

Online “Remote” Repositories

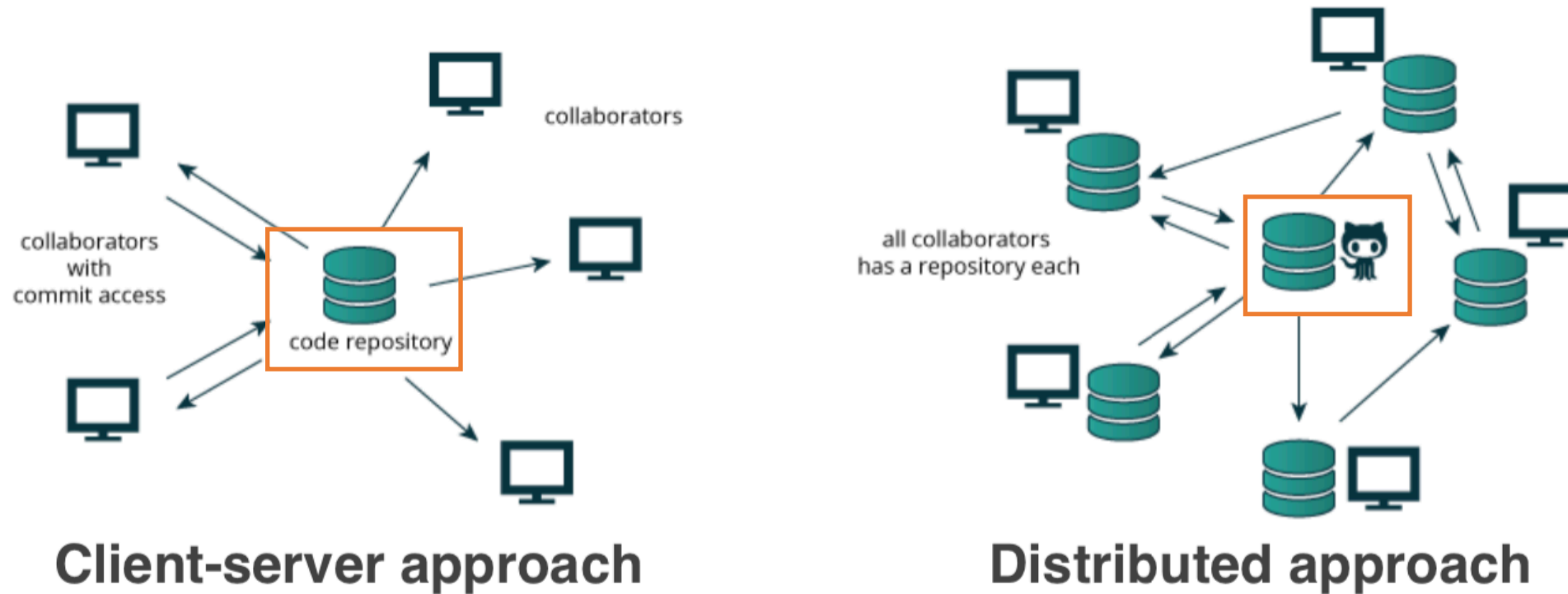
BIOS/BIOI/HG 606 Day 4

Hyun Min Kang

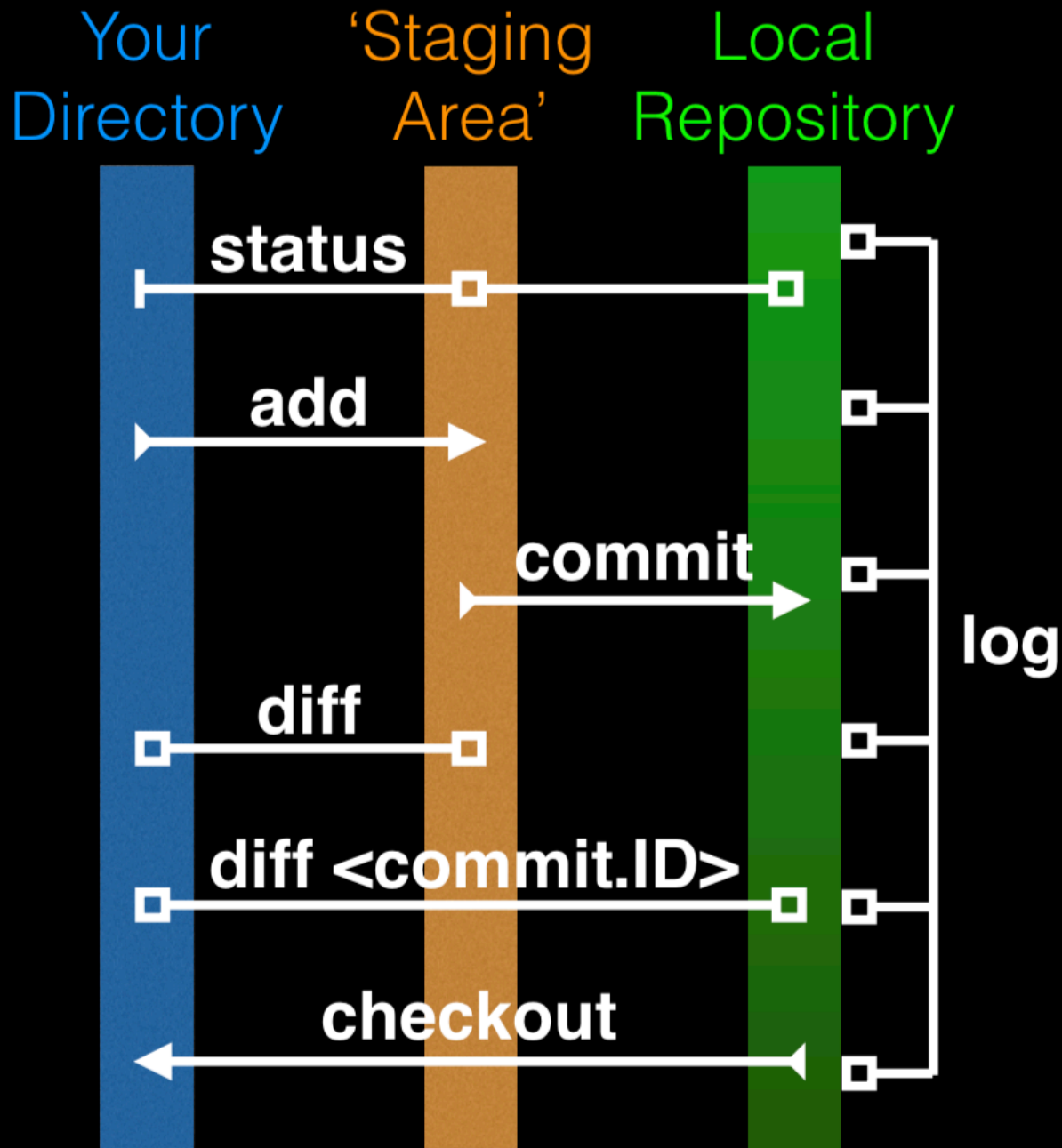
University of Michigan

Most of the lecture material was prepared by Barry Grant who is now at UCSD

Recap: Client-Server vs. Distributed VCS



For distributed version control systems like Git, a “**remote repository**” (e.g. an online Git repo at GitHub or Bitbucket) promotes further dissemination and collaboration.

