

Git / Github Tutorial

What is Git?

- Version control for Programmers
- Like Microsoft Word "Track Changes" feature with superpowers
- Makes it easy for programmers to collaborate and work on the same codebase
- SVN (subversion) and CVS are other version control programs (Git is the most popular)

What is Github?

- Web-based Git repository hosting service
- Built on top of git
- Morphed into a "social network" for developers

Vocabulary

- Repository
- Branch
- Fork
- Commit
- Push
- Pull Request

Repository

- Most basic element of GitHub
- A repository contains all of the project files
- Stores each file's revision history
- Repositories can have multiple collaborators and can be either public or private.

Branch

- Parallel version of a repository
- It is contained within the repository, but does not affect the primary or master branch allowing you to work freely without disrupting the "live" version.
- When you've made the changes you want to make, you can merge your branch back into the master branch to publish your changes

Fork

- A fork is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project
- Most commonly, forks are used to either propose changes to someone else's project or to use someone else's project as a starting point for your own idea

Commit

- A "revision", is an individual change to a file (or set of files)
- Git's version of "saving"
- Commits usually contain a commit message which is a brief description of what changes were made

Push

- Refers to sending your committed changes to a remote repository such as GitHub.com
- For instance, if you change something locally, you'd want to then push those changes so that others may access them

Pull Request

- Pull requests are proposed changes to a repository submitted by a user and accepted or rejected by a repository's collaborators.
- Pull requests each have their own discussion forum. See Using Pull Requests.
- Used to perform "Code Reviews" of other developers' work

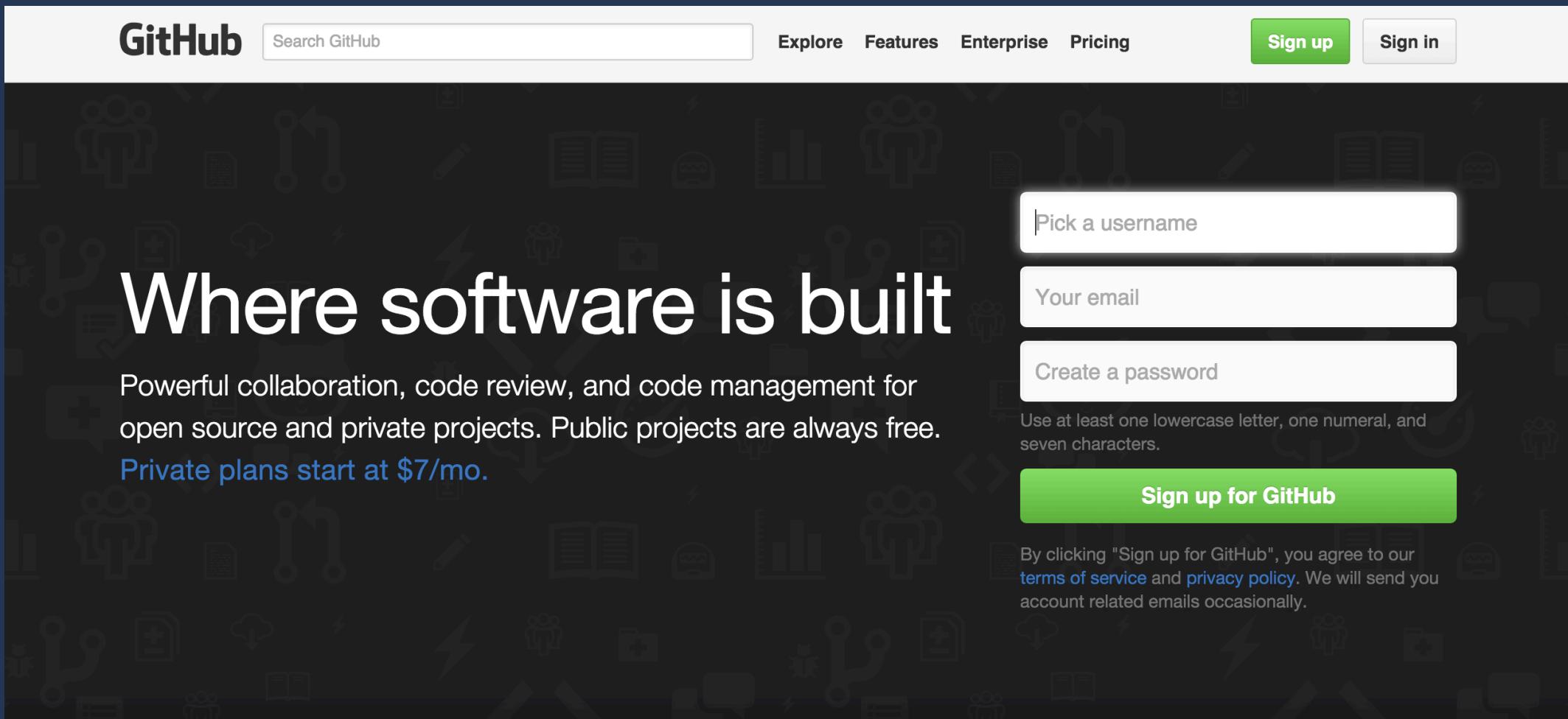
Merge

- Merging takes the changes from one branch (in the same repository or from a fork), and applies them into another
- This often happens as a Pull Request (which can be thought of as a request to merge)

Initial Setup

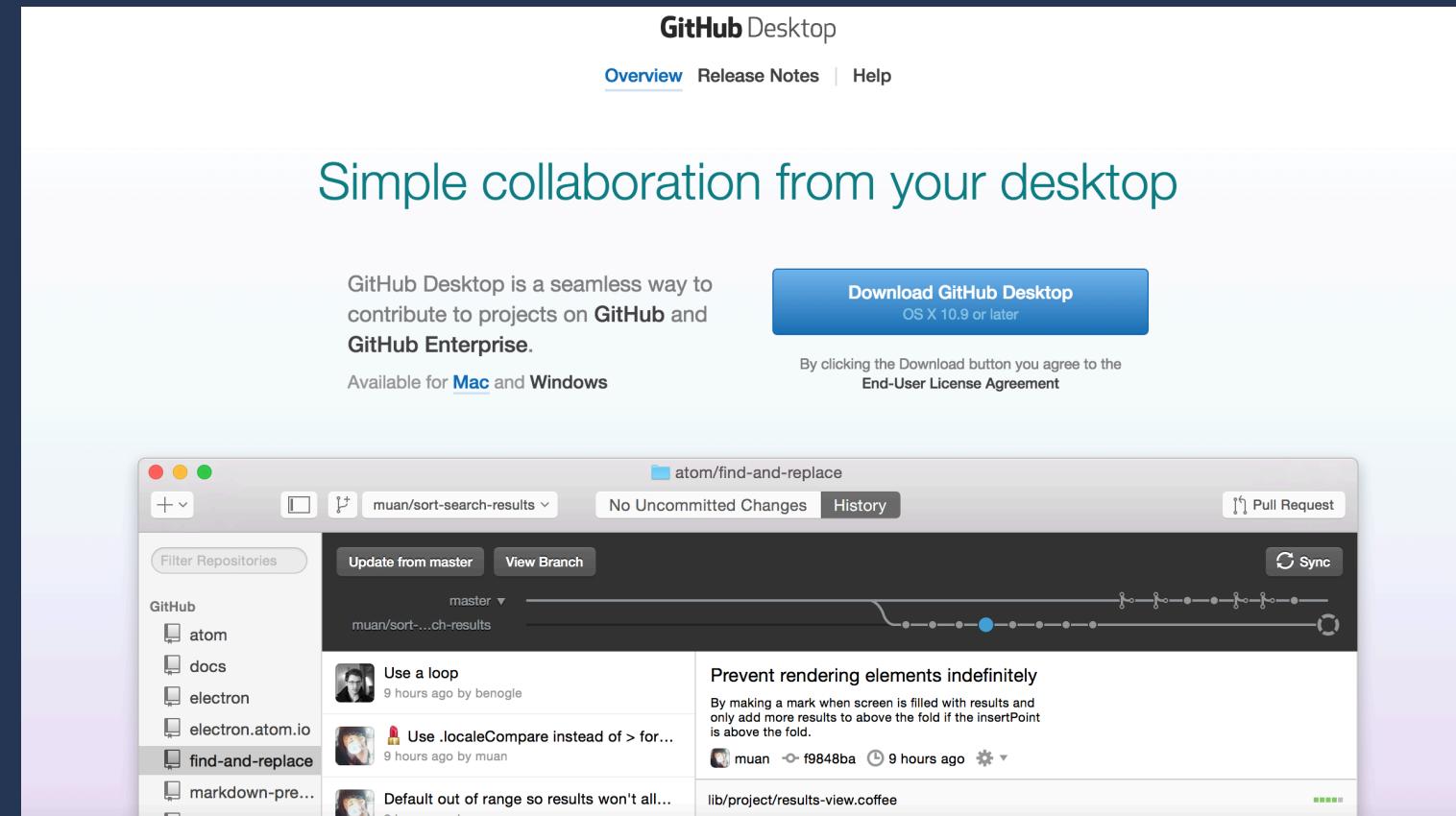
**(The following steps only need to
be completed One Time)**

