

1.125 – Software Engineering and Architecting

Lectures 3-4
GitHub and The Open Source Movement

Open Source vs. Closed Source

Closed source:

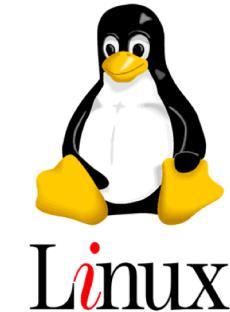
- Source code is kept proprietary
- Licenses keep users bound to usage patterns
- Can be more stable and efficient in designed cases
- Examples: Apple's iOS, Microsoft Windows



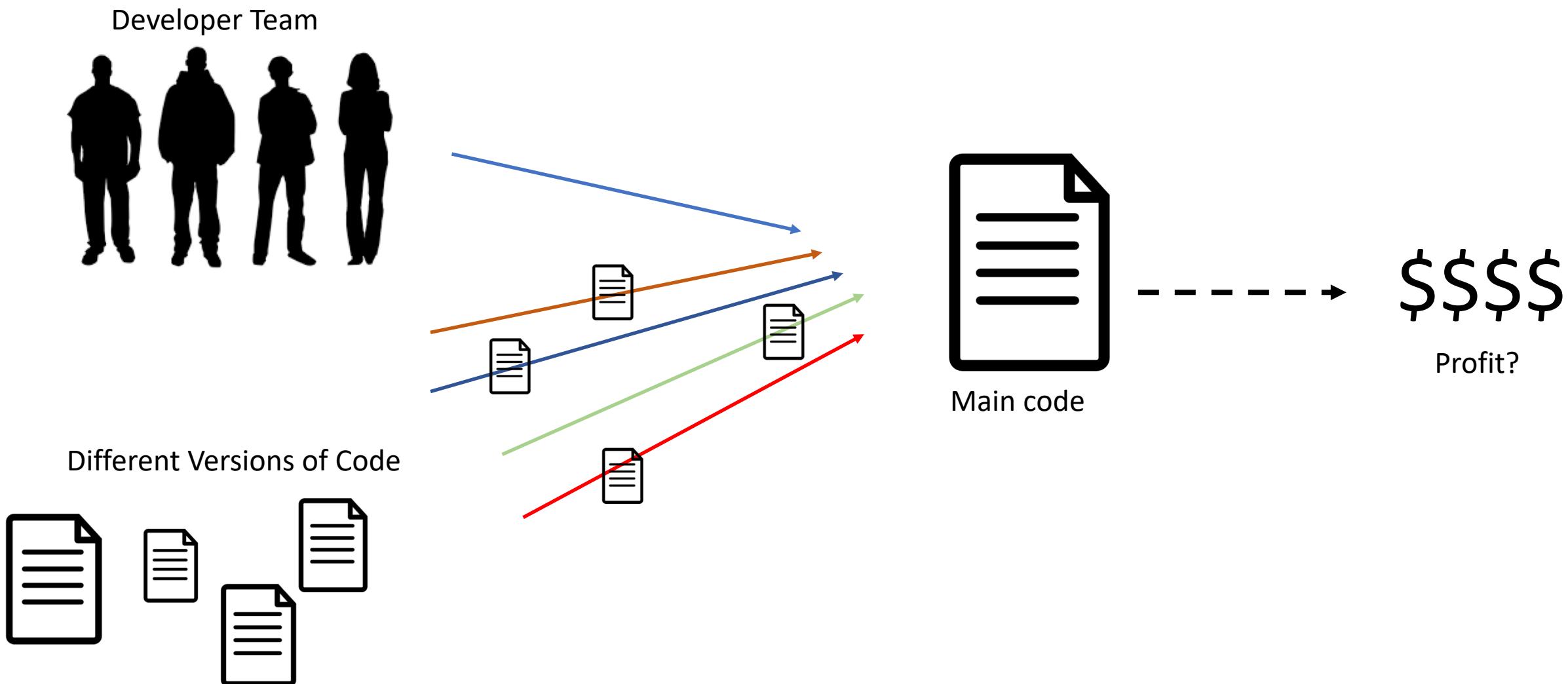
Windows®

Open Source:

- Source code is open and freely available to all
- Licenses are used to protect the openness (and generally the original creators)
- Can be used more widely, new and more features are often developed
- Examples: Google's Android, Linux OS's