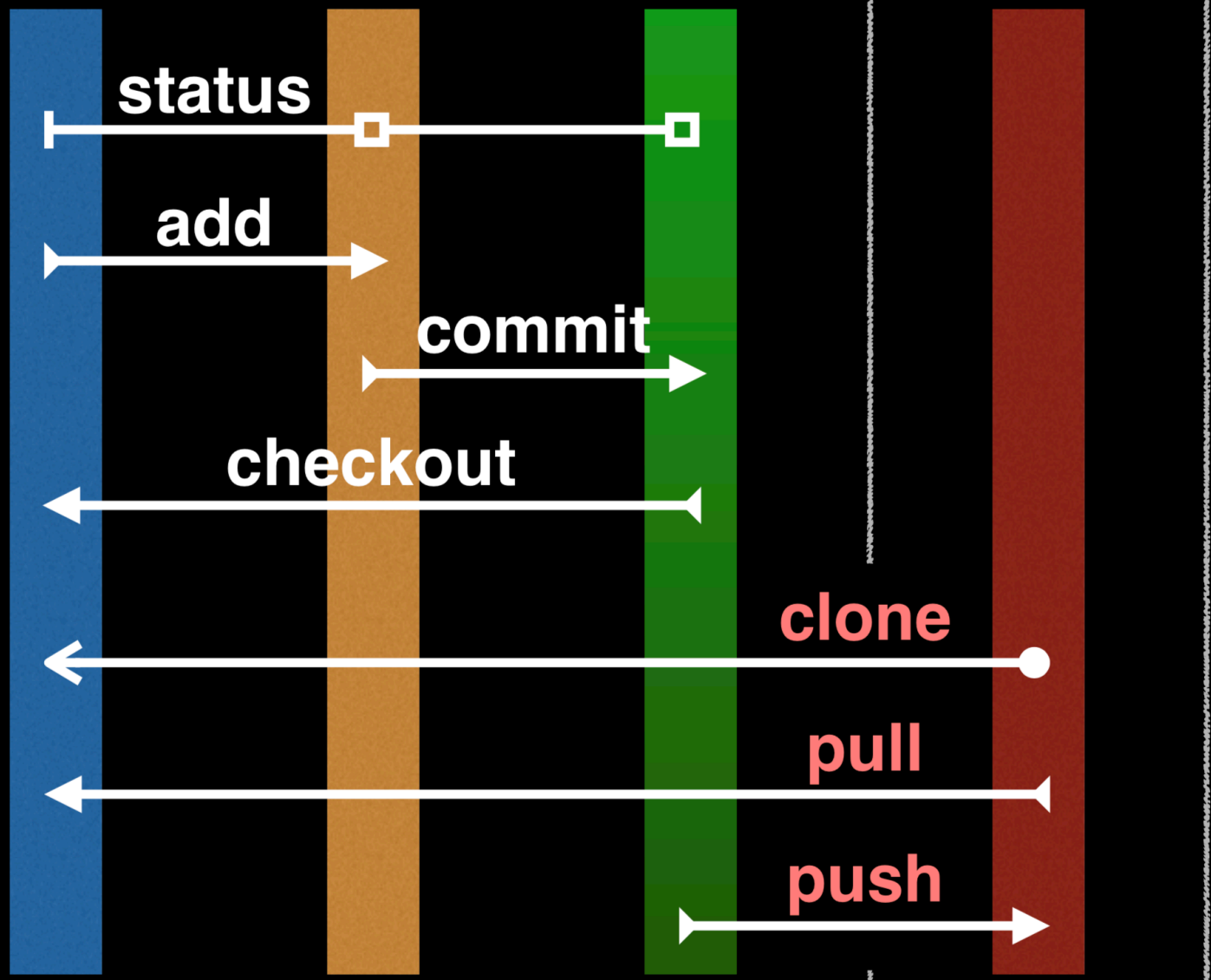


Your Directory

'Staging Area'

