eleven Hackathon

Introduction to shared code

To the attention of the Data Sciences
& Business Analytics master students
February 8th, 2021

CentraleSupélec ESSEC BUSINESS SCHOOL eleven strategy consultants London • Paris • Madrid

AGENDA

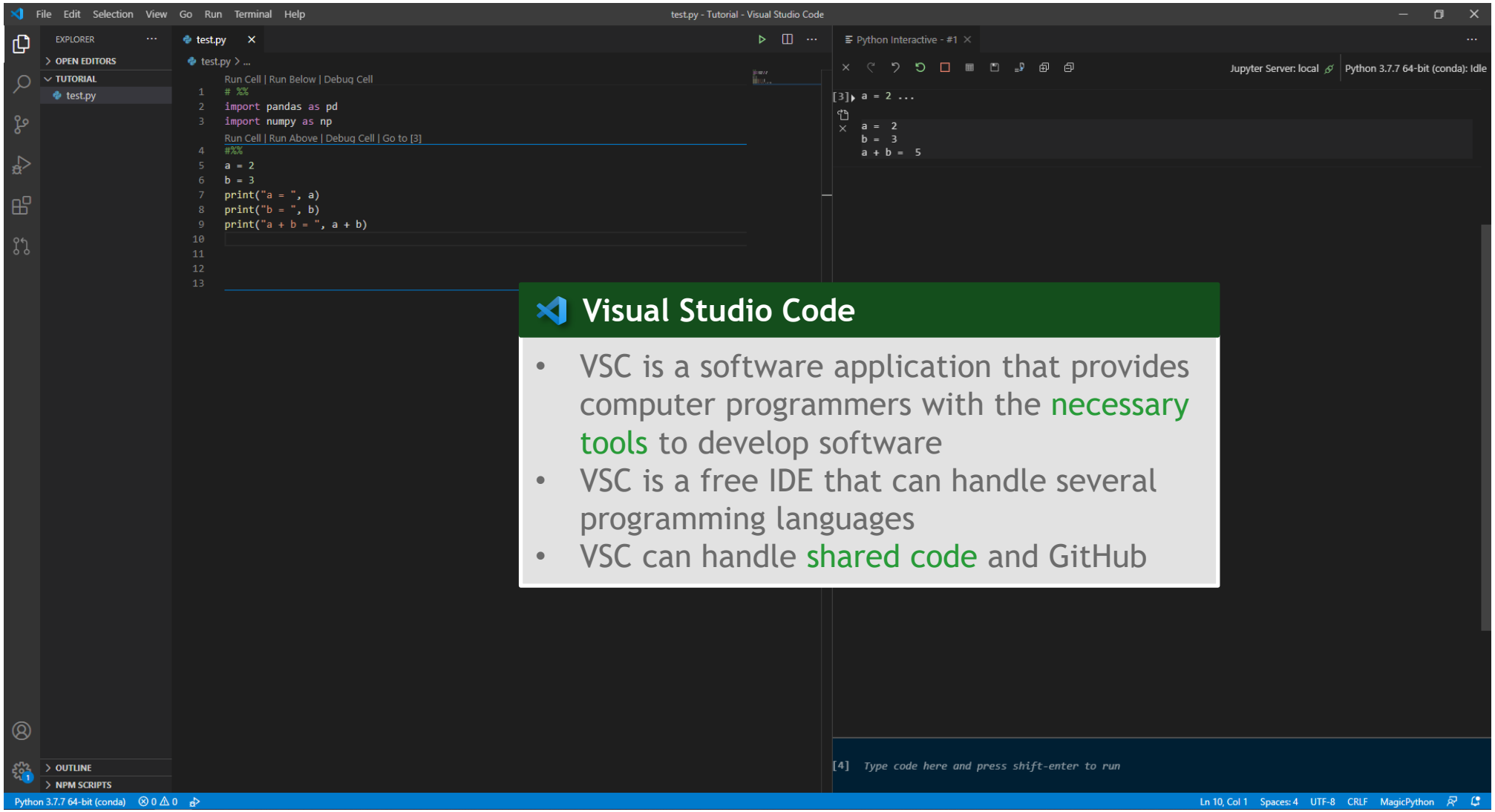
I  Why using VSC ?

II  Why using shared code ?

III  What is GitHub and how to use it ?

IV How to use GitHub with VSC?

