Assignment - Git, Github, Slack, and Python

1 Git and Github.

While Canvas is a user-friendly and convenient platform for students and faculty to share documents, it is not a good system for working collaboratively on shared projects. Most tech companies use Github to manage their open-source and private projects, codes, and live documents. Learning to use Git and Github is part of the course learning objectives.

Git is a *distributed* version control system for tracking changes in computer files and coordinating work on those files among people. Modifications to source code are tracked, and each version of the history is retained. One can easily find the previous version of code if a mistake is made and compare earlier versions of the code to help fix the mistake. **Github** is a web-based hosting service for Git repositories. It allows multiple people to work on the same project and code simultaneously. Through Github, you will be able to share your Git repositories with others. In other words, Git is installed on your local computer and allows you to track histories; Github allows you to share online the documents you commit in your local repositories. Github will be the shared platform for you to collaborate on the homework assignments, and submit your codes and writeups. Git and Github are useful not just for coding, but for any type of documents. In this document you will find a step-by-step instruction on how to install Git and Github. The instruction will address issues for both MAC and Windows users.

Step 1: Create an account at Github.

If you do not already have an account, please create one at `github.com`. Sign up only for the free account. After you created the account, add the Github Student Benefits completing the form at `https://education.github.com/discount_requests/new` (use your mccombs email address).

Step 2: Install and Set up GitHub Desktop

Next you will learn how to work with version control. Git is the tool that most people use for version control. While powerful, Git is not a very user friendly protocol. For the course, we thus will use Github Desktop, an easy-to-use graphic interface to use local version control (git). It allows to easily create projects (repositories) locally on your computer, commit, and push them on Github. I understand it might be confusing, but *Github Desktop* is your local Git version control tool; *Github* is a cloud service to share your documents and collaborate with others. During the course, every document or code we will write will be stored in a repository (folder), and we will use Github Desktop to version control it, and to upload it to Github.

1. Go to `https://desktop.github.com/`
2. Download for Windows (64bit) if you are using Windows; download for macOS if you are using a Mac
3. Click the .exe file.
4. Choose "Sign into GitHub.com" and sing in using your credentials.

Next, we will do an exercise where we will learn how access an assignment, create a document, to commit it, modify the document, and re-commit.

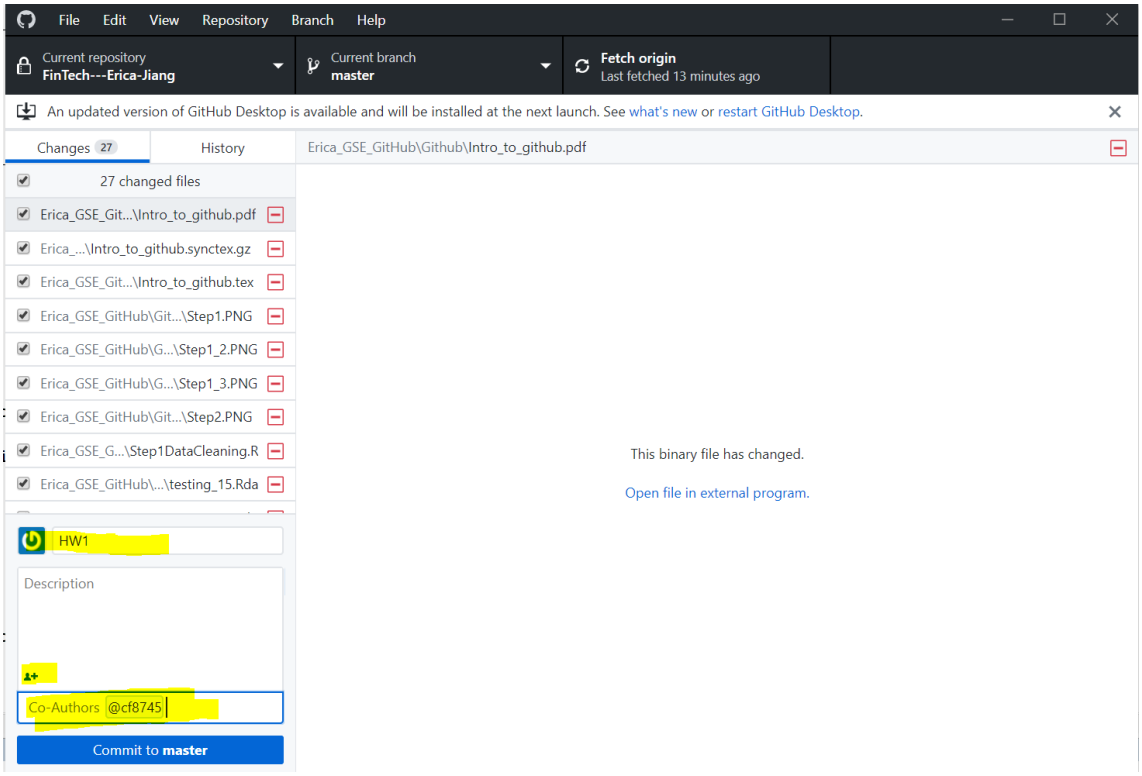
- Click on the Github Classroom link:
  - Graduate Course
  - Undergraduate Course