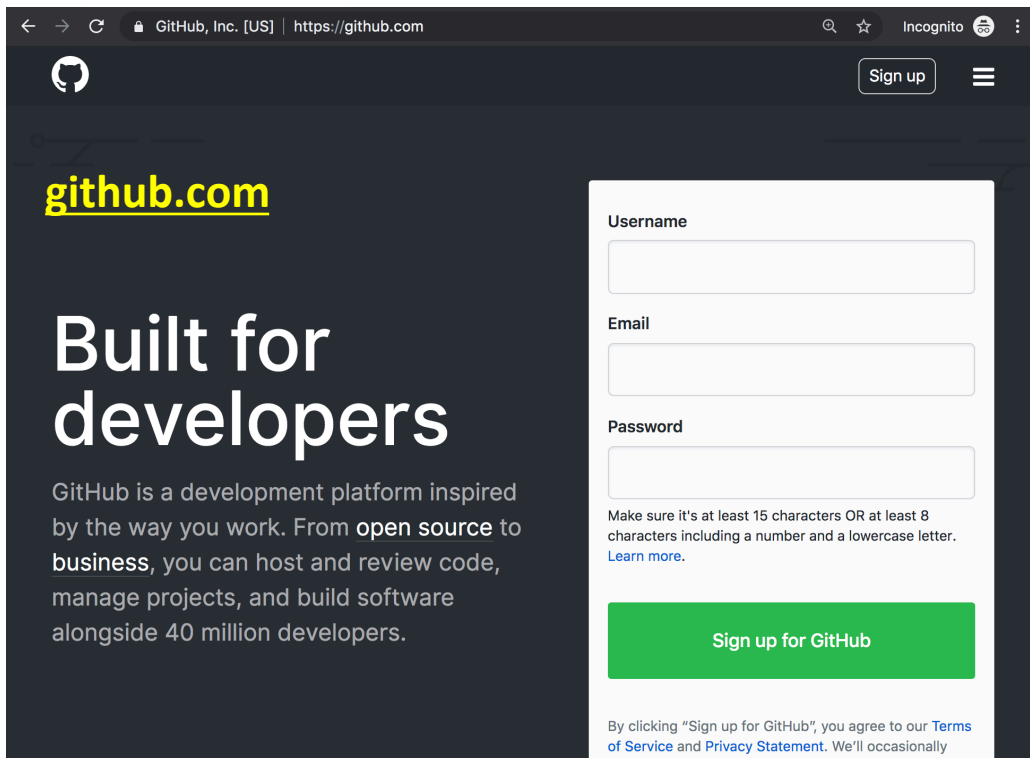
Local Repository

Remote Repository

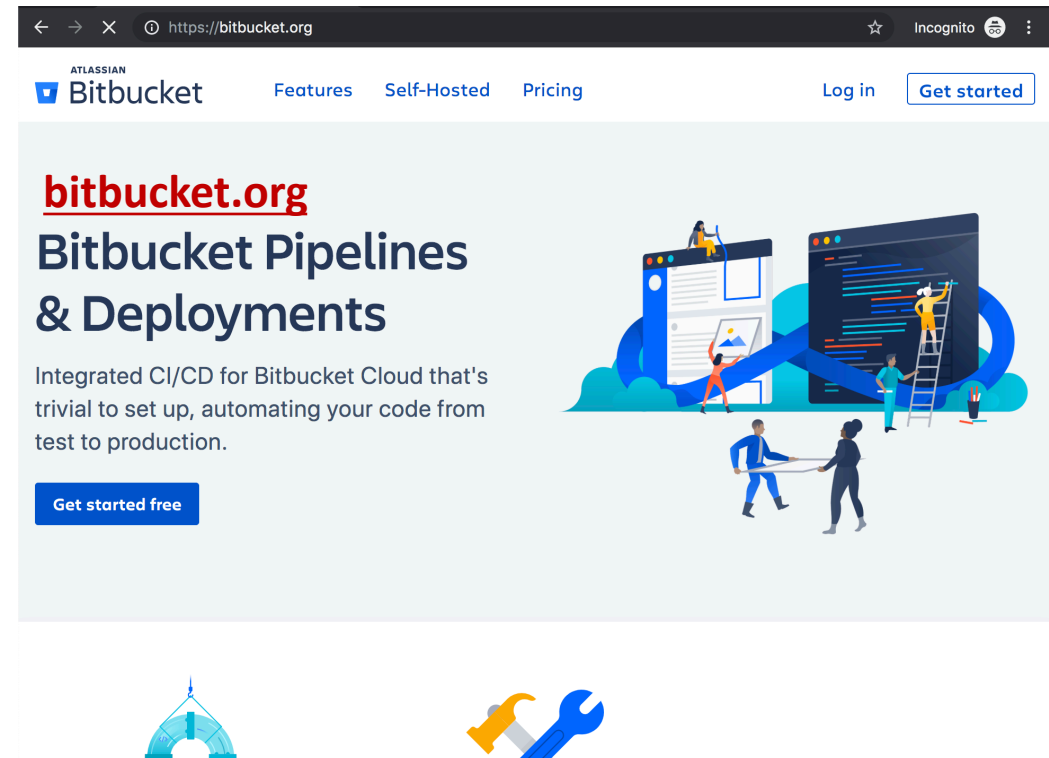


GitHub & Bitbucket

- **Git**hub and **Bit**bucket are two popular hosting services for Git repositories. These services allow you to share your projects and collaborate with others using both **'public'** and **'private'** repositories.



