What’s Git & GitHub

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What's Git?

- Git is a **free** "Distributed Version Control System" (DVCS).
  - It's fully open source.
- Its job is to keep track of the changes made to the files as you or your team collaborate on the repository.
  - Repositories or "repo" for short, is the name which Git uses to refer to its projects.
- Its DVCS will keep a detailed history of the changes made to the repository.
- Allows Trunk Based Development (TBD) for seamless creation and integration of features to the main branch or trunk code.

What's GitHub?

- GitHub is a **free** cloud hosting service for Git repositories.
  - Contains optional paid features.
- It provides developers with a robust tool-rich environment to take advantage of Git's features.
- Has an expansive community of over ***100 million developers***, as well as over ***420 million repositories*** on their network.
- Created with team work at its core, it offers seamless integration of collaborative strategies into its development process.

Downloading and setting up Git:

- First, we need to verify that Git is not installed.
  - If on Windows, we use the search bar and type: cmd.
  - If on Mac, we will look for the terminal app.
  - Once on either the "cmd" or "terminal", we will type: "***git***". **(Won't run if not installed).**
- Second, we need to download git itself.
  - Make sure to download the version corresponding to your OS.
  - https://git-scm.com/downloads **(Git's Homepage).**
  - Leave the default options selected.
- Finally, once installed, open the terminal/cmd.
  - Once in the terminal/cmd type: "git" to verify if properly installed.

Creating a GitHub Account:

- First, we need to install GitHub.
  - We head on over to GitHub's website where we can go ahead and click "sign-up".
  - https://github.com **(GitHub's homepage).**
- After we create the account, we need verify it via email.
  - Make sure to not use your professional email to sign-up, since companies can look at your GitHub page.
- Once the email is verified, you've completed the set-up.
  - You can finally begin exploring all that GitHub has to offer.
  - Make your first repository, which can be either public or private.
  - Explore all the public repositories available to both learn from or even contribute if you so desire.

Installing Visual Studio Code:

- First, we head on over to VS Code's website.
  - We head on over to GitHub's website where we can go ahead and click "sign-up".
  - https://code.visualstudio.com **(VS Code's homepage).**
  - VS Code is probably one if not the most versatile, customizable and powerful ***text editors (NOT AN IDE).***

- We then proceed to download then we install onto our machine.
  - Follow the steps required for the install process, you can leave the default settings.
  - Make sure you download the version specific to your respective OS.

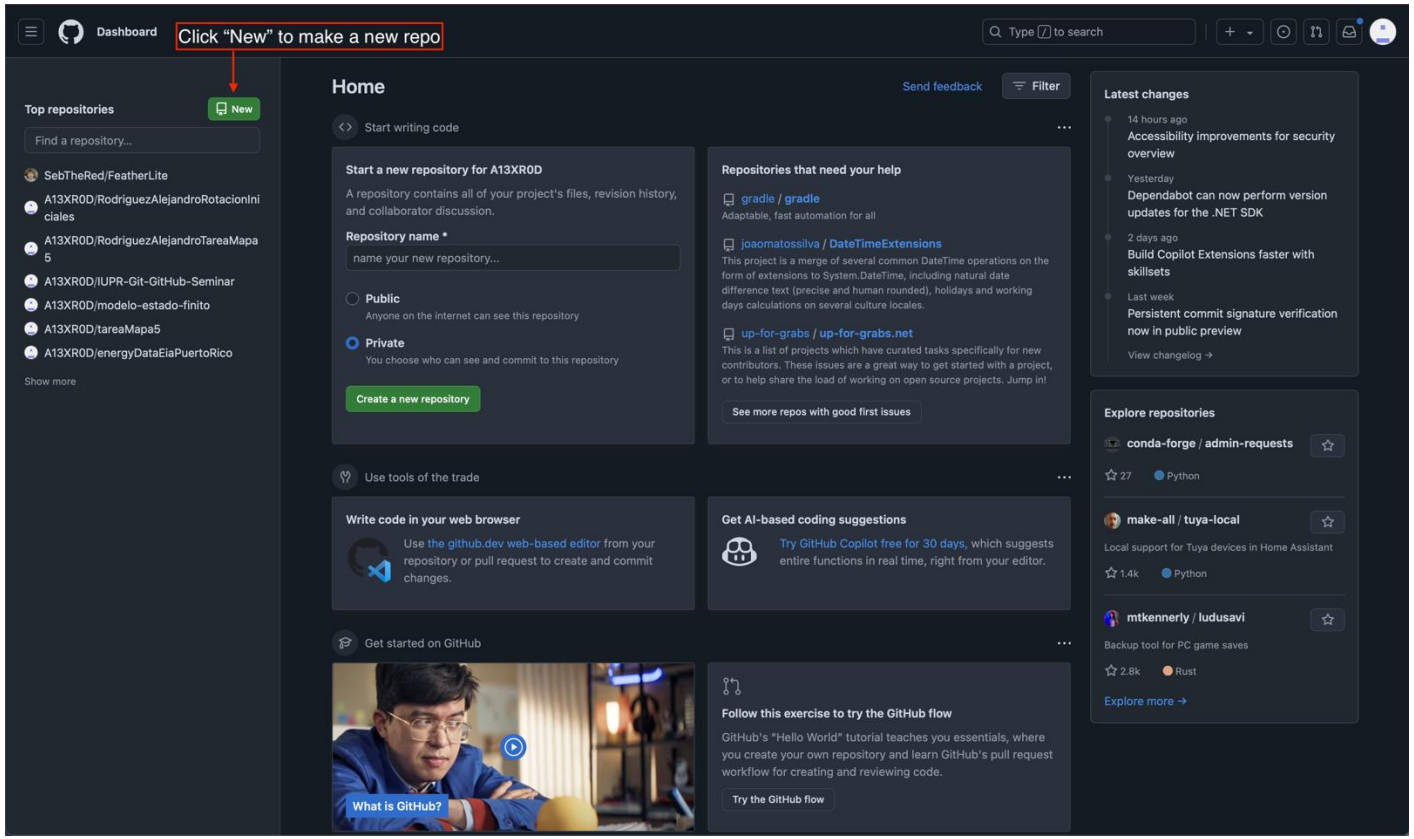
- Post installation, we can begin installing our extensions.
  - VS Code offers a huge library of both free or paid extensions for our text editor.

GitHub Extensions for VS Code:

- Once in VS Code, head on over to the extensions tab.
  - This is the icon with the three connected squares with one offset to the top right.
  - You can use the shortcuts "***Shift+cmd+X* on MacOS**" and "***Ctrl+Shift+X* on Windows**" to quickly access it.
- There are three extensions we're going to install.
  - GitHub Actions: **(This fully integrates most if not all the necessary tools to use GitHub via VS Code).**
  - GitHub Codespaces: **(This is a more advanced feature for team collaborations, allowing a customizable VE).**
  - GitHub Pull Requests: **(This lets you manage pull requests directly form GitHub).**
- After this is all done, we can link our GitHub to VS Code.
  - This will provide us with a GUI, which allows us to get a visual representation of the actions taking place.
  - In my opinion, this method is better than using the ***GitHub desktop app*** and the ***GitHub CLI***.
  - This build, provides us all the tools to seamlessly streamline the upload of the code itself to GitHub.

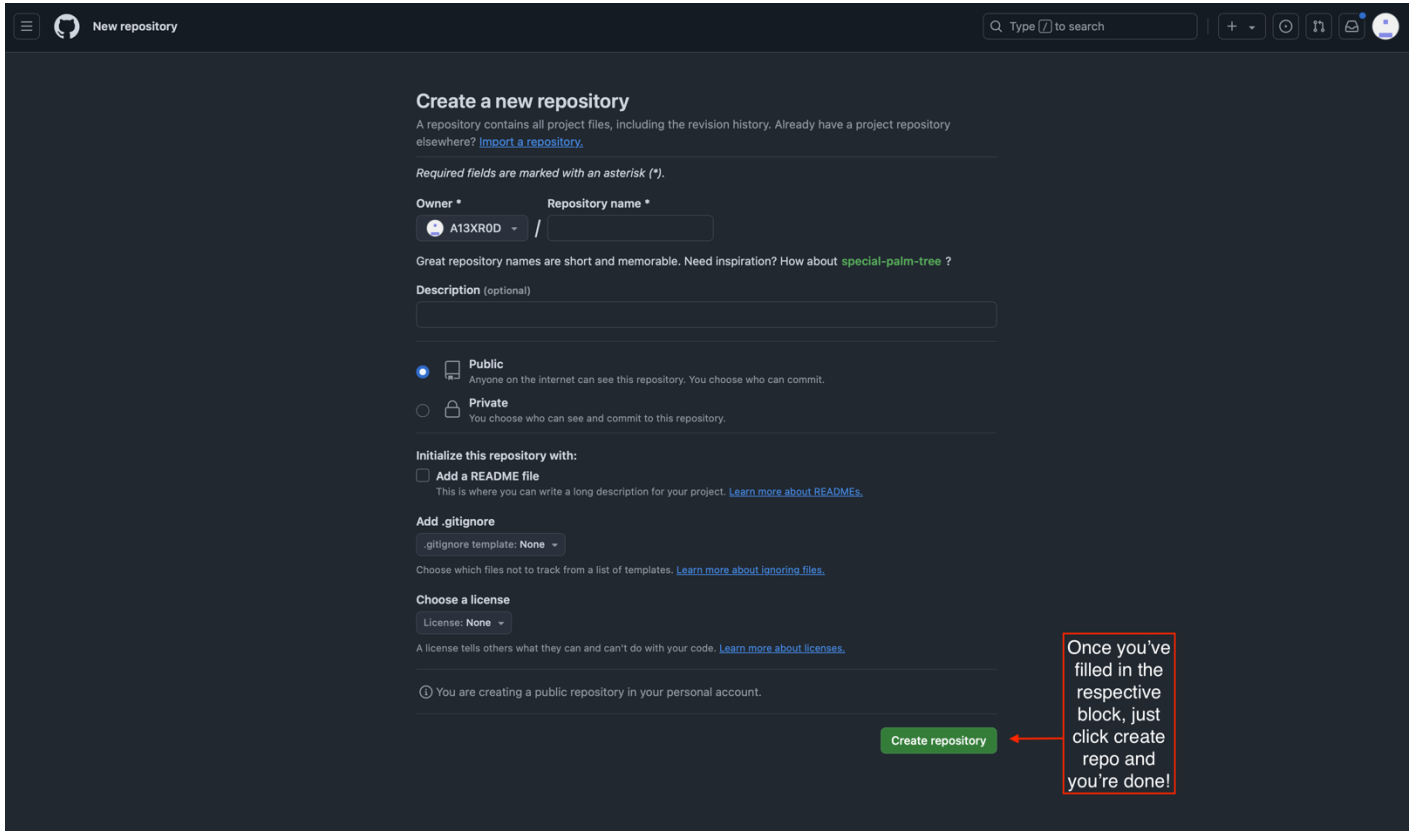
Creating a Personal Repo:

- Once on your GitHub dashboard, you'll be able to make a personal repo by clicking on the ***"new" button***.



