

# TEP4290 Introduction to exercises

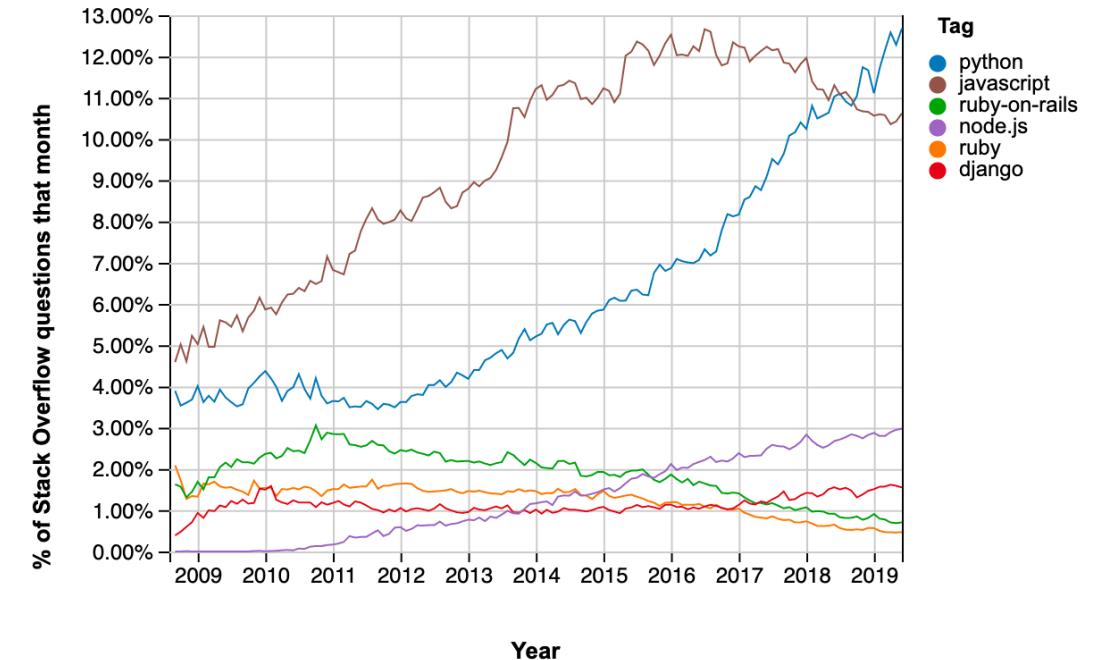
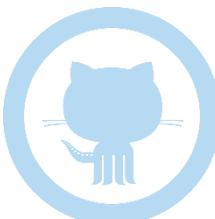
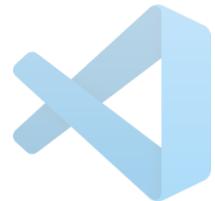
Warm-ups, project, solution-oriented approach

- Warm-up 1: Jupyter&IDEs
- Warm-up 2: Programming motivation
- Warm-up 3: Variables&Expressions
- Warm-up 4: Conditions
- Warm-up 5: Functions
- Warm-up 6: Loops&Iterations
- Warm-up 7: Modules&Packages
- Warm-up 8: Intro Numpy
- Warm-up 9: Intro Pandas
- Warm-up 10: Visualization
- Warm-up 11: OOP
- Warm-up 12: Commenting&Documenting
- Warm-up 13: Errors&Debugging
- Warm-up 14: Vehicle Fleet
- Warm-up 15: Regression