Step 1: Create a Github Account*



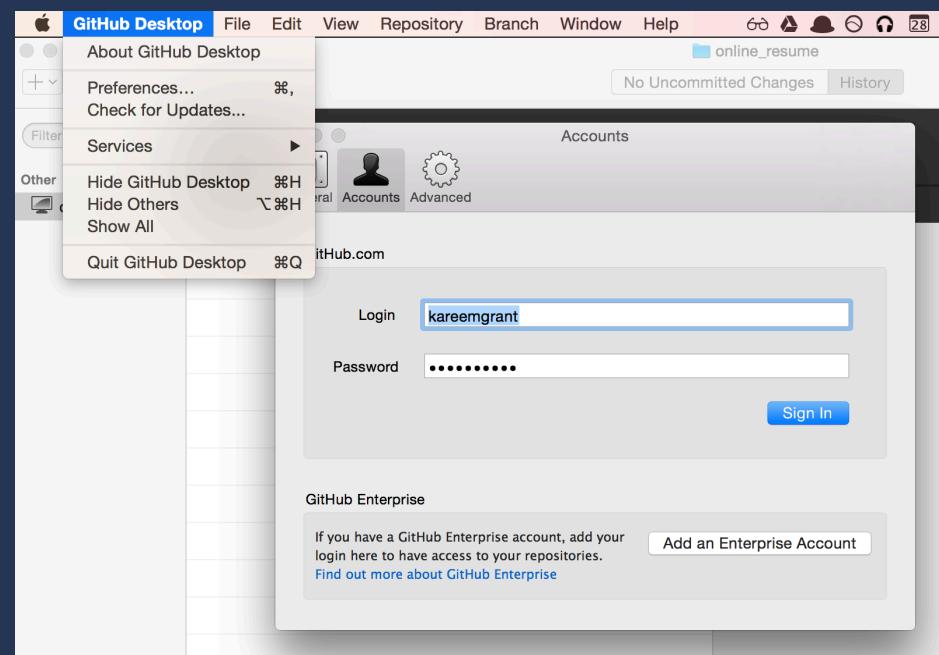
*one-time step

Step 2: Download Github Desktop software*



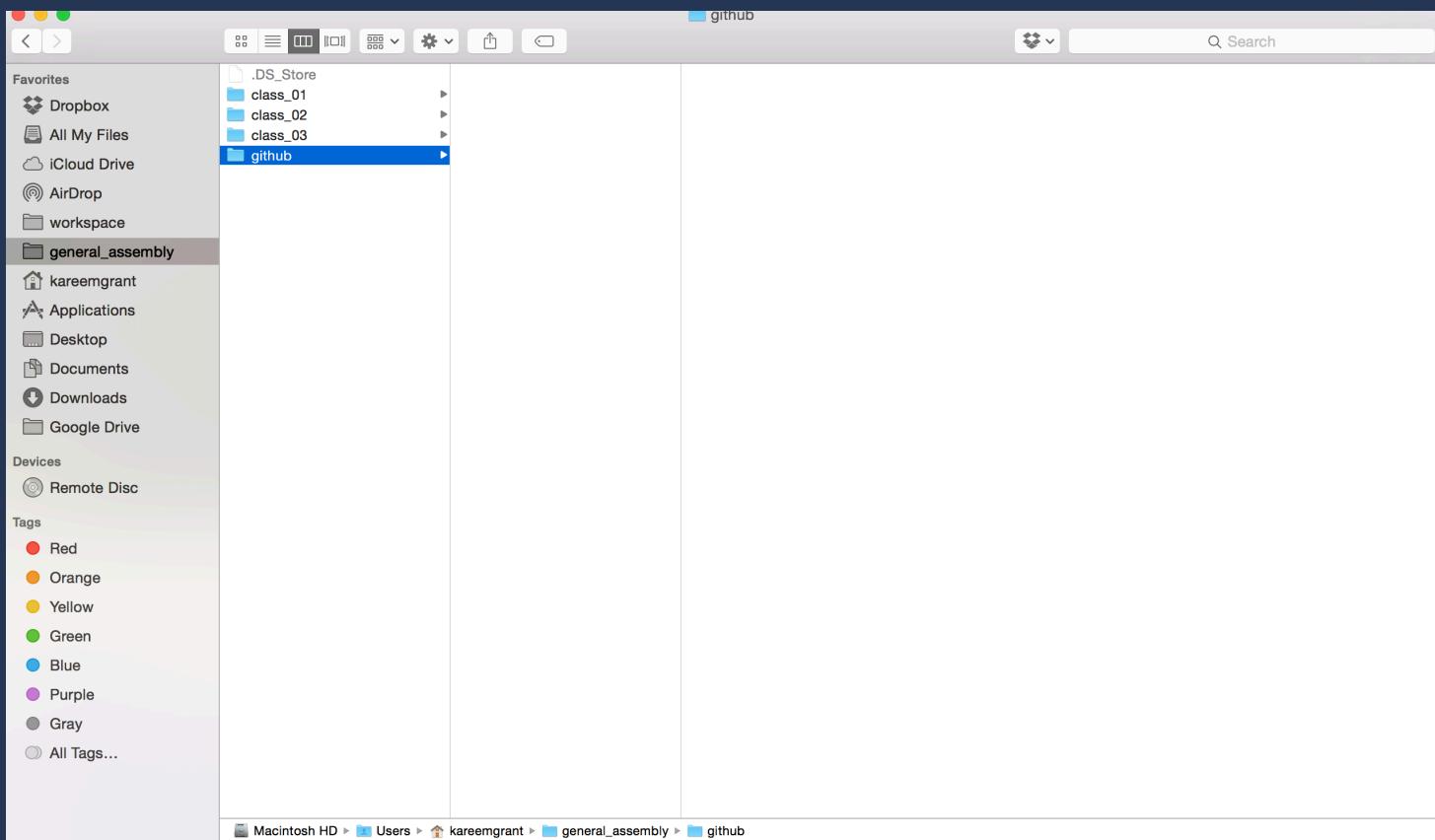
*one-time step

Step 3: Sign in to Github Account through the Github Desktop application



- Github Desktop -> Preferences -> Accounts
 - *one-time step / Use Github account username & password