Creating a Personal Repo:

- After filling each of the respective blocks you can then hit the "***Create Repo***" button found on the bottom right corner.



Seminar's practice GitHub Repo:

- After creating your GitHub account, you can use this QR Code to access the GitHub Repo.
- This repo contains useful resources to help you in the future.

Alternate Link:

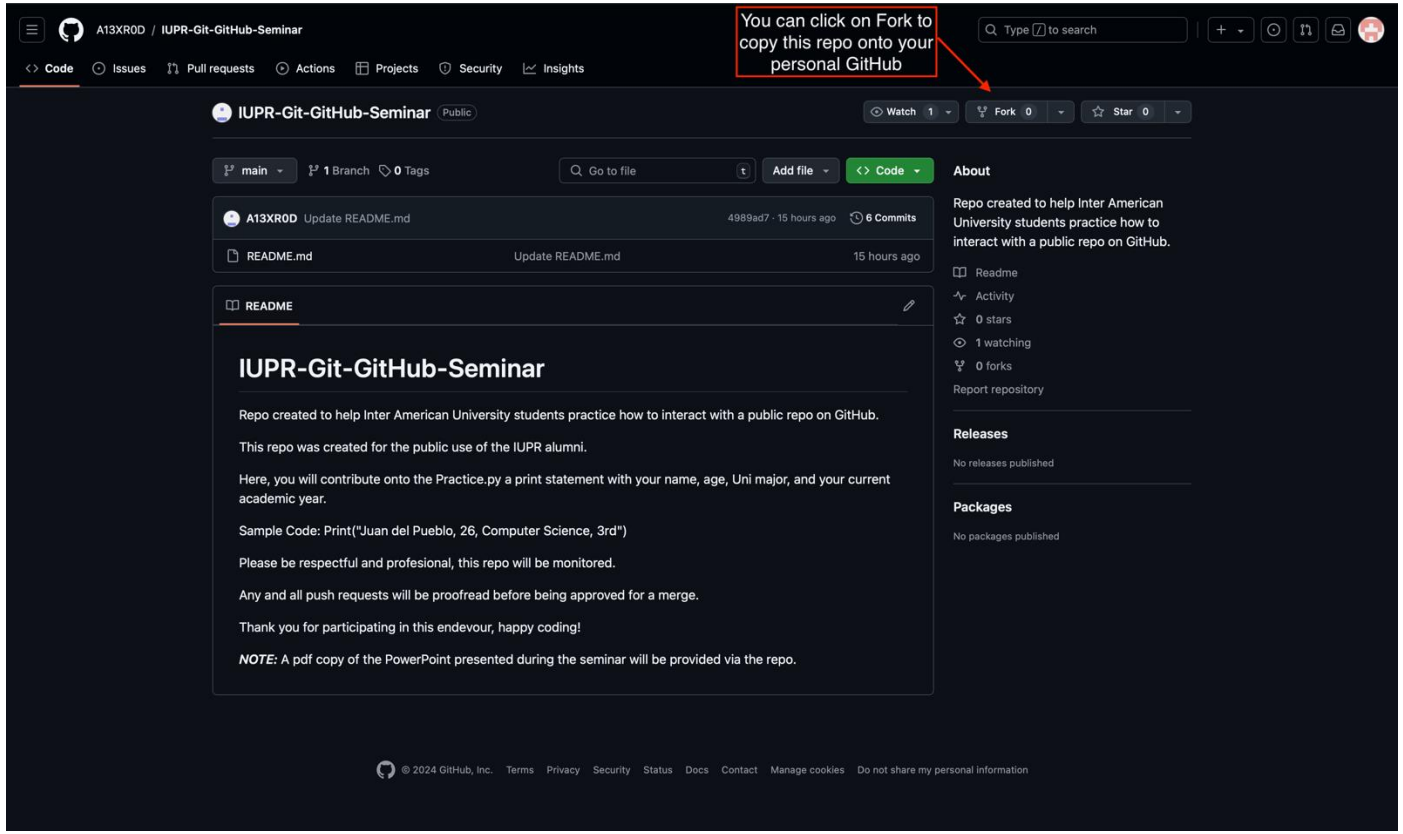
https://github.com/A13XR0D/UIPR-Git-GitHub-Seminar

After the Accessing the Repo:

- Once in the GitHub repo, take a second to look around.
  - I recommend taking a quick second to look around the repo.
  - This way you know if this is a repo you'd be interested in contributing to.
- Read the description on the repo.
  - The description can be a quick way of getting the main purpose off functions of the current repo.
- Always make sure to look through the README.md.
  - This is a good way of getting a better understanding of the project you're trying to contribute to.
  - Sifting through the README.md, is vital.
  - Reading the README.md allows you to better understand both the rules, structure or even the base idea of the repo you're contributing to.

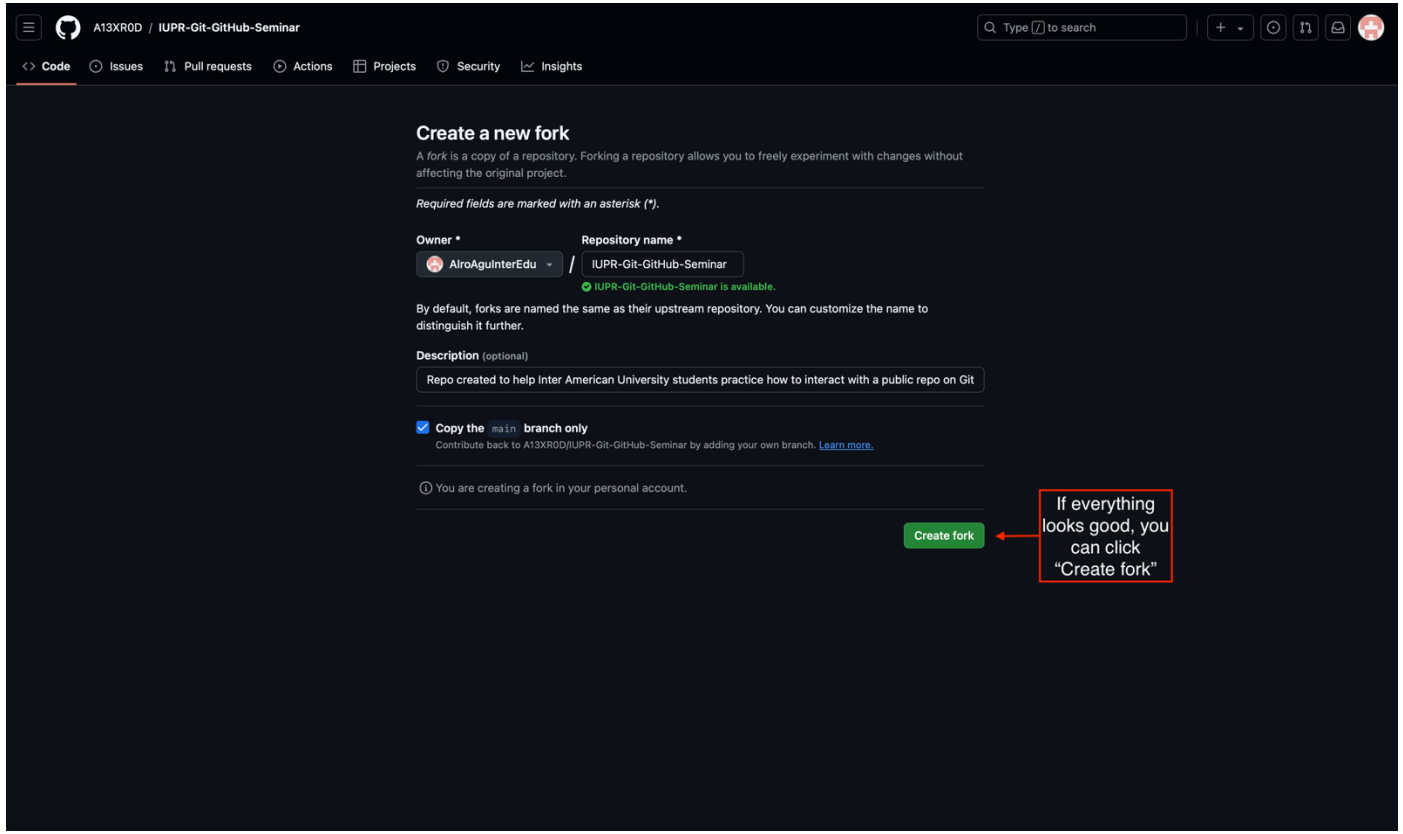
Contributing to a public Repo:

- Once you're in the public repo's dashboard, you can make a ***fork*** of the public repo to add a copy to your GitHub account.



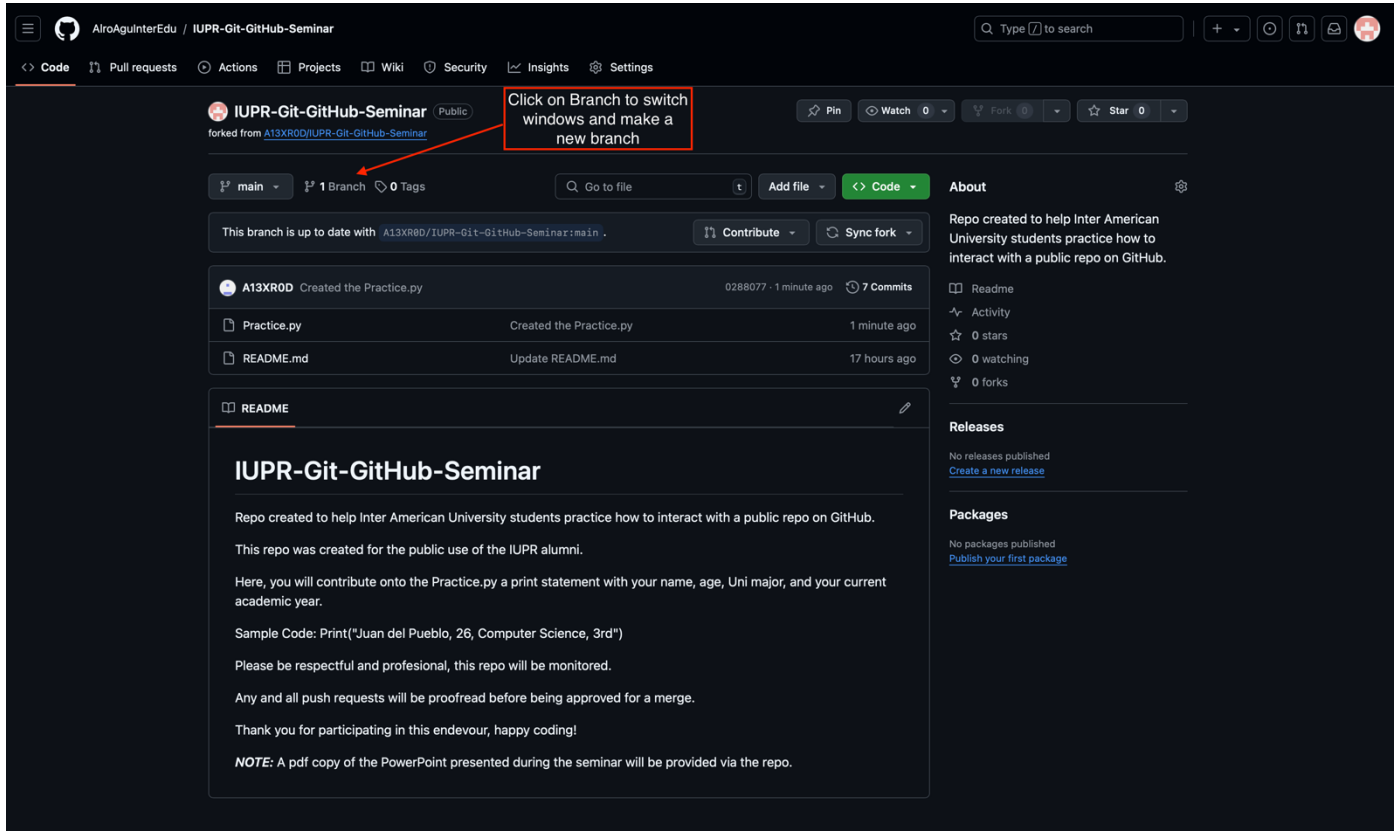
Contributing to a public Repo:

- Make sure to double check that the blocks are filled in as desired, if not. Make any changes you deem necessary and proceed to click on "***Create Fork***".



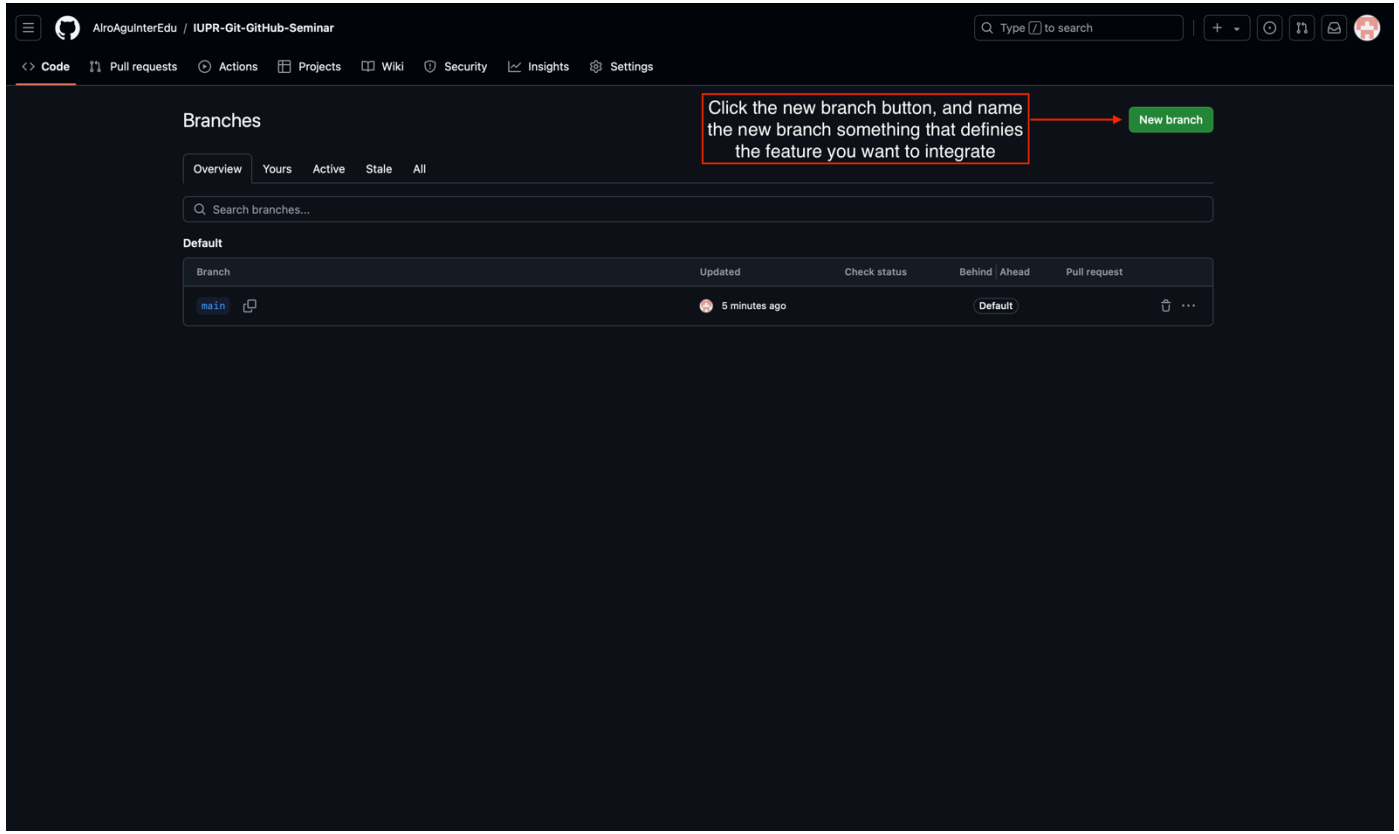
Contributing to a public Repo:

- After a quick little loading screen, you can access your fork and create a new branch. This way you can better track your contributions.



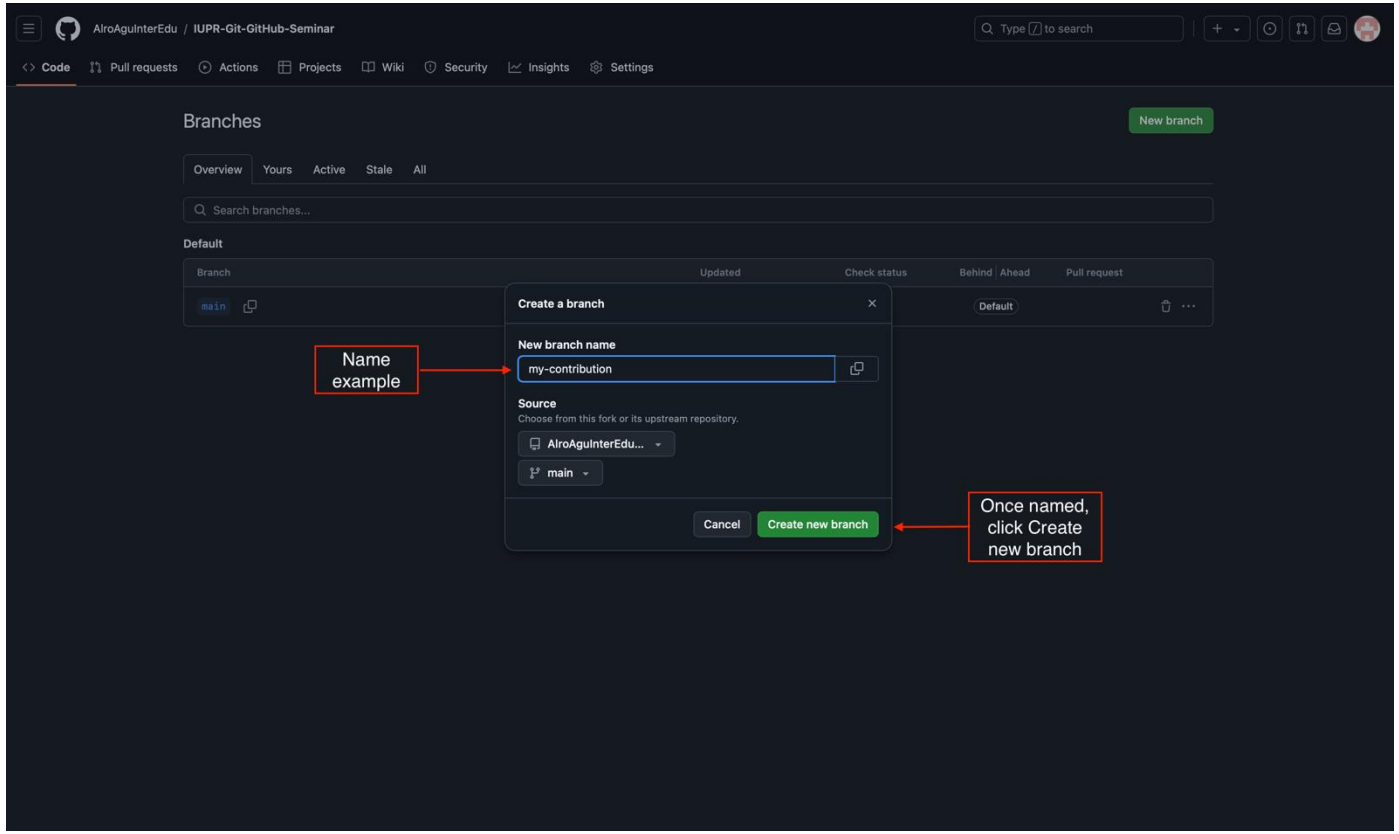
Contributing to a public Repo:

- After selecting the Branches tab. Proceed to click on the "***New Branch***" button on the top right corner of the screen.