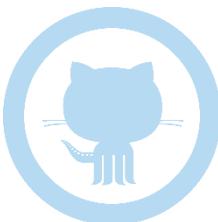


Project: building stock energy

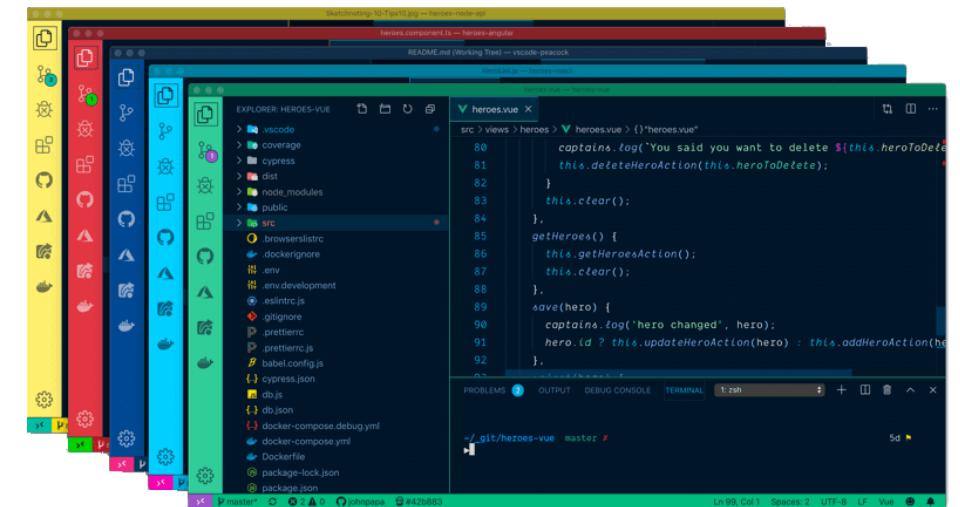
# The tools we use



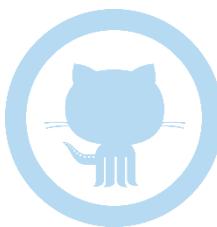
# The tools we use



Popular, flexible, free, somewhat open-source, tons of plugins



# The tools we use



Organized, easy to use, great for presenting

A screenshot of the Visual Studio Code (VS Code) interface, specifically a Jupyter Notebook environment. The interface shows a dark-themed workspace with several code cells and a sidebar labeled 'OUTLINE'.

The 'OUTLINE' sidebar lists the following items:

- M+VS Code Notebooks
- M+Import Data
- M+View Data
- M+Define filter
- M+Analyze Data

Three teal arrows point from these items to the corresponding sections below:

- An arrow points from 'M+VS Code Notebooks' to the text 'VS Code Notebooks'.
- An arrow points from 'M+Import Data' to the text 'Import Data'.
- An arrow points from 'M+View Data' to the text 'View Data'.

The main content area displays two code cells:

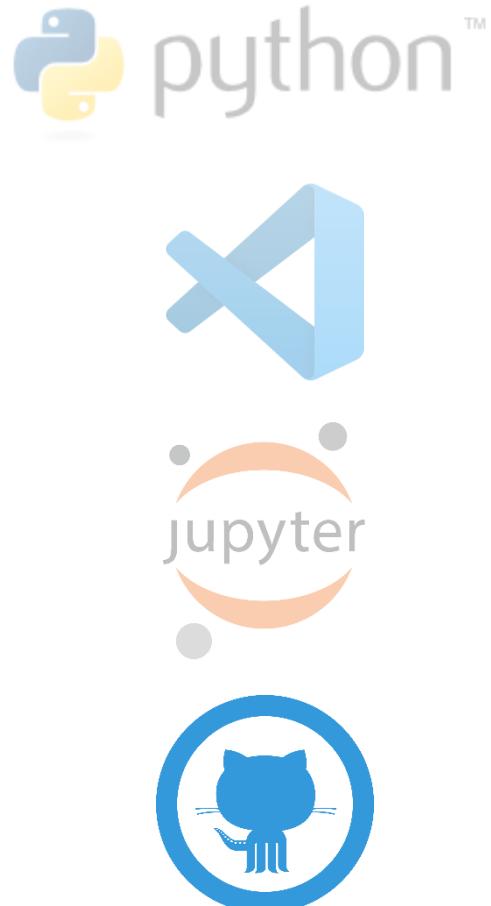
```
import pandas as pd
import numpy as np
```

