Conda, Git & GitHub

COGS 108 Fall 2025
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Week 2

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OH: Tue 3-5 pm

Reminder

- Practice Assignment: Due on TODAY (10/08)
- D1: Due on Friday (10/09)

Datahub/JupyterLab

Do not forget to submit(time-stamps)

Validate

- Only pass public tests
- Validate != Submit
- might need to optimize your code if runs too long

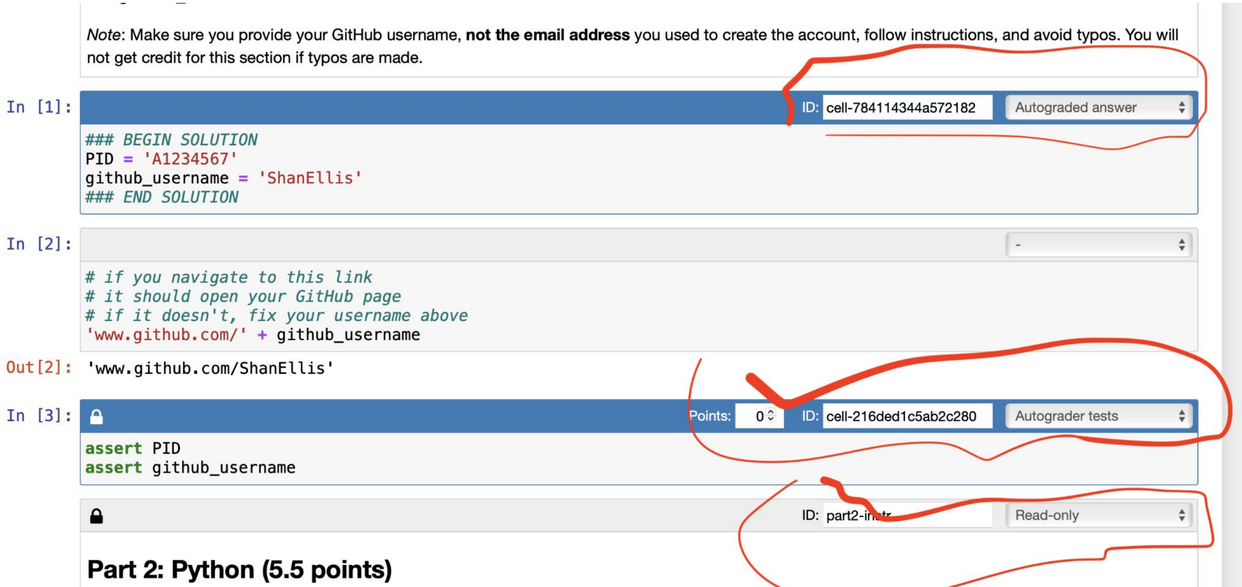
Datahub/JupyterLab

Do not re-submit after due dates

- Please double check before submitting
- JupyterLab won’t store your code

Do not delete the original cell

- autograde based on cell ID



Conda

Conda is a package manager and environment manager for data-science tools.

It helps you:

- Install software libraries (like NumPy, Pandas, PyTorch)
- Manage versions of Python and packages
- Keep projects isolated from each other

Works across platforms (Mac / Windows / Linux) and supports multiple languages (Python, R, C, etc.).

Conda virtual environment

A virtual environment is a self-contained workspace with its own Python version and packages.

Each project can have different dependencies without conflicts.

Example:

- Project A uses Python 3.9 and TensorFlow 2.6
- Project B uses Python 3.11 and PyTorch 2.2
- → Both can coexist safely.

Conda virtual environment

Why do we need virtual environments?

- Prevents the “dependency hell” problem.
- Lets you reproduce results easily — crucial in data science.
- You can share environments using a .yml file.