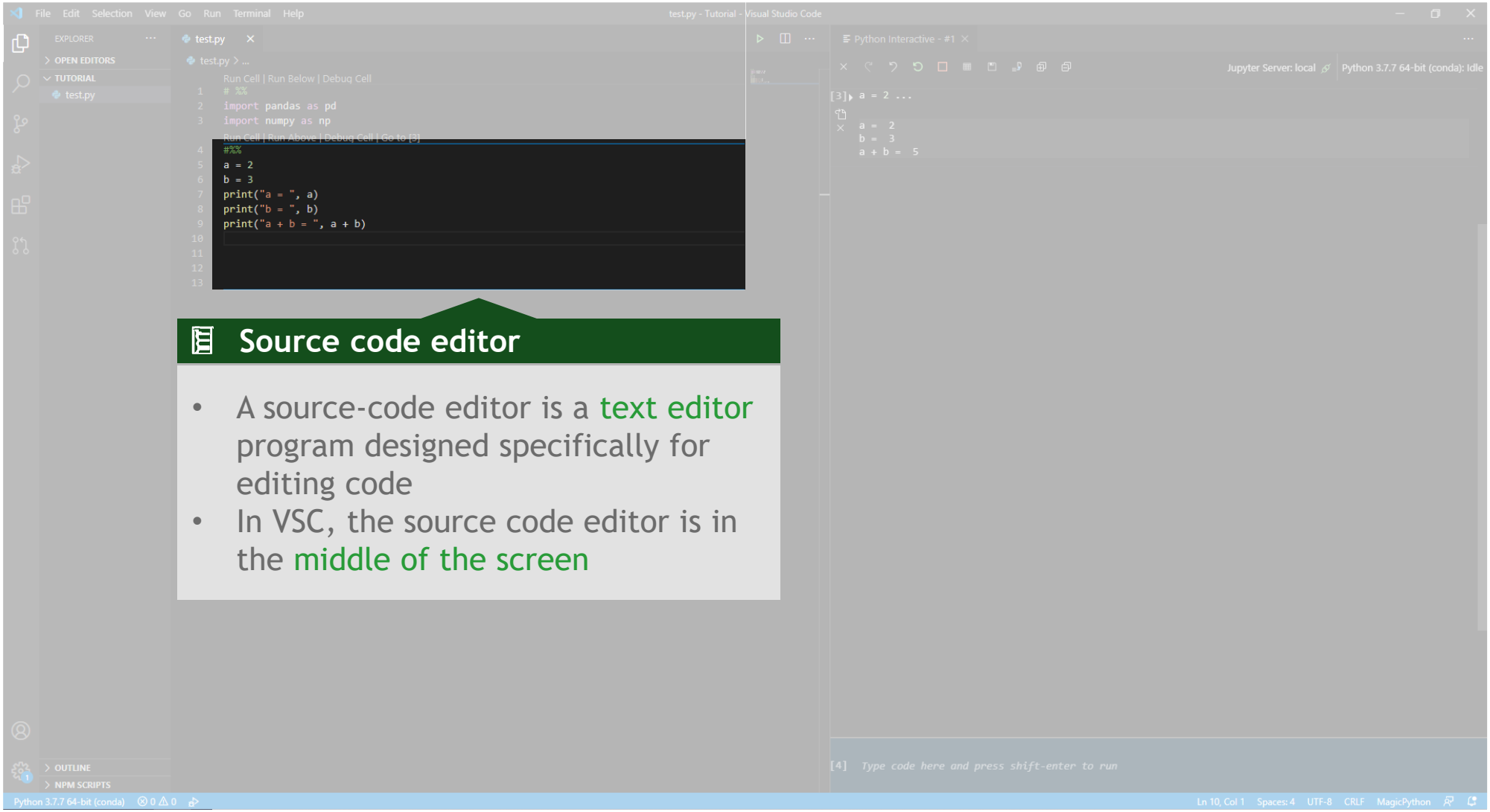
Eleven's IDE is Microsoft's visual studio code



Visual Studio Code

- VSC is a software application that provides computer programmers with the necessary tools to develop software
- VSC is a free IDE that can handle several programming languages
- VSC can handle shared code and GitHub

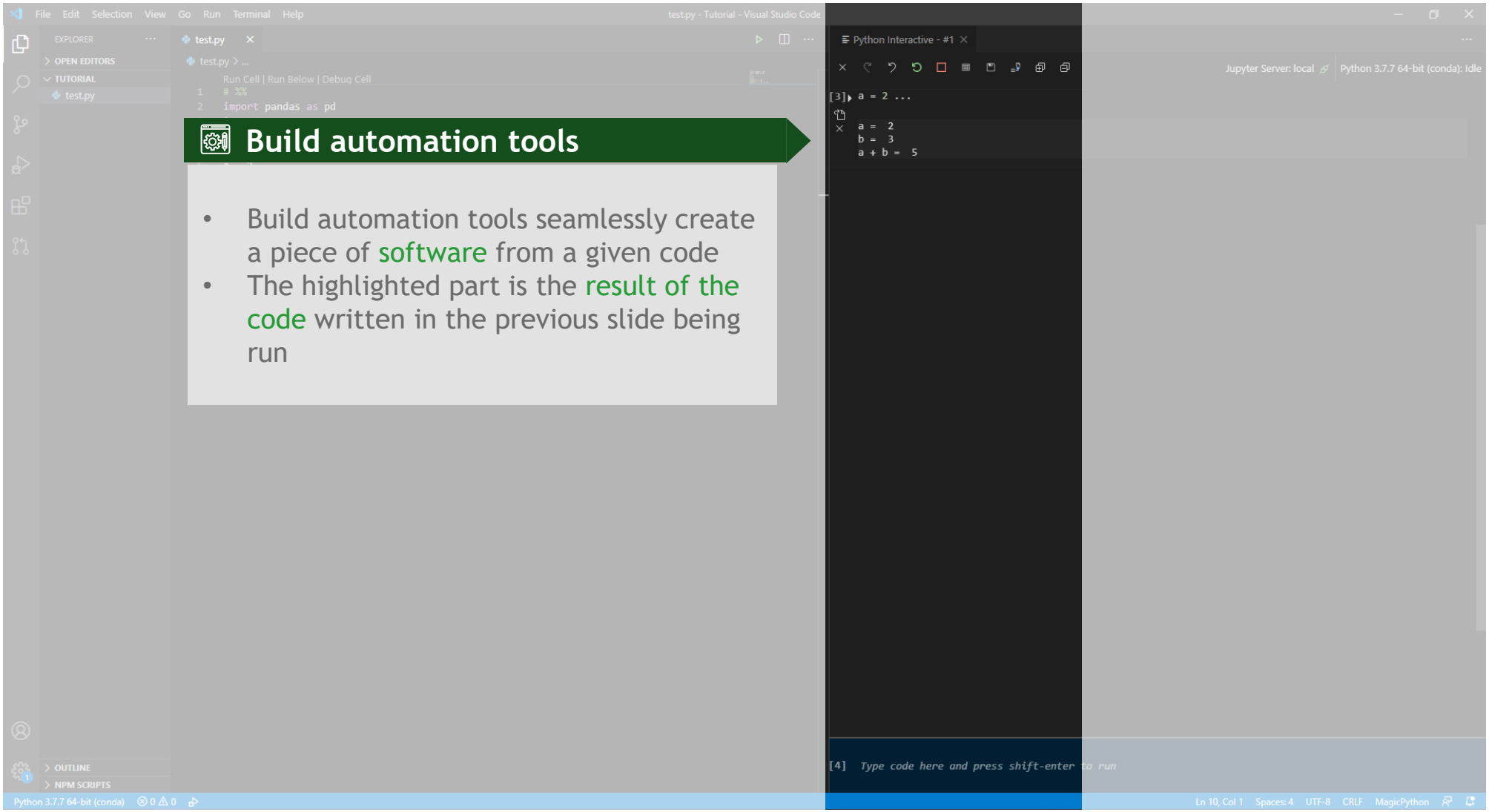
The source code editor is where code will be written