The screenshot shows the GitHub sign-up page. The browser address bar displays "https://github.com". The page features the GitHub logo and a "Sign up" button in the top right. The main heading is "github.com" in yellow, followed by "Built for developers" in large white text. Below this, a paragraph describes GitHub as a development platform for open source and business. On the right, there is a sign-up form with fields for "Username", "Email", and "Password". A green "Sign up for GitHub" button is at the bottom of the form. A small note at the bottom states: "By clicking 'Sign up for GitHub', you agree to our Terms of Service and Privacy Statement. We'll occasionally..."



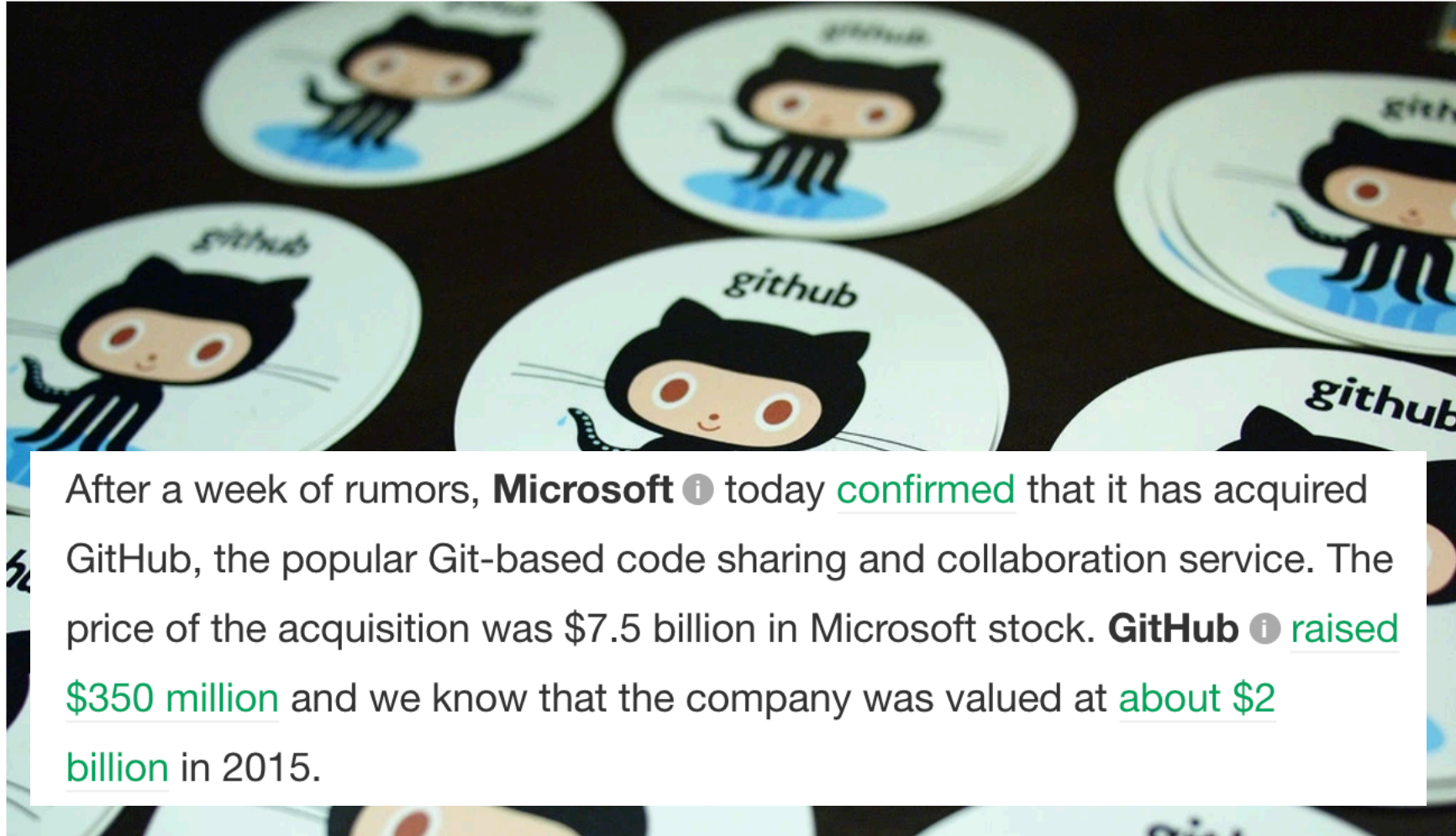
The screenshot shows the Bitbucket homepage. The browser address bar displays "https://bitbucket.org". The page features the Atlassian logo and "Bitbucket" text, with navigation links for "Features", "Self-Hosted", and "Pricing". There are "Log in" and "Get started" buttons in the top right. The main heading is "bitbucket.org" in red, followed by "Bitbucket Pipelines & Deployments" in large blue text. Below this, a paragraph describes the integrated CI/CD for Bitbucket Cloud. An illustration shows people working on code and deployment. A blue "Get started free" button is prominent. At the bottom, there are icons for a blue arch and a yellow wrench.

