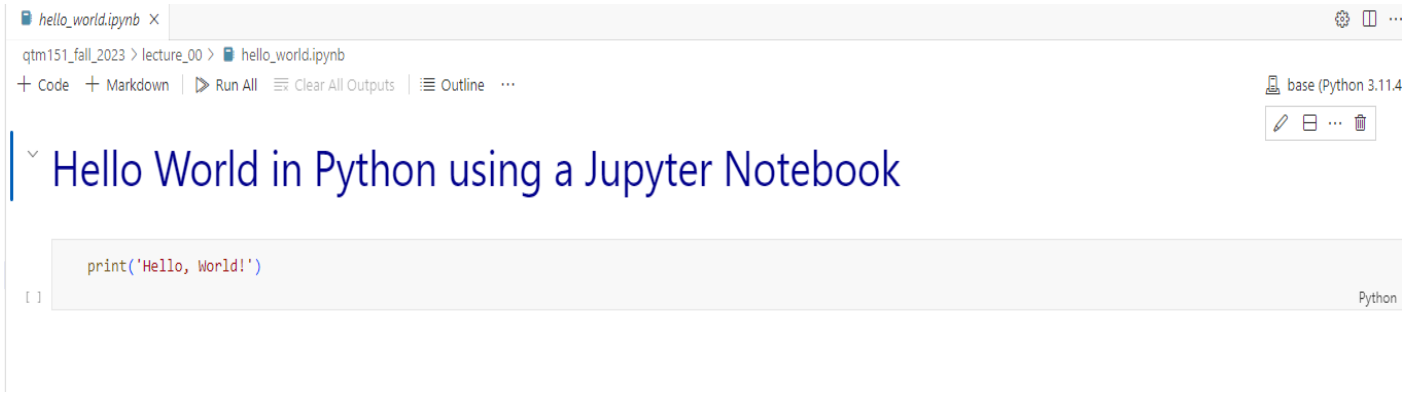
https://github.com/sentz2/qtm151fall2025



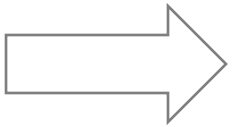

You can view the lectures in the browser




A Jupyter Notebook (“.ipynb”) is a file with code (python) and annotations (markdown)




- All the lecture notes are written as Jupyter notebooks
- It is encouraged that you bring your laptop to class
- Lecture notes are designed to be follow-along. There will be “try it yourself” exercises.