Step 4: Create a folder named github in your "class" folder*

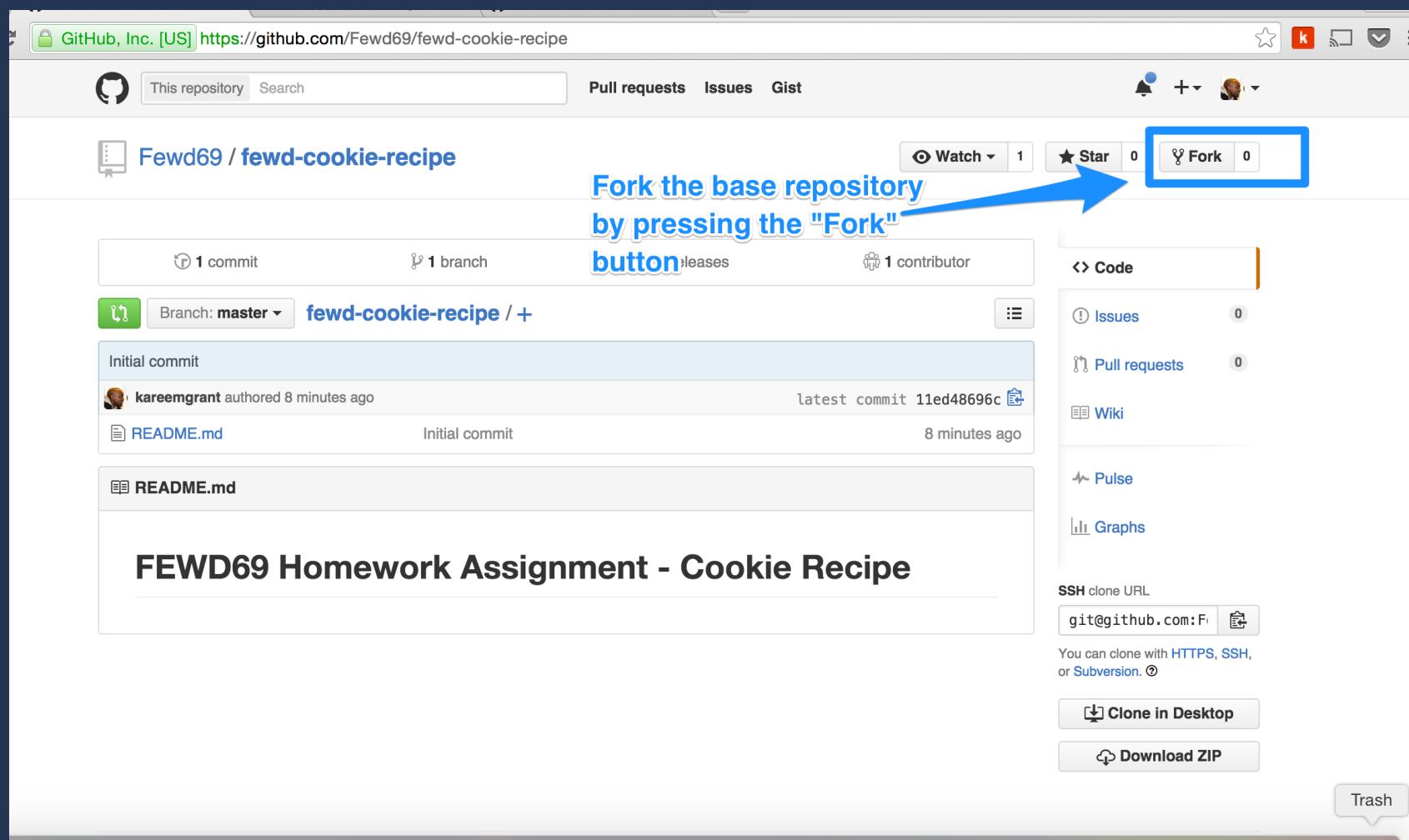


*one-time step

Starting an Assignment

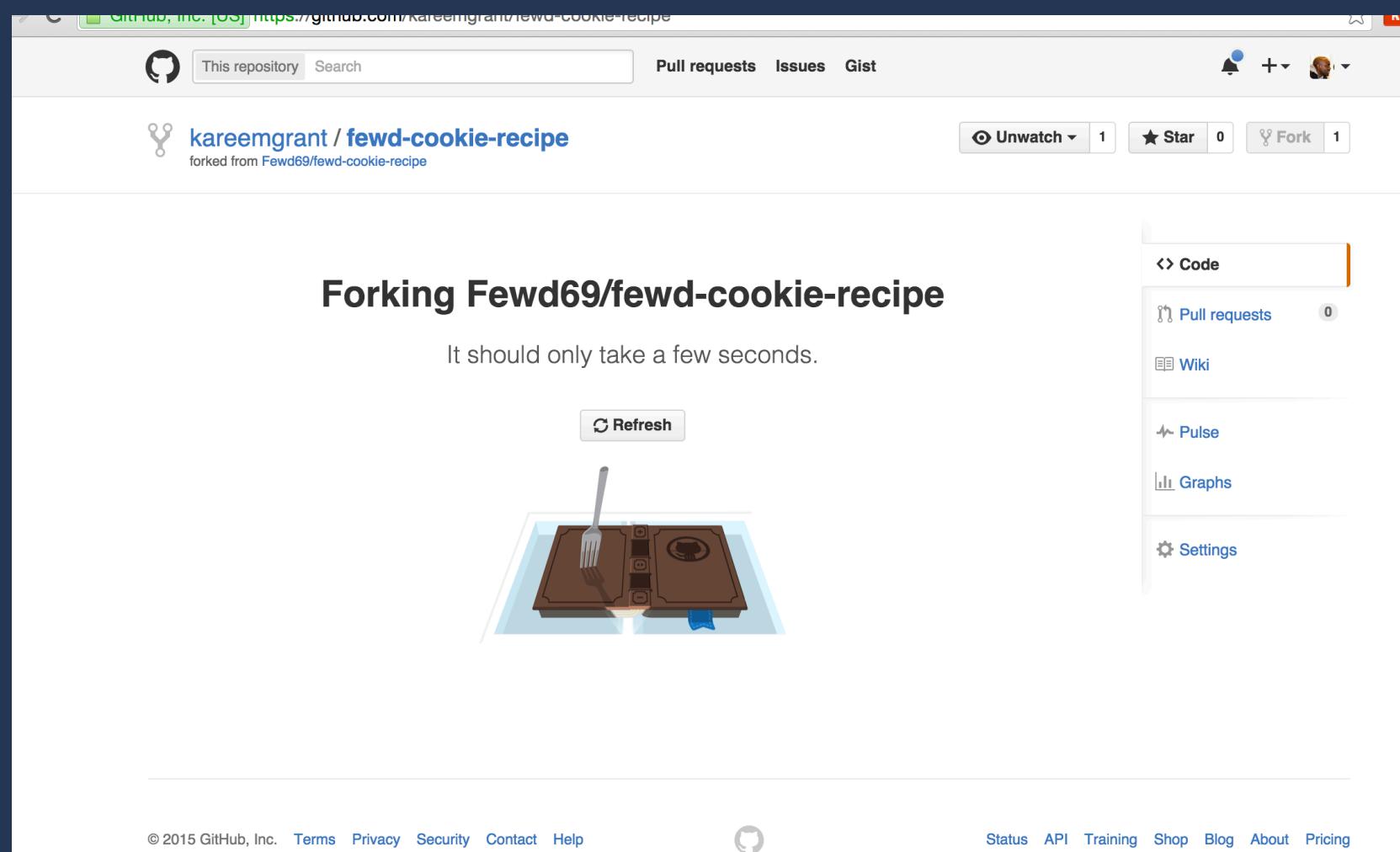
Step 5a: Fork Instructor Repository

- The link for the Instructor repository will be provided to you

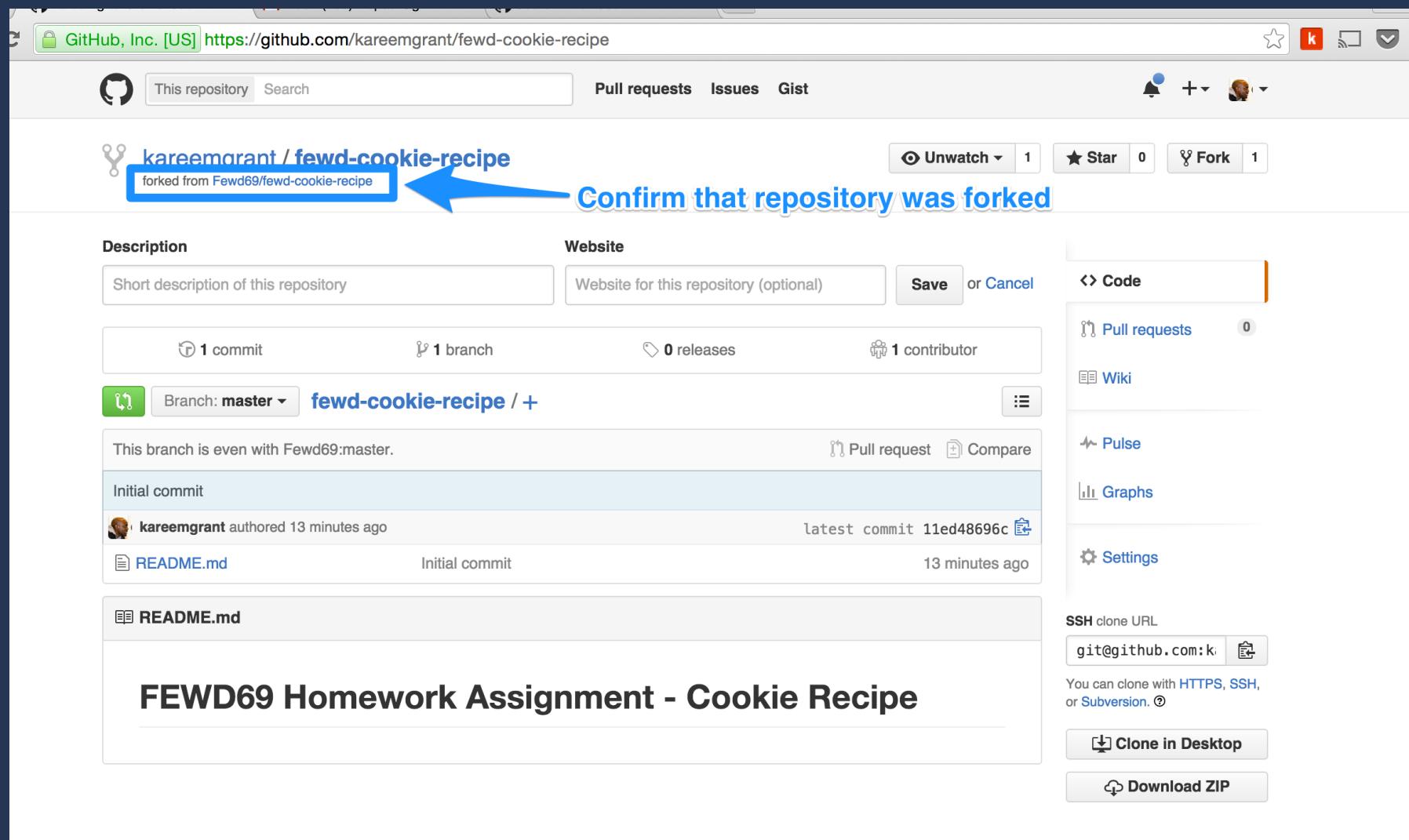


Step 5b: Fork Instructor Repository

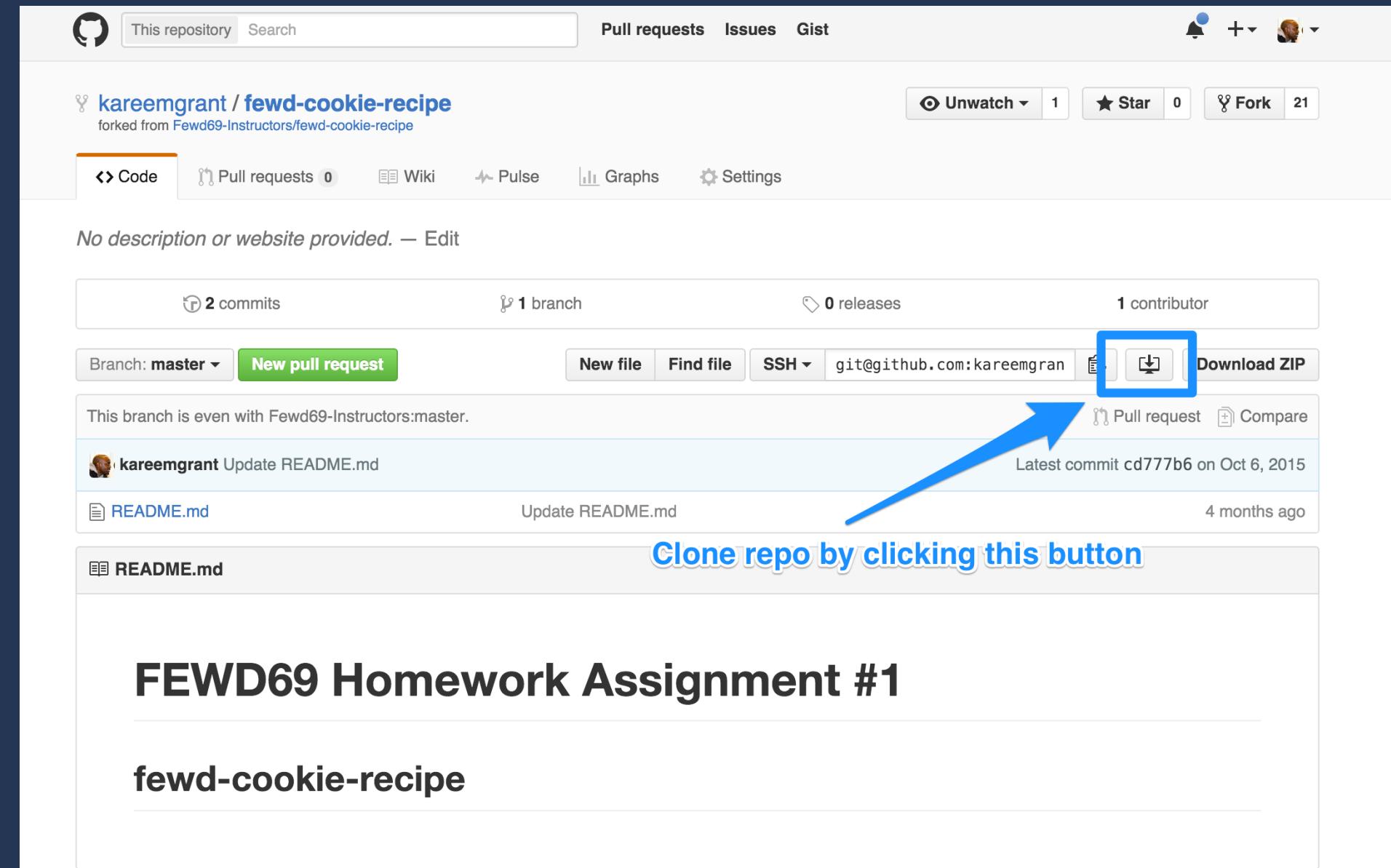
- Github will create a copy of the repo under your account