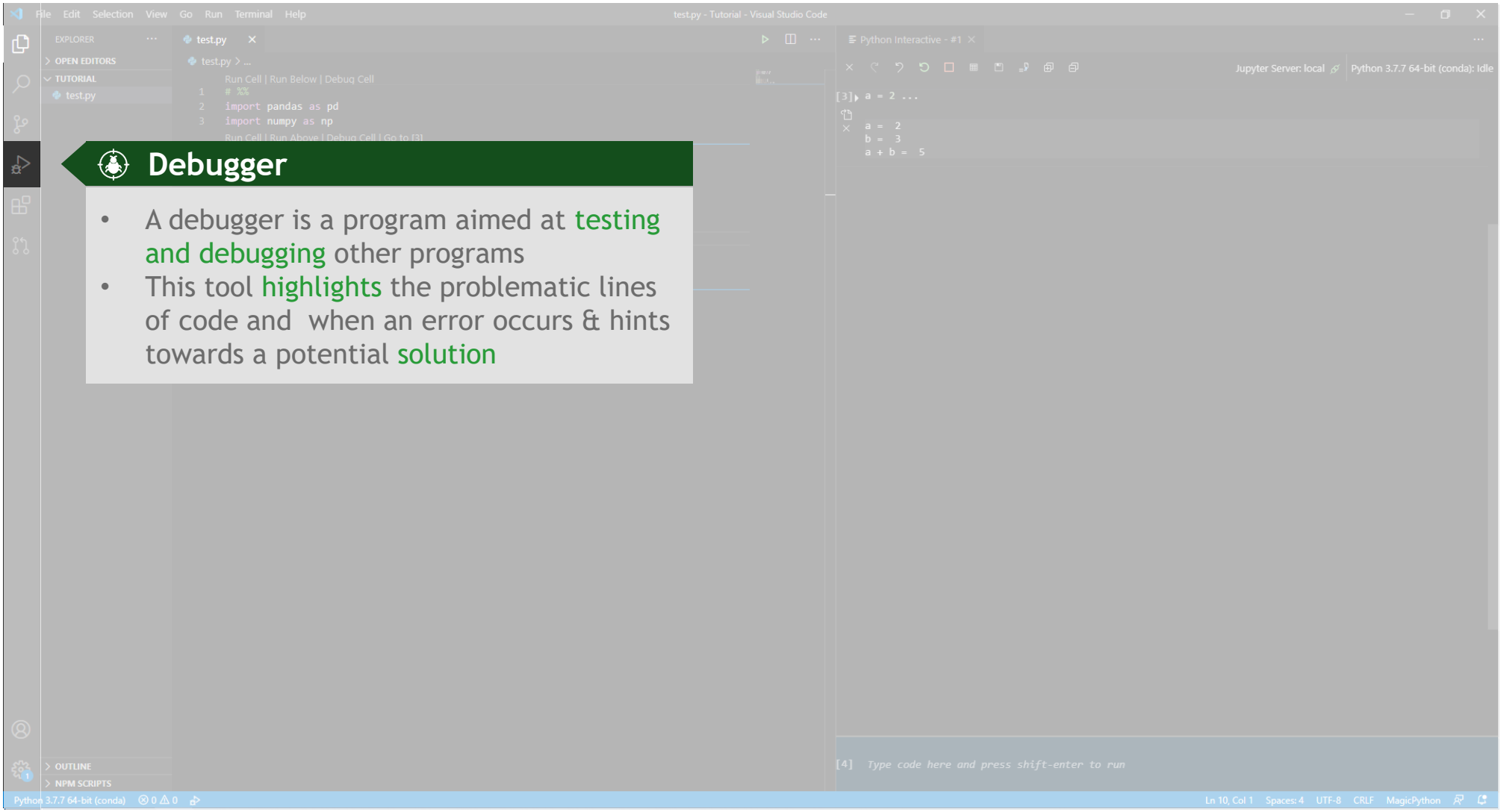
Source code editor

- A source-code editor is a text editor program designed specifically for editing code
- In VSC, the source code editor is in the middle of the screen