Microsoft has acquired GitHub for \$7.5B in stock



Frederic Lardinois, Ingrid Lunden 1 year ago

Comment



After a week of rumors, **Microsoft** today confirmed that it has acquired GitHub, the popular Git-based code sharing and collaboration service. The price of the acquisition was \$7.5 billion in Microsoft stock. **GitHub** raised \$350 million and we know that the company was valued at about \$2 billion in 2015.

<https://techcrunch.com/2018/06/04/microsoft-has-acquired-github-for-7-5b-in-microsoft-stock/>

What is the big deal?

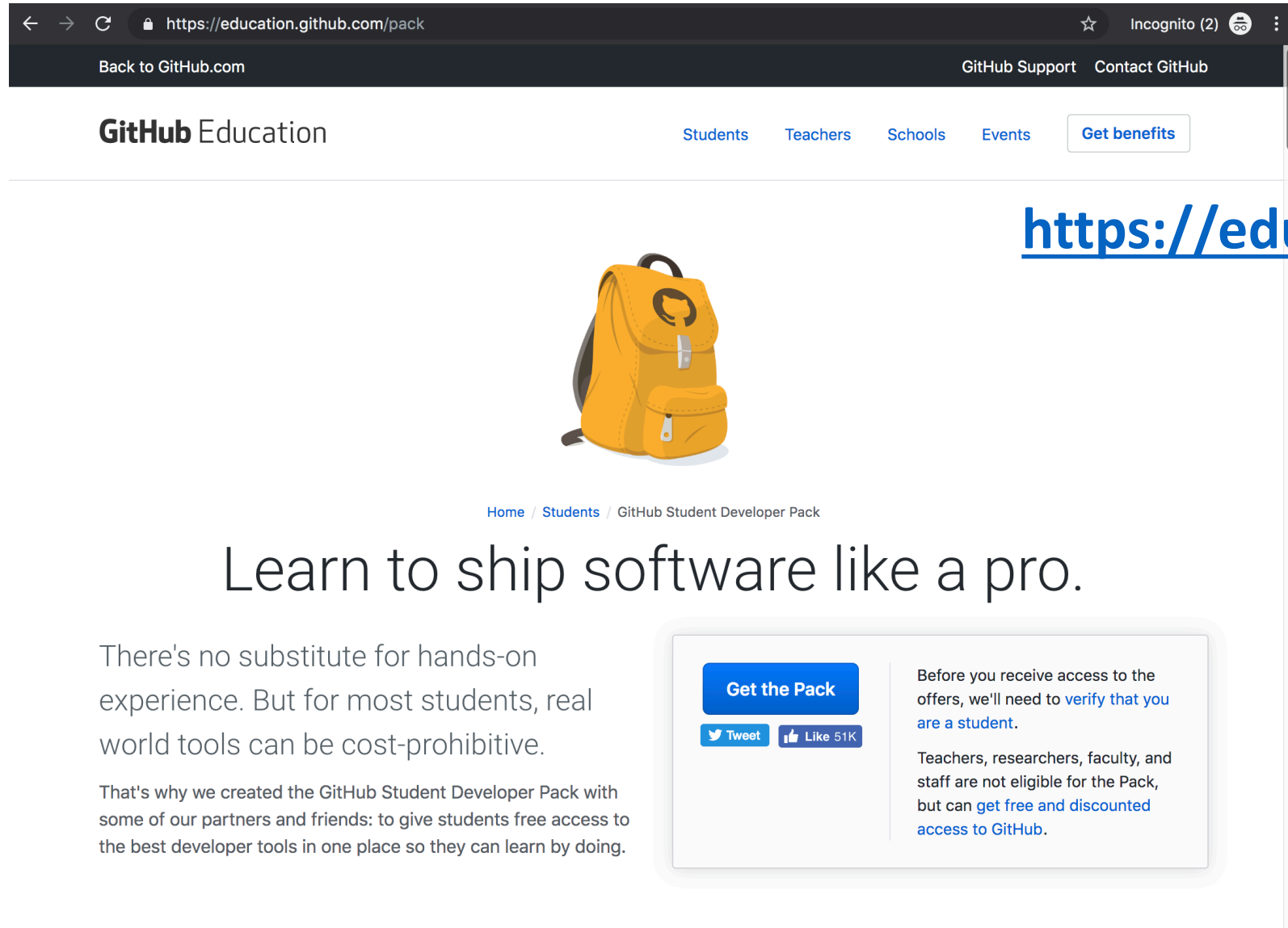
- At the simplest level, **Github** and **Bitbucket** offer backup of your projects' history and a centralized mechanism for sharing with others by putting **your Git repository online**.
 - Github, in particular, is often referred to as the “A nerd’s Facebook and LinkedIn combined”
- At their core, both services **offer a new paradigm for open collaborative project development**, particular for software.
 - In essence, they allow anybody to contribute to any public project and get acknowledgement (We will demo this later)

Public contribution by “fork & pull”

- For any public project on Github or Bitbucket, you can make any changes you like, which means **you don't first need permissions to contribute** your improvements/bug-fixes/ideas, etc.
- There are two mechanisms for doing this:
 1. For trusted “collaborators” (via a **shared repository** and regular **commit & push** steps)
 2. Joe public (via a different ‘**fork & pull request**’ approach)

You don't have to beg for a permission (just submit a pull request) on GitHub or BitBucket and your changes with attribution will be in the project and its history once approved.

Sign up for free GitHub student pack