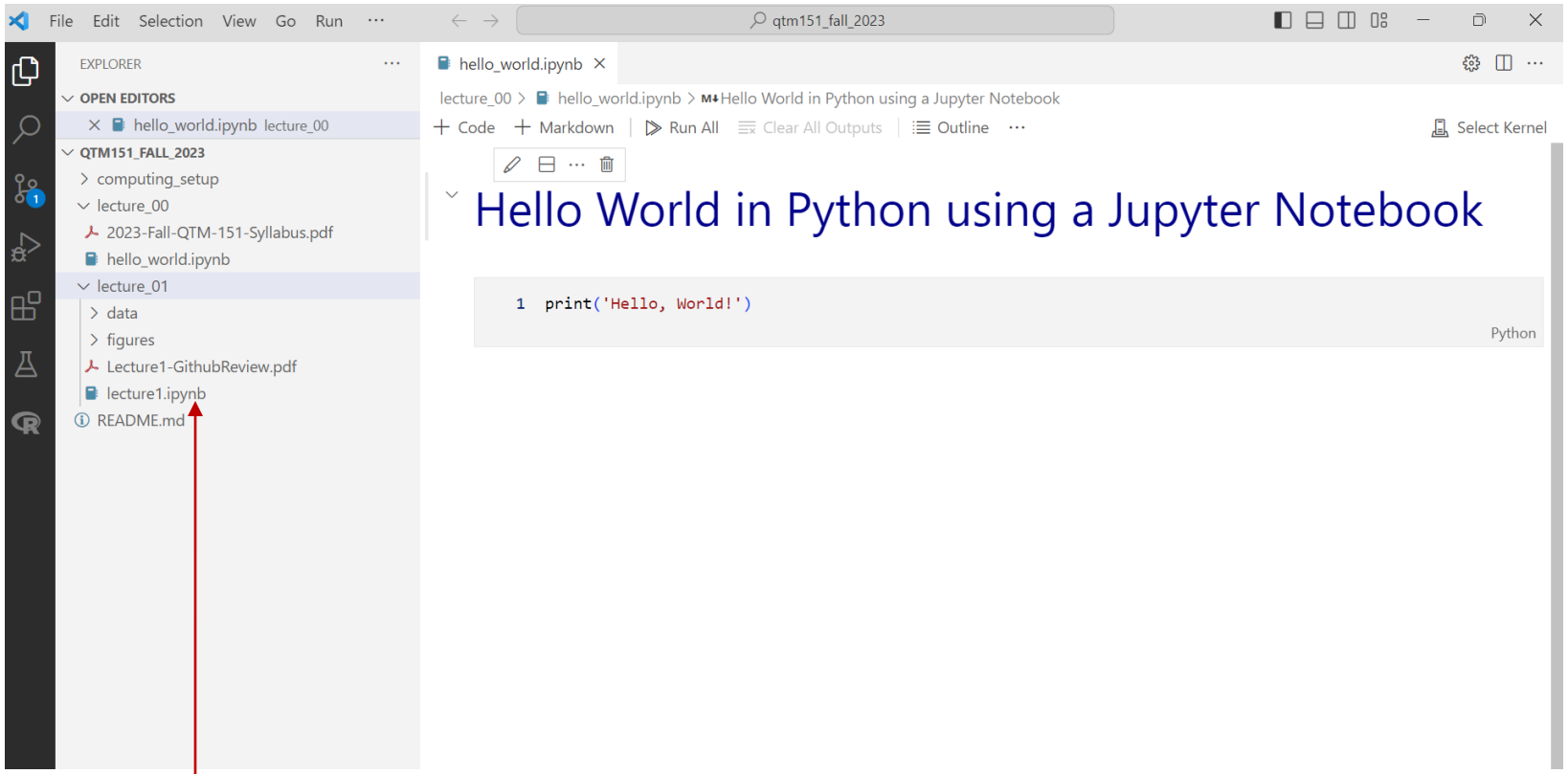




See **Assignment 1**

Basics of a Jupyter notebook

- Need to have all the tools installed
- Install **soon** that we can help you with any issues!

# We will do all our coding in Visual Studio Code




Lecture notes

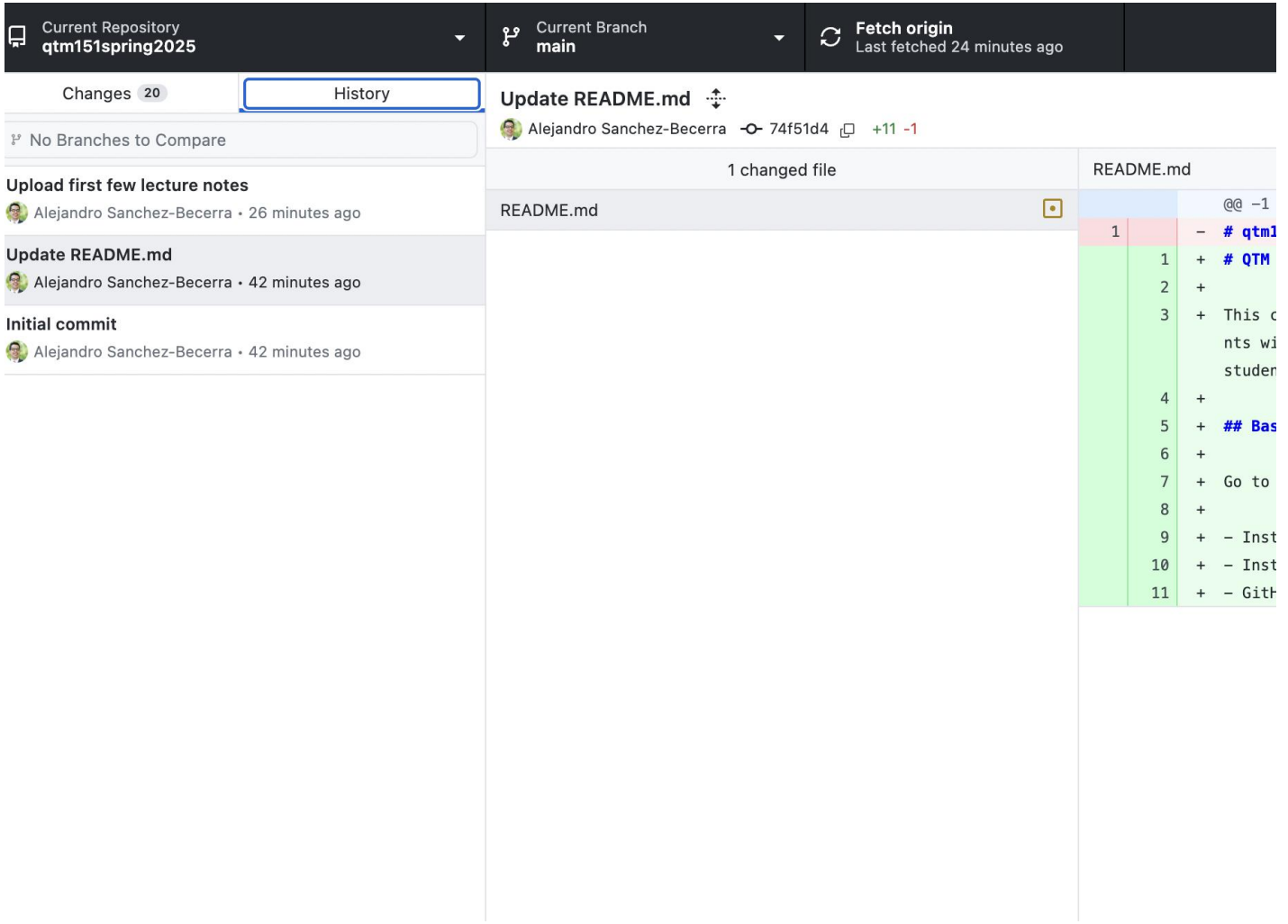
“.ipynb”: Interactive Python Notebook

Github Desktop will allow you to **automatically download the lectures notes** from my account (and update them).

It will also show you

- the date of any update
- what the changes are

Update the lecture notes before class!



# Questions about computing environment?

# Agenda



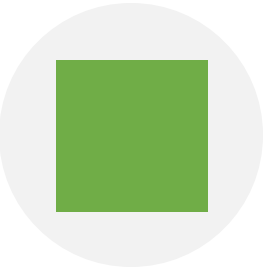
INTRODUCTIONS



CLASS DETAILS



COMPUTING ENVIRONMENT



INSTALLATION

# Let’s get started!

Go to “Modules” in Canvas and open the documents under “Installation” and follow instructions.

- We will walk around to answer questions.

- If you don’t complete the installation, we encourage you to visit one of the office hours, so that you are set up before the next class.