Build automation tools enable code lines execution



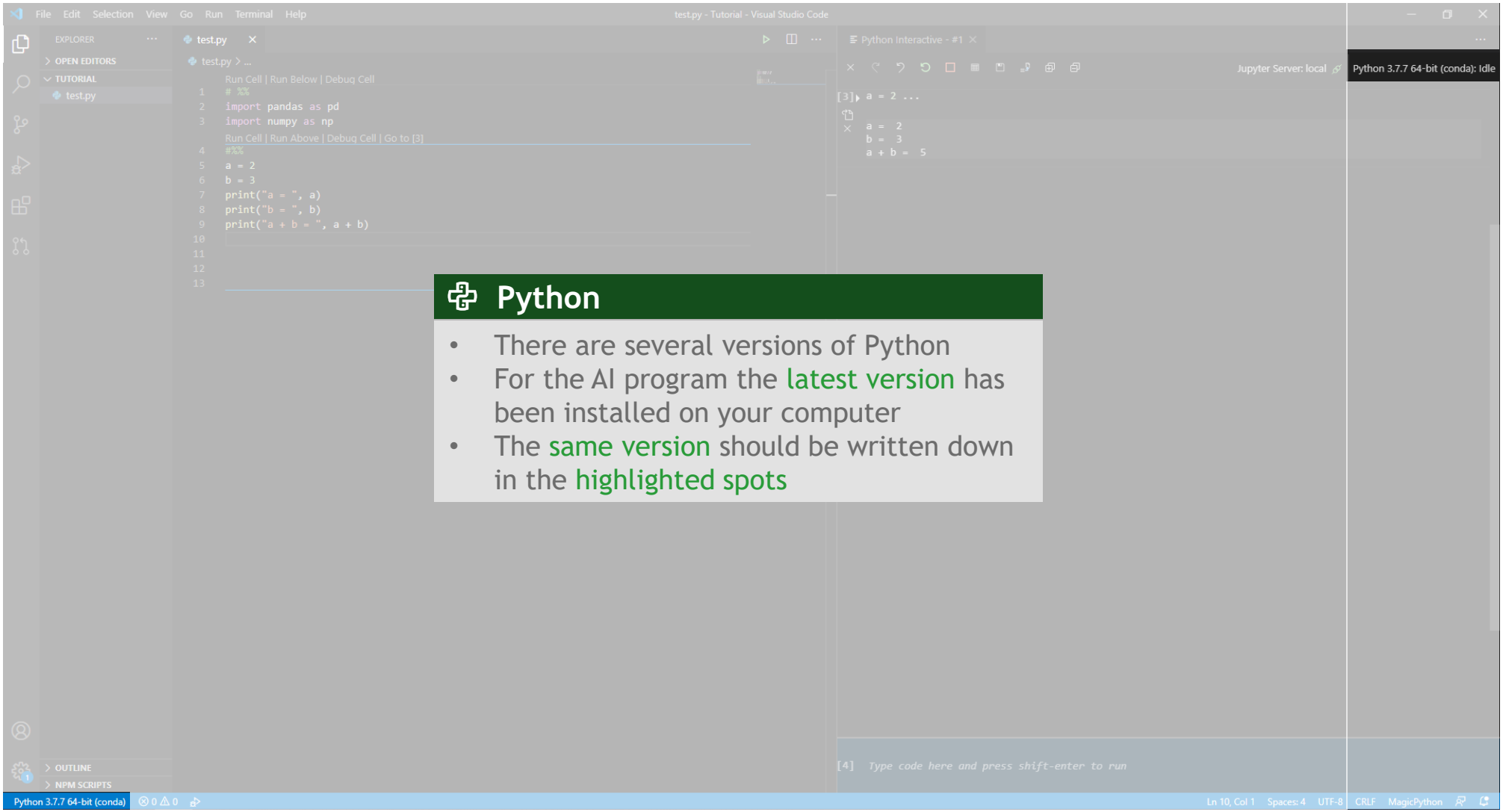
The Debugger aims at helping the programmer fix mistakes



Debugger

- A debugger is a program aimed at testing and debugging other programs
- This tool highlights the problematic lines of code and when an error occurs & hints towards a potential solution

This hackathon will focus on python programming language



Python

- There are several versions of Python
- For the AI program the latest version has been installed on your computer
- The same version should be written down in the highlighted spots

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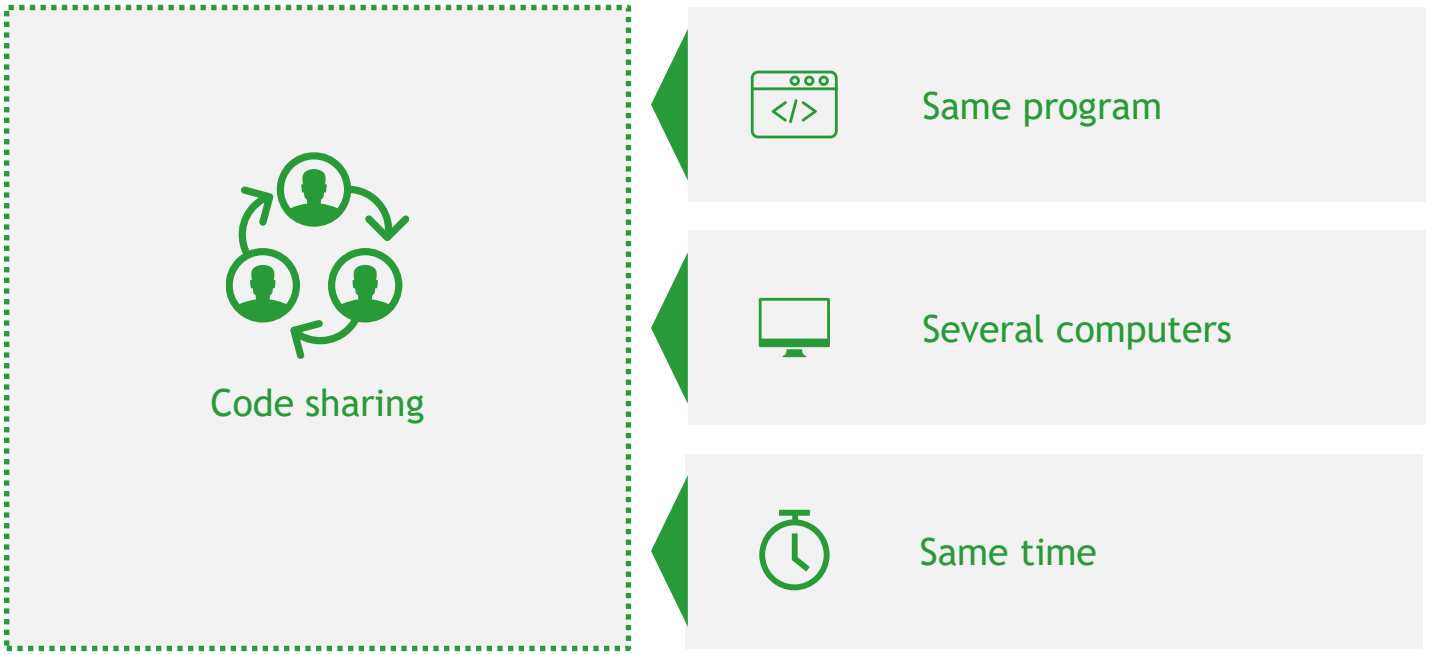
Code sharing enables to work with others on the same code

