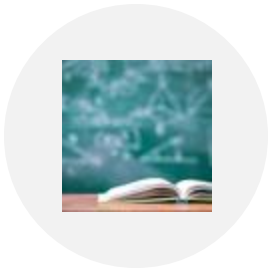


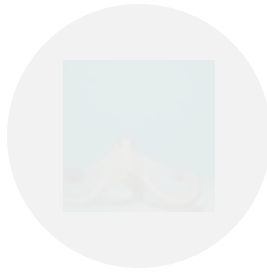
QTM (DSci) 151: Introduction to Statistical Computing II

Dr. Peter Sentz

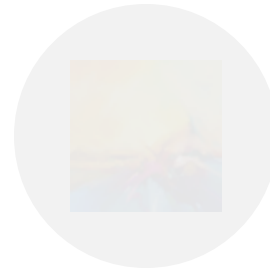
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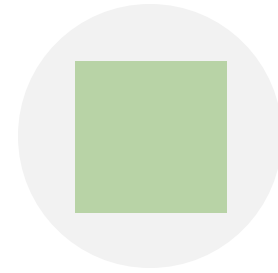
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About me

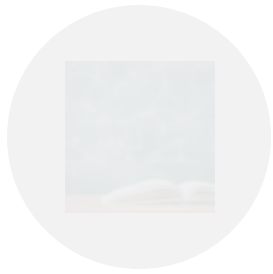
- My name is Peter Sentz
 - Calling me “Peter” is fine
 - If you’re too scared to do that, “Prof. Sentz” or “Dr. Sentz” works as well.
- Academic Background
 - Studied Mathematics (minoring in Economics) at University of Wisconsin-Milwaukee
 - Master’s degree in Applied Mathematics at University of Washington
 - 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

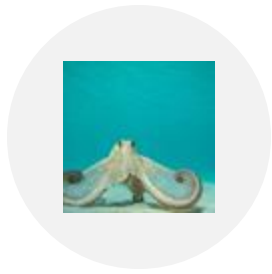
- Molly Murphy (Section 1)
- Shuyang Yu (Section 1)
- Minh Bao Truong (Section 2)
- Sarah Shao (Section 2)

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

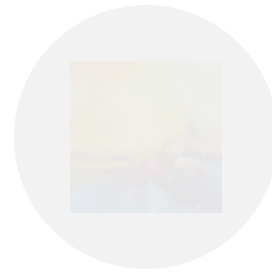
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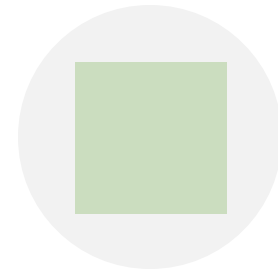
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Learning Objectives

- 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

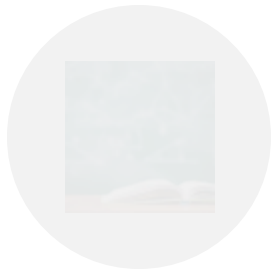
- Late assignments will automatically be graded for half-credit
- To account for unforeseen circumstances, we will drop the worst assignment and the worst quiz
- Watch out for the assignments to install software. You will need these to be able to use the lectures notes.