If you're using windows powershell and it cannot recognize `conda`

1. Make sure conda is properly installed

2. Run PowerShell as Administrator
   Right-click PowerShell → "Run as Administrator".

3. Find where Anaconda actually is
   `Get-Command conda | Select-Object Source`

4. Add the Anaconda paths to the system PATH variable (replace `\path\to\conda` with the actual path you found in step 3)

```
 setx PATH
"$($env:PATH);C:\path\to\conda;C:\path\to\conda\Scripts;C:\path\to\c
onda\Library\bin"
```

5. Restart PowerShell so the new PATH takes effect
6. Verify
   `conda --version`

If the code can’t find a package called unixodbc

1. Open `conda_env_COGS108_FA25.yml`
2. Comment out the line containing unixodbc

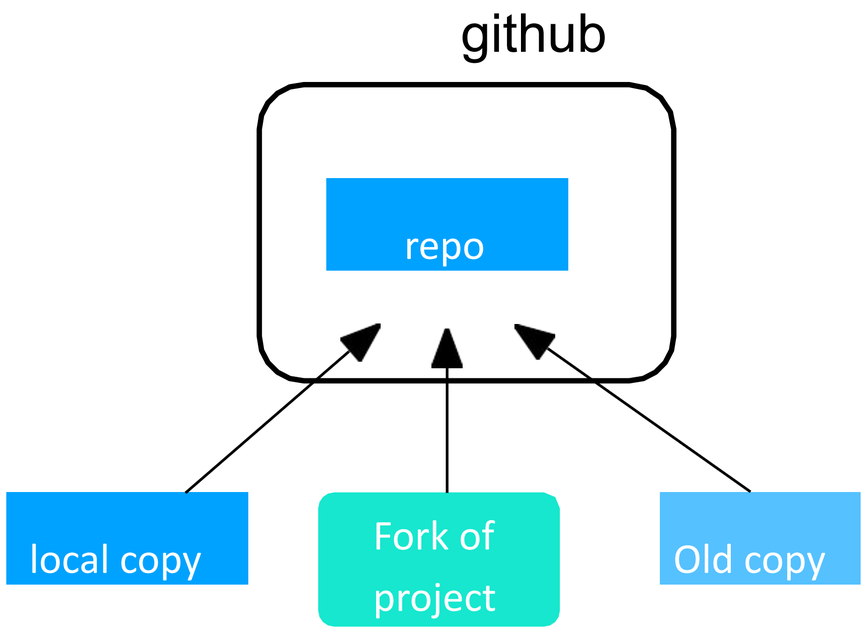
   ```
   # - unixodbc
   ```

Git

- Version control system!
- Go to https://git-scm.com/downloads
  - Choose your Operating System (Windows/OS X/Linux)
  - Follow the steps specific to your OS
  - Verify installation: In terminal type “git –-version”

What is git + GitHub?

- Somewhere online to store a copy of a project (Github)
- Plus a tool to interact with this copy (Git)
  - Command line and desktop versions
- A way of keeping track of changes you make to a project
- Does everyone have a GitHub account?



Why use git + GitHub?

- Collaboration: Git allows you to work on code projects with other people. It's the preferred tool for many projects, like...
  - Python: https://github.com/python/cpython
  - Jupyter: https://github.com/jupyter/
  - COGS 108: https://github.com/COGS108/
- Backup
- Version control (*undo* on a large scale)
- Code reuse

Github

1. Fork

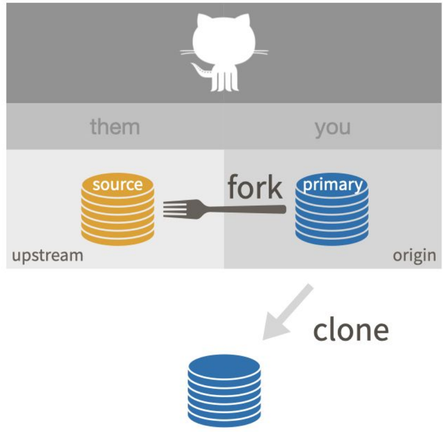
   A “fork” is just an independent copy of a repository that you can develop on without affecting the original.