Version Control – The Problem



Version Control - Solutions



the revision control system

Generation 1

Locks – 1 at a time



Generation 2

Many edits at once, one centralized



Generation 3

Multi edits, automated merging and commits



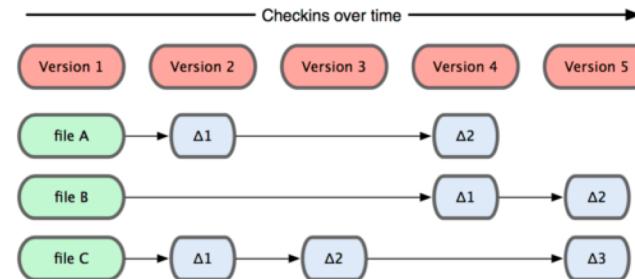
Git – How it works



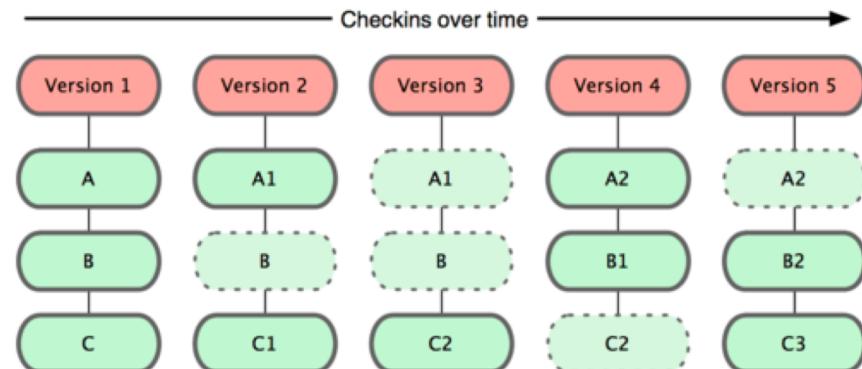
Created in 2005 by Linus Torvalds

Handles data very differently to other version control systems (VCSs)

Other VCS view of data



Git's view of data



GitHub – Sharing Code

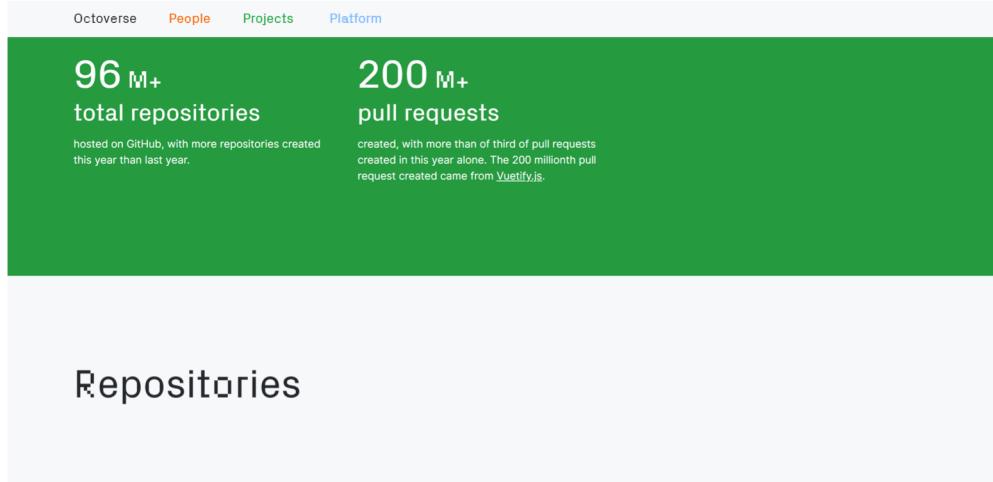
GitHub was the first main commercial product built for hosting Git codes.

Repositories store the code and interact with the developers using HTTP/IP protocol to send/receive git commands

Used by Google, Facebook, Microsoft, and most of the internet giants to store entire code bases and coordinate development.