[4] [✓] 0.2s

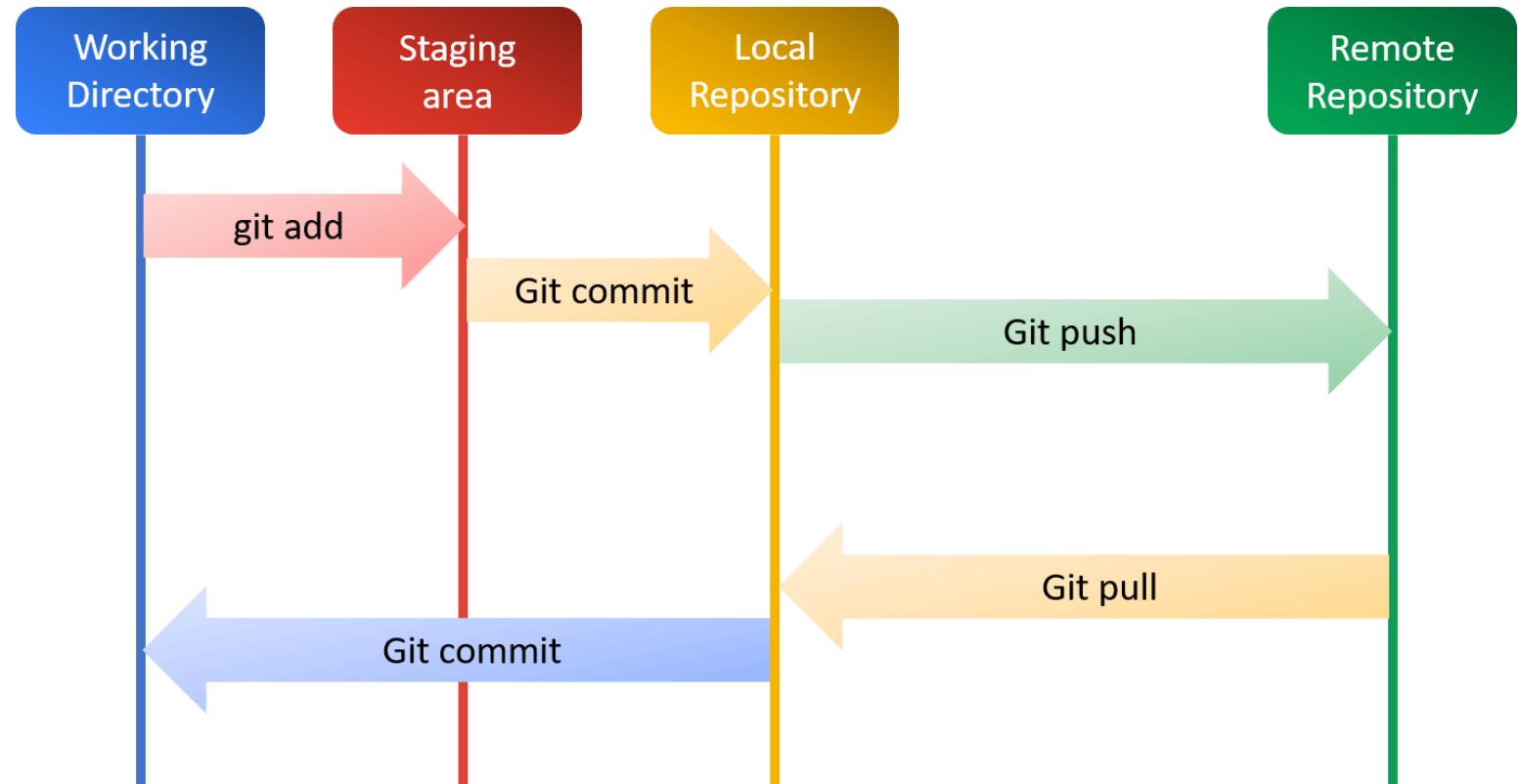
```
url = 'https://github.com/chris1610/pbpython/raw/master/data/2018_Sales_Total.xlsx'
# Large file for timing test
#url = 'https://data.iowa.gov/api/views/m3tr-qhgy/rows.csv?accessType=DOWNLOAD'
df = pd.read_excel(url)
```