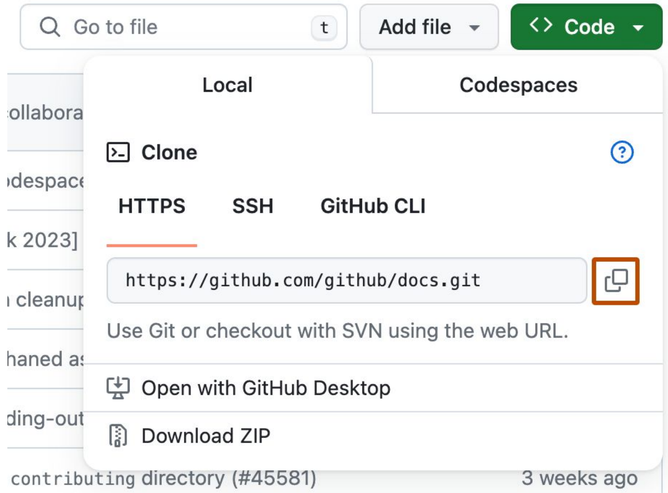
2. Clone

   Creates a local copy of a repository on your machine.

3. You can “push” changes back to the remote repository if you have permissions.

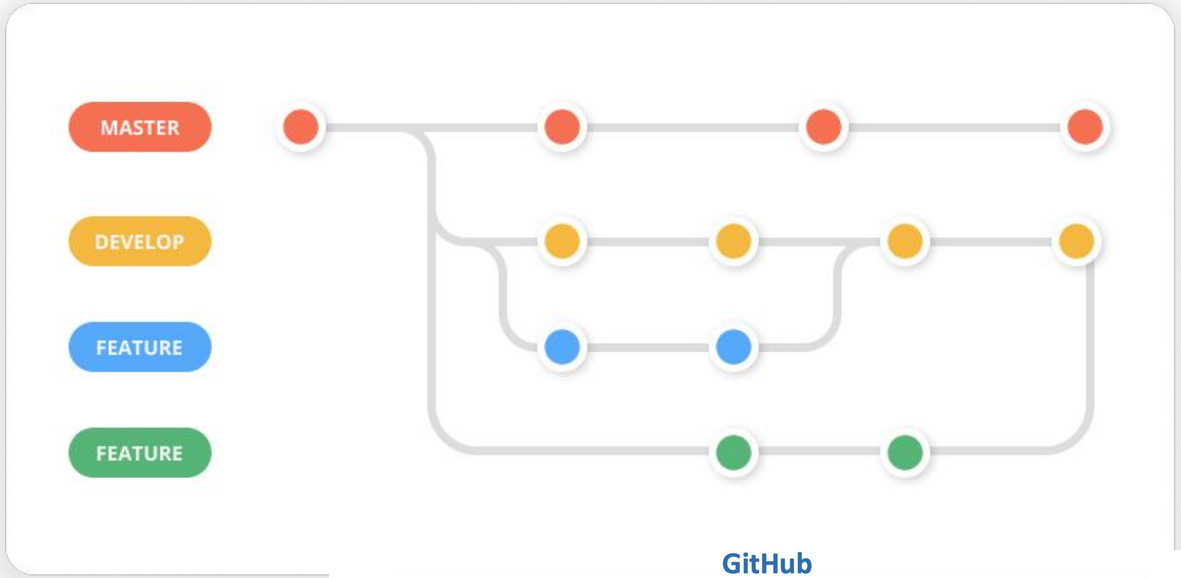
$ git clone https://github.com/user/repo.git