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

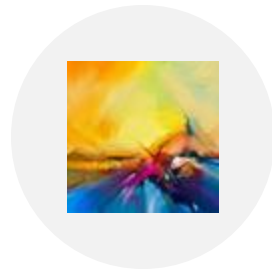
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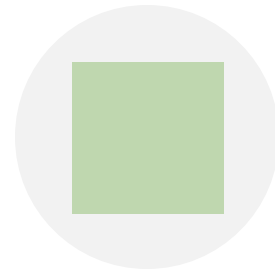
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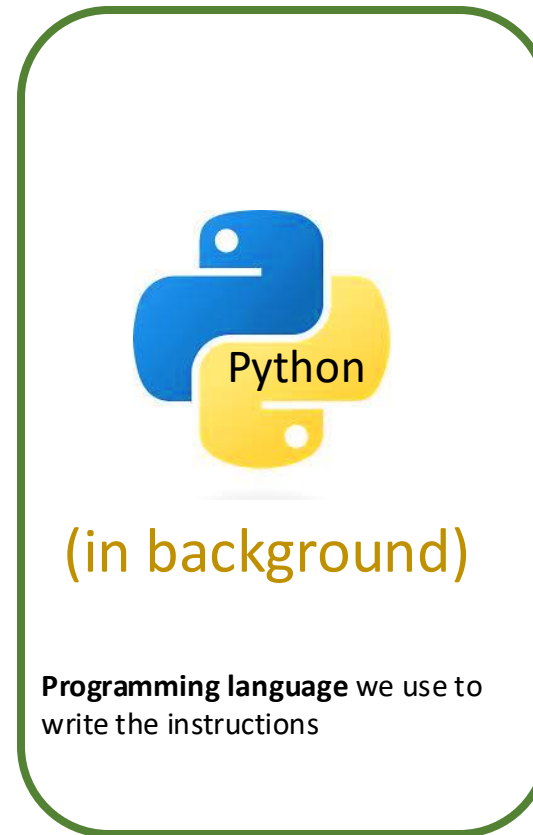


INSTALLATION

Two components:



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Virtual Environment

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

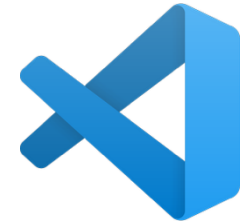
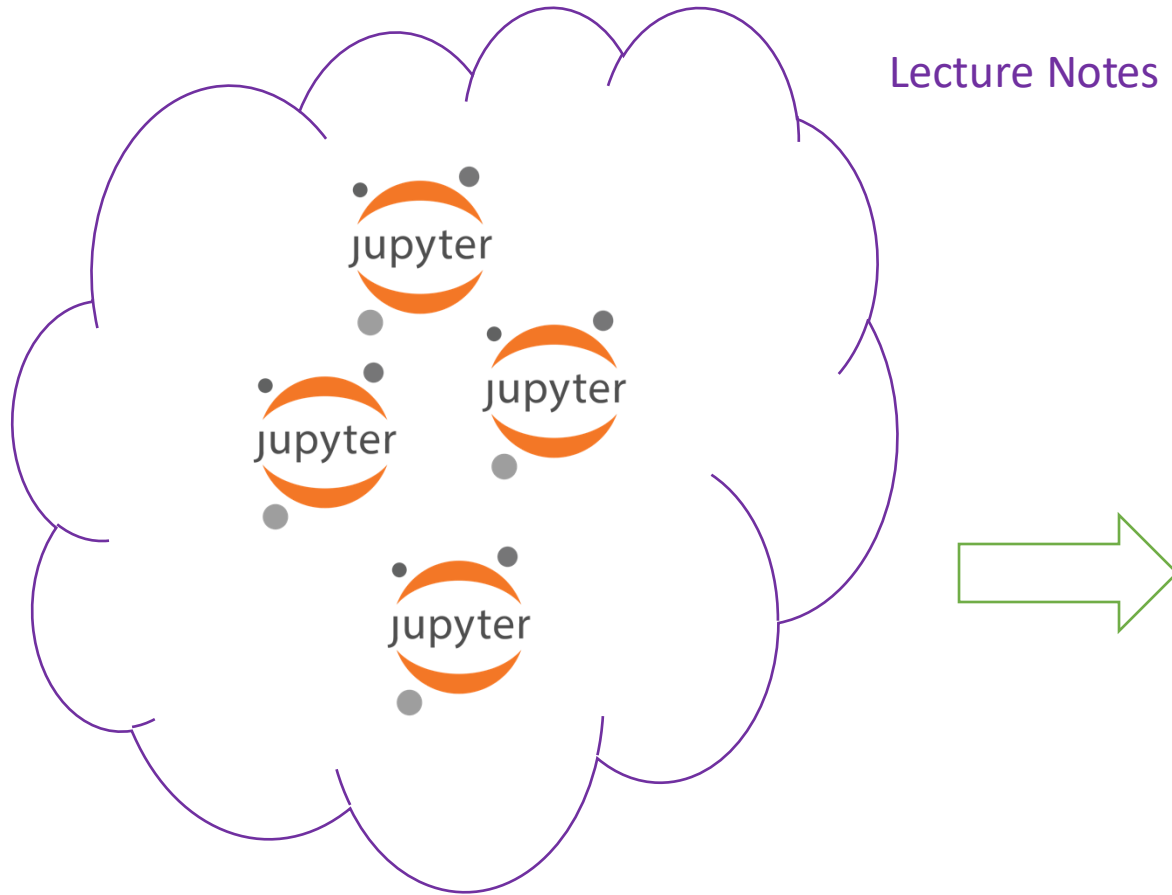
- File with code in the Python **programming language**.
- Instructions for the program to follow