Step 6: Confirm Repository was Successfully Forked

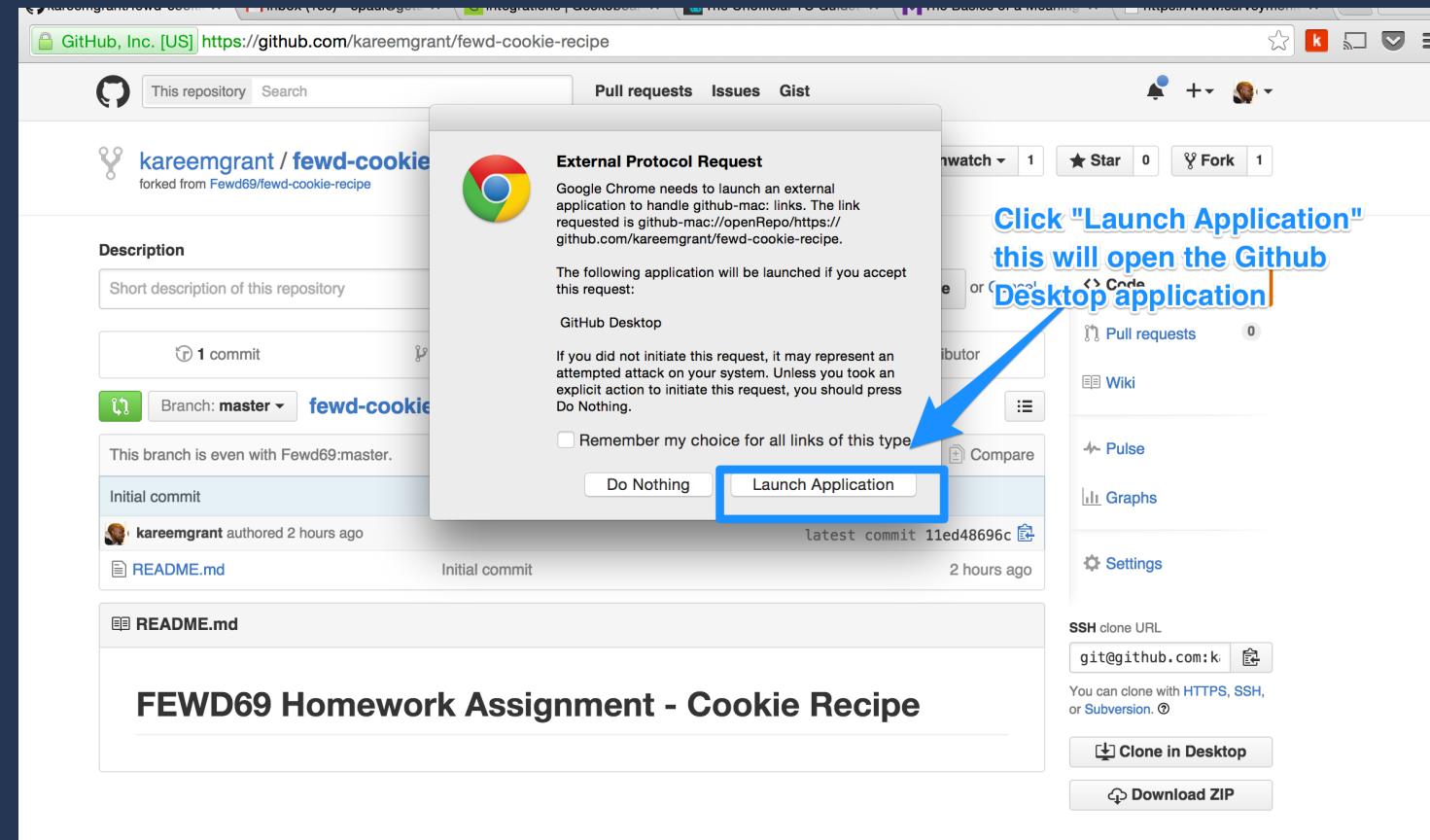


Step 7a: Clone Repository in Github



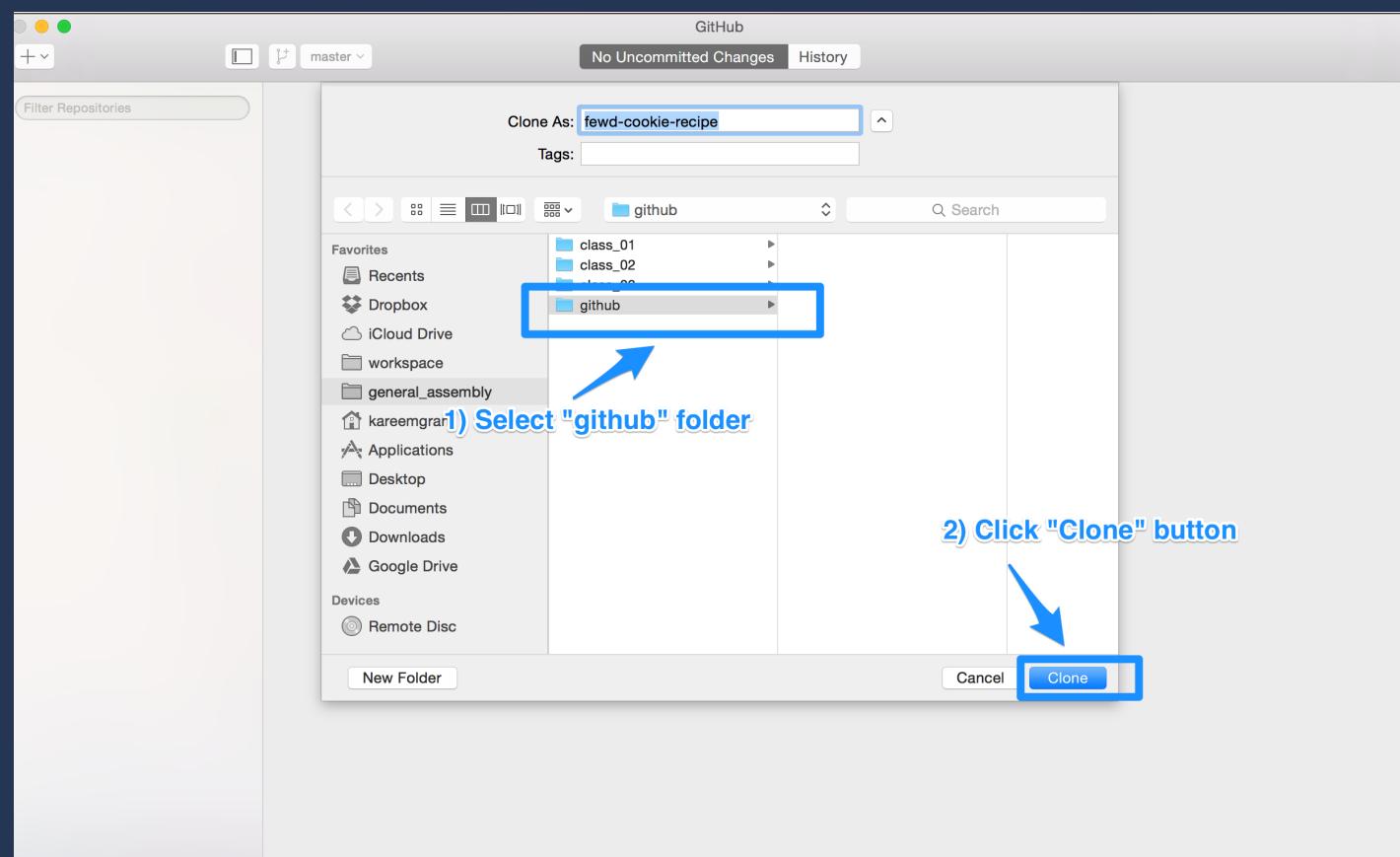
Step 7b: Click "Launch Application" button

- This opens your Github Desktop application

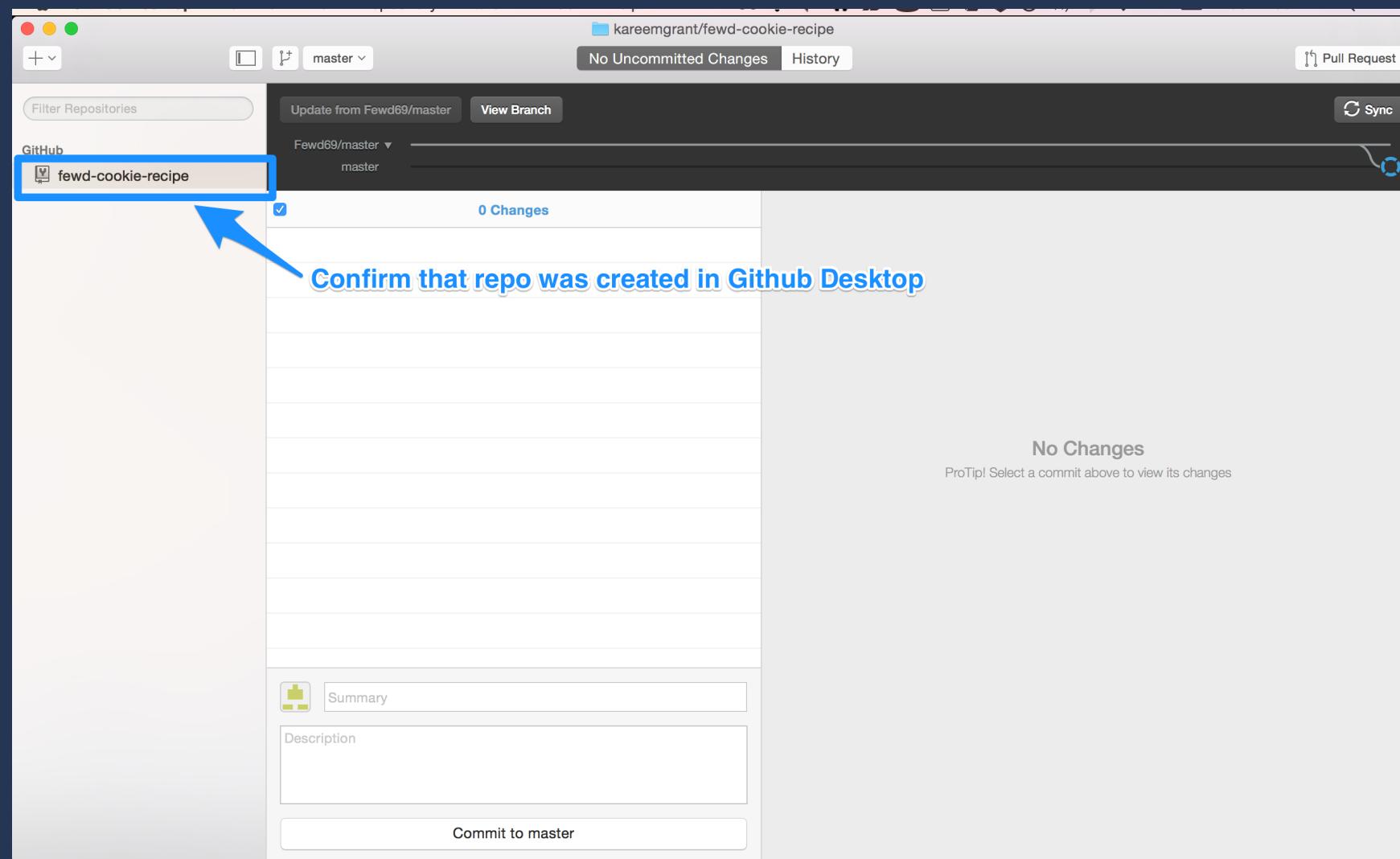


Step 7c: Select your "github" folder you created in Step 4 and click "clone"