Code sharing has three main characteristics

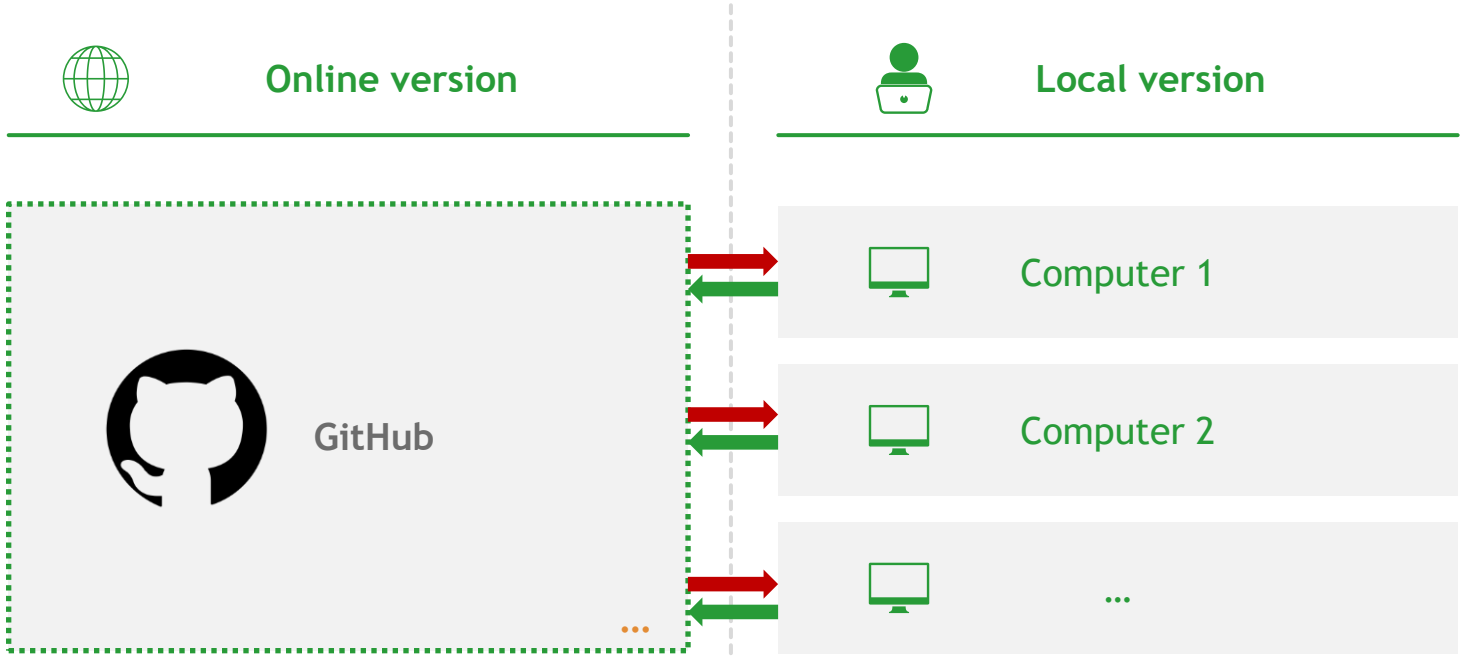


Key learnings

- Code sharing is like a google docs but for programmers
- Code sharing gives a team of developers the opportunity to work on different aspects of the same code at the same time

Code sharing manages interactions between Online & local versions

Architecture of a shared code network



Key learnings

- The action of downloading the online version on laptop is called a "pull"
- The action of uploading the local version is called a "push"

Diagram Legend

Pull

Push

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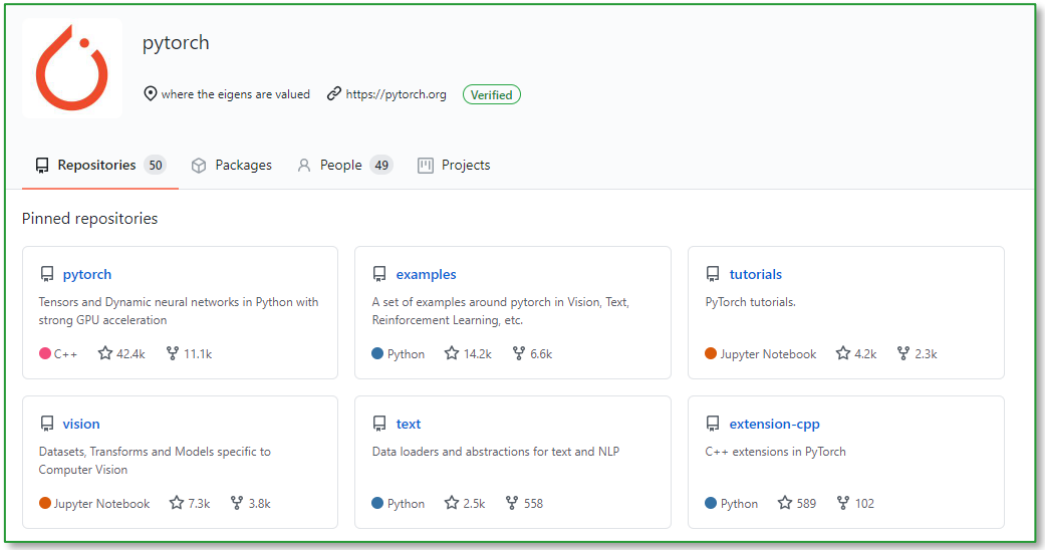
Github is a website that hosts a team's or an individual's shared projects