The screenshot shows a web browser window with the URL <https://education.github.com/pack>. The page features the GitHub Education logo, navigation links for Students, Teachers, Schools, and Events, and a 'Get benefits' button. A yellow backpack with the GitHub logo is prominently displayed. Below the backpack, the breadcrumb trail reads 'Home / Students / GitHub Student Developer Pack'. The main heading is 'Learn to ship software like a pro.' The text below explains that hands-on experience is essential but expensive, leading to the creation of the GitHub Student Developer Pack. A 'Get the Pack' button is visible, along with social media sharing options for Tweet and Like (51K). A note states that before access, users must verify they are a student. It also mentions that teachers, researchers, faculty, and staff are not eligible but can get free and discounted access to GitHub.

<https://education.github.com/pack>

GitHub student pack offers unlimited free public and private repositories, along with other free benefits

Steps to follow next

- Sign up for free GitHub student pack at <https://education.github.com/benefits> (or sign up for a free account at <https://github.com/join>)
- Check the verification email to complete sign up
- Skip the hello-world tutorial

Create a new repository

- Log in with your github account to create a new repository of visit <https://github.com/new>
- Name your repository as:
bioboot_demo_github
- Create the repository

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Owner

 hyunminkang ▾



Repository name *

bioboot_demo_github ✓

Great repository names are short and memorable. Need inspiration? How about [scaling-octo-spoon?](#)

Description (optional)

This is an example [github](#) repo for biocomputing bootcamp

-  **Public**
Anyone can see this repository. You choose who can commit.
-  **Private**
You choose who can see and commit to this repository.