[5] [✓] 0.4s

# The tools we use



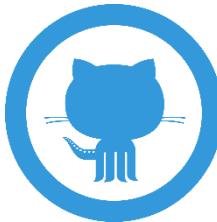
Version control tool #1, open source, flexible



# The tools we use



.py



If you find others,  
let us know!

# Generative AI in class: Copilot > ChatGPT



# Warm-ups

- Warm-up 1: Jupyter&IDEs
- Warm-up 2: Programming motivation
- Warm-up 3: Variables&Expressions
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- Warm-up14: Vehicle Fleet
- Warm-up 15: Regression

Programming basics

Python specific warm-up

Stock modeling with DSM

How to extrapolate data

# Submissions

- Warm-ups 1-6: No submission
- Warm-ups 7-13:
  - Export all your Jupyter notebooks to PDF files (see Warm-up 0 on Github)
  - Merge all PDFs and submit **1 PDF file only** in the correct submission folder on Blackboard.
  - Submission deadline: Monday, Janurary 26<sup>th</sup> at 18:00
- Warm-up 14:
  - Submission deadline is Wednesday, February 4<sup>th</sup> 18:00
- Warm-up 15:
  - Submission deadline is Wednesday, Feburary 18<sup>th</sup> 18:00

# Questions?

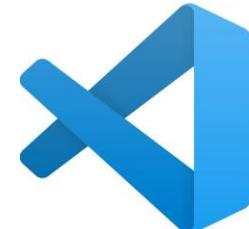
# Set-up

Preliminary steps (which you have hopefully already done)

1. Install a Python interpreter:  
Miniconda, Anaconda, Python,...



2. Install + set up Visual Studio Code
  - Install extensions: Jupyter, Python,...
  - (Install packages: pip install numpy, pandas, matplotlib,...)