A Github account is structured with repositories

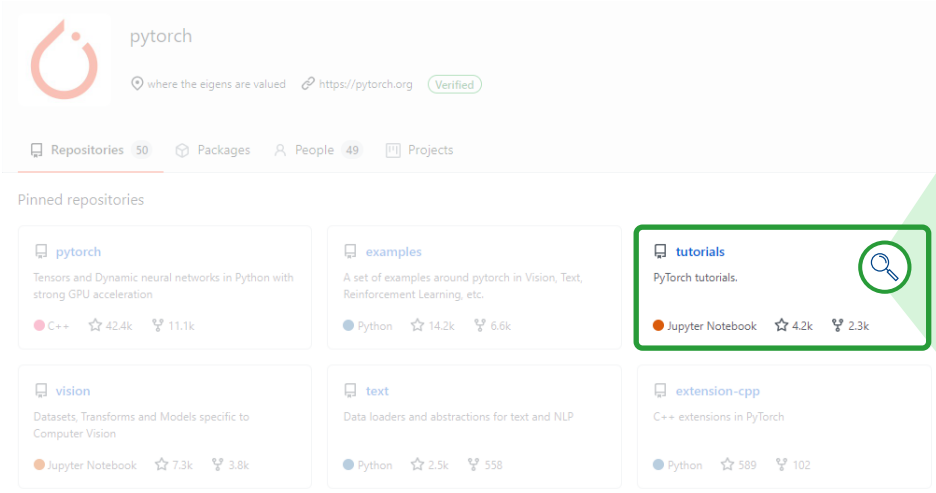


Structure of the Pytorch's GitHub

- This picture is taken form PyTorch's account, a famous deep learning library
- A repository is a Git word to design a project
- 6 repositories can be seen in this image:
  - Pytorch
  - Examples
  - Tutorials
  - Vision
  - Text
  - Extension-cpp

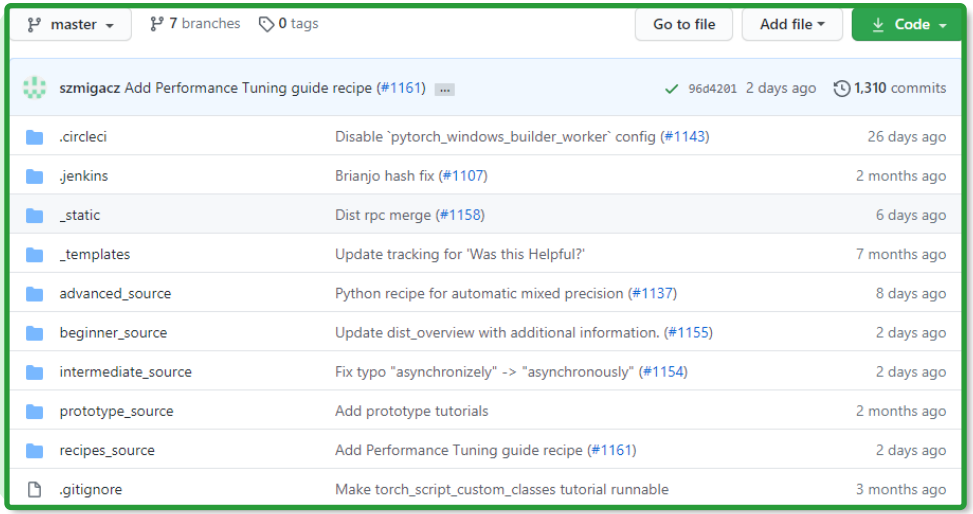
Github is a website that hosts a team's or an individual's shared projects

A Github account is structured with repositories



Structure of the Pytorch's Github

A repository is structured with folders



Structure of the tutorials' repository with several folders

Key learnings

- A Github account is structured with repositories
- A repository contains different folders and files
- A repository can be remote (online) or local

Tutorial: Create a GitHub account

Steps to create an account

1. Go to Github website:

   “https://github.com/”