GitHub – Stats



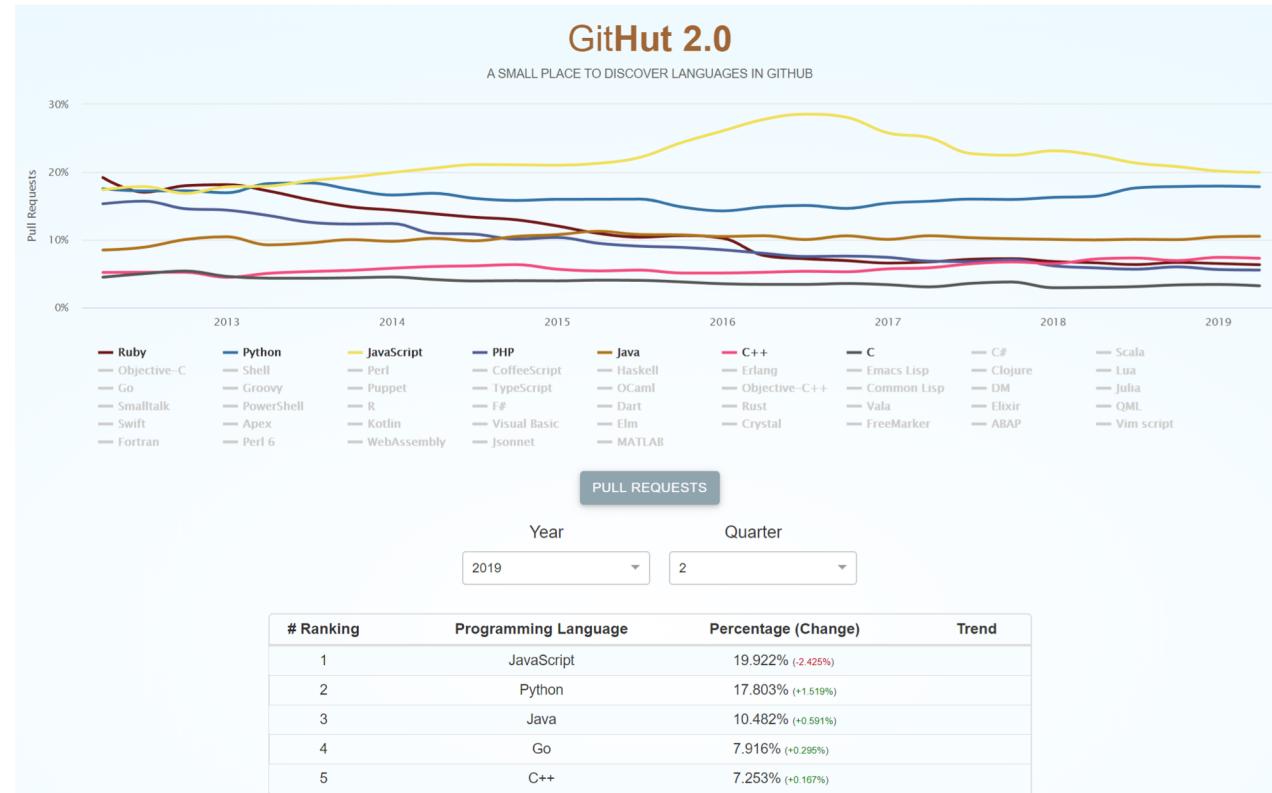
Repositories

Top open source projects

VS Code, React, and Tensorflow once again top our list of open source projects by contributor count. New to the list are projects that manage containerized applications, share Azure documentation, and consolidate TypeScript type definitions: Kubernetes, Azure Docs, and DefinitelyTyped.*

	Contributors
1 Microsoft/vscode	19k
2 facebook/react-native	10k
3 tensorflow/tensorflow	9.3k
4 angular/angular-cli	8.8k
5 MicrosoftDocs/azure-docs	7.8k
6 angular/angular	7.6k
7 ansible/ansible	7.5k
8 kubernetes/kubernetes	6.5k

<https://octoverse.github.com/>



https://madnight.github.io/git hut/#/pull_requests/2019/2

GitHub Setup

The Git/GitHub Workflow

The four commands you'll need most of all

GitHub Command to download the repo

```
git clone "repo name"
```

****Make any changes to the code****

Git local command to stage changes you've made

```
git add "file name or "." for all files"
```