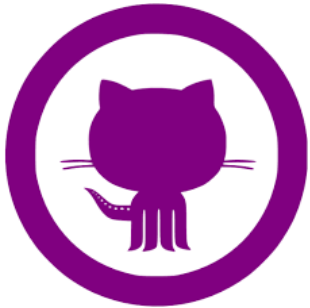
VS Code Integrated Development Environment (IDE)

Environment where the user
writes the scripts

* Not really script files. Jupyter Notebook files



VS Code



GitHub:

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

- Has version control
- Great for collaborative programming



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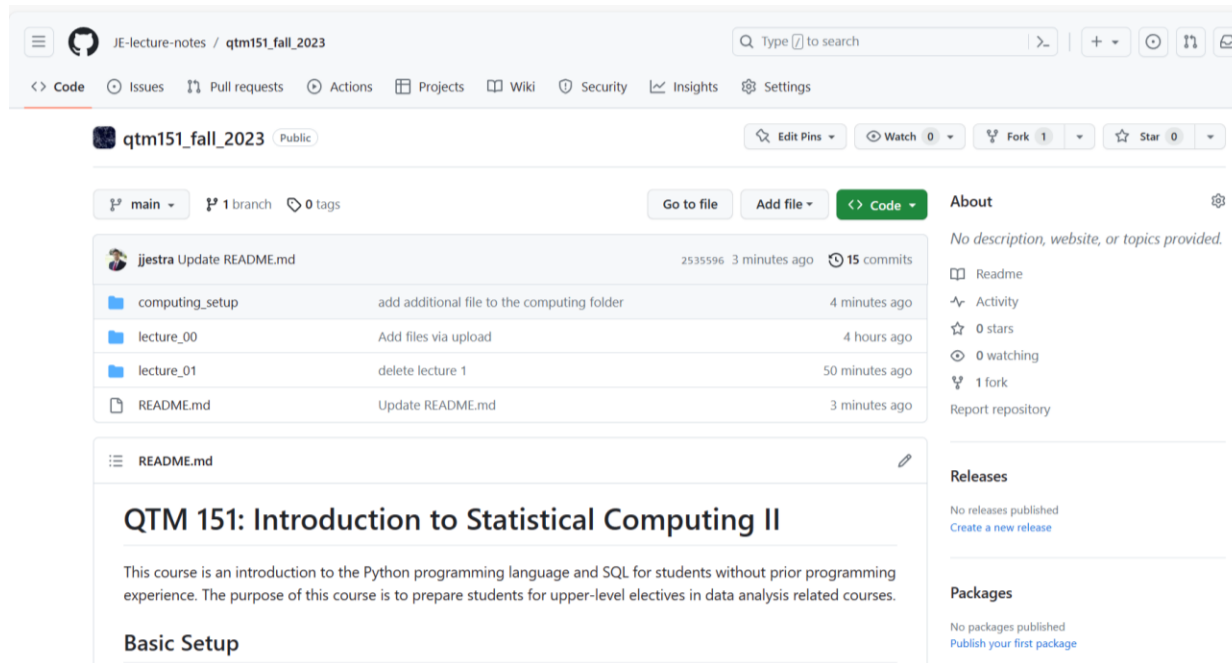
Towards the end of the class we'll also introduce SQL.

- 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>

A screenshot of a GitHub repository page for 'qtm151_fall_2023'. The repository is public and has 1 fork and 0 stars. The main branch is 'main'. The repository contains a README.md file and a folder named 'computing_setup'. The README.md file is titled 'QTM 151: Introduction to Statistical Computing II' and describes a course for students without prior programming experience. The 'Basic Setup' section is visible. The right sidebar shows the repository's activity, including a commit by 'jjestra' 3 minutes ago, and sections for 'About', 'Releases', and 'Packages'.