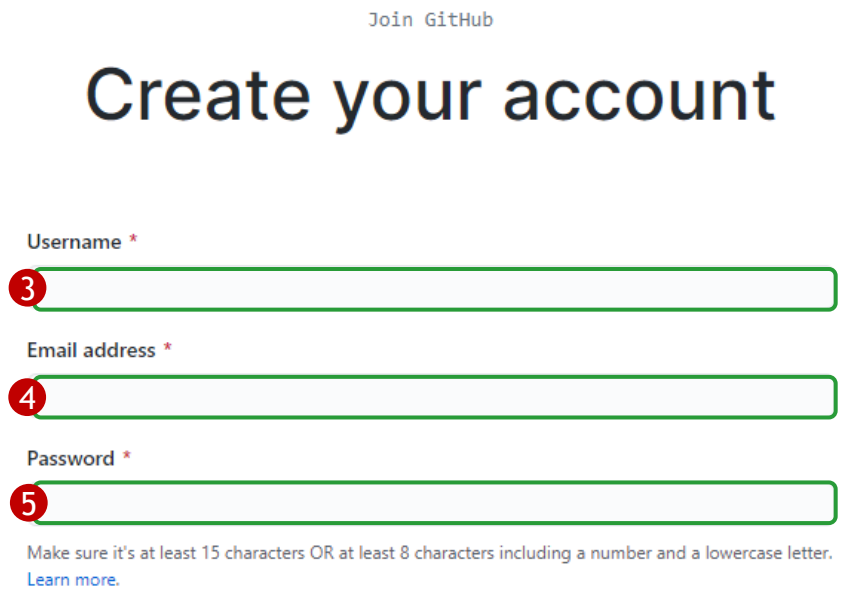
2. Click the “Sign up” button

3. Choose a username

4. Fill your email address

5. Choose a password

Illustration of steps 3 to 5

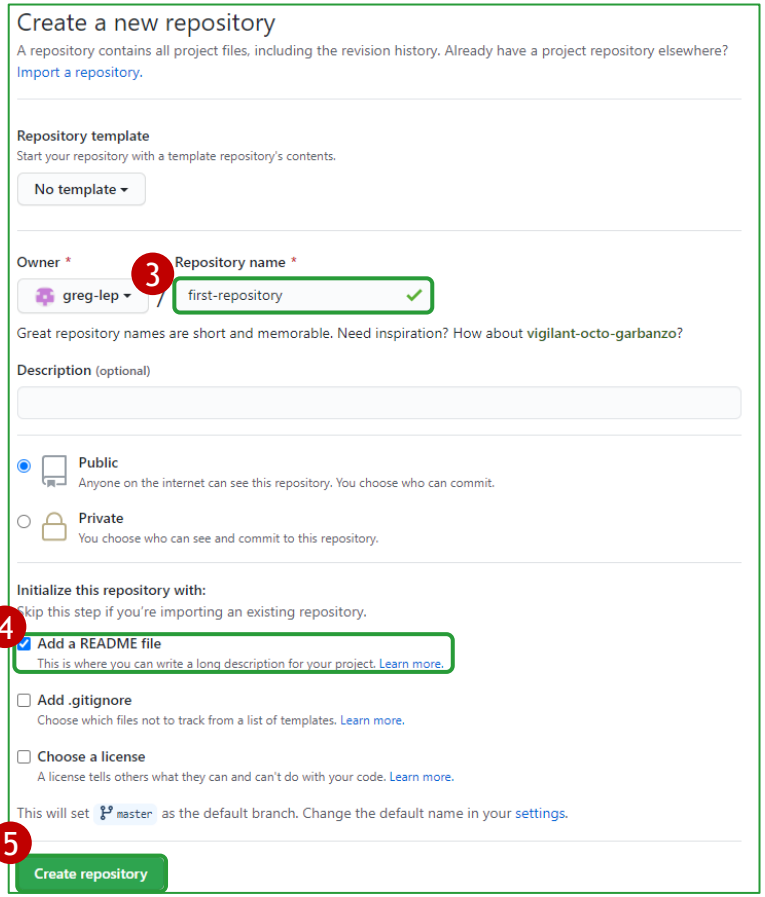


Tutorial: Create a GitHub repository

Steps to create a repository

1. Click “Repositories”
2. Click the “New” button
3. Enter the name of the repository (see next image)
4. Click “Add a REAMDME file”
5. Click “Create repository”

Illustration of steps 3 to 5



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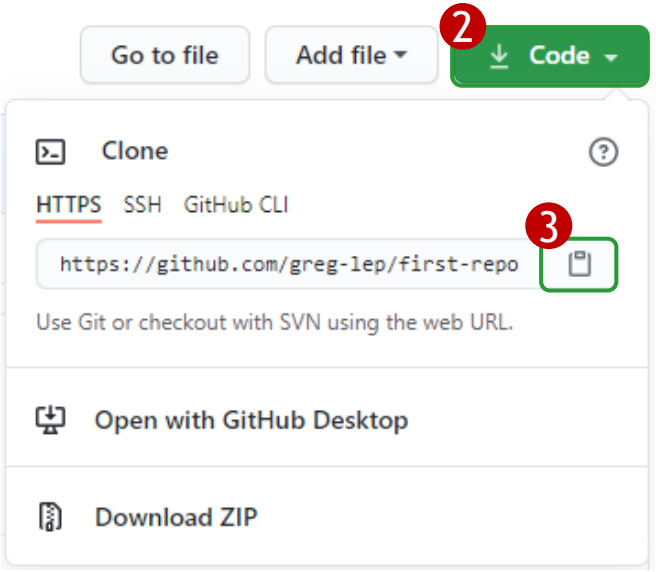
Tutorial: Create a local version of this repository

Copy the link of the repository

1. Open the repository “first-repository”
2. Click the “Code” button
3. Click the diskette button to copy the HTTPS link of the repository



Clone the repository

4. Open VSC and open a new Terminal
   - › Click the “Terminal” button (top of VSC’s screen)
   - › Click the “New Terminal”
5. Create a “Github” folder in your “Documents” folder and then navigate through it

```
cd Documents
mkdir Github
cd Github
```

6. Write on the prompt command “git clone” followed by the HTTPS link of the repository
   - › The new folder created in the Github folder is the clone of “first-repository” (Github repository)

Tutorial: Synchronize the local repository with VSC & and Push changes

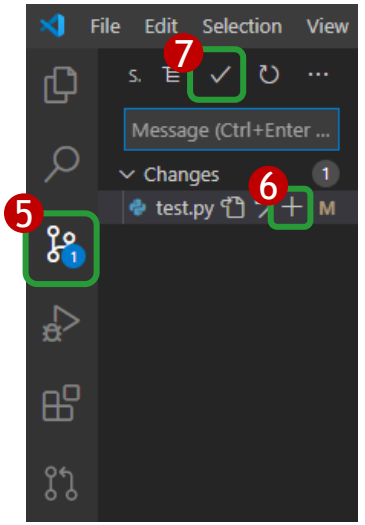
Copy the link of the repository

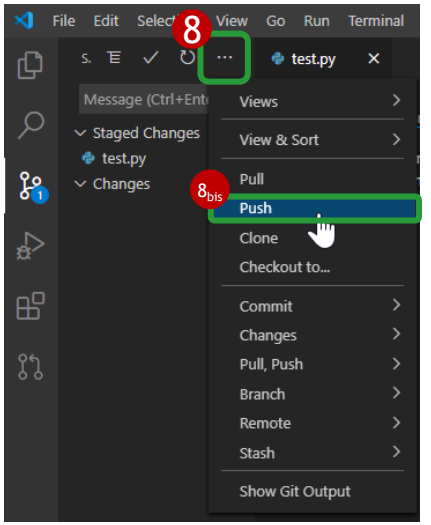
1. Open VSC
2. Open in VSC the folder “first-repository”
3. Create a python file named “test.py”
4. Write the following code line and save it

```
import numpy as np
a = np.linspace(1, 10, 50)
print(a)
```