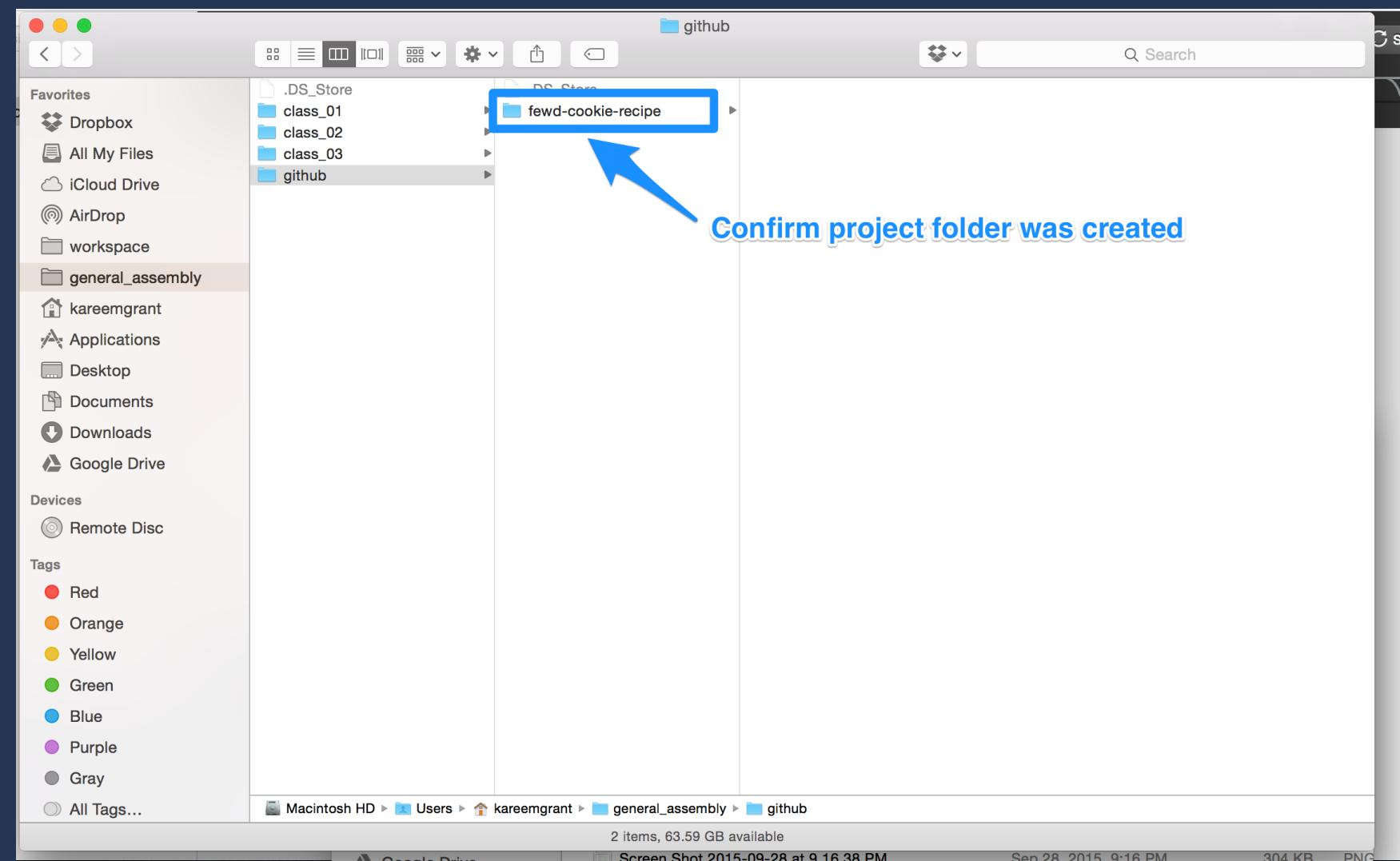
- This is where the project folder will live