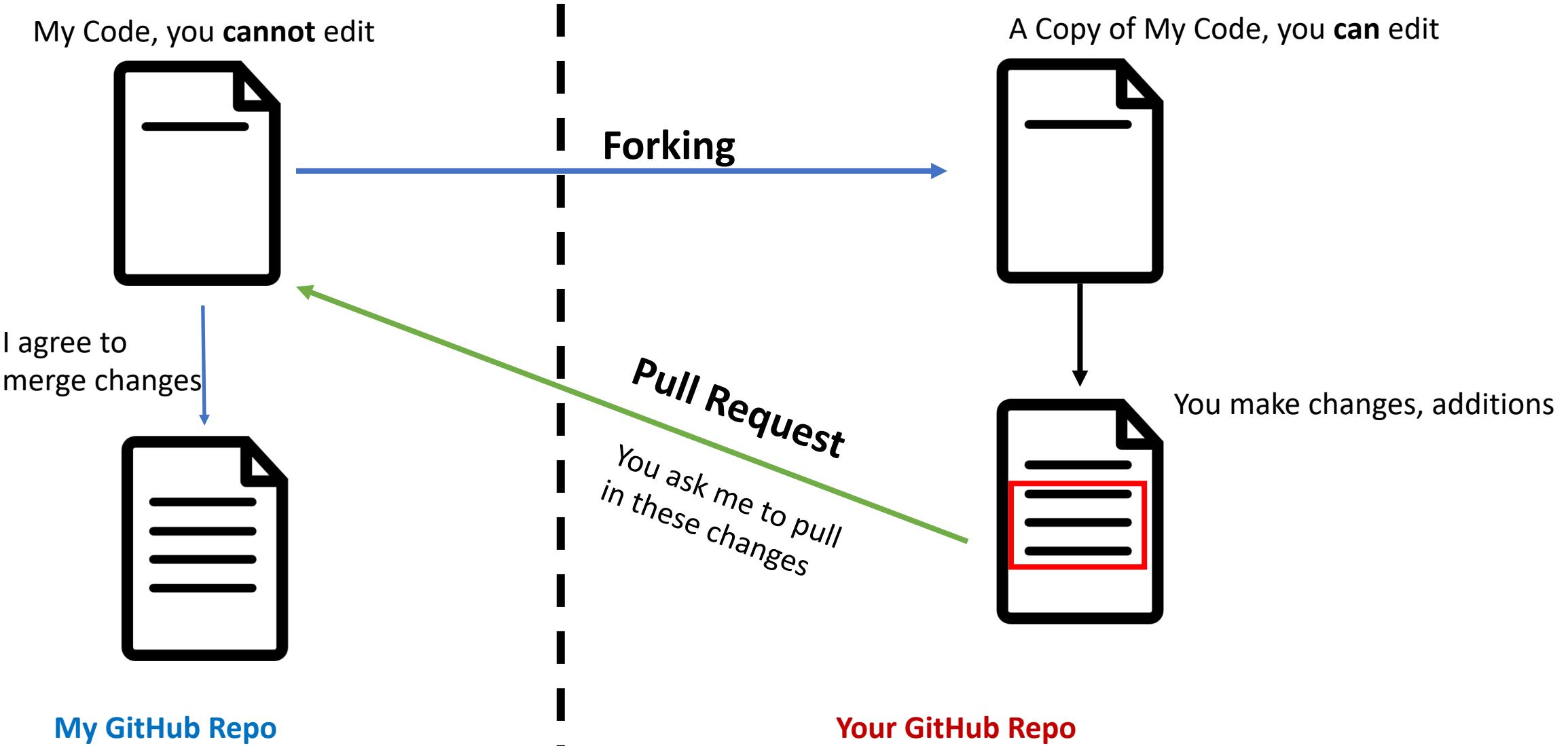
Git local command to commit these changes to an updated commit of the code

```
git commit -m "message relating to the commit" (mandatory to write a message)
```