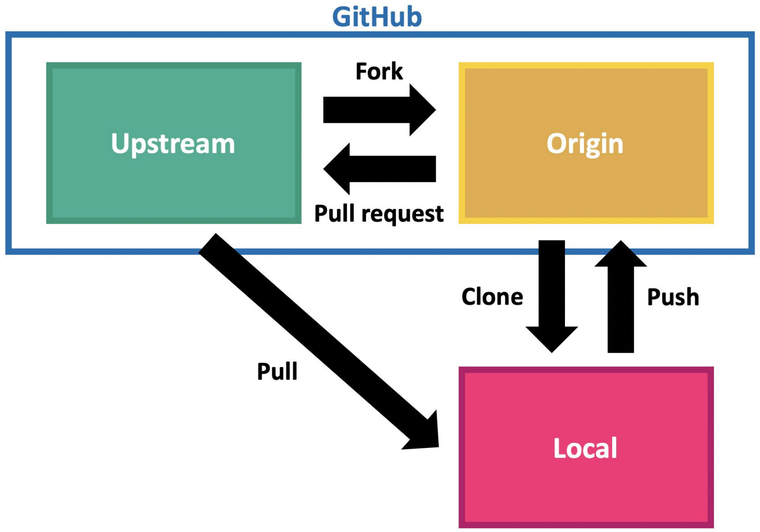
Branching

Branch will be independent of the clean, functioning “master” code and is a safe place for you to delete, modify and add code.