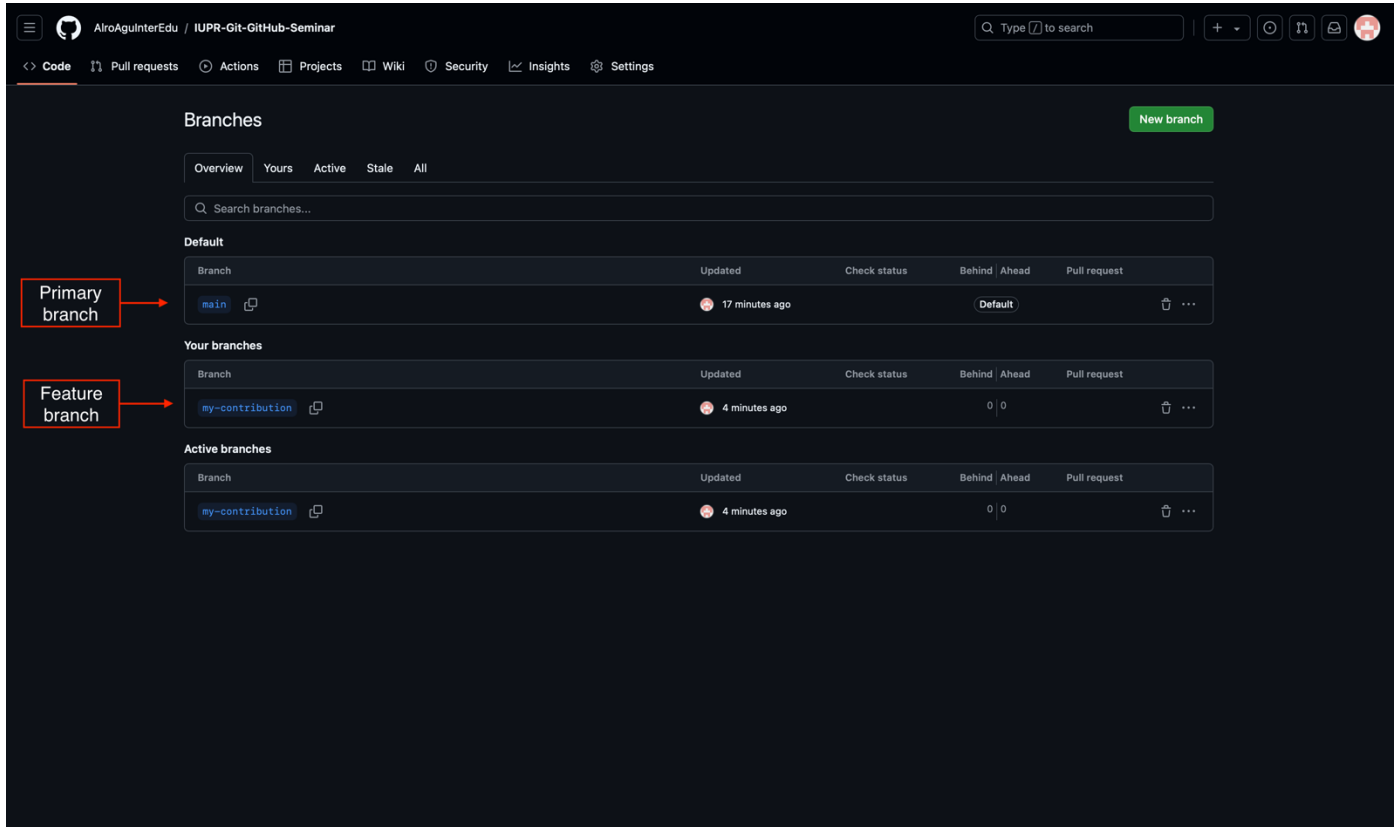
Contributing to a public Repo:

- Post clicking the button.
- You'll be prompted with a small window where you can name your branch.



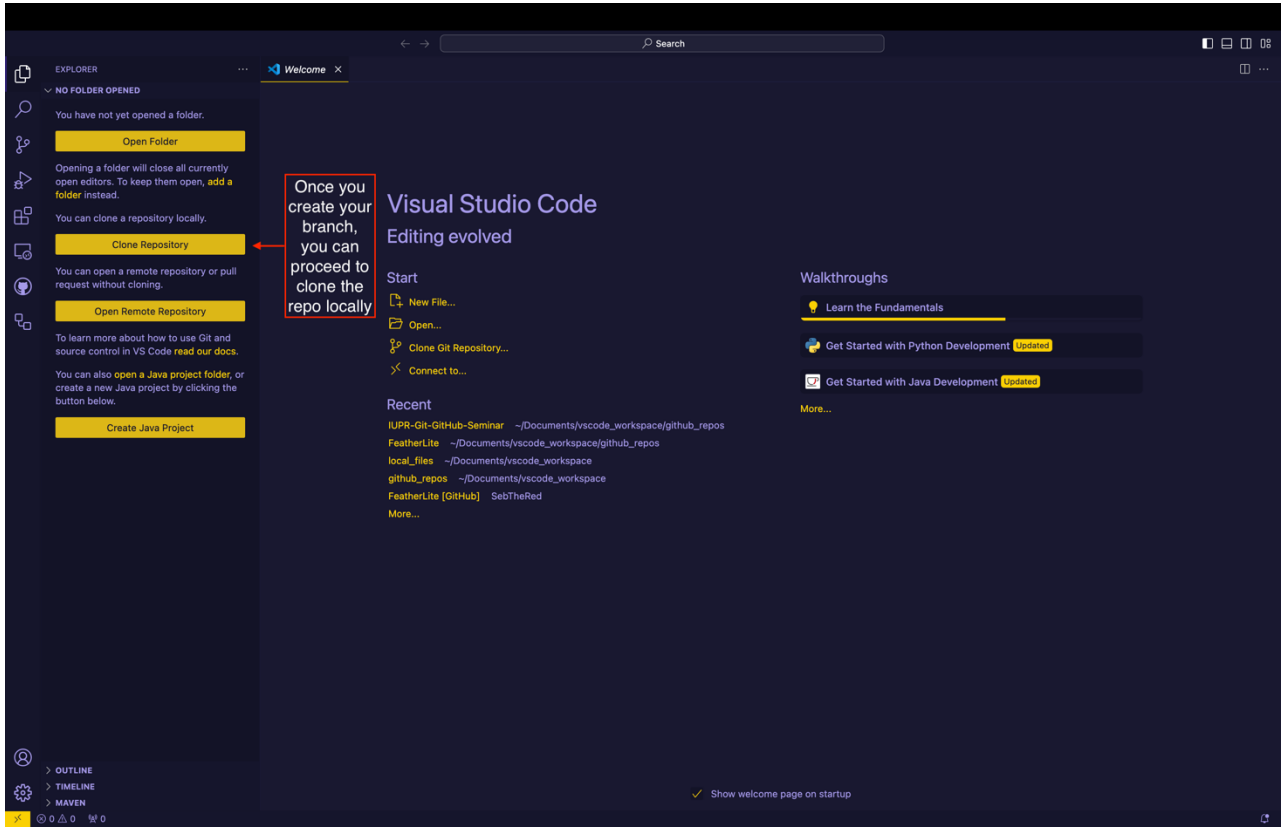
Contributing to a public Repo:

- As you can see, once the repo is created. It will appear in the branches tab.



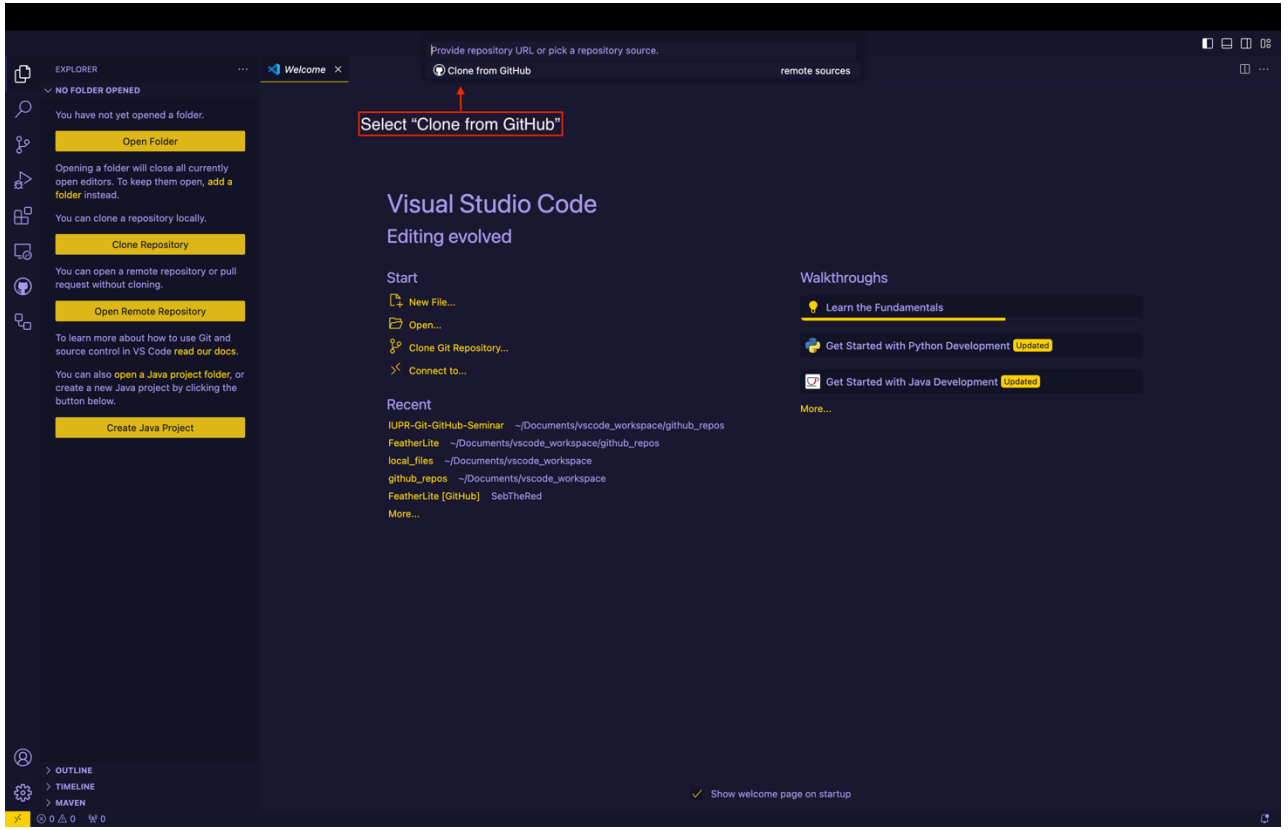
Contributing to a public Repo:

- Now we proceed onto VS Code.
- Where we can now create a clone of the repository onto our local file system in our machine.



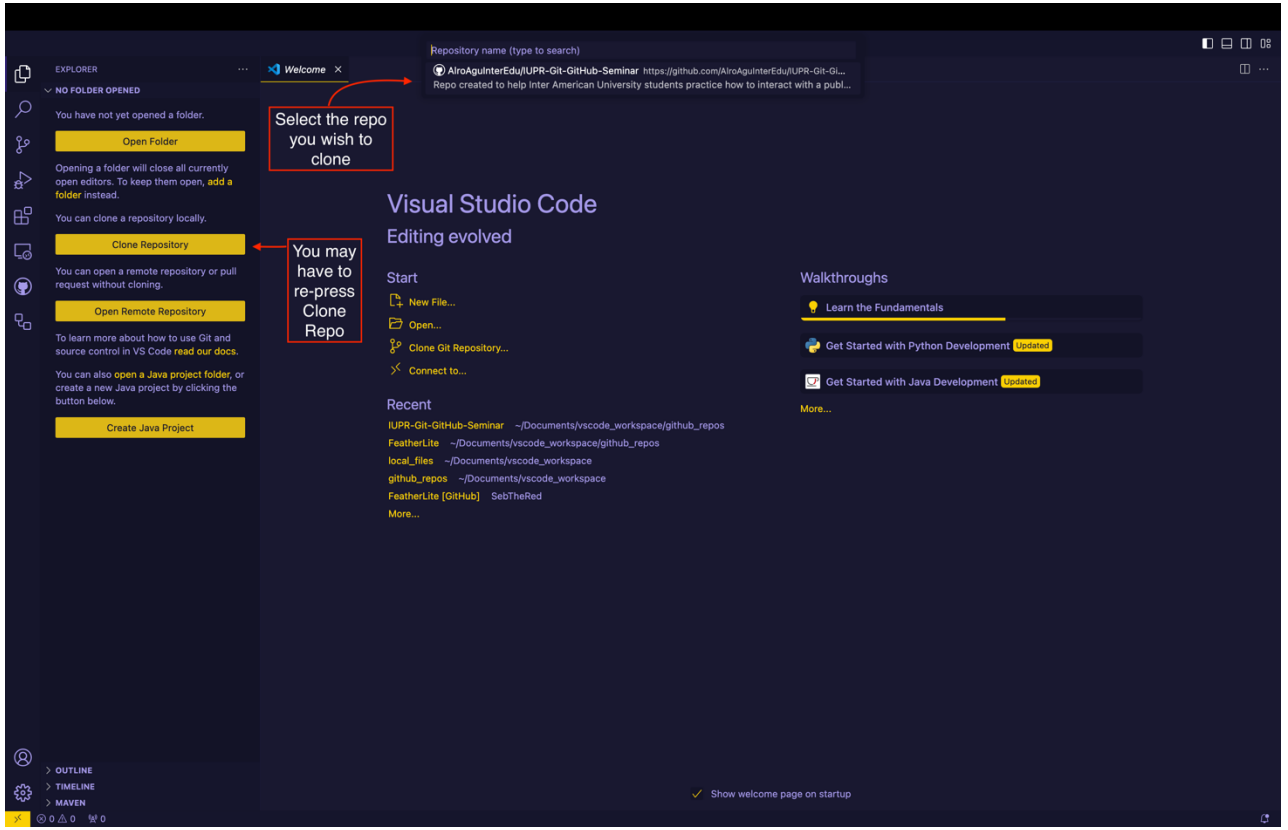
Contributing to a public Repo:

- After pressing the "***Clone Repo***" button, you'll be prompted with this window. Asking where you'd like to clone the repo from.



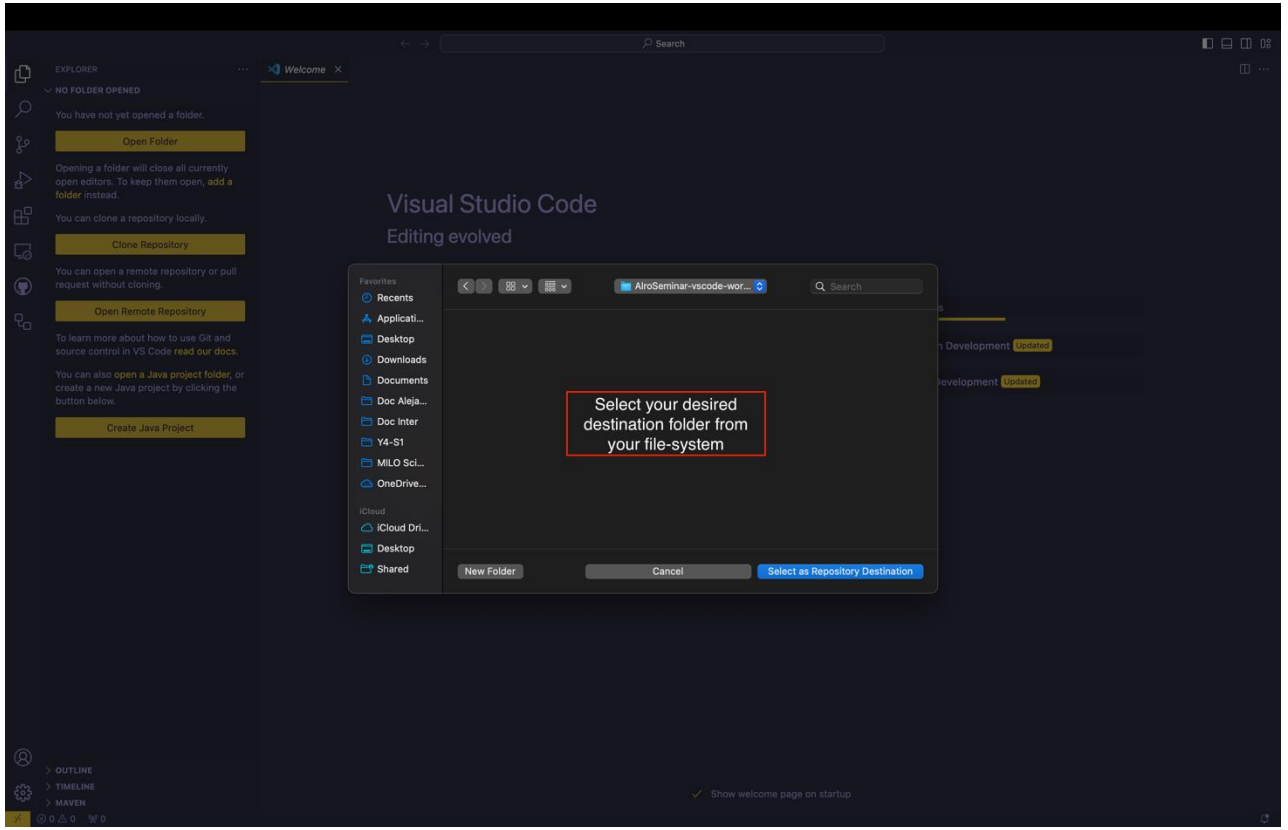
Contributing to a public Repo:

- Now you select the specific repo you want to clone onto your local file system.
- ***NOTE*** you may have to re-click the clone repo button.



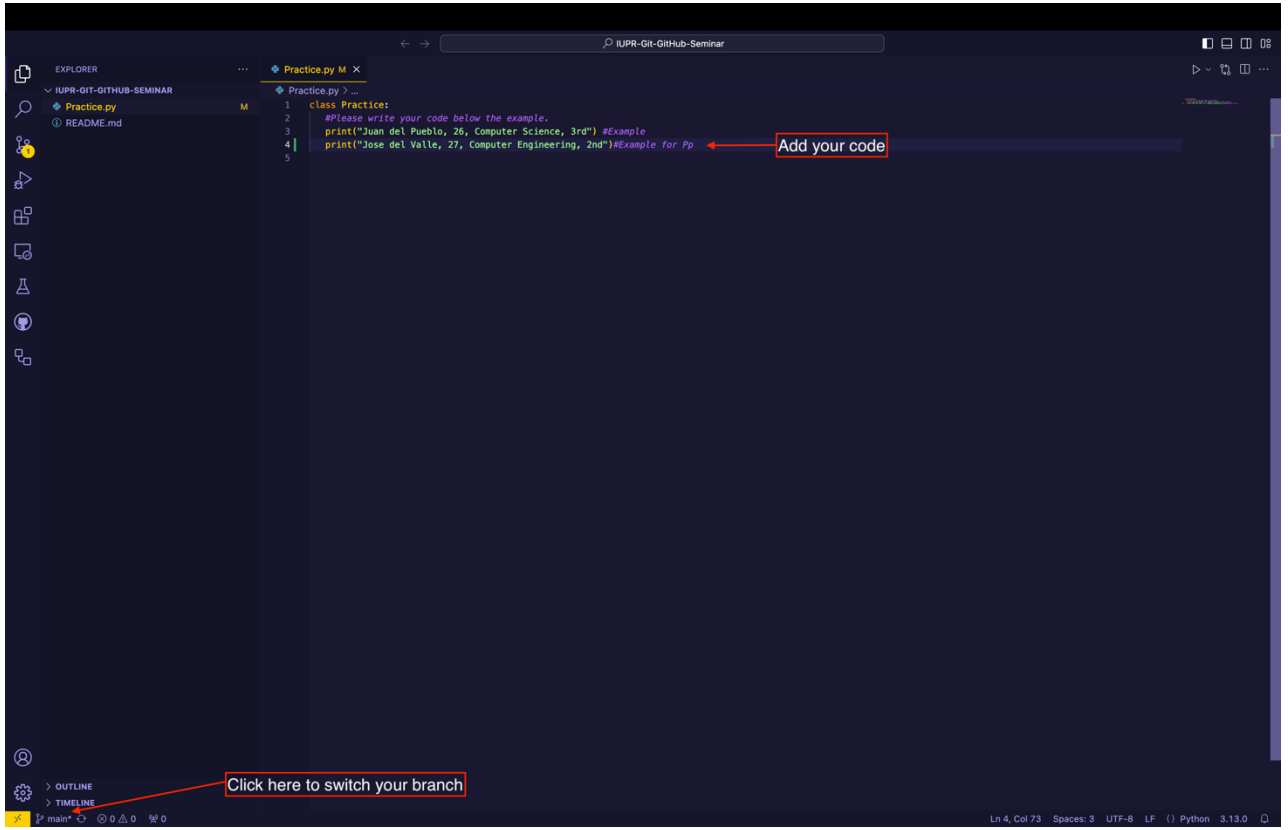
Contributing to a public Repo:

- After selecting the repo, you'll be prompted on where you'd like to store the specified repo we're cloning.



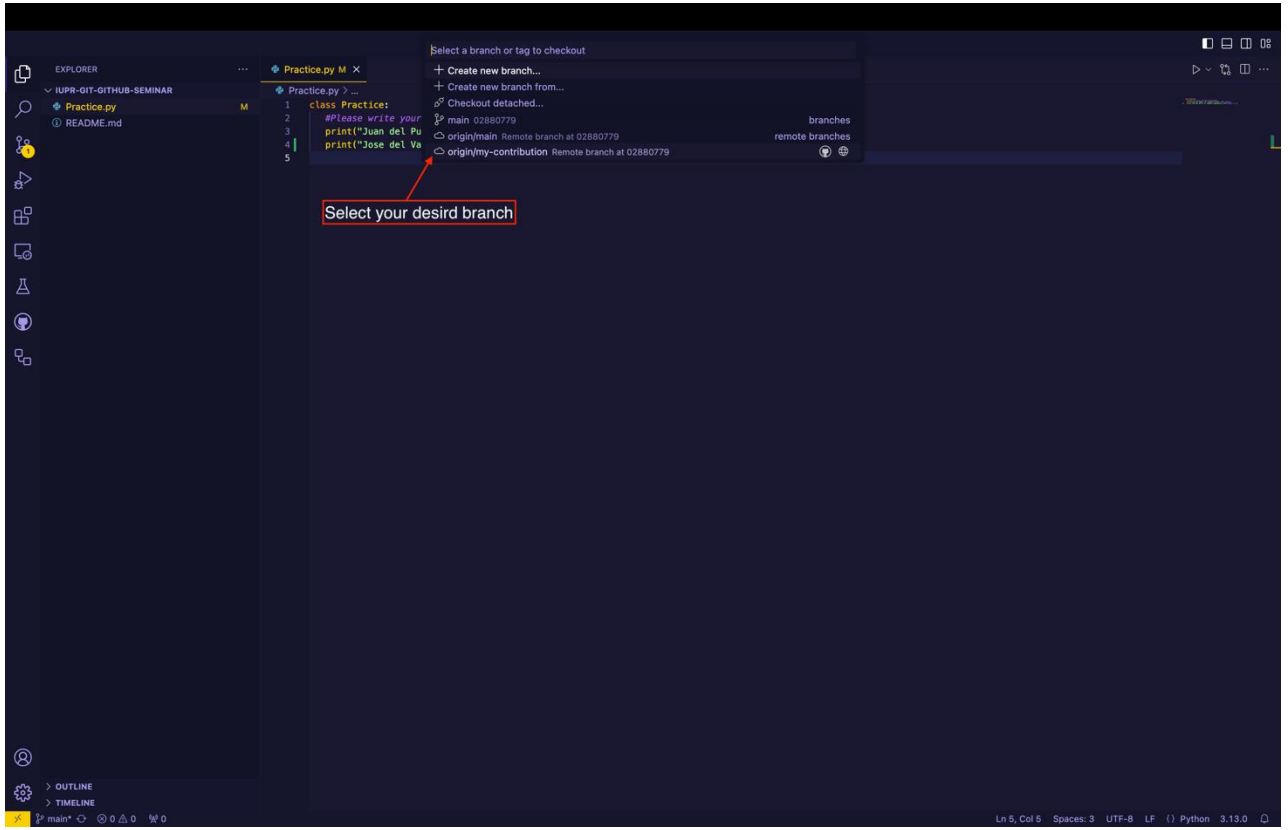
Contributing to a public Repo:

- You can now add your code and switch to the branch you'd like to make the contribution to.
- This can be done before adding the code.