- Accept the assignment. This creates a repository in your assignment repository in the classroom organization on github.com.
- Click on the link of the newly-formed personalized repository. The repository will be called "Hello-world-YOURNAME". Your repository now exists on the cloud on github.com, but it is not present locally on your machine. To clone the repository locally, click on the button "Set up in Desktop". Choose the location in your local machine where to create the repository. You might want to put it in your fintech classroom folder.
- Next, create a new text file. Write "Hello Github World!" as content. Save it locally as "intro_to_github.txt" in the assignment repository .
- Go back to Github Desktop. You should see that it detected a new file in the assignment repository.
- Commit by adding a summary of the changes, and clicking on "Commit to master". To commit means that you tell Git that this is a new version of the file. Git will keep track of all the version of any file in the repository.
- Return to the "intro_to_github.txt" file, and edit it. Add a new line that says "This is my first edit." and save the file again.
- Go back to Github Desktop. Again, it should have detected changes to the "intro_to_github.txt" file. Commit these changes to the master.
- In the "History" tab, now you can see the history of your changes to the file, and you can go back to previous versions if needed. You now know how to version control any file you want!
- Finally, we are ready to push the newly-created repository to the cloud on Github.com, so that you can submit your first writeup, and complete the first assignment.
  - On Github Desktop, click on the icon that says "Publish Branch".
  - That's it. Your document is now on github, and the assignment completed.
  - Click on "Open the repository page on github in your browser. You should be able to see your repository there.

Congratulations! You have completed your first assignment, where you learned how to use version control on your documents, and how to share them with other collaborators. To learn more about other Github functions, such as creating a branch, and opening and merging a pull request, please go through this simple Hello-World introduction, or this short Canvas course.

Homework Submission

You will use GitHub to submit all of your homework assignments throughout the course. For each homework assignment, you will need to do the same as your first one: you will need to click on the assignment link, accept the assignment, clone the repository locally, add the writeup and codes into this folder, commit the changes to the repository, and push it to github.com. For group assignments, when you commit, you need to add the group members as co-authors (using their github usernames), as shown below



2 Slack

We will be using Slack, a multi-platform messagging app, to communicate throughout the semester outside of class. I find the app very intuitive to use, and I can respond much faster to any questions you might have. I have the app installed on my smartphone, and on my desktop, so it is easy to reach me there. My TA and I will moderate the discussion on Slack and answer questions, but I encourage all students to actively participate in the discussions. I will also often post articles about topics related to the course. My TAs and I will only answer emails regarding questions or concerns about grades, attendance and individual matters.

3 Python

Throughout the course, we will be using python to handle and analyze data. Knowledge of python is not a requirement in this class, but it will be easier for you if you already know the basics of python.

Please review the document “Intro to Python”. We will be using Google Colab to write, run and share codes in this course. Please follow the instructions in the document to set up your Google Colab account and finish ”HW0”.