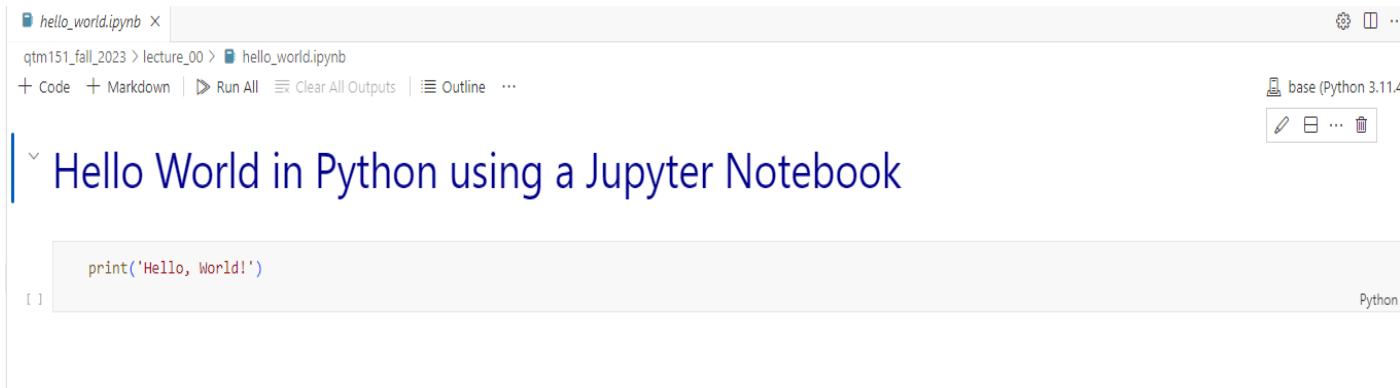
You can view the lectures in the browser

A screenshot of a Jupyter Notebook file in a browser. The file is named 'hello world file' and was updated by 'jjestra'. The notebook content is titled 'Hello World in Python using a Jupyter Notebook' and contains a single code cell with the following code:

```
In [ ]: print('Hello, World!')
```



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.