GitHub Command to push any/all commits to the cloud

```
git push
```

GitHub – Forking and Pull Requests

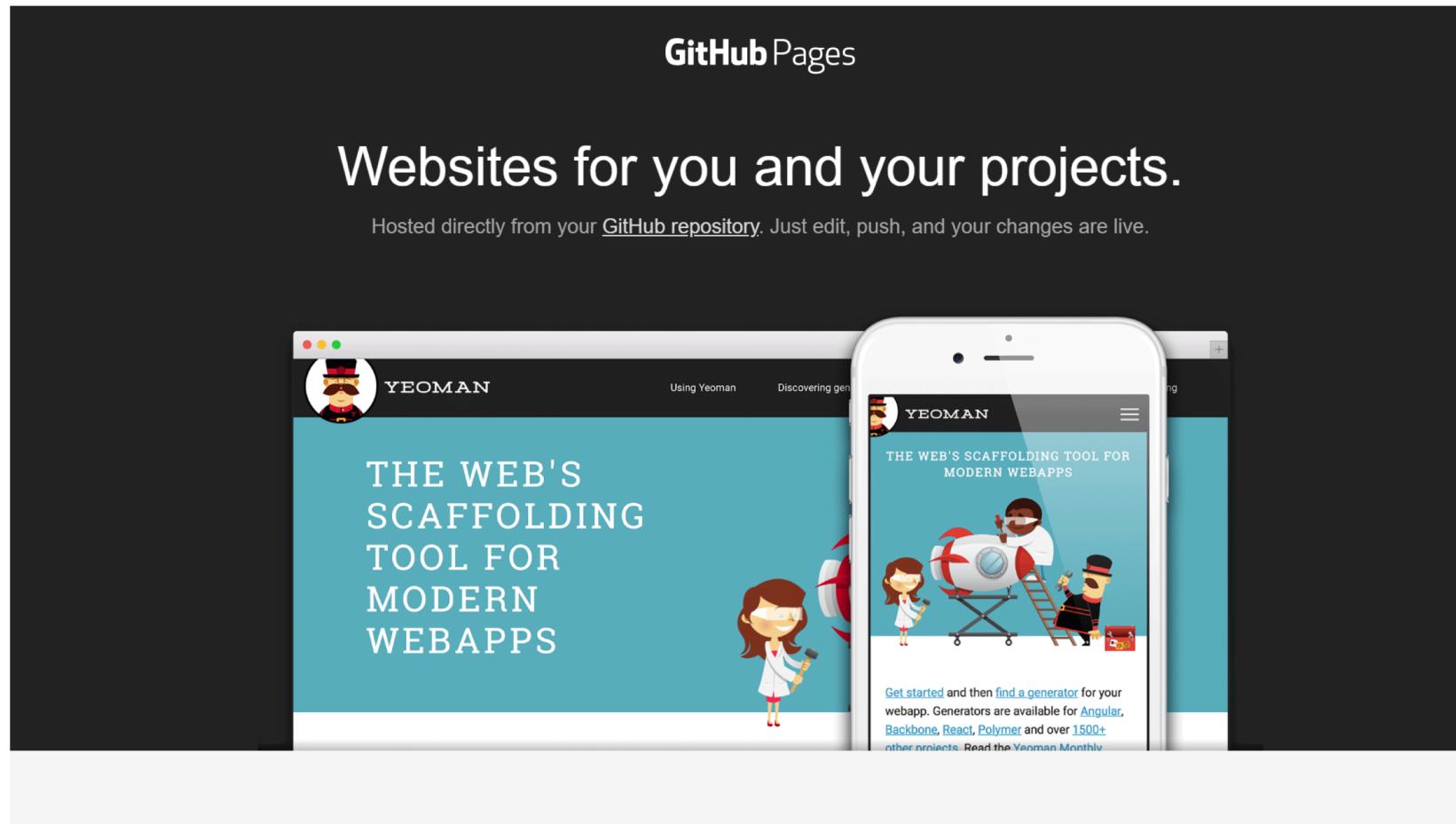


GitHub Pull Request

1. Find the classList repo on my GitHub (username SamRaymond)
2. Fork a copy of this repo
3. Clone the repo to your machine (from your account)
4. Using VSCode, open the README file and add an extra line with the following(separated by commas):
FirstName, LastName, GitHub Username
5. Add and commit the changes to the local copy of your repo
6. Push this commit to your GitHub Account
7. Send a Pull Request to me once your commit has been pushed to GitHub

GitHub Pages – HW 2

Free Website Hosting through GitHub
<https://pages.github.com/>



GitHub Pages – HW 2

For Homework 2 you will create a new repo for the website you made in Homework 1 and host it on your GitHub account using GitHub pages. Once your site is up and running you will fork the class list repo from class and add the URL of your site next to your GitHub username and perform the same pull request procedure.

Steps:

- 1 – Create a new Repo in GitHub for your HW1
- 2 – Perform the clone/add/push cycle to add all of the files to this repo from your local copy
- 3 – Use the GitHub pages steps to host this website on your account
- 4 – Delete the original classList folder
- 5 – Perform the Fork/Pull Request cycle to the SamRaymond/classList repo to update your info with the URL of your new webpage.

Due Date: Fri Sep 27, 5pm