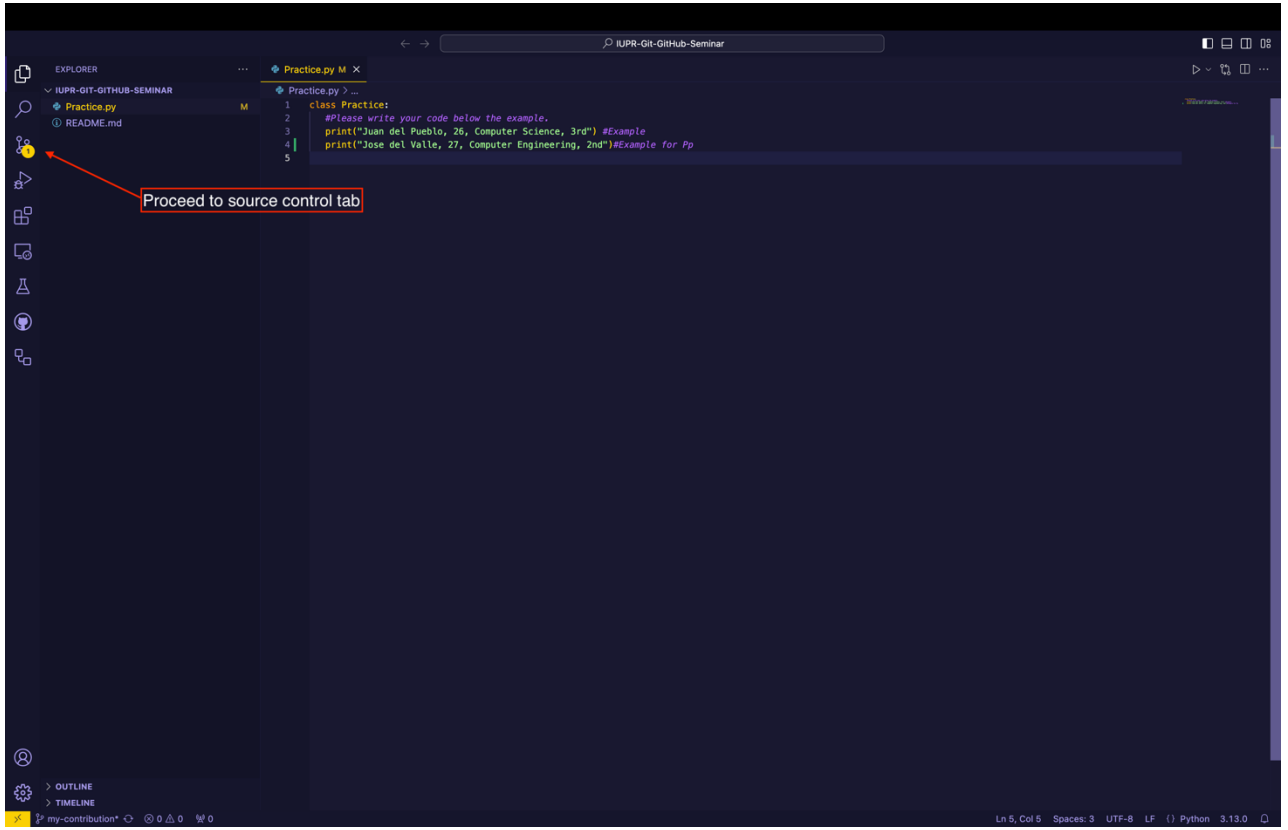
Contributing to a public Repo:

- Once you click the button on the bottom left corner to switch branches, you'll be prompted with this drop-down menu.



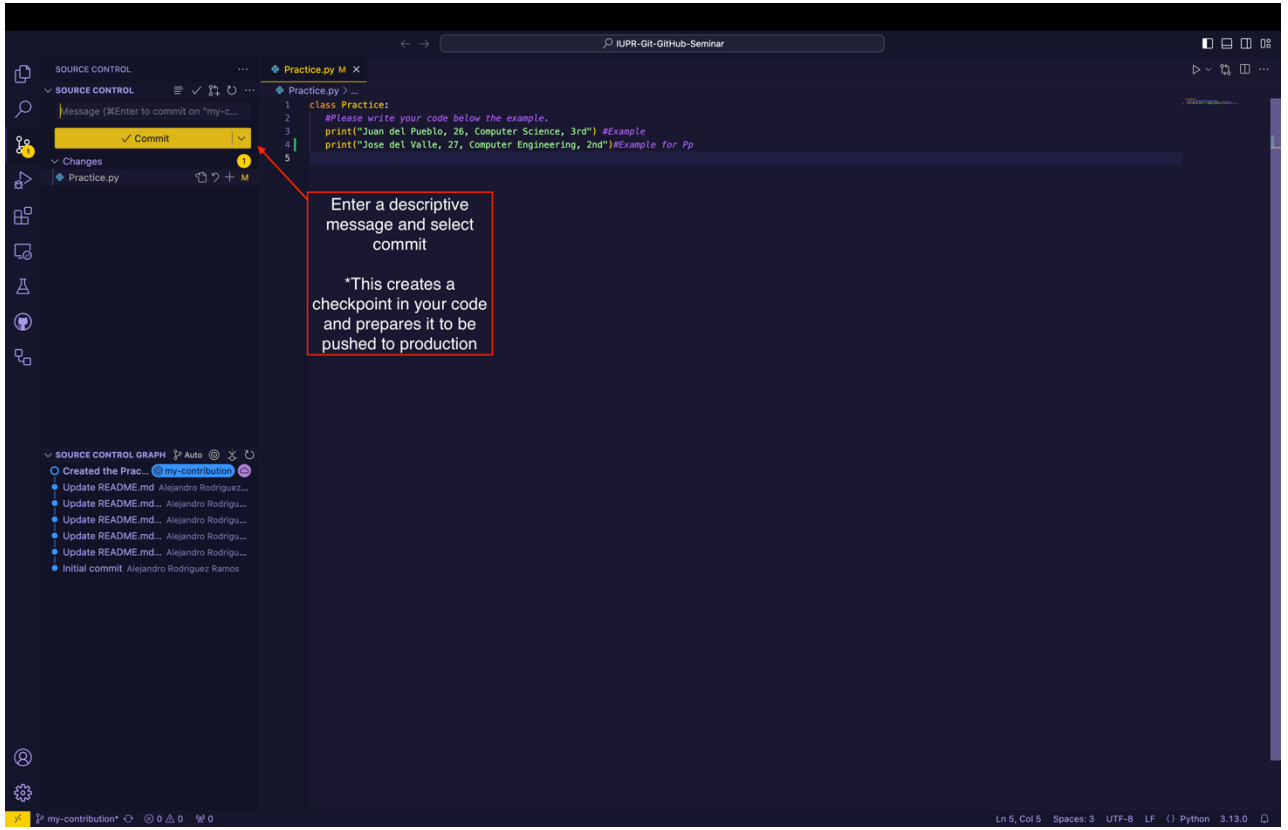
Contributing to a public Repo:

- Post adding your code and saving the file, you can proceed with switching to the source control tab.



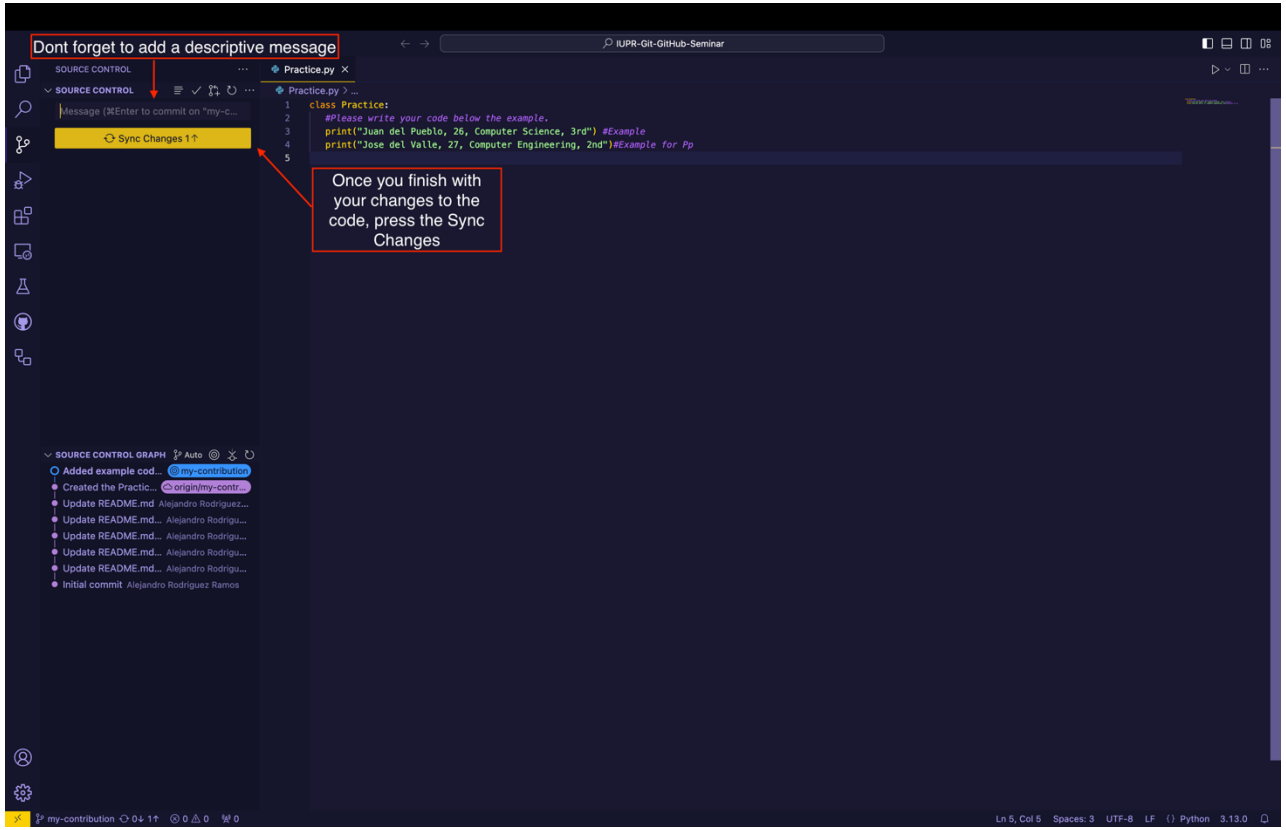
Contributing to a public Repo:

- After switching to the source control tab. You can Add a descriptive message and commit the code if you're pleased with your contribution.