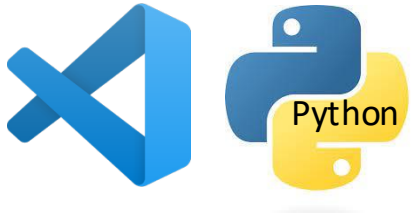


VS Code

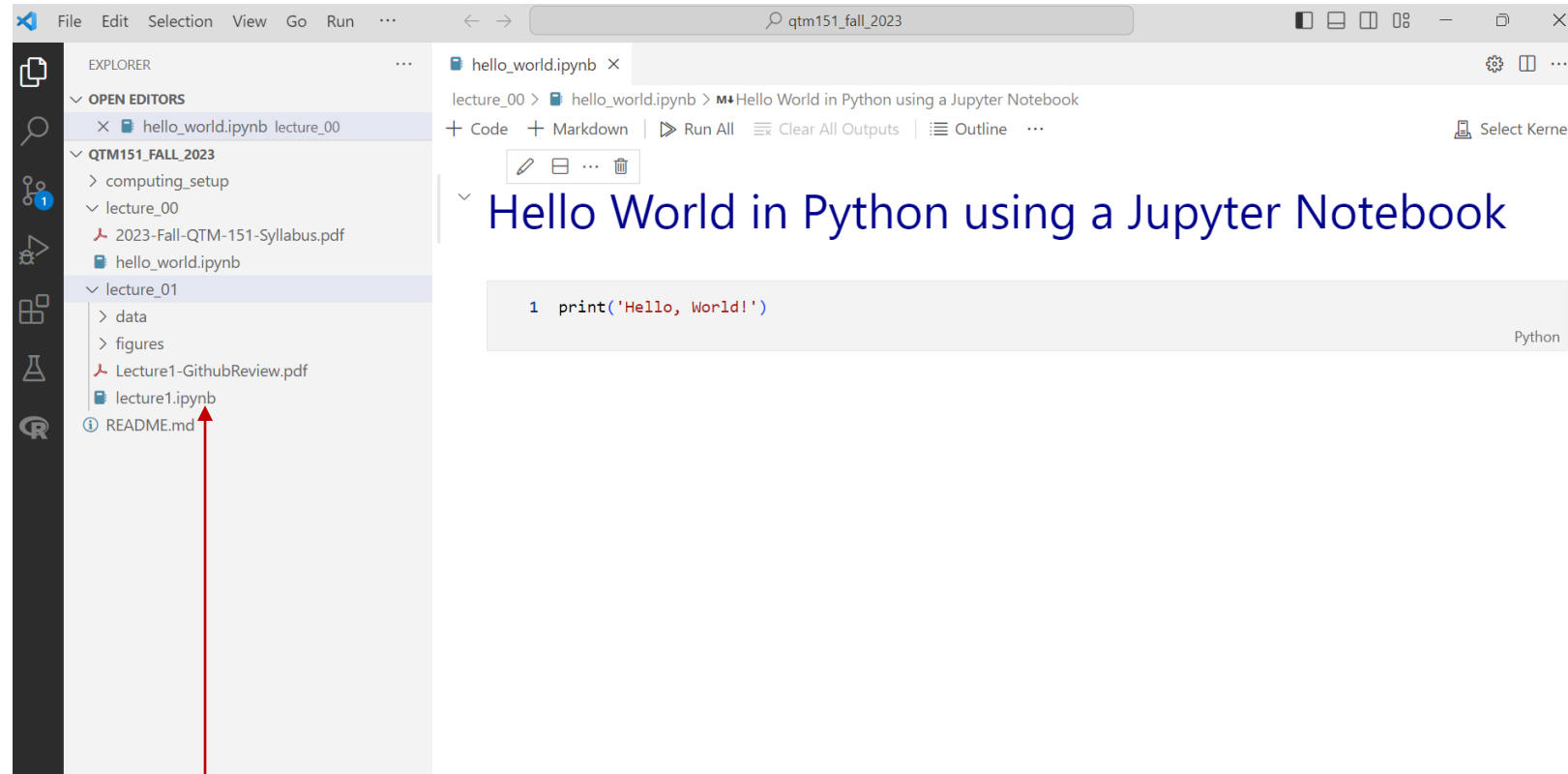
See **Assignment 1**

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!

Current Repository
qtm151spring2025

Current Branch
main

Fetch origin
Last fetched 24 minutes ago

Changes 20

History

No Branches to Compare

Upload first few lecture notes
Alejandro Sanchez-Becerra • 26 minutes ago

Update README.md
Alejandro Sanchez-Becerra • 42 minutes ago

Initial commit
Alejandro Sanchez-Becerra • 42 minutes ago

Update README.md

Alejandro Sanchez-Becerra 74f51d4 +11 -1

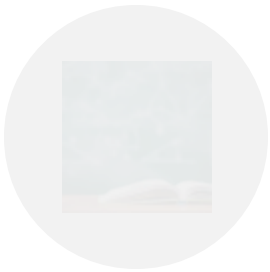
1 changed file

README.md

| README.md | | @@ -1 |
|-----------|---|--------|
| 1 | - | # qtm1 |
| 1 | + | # QTM |
| 2 | + | |
| 3 | + | This c |
| | | nts wi |
| | | studen |
| 4 | + | |
| 5 | + | ## Bas |
| 6 | + | |
| 7 | + | Go to |
| 8 | + | |
| 9 | + | - Inst |
| 10 | + | - Inst |
| 11 | + | - Git |

Questions about computing environment?

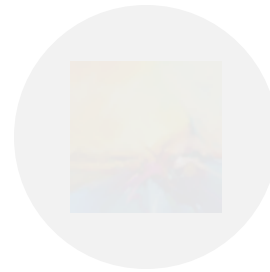
Agenda



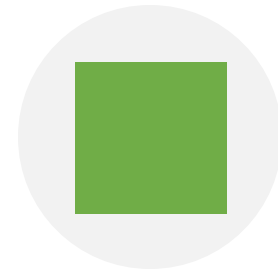
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INSTALLATION

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.