5. Click the third icon where a “1” appeared
6. Stage “test.py”
7. Commit the stage and write: “Add first Python file”
8. Push the commit
9. Go on Github website to watch the adding of the Python file

Illustration of steps 5 to 8





Key learnings

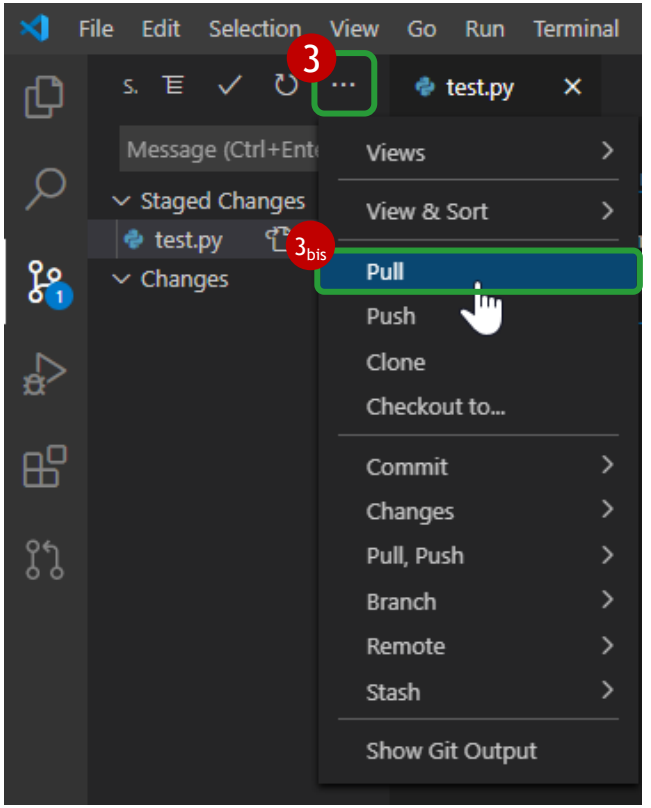
- A stage moves modified files from the working directory to a staging area ready to be committed
- A commit moves staging area’s files to the local git directory

Tutorial: Pull changes from the remote repository

Copy the link of the repository

1. Go to GitHub website on the repository “first-repository”
2. Add a new python file named “test_pull.py”
   - Click “Add file”
   - Click “Create new file”
   - Fill the file name: “test_pull.py”
   - Click “Commit new file” at the bottom of the web page
3. Pull locally the new python file
4. Check on VSC the presence of the file “test_pull.py”

Illustration of step 3



Branches are useful for solution versioning as well as new ideas testing without affecting the whole program

- A branch is a way of isolating some development work without affecting other branches of the repository
- The default branch is called “master”
- Once you are satisfied with the changes in your branch you can merge a branch with another

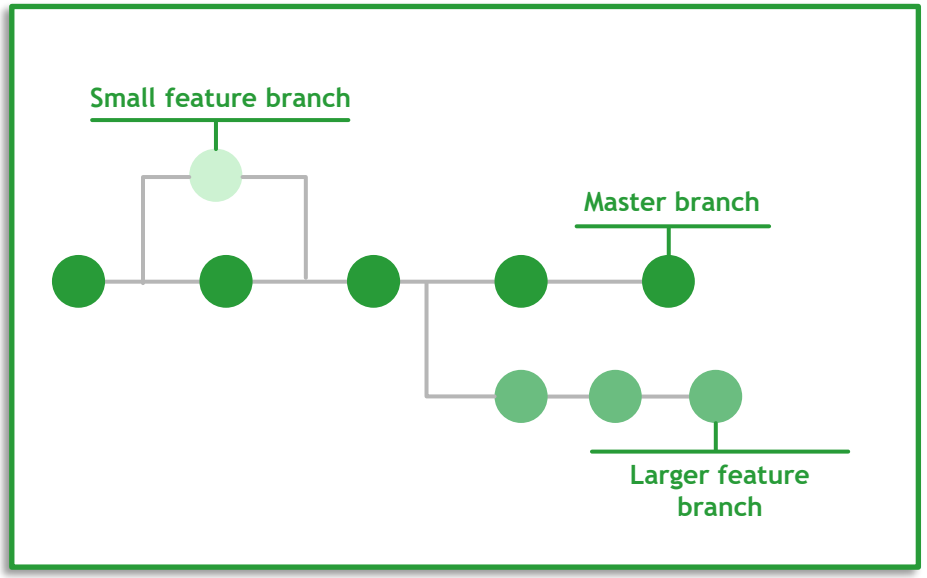


Illustration of how branches work

Key learnings

- GitHub can only get you so far, you need to learn how to use it efficiently
- Commits must be frequent and well documented
- Communication remains key to collaborating on a coding project

Tutorial: Create a new branch and merge it with the master branch

Steps to pull a repository

1. Click the branch sign
2. Choose “Create a new branch”
3. Call this new branch “test”
4. Check that the current branch is the “test” branch
5. Modify the python file “test.py”
6. Merge the branch “test” with the “master” branch
   - Click “…” > “branch” > “Merge Branch”
   - Choose the branch “test”
7. Check that the file “test.py” on the master branch has been modified

Illustration of steps 1 to 6