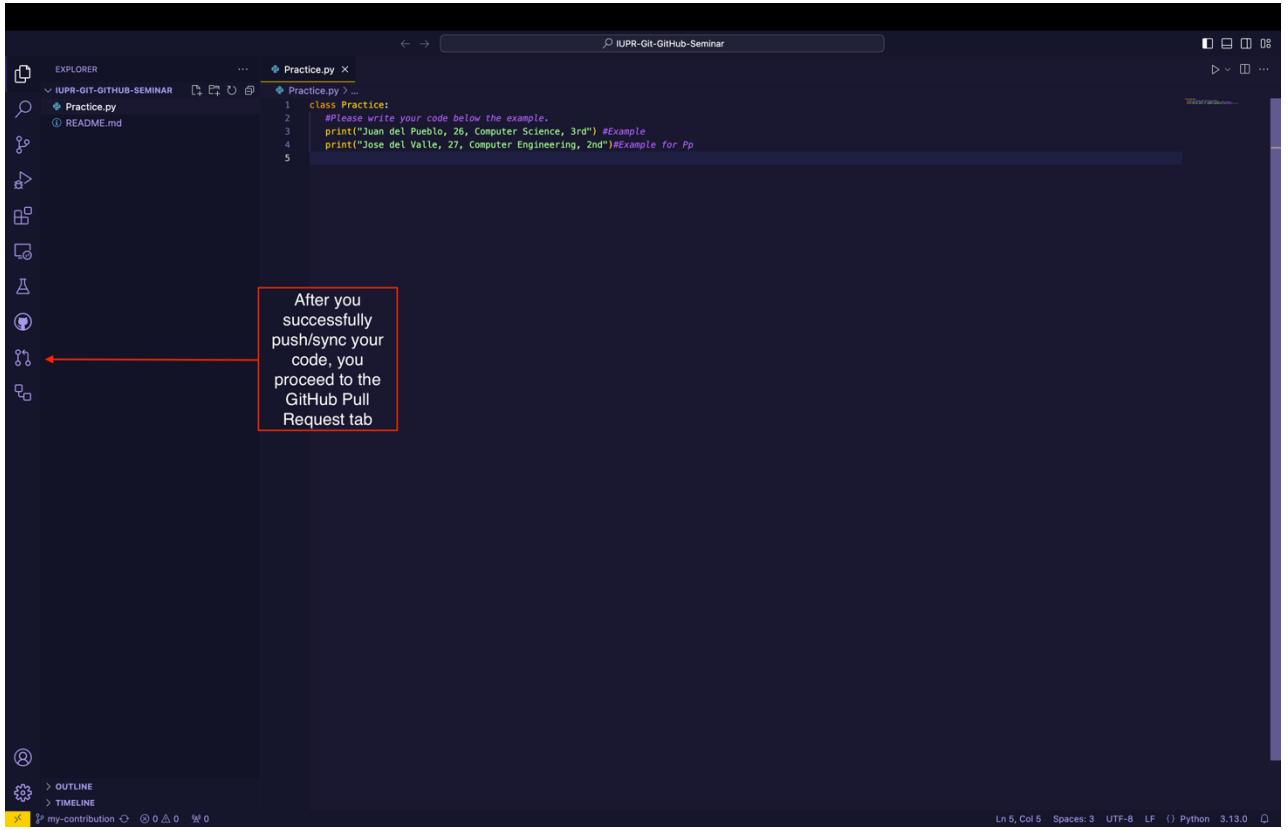
Contributing to a public Repo:

- If this is the only file you're committing. You can then add another descriptive message and push or sync the changes to the online repo.



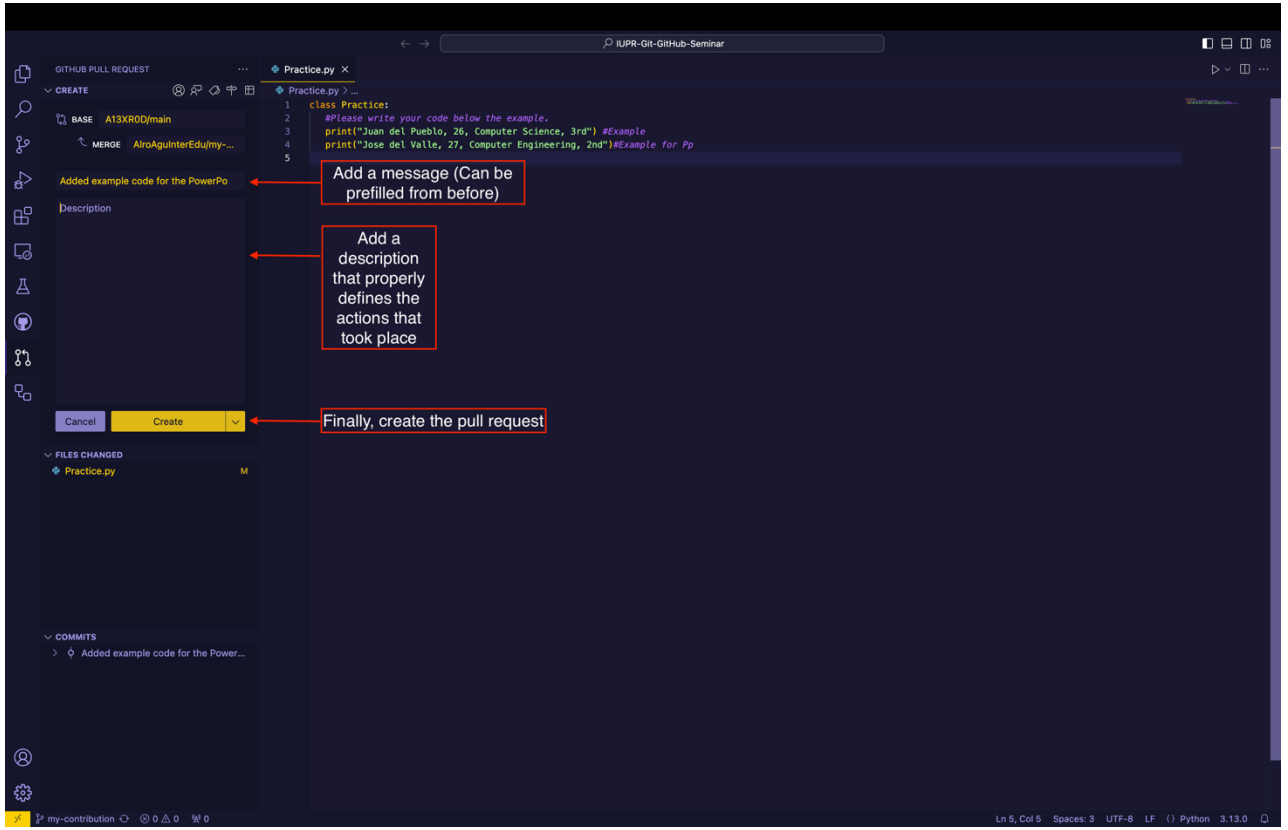
Contributing to a public Repo:

- After you’ve successfully pushed your code into your online repo.
- You now proceed to create a pull request to contribute to the primary repo.



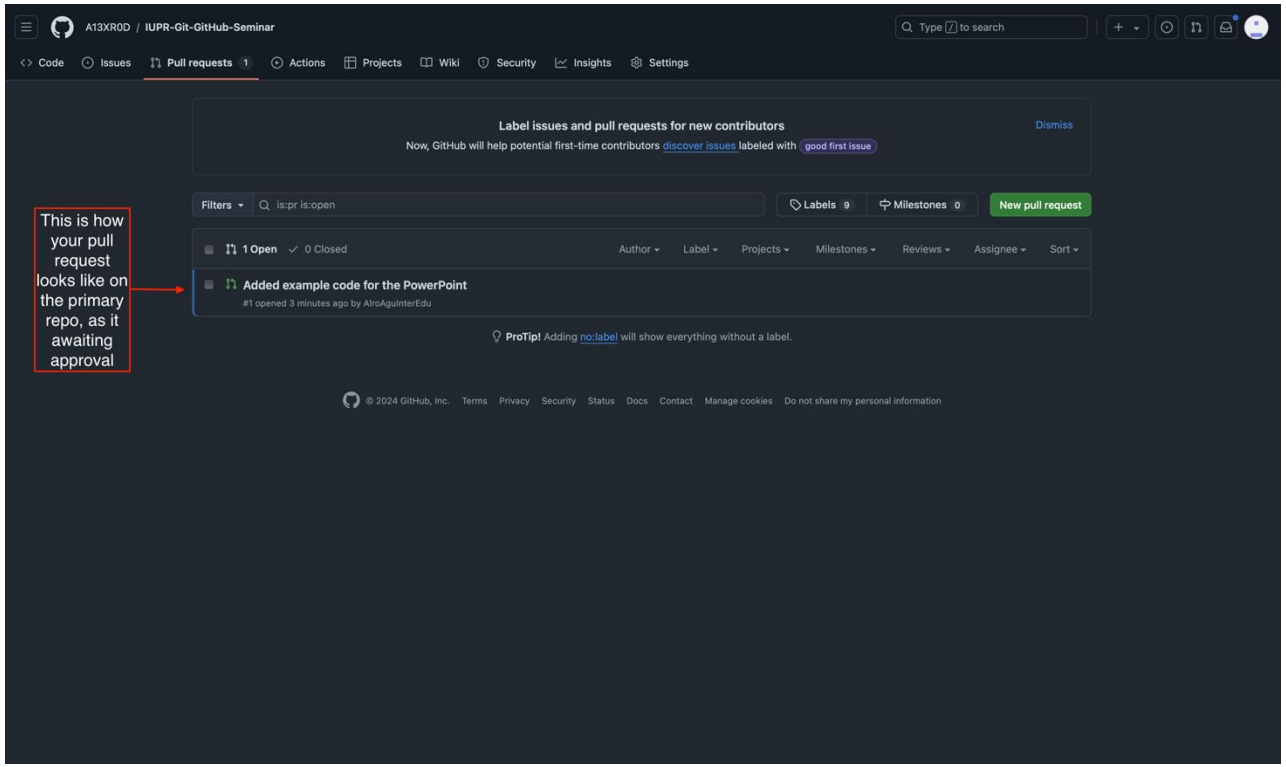
Contributing to a public Repo:

- Once you've switched to the Pull Request tab.
- Create a pull request.
- Essentially asking for permission to merge your code to the main repo.