Step 8: Confirm Repo was created in Github Desktop

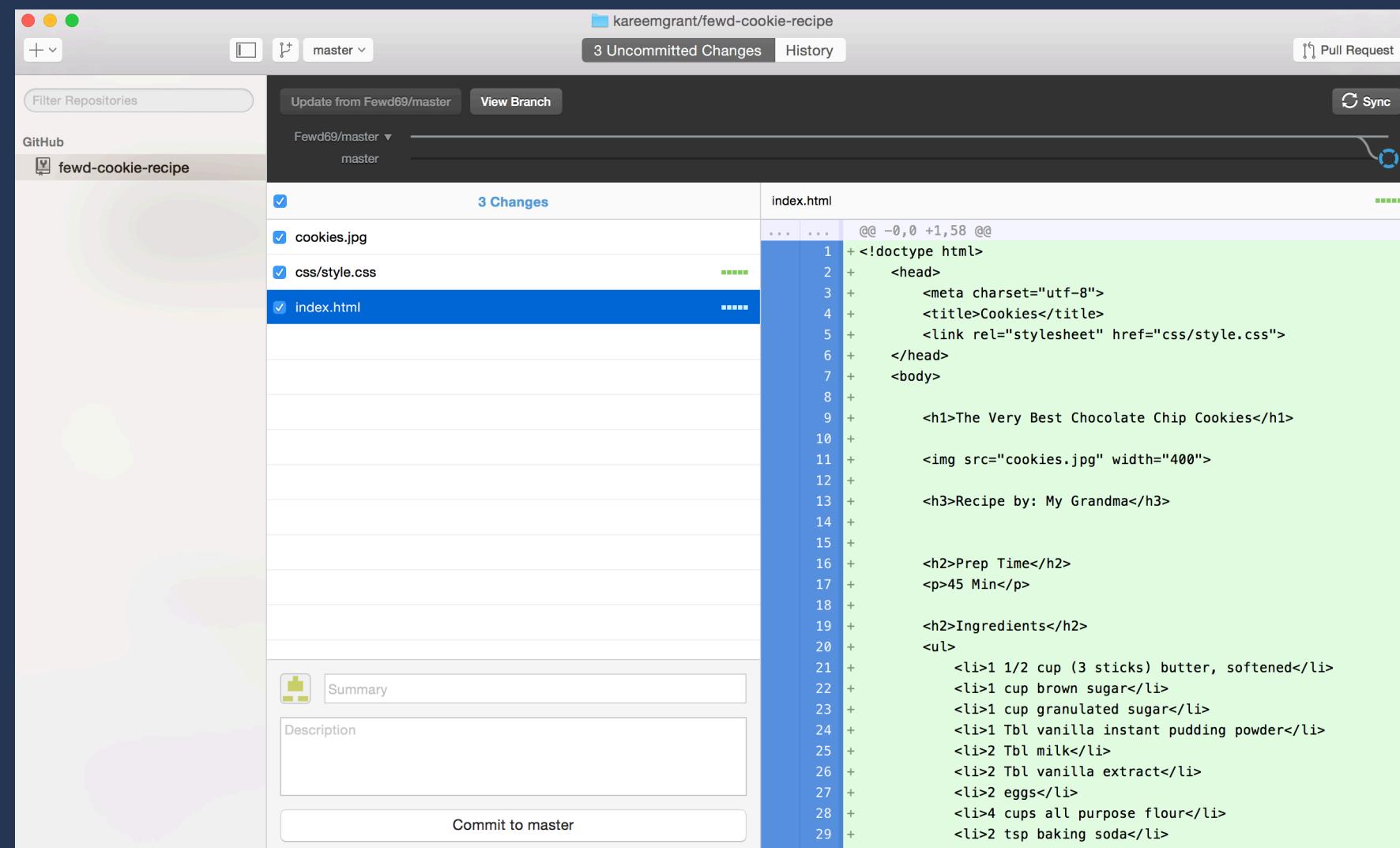


Step 9: Confirm project folder was created in "github" folder

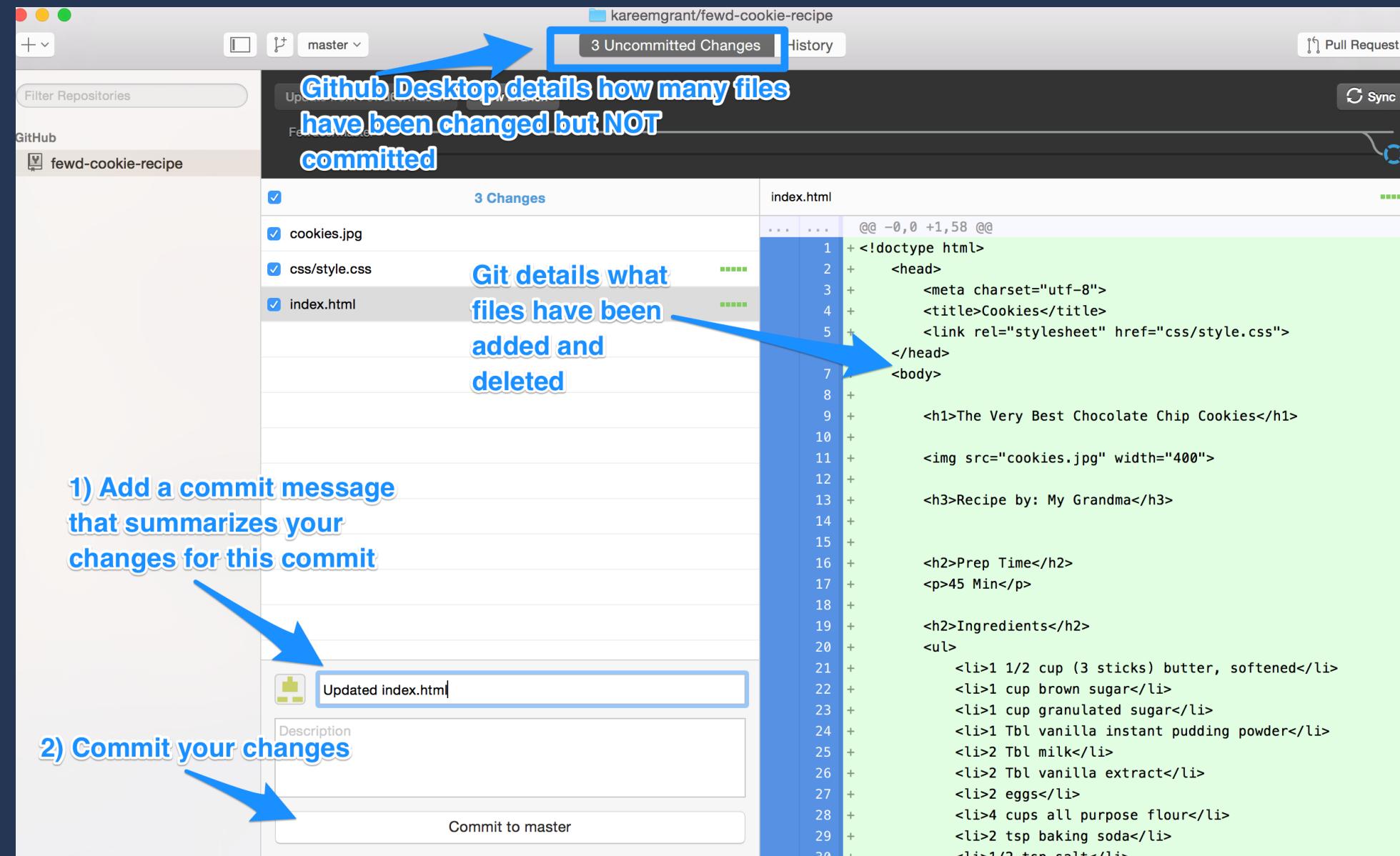


**Step 10a: Open project folder
with sublime and add code (as
you normally would)**

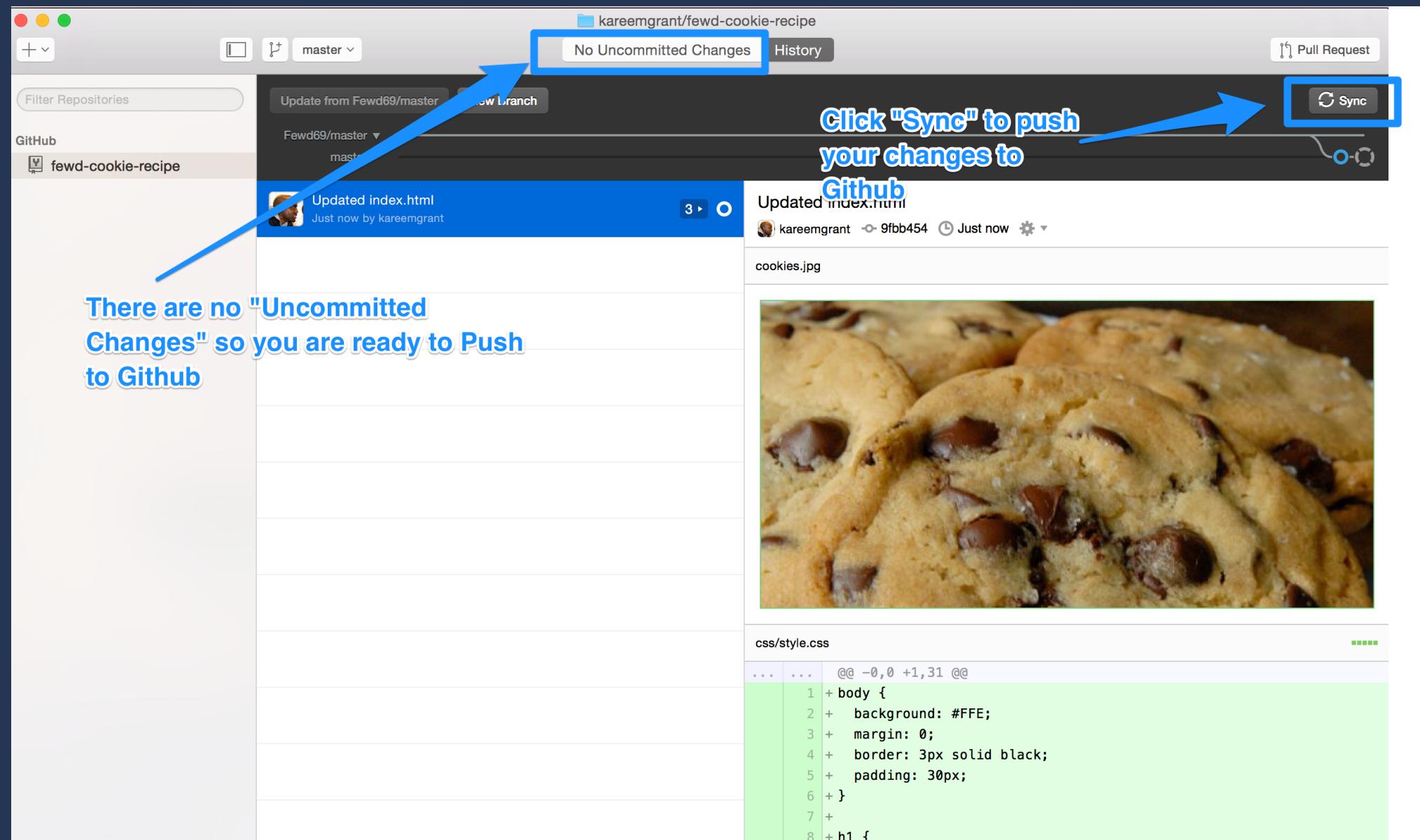
Step 10b: View changes in Github Desktop