# Set-up

## Getting started with Git

1. Create an account/sign in on [github](#)

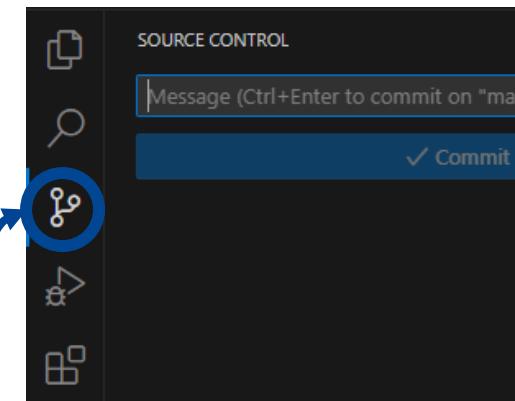


2. Install Git on your computer

<https://github.com/git-guides/install-git>

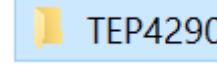
3. Set up Git in VSCode

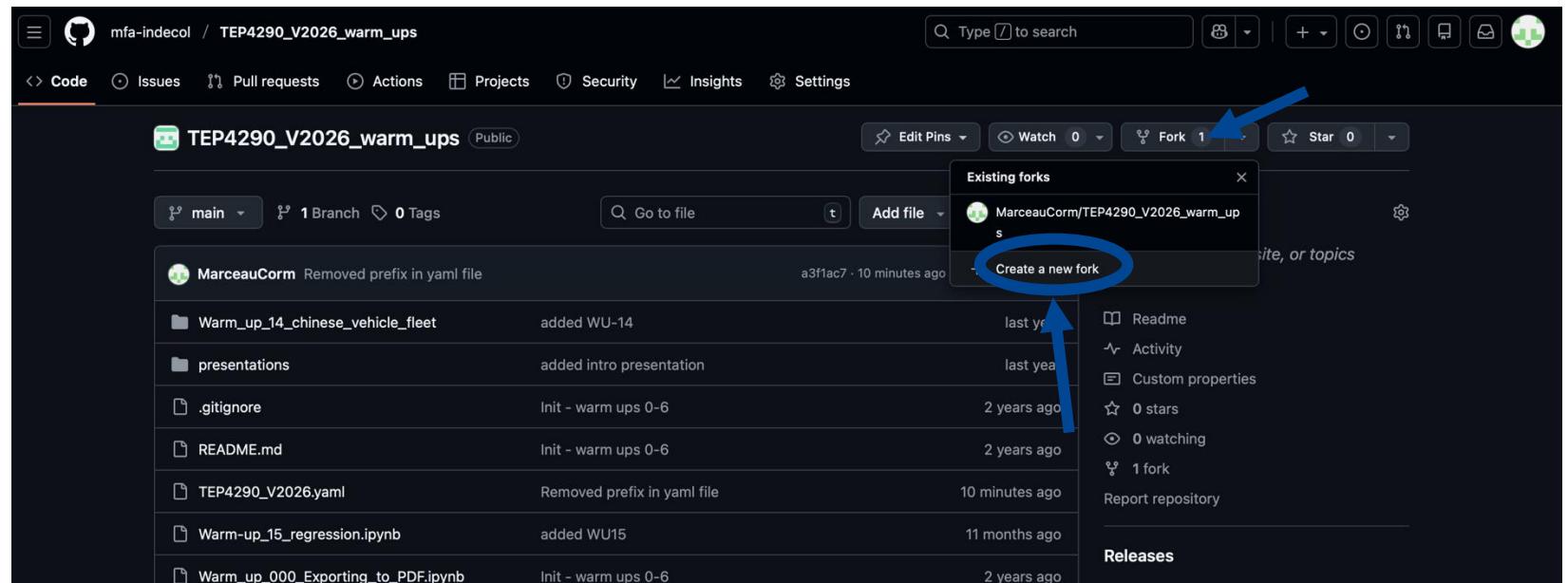
Go to 'Source Control' and follow the instructions