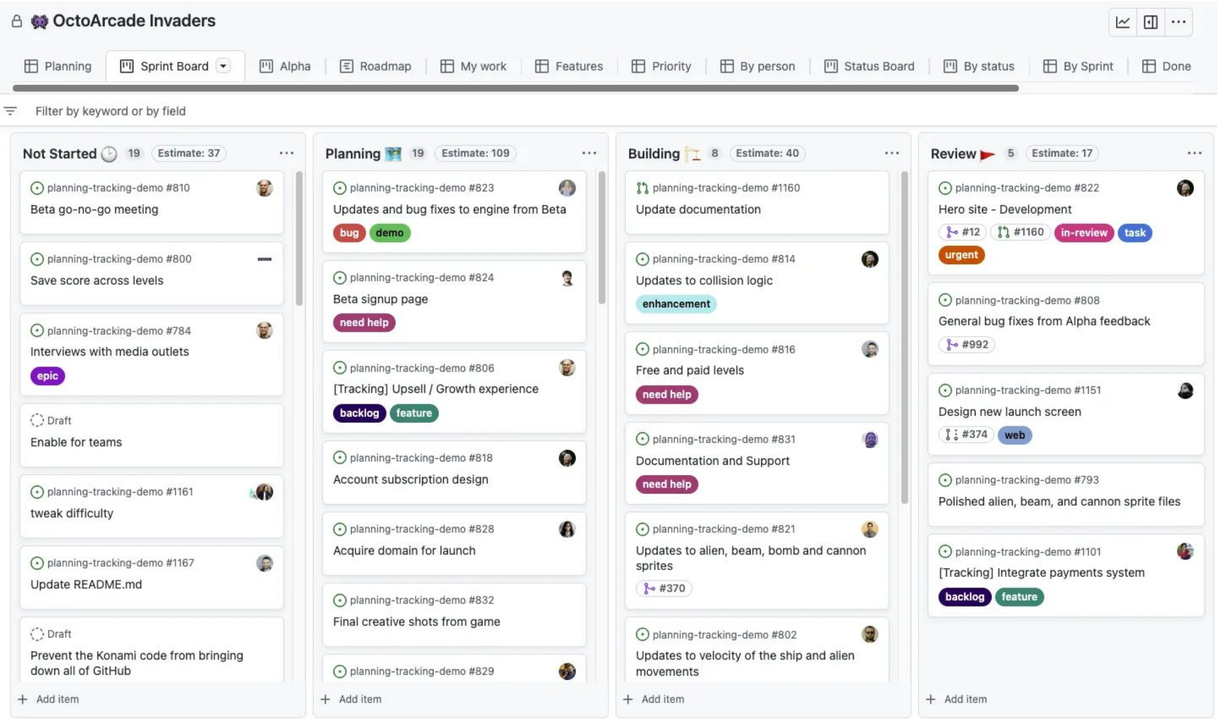
Pull Request

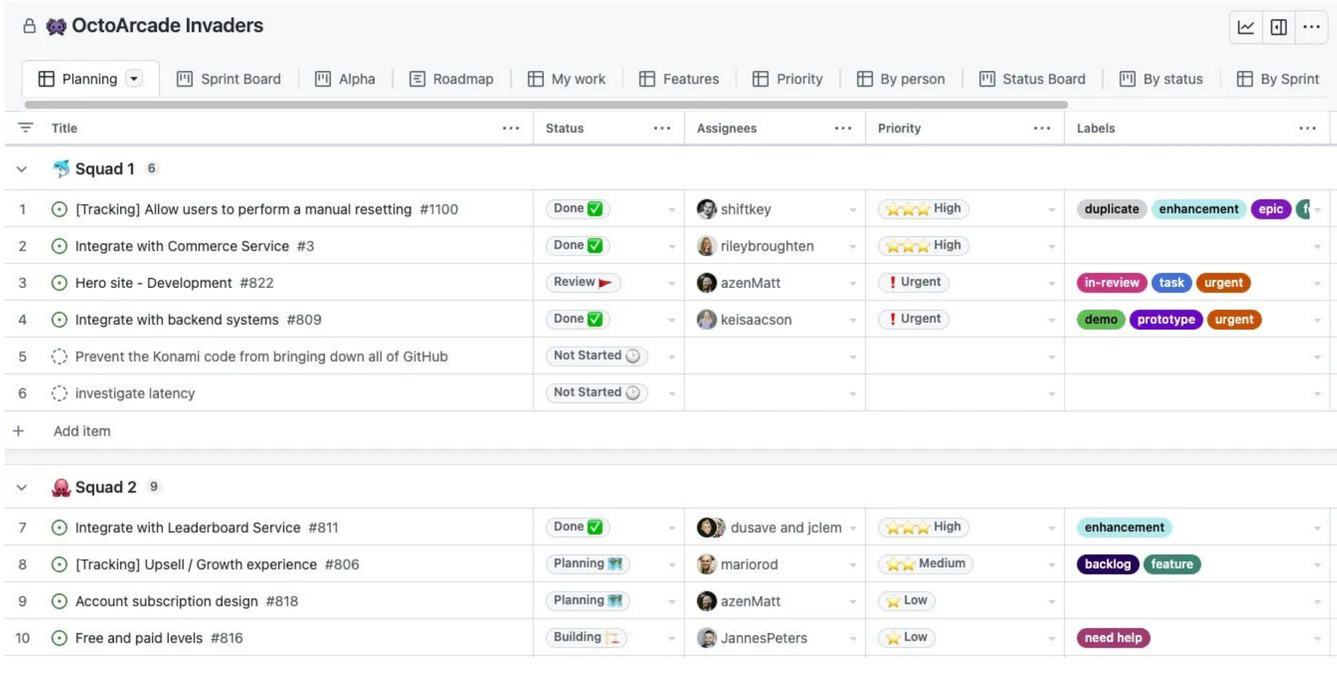
Asks the maintainers of the original repository to take a look at and hopefully integrate your code changes into their repository.



GitHub Issues are used to track tasks, enhancements, and bugs for a project, allowing team members to discuss and manage work collaboratively.

GitHub Projects is a tool to organize and track the progress of issues and pull requests in a board view, helping teams visualize workflows and prioritize tasks.