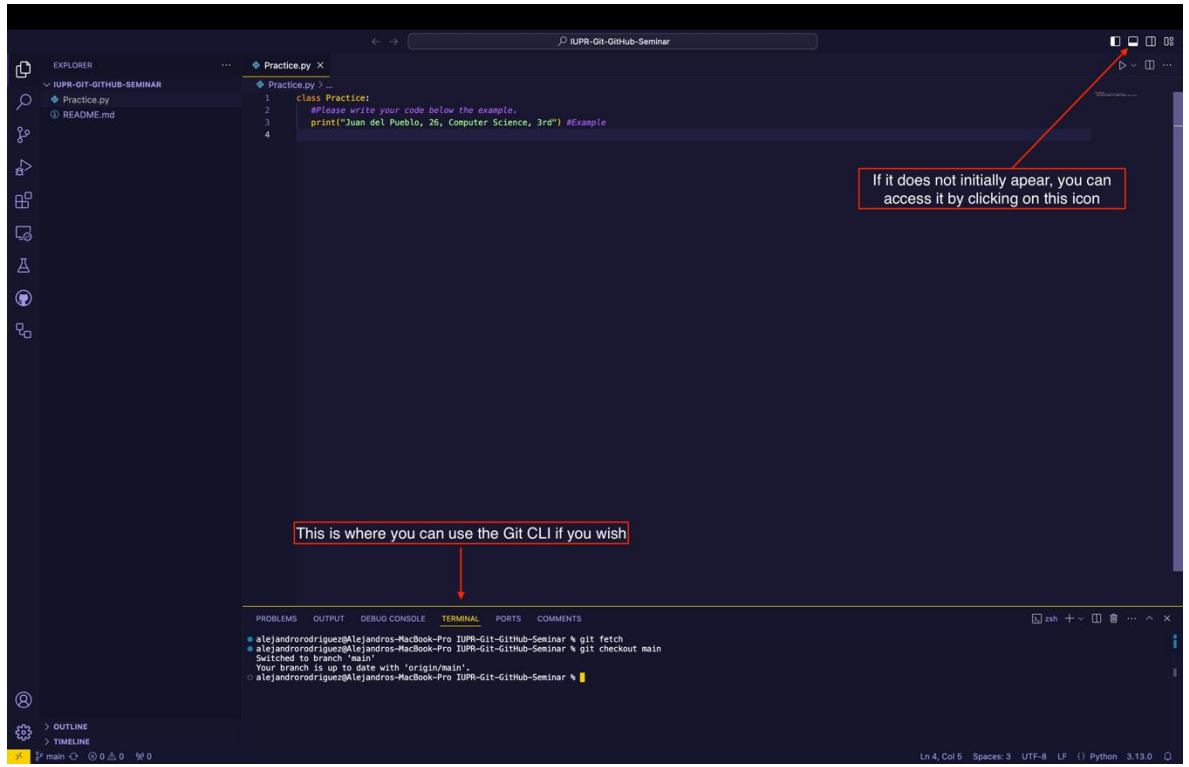
Contributing to a public Repo:

- ***You've now successfully sent a request pull request.***
- All that's left do now is wait until the owner approves it and includes your feature in the main trunk of the code.



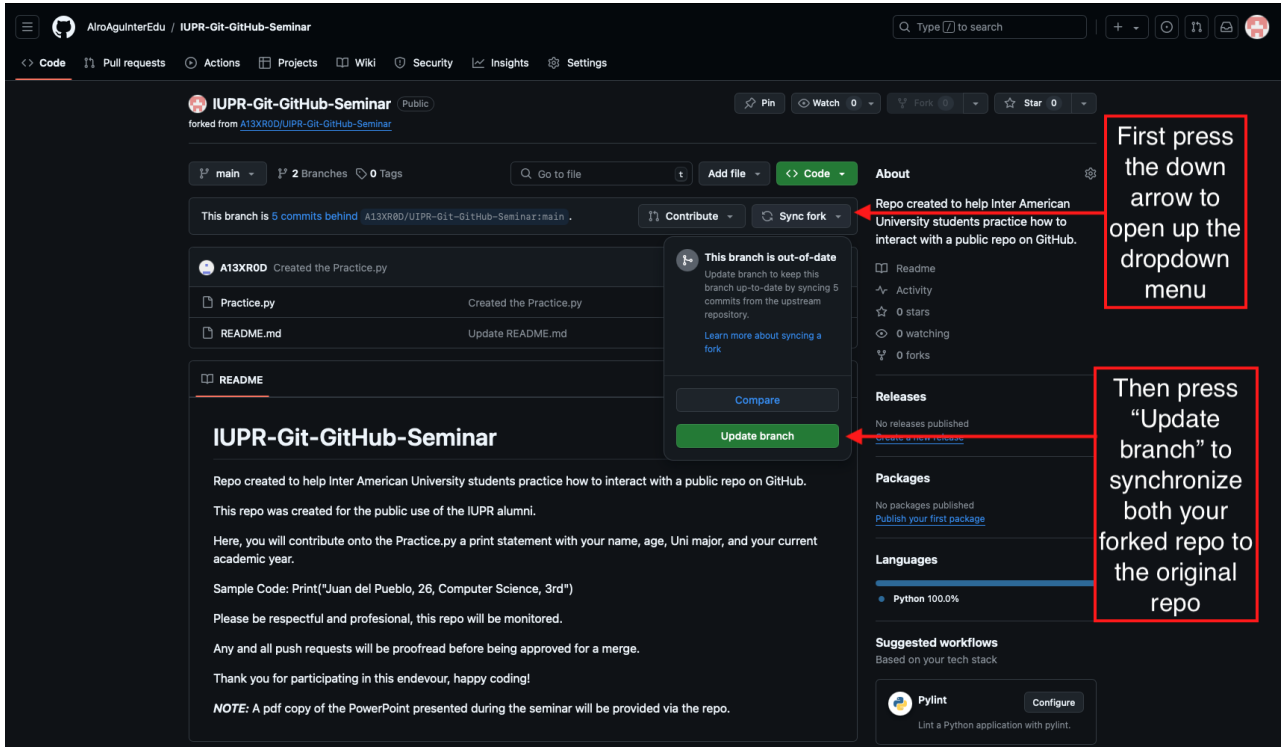
Using CLI in the terminal window:

- Using the built-in terminal provided by VS Code. You can use the git CLI instead of using the GUI.
- Incase you don't see the terminal window; you can access it via the tab on the top right-hand side.



Updating forked repo:

- To update the forked repo, head on over to your repositories and click on the dropdown arow and later click the "***Update branch***".

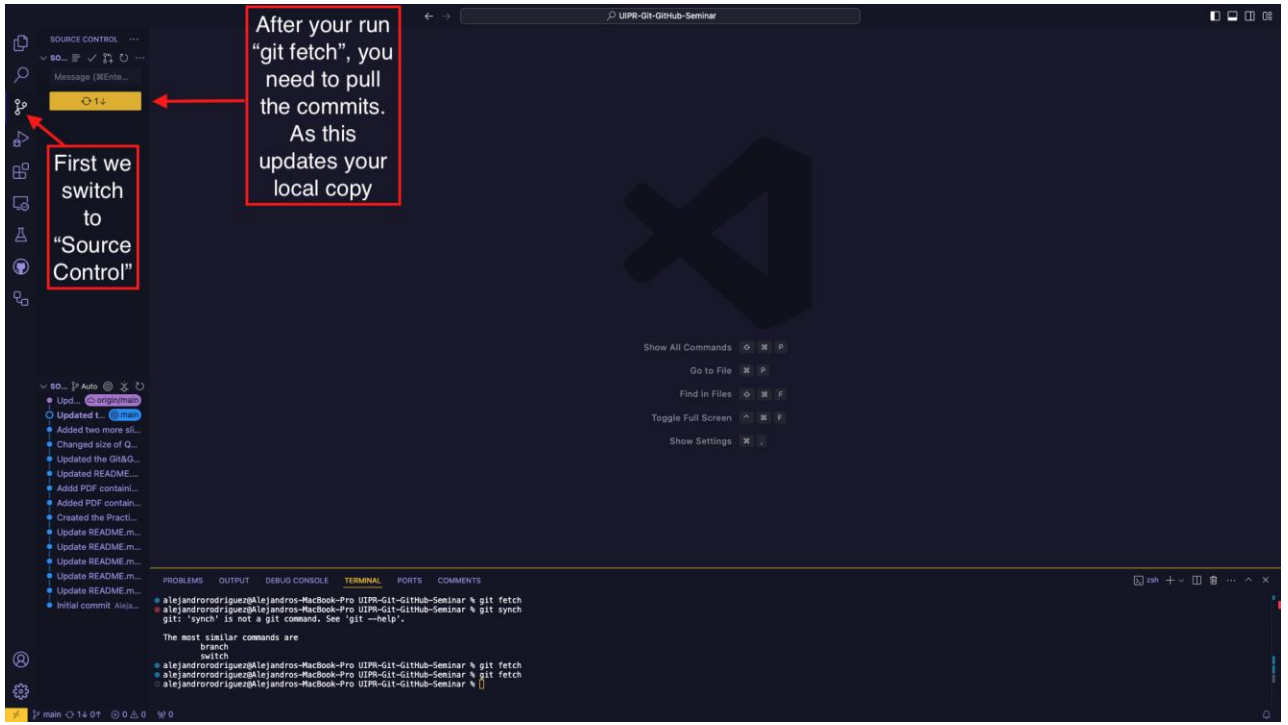


Updating forked repo:

- *After updating your fork, you proceed to the clone's terminal and enter "**git fetch**". This updates your local files to the latest version*

Updating forked repo:

- *Finally, after running "git fetch", we switch to the source control tab and then we pull the commits from the online repo by pressing the yellow button.*



Useful Links:

- GitHub's Quick-start for repositories:
  - https://docs.github.com/en/repositories/creating-and-managing-repositories/quickstart-for-repositories?tool=webui
- 10 Git Commands Every Developer Should Know:
  - https://www.freecodecamp.org/news/10-important-git-commands-that-every-developer-should-know/
- GitHub Student Developer Pack (Free stuff for students):
  - https://education.github.com/pack
- VS Code Homepage:
  - https://code.visualstudio.com

References:

- Cem Eygi, (2020, Jan 19). 10 Git Commands Every Developer Should Know. https://www.freecodecamp.org/news/10-important-git-commands-that-every-developer-should-know/
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