# Set-up

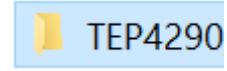
## Cloning the Warm-ups repository

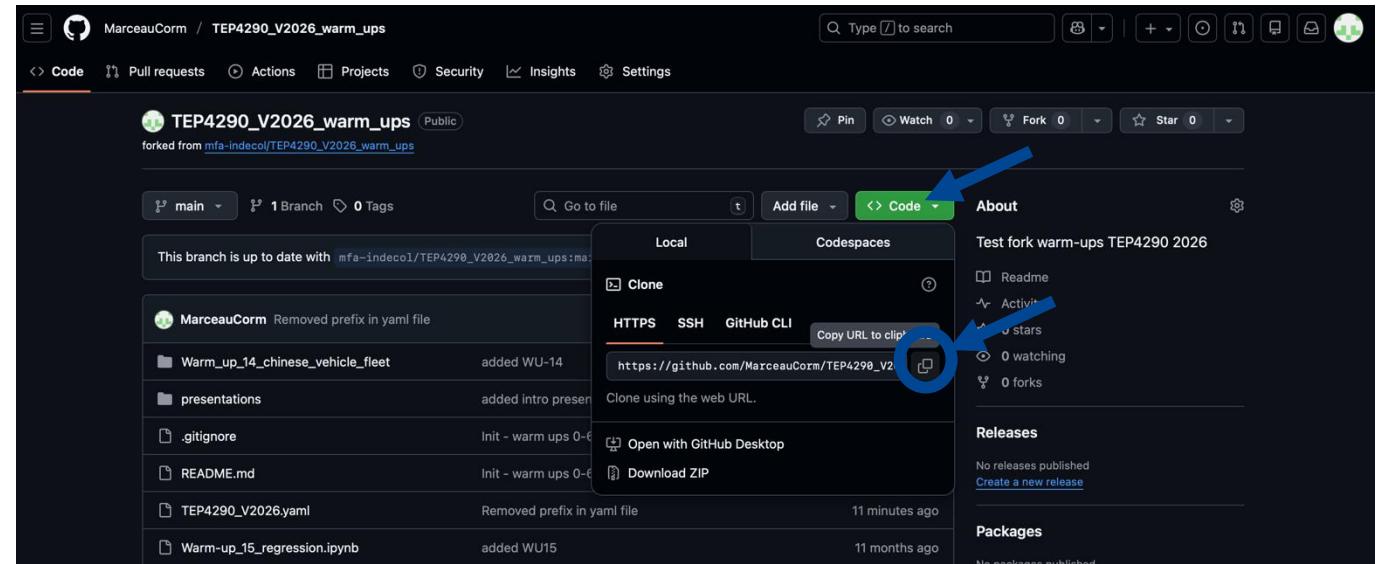
1. Create a new folder on your computer 'TEP4290' 
2. Go to [https://github.com/mfa-indecol/TEP4290\\_V2026\\_warm\\_ups](https://github.com/mfa-indecol/TEP4290_V2026_warm_ups)  
→ Fork/create a new fork



# Set-up

## Cloning the Warm-ups repository

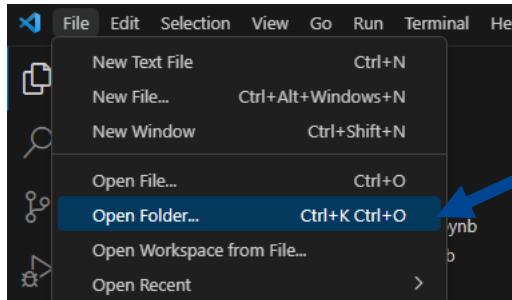
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→ Fork/create a new fork
3. Copy the url of your own fork



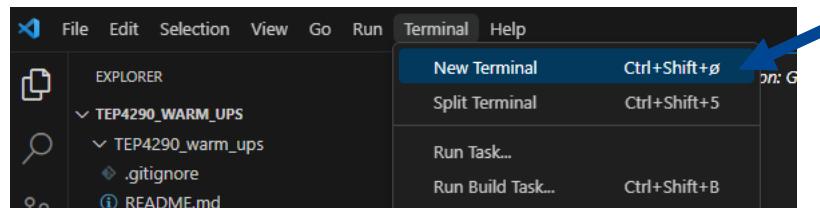
# Set-up

## Cloning the Warm-ups repository

3. In VSCode, open your folder 'TEP4290'



4. Open New Terminal



5. Write: git clone + [the URL you copied]

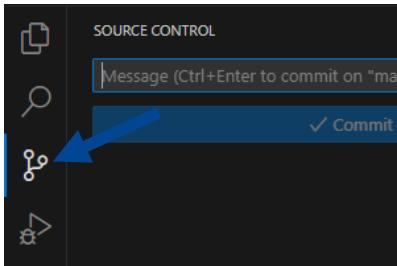
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS  
Receiving objects: 100% (13/13), 233.22 KiB | 5.83 MiB/s, done.  
Resolving deltas: 100% (4/4), done.  
PS C:\Users\zoec\OneDrive - NTNU\MFA_SA\MFA II\TEP4290_warm_ups> git clone https://github.com/mfa-indeco1/TEP4290_warm_ups.git[]
```

Et voilà !

# Set-up

What happens if we update a warm-up/upload more ?

1. In VSCode, go to 'Source control'



2. Pull the updated files from Github