Step 11: Commit Your Changes



Step 12: Push your changes to Github.com

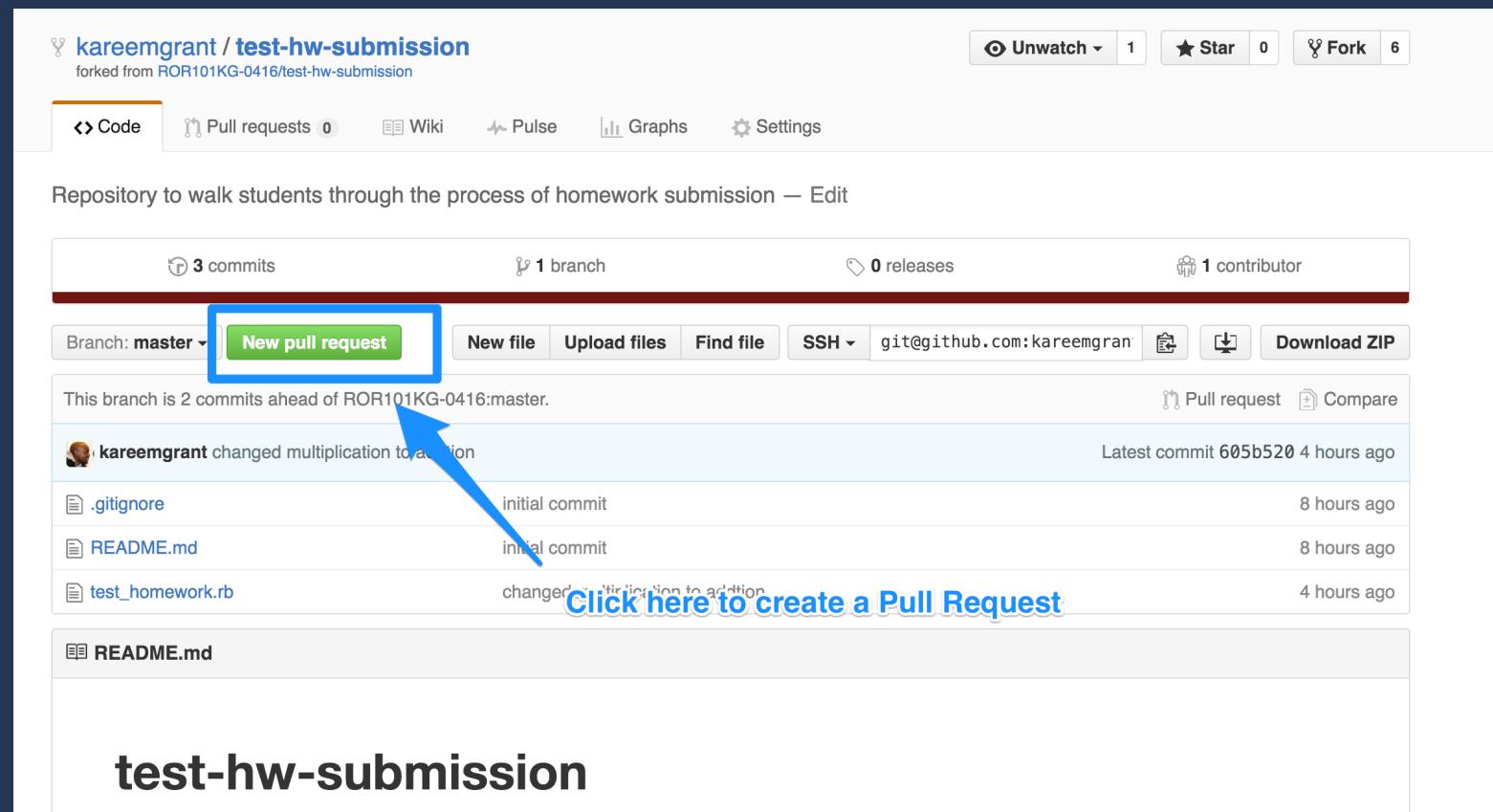


Repeat Steps 10 through 12 - as many times as needed

Submitting Your Assignment

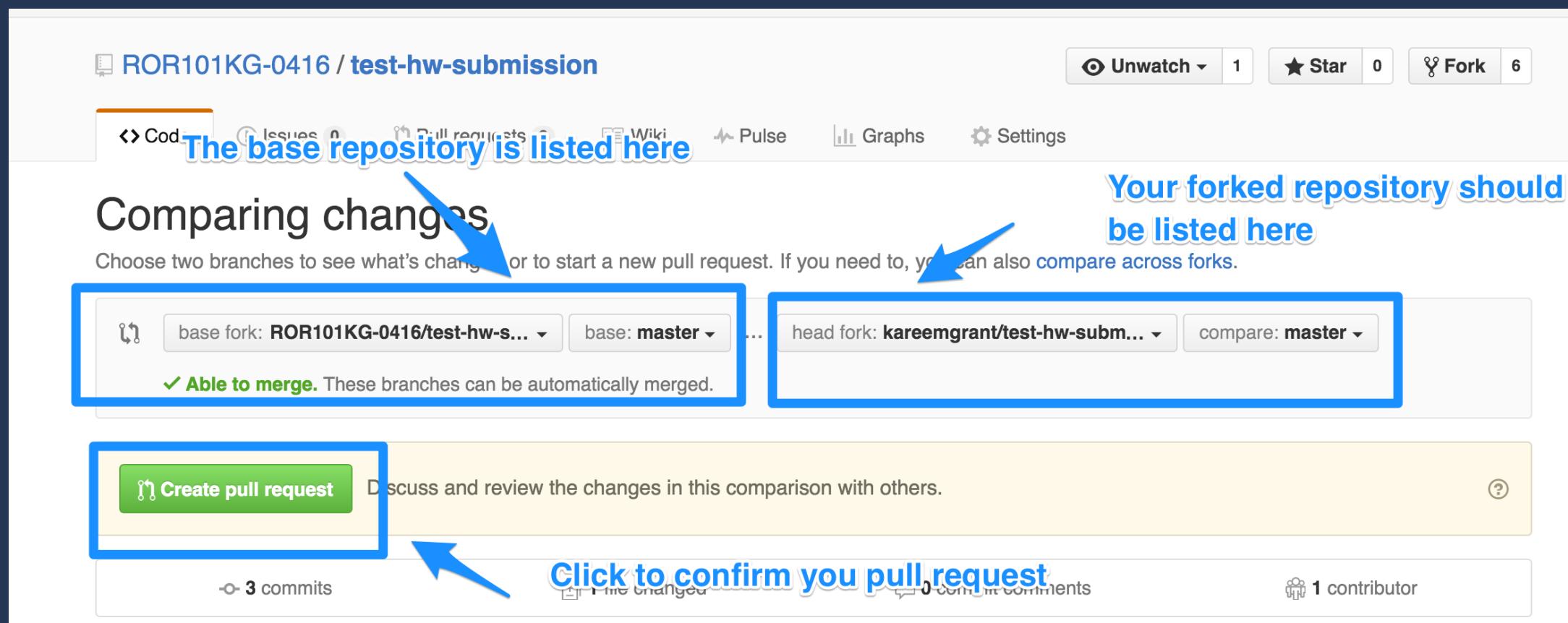
Step 13a: Create a Pull Request in Github

- Navigate to your forked repo on Github.com and click **New pull request**



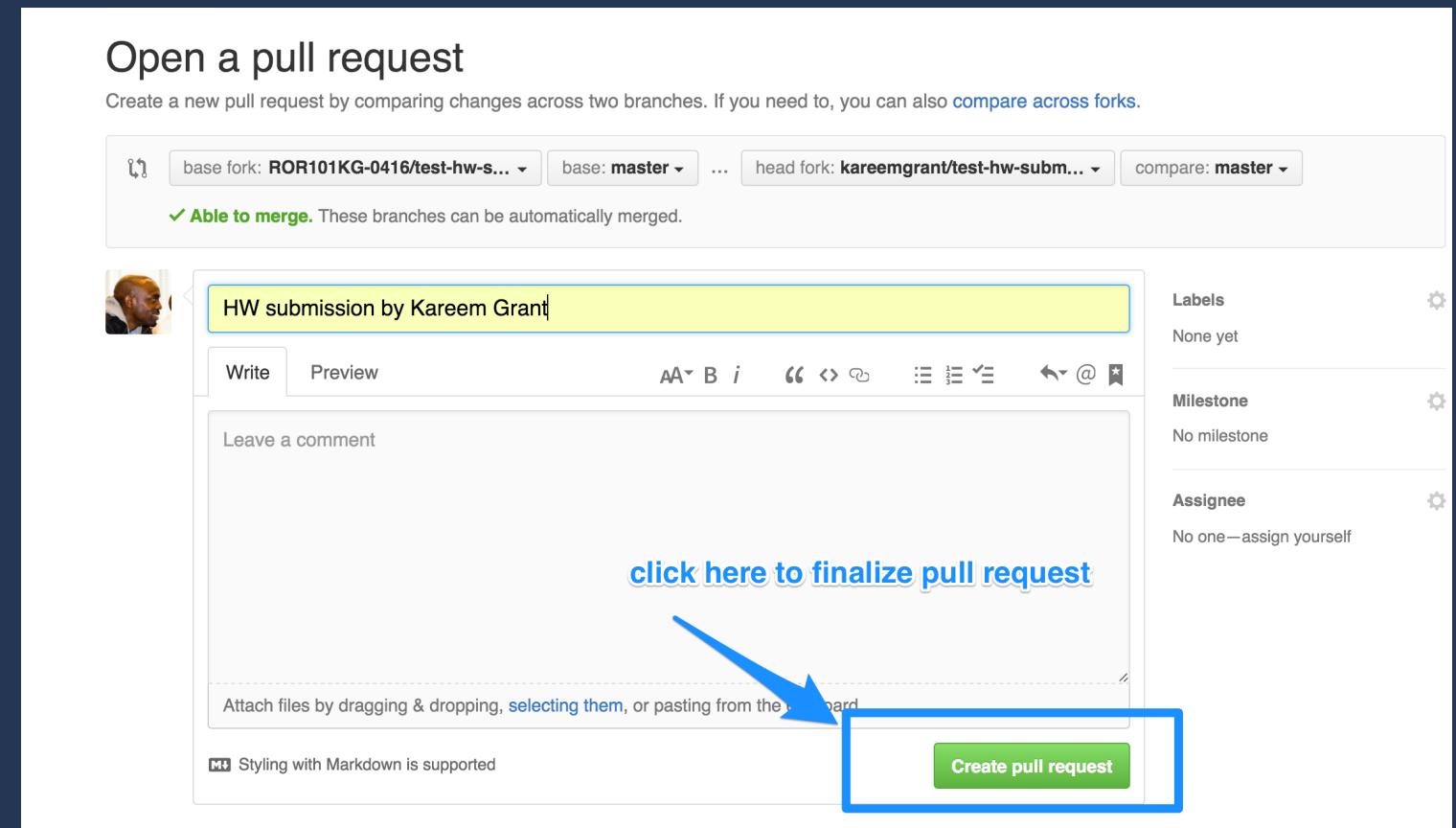
Step 13b: Confirm details of the Pull Request in Github

- Confirm details of the pull request

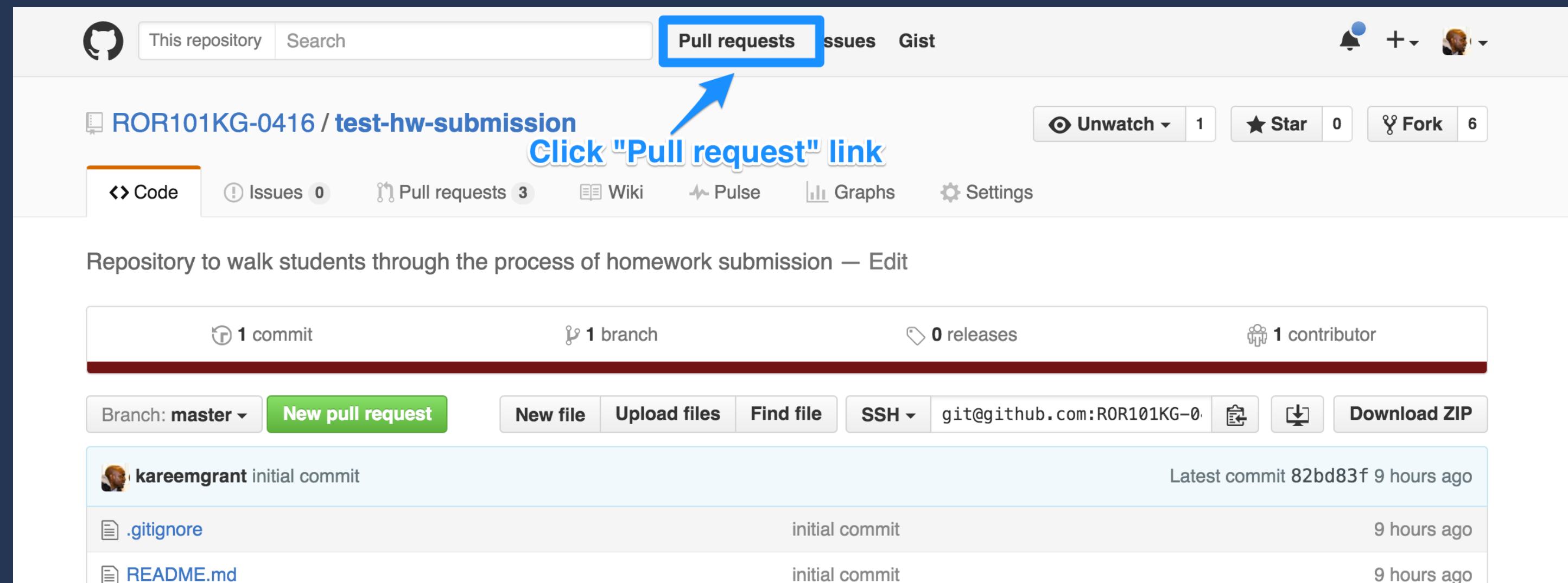


Step 13c: Name your pull request "HW Submission by [Your Name]"

- Name and finalize the pull request



Step 14a: Confirm Creation of Pull Request on Github



The screenshot shows a GitHub repository page for "ROR101KG-0416 / test-hw-submission". The "Pull requests" tab is highlighted with a blue box and an arrow pointing to it. The page displays the following information:

- Repository:** ROR101KG-0416 / test-hw-submission
- Issues:** 0
- Pull requests:** 3
- Wiki:** Wiki
- Pulse:** Pulse
- Graphs:** Graphs
- Settings:** Settings
- Unwatch:** 1
- Star:** 0
- Fork:** 6

Repository Description: Repository to walk students through the process of homework submission — Edit

Repository Metrics:

- 1 commit
- 1 branch
- 0 releases
- 1 contributor

Branch: master **New pull request**

Actions: New file, Upload files, Find file, SSH, git@github.com:ROR101KG-0..., Copy, Download, Download ZIP

Commits:

