

Collaboration

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Collaboration

- Most programming isn't solo.
- In companies / research, you are often working on a small part of a larger project.
- To collaborate - you need to share code!

Version control

- To collaborate, we need:
 - A place to store a shared version of our code.
 - A way to track changes to different parts of the code.
- Solution:
 - A “repository” to store our code
 - A **version control** system to track changes to the code

Local vs. Remote code

- A repository stores the code for a specific project.
- There are two different types of repository:
 - **Local:**
 - *Think: a file folder on your computer.*
 - **Remote:**
 - *Think: a GitHub repository*

Local vs. Remote code

- With version control, I want my **local** changes to be reflected in the **remote** repository.



git and GitHub

- **git** is an open source version control system.
 - Purpose: recording and reconciling changes to code.
- **GitHub** is a place to store **remote** repositories.
 - Here is the repository for [this course!](#)

Google docs

- `git` is kind of like Google Docs.
 - I make a change to a document.
 - You make changes to the same document.
 - Our changes are combined together.
- Except: `git` is *very manual*.

Version control

- With `git` you need to be explicit about:
 - Saving changes (called ‘committing’).
 - ‘pushing’ **local** changes to the **remote** repository.
 - ‘pulling’ changes from the **remote** repository.
 - ‘merging’ changes together.
- *Good question: Why does this have to be explicit?*

Aims: this afternoon

- Create a **local** `git` repository with some of the code you have written.
- Create a **remote** repository on GitHub.
- Push your code from your **local** repository to your **remote** repository.

Aims: tomorrow

- After the challenge, we will each:
 - Push our code to a shared repository.
 - Compare solutions.
- Shared repository URL:
 - [soda_python_foundations_challenge_2024](#)
- Please give me your GitHub usernames today!

Tutorial #1

1. Setup a [GitHub](#) account.
2. [Create a GitHub repository](#).
3. Commit your **local** code ([Add](#), [Commit](#)).
4. Push your code to your **remote** repository ([Remote](#)).

What about GitHub alternatives?

- [git](#) is open source and is the *de facto* version control software
- GitHub is a for-profit company owned by Microsoft.
- There are alternatives to GitHub:
 - [GitLab](#)
 - [CircleCI](#)
 - Many more...

What about git clients?

- There are lots of “easier” ways to interact with `git` repositories through a graphical user interface (GUI).
 - Example: [GitHub Desktop](#).
- I recommend the command line because:
 - Most basic git interactions are simple commands.
 - You aren’t linked to a particular `git` hosting service.

Diving deeper into `git`

- This is a very basic introduction to `git`
- Advanced uses of `git` / GitHub:
 - Collaboration on large projects, automated testing, issue / version tracking
- Introductory uses of `git` / GitHub:
 - Storing code / not losing what you have done
 - **Building a ‘portfolio’ of coding projects**

Tip

- Github's Education Benefits give you access to a lot of **free stuff!**
 - GitHub Copilot
 - GitHub Copilot Chat
 - Free web hosting

Extra

- If you breeze through the GitHub setup / repository creation:
 - Try editing files in the **remote**, then **pull** the changes to your **local** repository.
 - Try creating a **local branch**, then **push** the branch to the **remote** repository.
 - Try setting up a repository with someone else, making changes to the same file.