You might run into this error when using git:

```
remote: Invalid username or token. Password authentication is not supported for Git operations.
```

We need to create a ssh key in the terminal and add it to github

On your terminal, create an SSH key

```
ssh-keygen -t ed25519 -C "your_email@example.com"
```

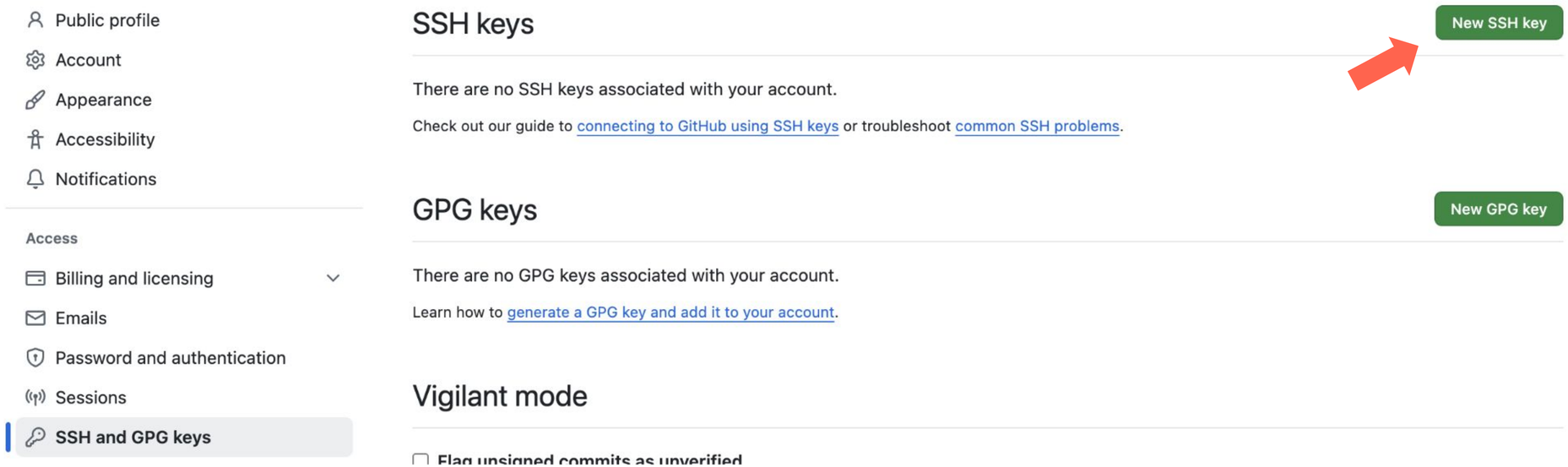
When prompted ‘Enter file in which to save the key’, simply press Enter

When prompted to set passcode, simply press Enter

Print out the key and copy it. Enter the following in your terminal:

```
cat ~/.ssh/id_ed25519.pub
```

Go to Github Settings -> SSH and GPG keys and add your key



Test the connection

```
ssh -T git@github.com
```

You might see this message, just type yes

```
The authenticity of host 'github.com (140.82.116.3)' can't be established.
ED25519 key fingerprint is SHA256:+DiY3wvvV6TuJJhbpZisF/zLDA0zPMSvHdkr4UvCOqU.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
```

You have succeeded if you see this message:

```
Hi z5ying! You've successfully authenticated, but GitHub does not provide shell access.
```

Demo of GitHub Repo and Commands

- Cloning a repo on your local machine
- Working on your local repo (making changes to files)
- Stage, commit and push these changes to your Github repo
- Commands you should know:
  - Git clone -This will download the latest version of the repo to your local PC
  - Git status (not really needed – but really helpful)
  - Git add - This adds the changes in the staging area
  - Git commit -m “” - This will save a “Snapshot” of your most recent changes
  - Git push - This will upload your local changes to your GitHub Repo
  - Git pull - This will update your local repo to the latest version which is on GitHub

Your time to …

- Talk to your classmates to find potential teammates!
- Work on D1

Section Materials

Section materials can be accessed at:
https://github.com/JasonC1217/COGS108_FA25_B07-B08

SCAN ME

Questions?