- kareemgrant initial commit (Latest commit 82bd83f 9 hours ago)
- .gitignore initial commit (9 hours ago)
- README.md initial commit (9 hours ago)

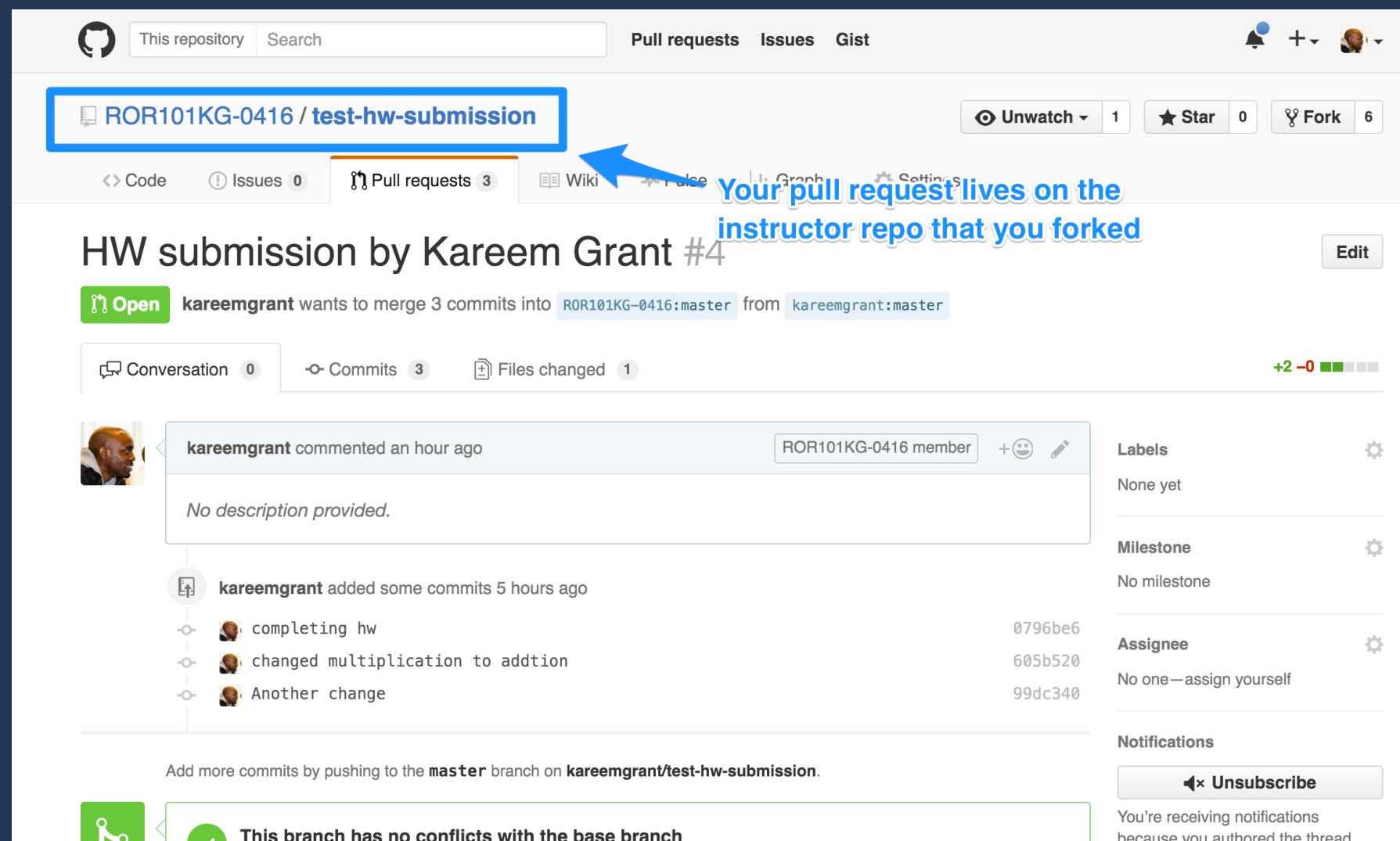
Step 14b: Confirm Creation of Pull Request on Github (cont'd)

A screenshot of a GitHub interface showing a list of pull requests. The top navigation bar includes a search bar, 'Pull requests', 'Issues', 'Gist', and user profile icons. Below the navigation, there are three tabs: 'Created' (highlighted in blue), 'Assigned', and 'Mentioned'. A search bar contains the query 'is:open is:pr author:kareemgrant'. The main list shows 6 open pull requests. One specific pull request is highlighted with a blue box and a blue arrow pointing to its title: 'HW submission by Kareem Grant'. The pull request details show it was opened by 'kareemgrant' 44 minutes ago. The GitHub logo is visible in the top left corner.

Click on Pull Request link

HW submission by Kareem Grant

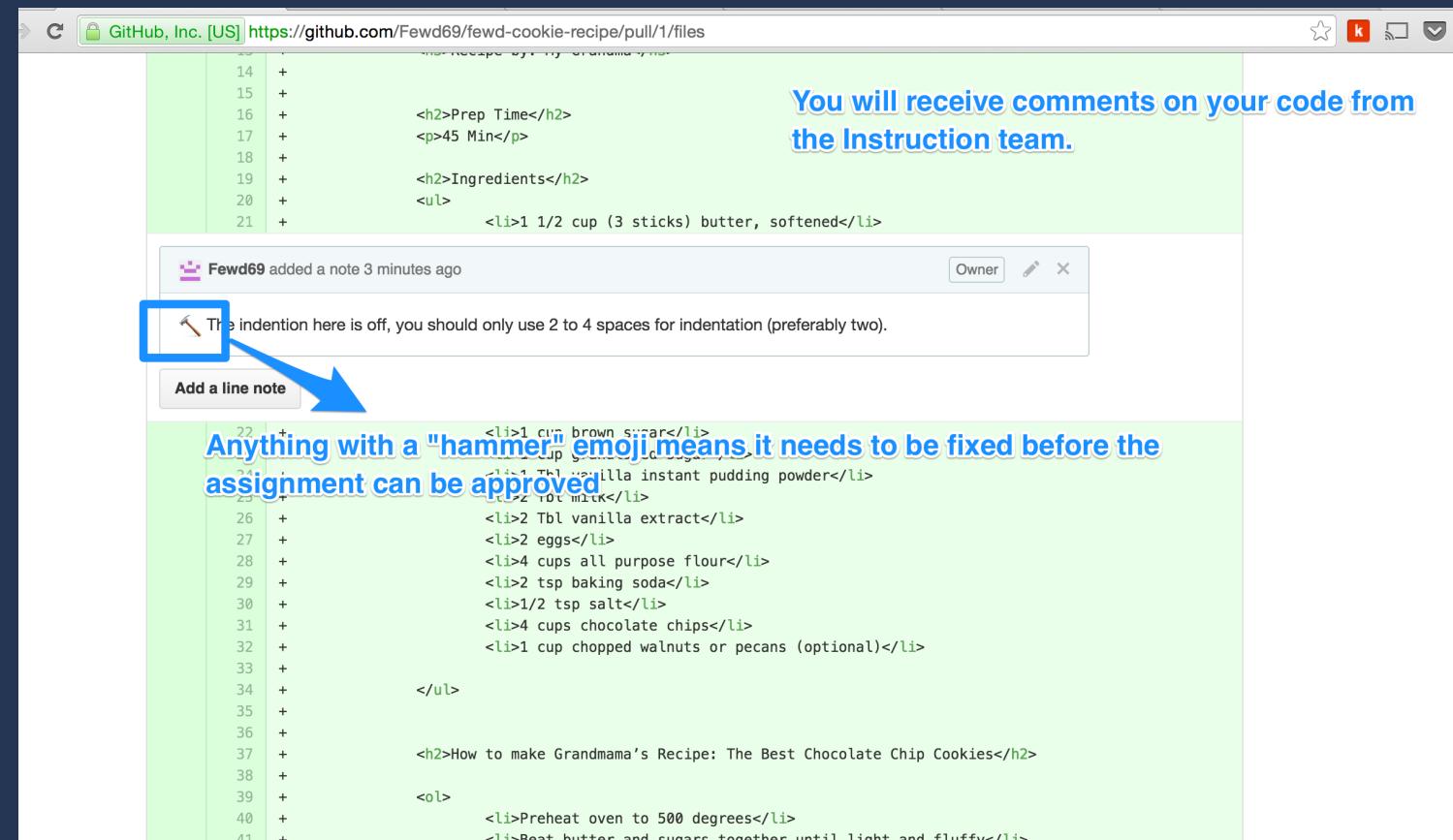
Step 14c: Confirm Creation of Pull Request on Github (cont'd)



Receive Feedback from Instructors

Step 15a: Instructors will leave feedback and let you know what needs to be fixed

- Hammer emojis indicate something that needs to be fixed



Step 15b: Students can add comments of their own to get clarification

The screenshot shows a GitHub pull request page for a file named "cookie-recipe.py". The code is a Python script for a cookie recipe. A specific line of code, line 21, is highlighted in green: "`1 1/2 cup (3 sticks) butter, softened`". Below this line, there are two comments from users "Fewd69" and "kareemgrant". The comment from "Fewd69" is a note about indentation. The comment from "kareemgrant" is a question asking if there's a setting in Sublime that can help with indentation. A blue box highlights the "kareemgrant" comment, and a blue arrow points from this box to a callout text on the right.

`14 +
15 +
16 + <h2>Prep Time</h2>
17 + <p>45 Min</p>
18 +
19 + <h2>Ingredients</h2>
20 +
21 + 1 1/2 cup (3 sticks) butter, softened`

Fewd69 added a note 10 minutes ago
The indentation here is off, you should only use 2 to 4 spaces for indentation (preferably two).

kareemgrant added a note 10 seconds ago
Is there a setting in Sublime that I can use to help with my indentation?

Students can add comments of their own to discuss code issues or ask for clarification

Step 16: Student Fixes Any Outstanding Issues (Hammer emojis)

Repeat Steps 10 through 12

- 1) Make your changes in sublime
- 2) Commit your changes
- 3) Push your changes

Do Not create a new Pull Request Your existing Pull Request will automatically be updated

Step 17: Instructor Reviews Changes

- Instruction team will receive an email notification letting them know your Pull Request was updated
- Instruction team will confirm that "hammers" were addressed

Step 18: Instructor Approves Your Assignment

- Student will receive a "Thumbs Up" emoji indicating that the assignment was approved