Skip this step if you're importing an existing repository.

- Initialize this repository with a README**
This will let you immediately clone the repository to your computer.

Add .gitignore: **None** ▾

Add a license: **None** ▾



Create repository

Let's **push** an existing repository

```
> cd ~/git_class
```

```
> git remote add origin
```

```
https://github.com/YourGitHubUserName/bioboot_demo  
github.git
```

```
> git push -u origin master
```

You will be prompted for your
username and password

Tip: You can get the long URL in the second step from your GitHub page

Let's **push** an existing repository

```
> cd ~/git_class
```

```
> git remote add origin
```

```
https://github.com/YourGitHubUserName/bioboot_demo  
github.git
```

```
> git push -u origin master
```

CONGRATULATIONS!

You just pushed your local repo to GitHub!!

Check it out in your web browser

hyunminkang / bioboot_demo_github

Unwatch 1 Star 0 Fork 0

- Code
- Issues 0
- Pull requests 0
- Projects 0
- Wiki
- Security
- Insights
- Settings

This is an example github repo for biocomputing bootcamp Edit

Manage topics

2 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

hyunminkang	Add ToDo and modify README	Latest commit c147d0c 6 hours ago
README	Add ToDo and modify README	6 hours ago
ToDo	Add ToDo and modify README	6 hours ago

README

```
This is the first line of text
This is a 2nd line of text
```

Let's edit README online


- Specifically, let's add some Markdown content

Branch: master ▾

bioboot_demo_github / README

Find file

Copy path

 hyunminkang Update README

7606bb7 now

1 contributor

7 lines (5 sloc) | 244 Bytes

Raw

Blame

History



```
1 # My first Git repo is now online
2 This is the first line of text
3 This is a 2nd line of text
4
5 I am going to use markdown syntax from now on because it is cool!
6 I am a student in [bioboot camp](http://dcmb_courses.github.io/bioinf606-2019)
```


Let's also edit **locally**..

```
> git pull
```

```
> mv README README.md
```

```
> git status
```

```
> git add README.md README
```

```
> git commit -m "Renamed README to README.md"
```

```
> git push
```

Check your remote repository. What happened and why?

This is an example github repo for biocomputing bootcamp

Edit

Manage topics

4 commits 1 branch 0 releases 1 contributor


Branch: master New pull request Create new file Upload files Find File Clone or download

Table with commit history: hyunminkang Renamed README to README.md (4 minutes ago), README.md Renamed README to README.md (4 minutes ago), ToDo Add ToDo and modify README (8 days ago)

README.md content: My first Git repo is now online. This is the first line of text This is a 2nd line of text. I am going to use markdown syntax from now on because it is cool! I am a student in bioboot camp

Examine your commit history

 4 commits

 1 branch

 0 releases

 1 contributor

Branch: master ▾

New pull request

Create new file

Upload files

Find File

Clone or download ▾

 hyunminkang Renamed README to README.md

Latest commit cd83a60 4 minutes ago

 README.md

Renamed README to README.md

4 minutes ago

 ToDo

Add ToDo and modify README

8 days ago

 README.md



My first Git repo is now online

This is the first line of text This is a 2nd line of text

I am going to use **markdown** syntax from now on because it is *cool!* I am a student in [bioboot camp](#)

Examine your commit history

hyunminkang / bioboot_demo_github

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Security Insights Settings

Branch: master

Commits on Aug 17, 2019

- Renamed README to README.md
hyunminkang committed 5 minutes ago
cd83a60
- Update README
hyunminkang committed 8 minutes ago
7606bb7

Commits on Aug 9, 2019

- Add ToDo and modify README
hyunminkang committed 8 days ago
c147d0c
- Create a README file
hyunminkang committed 8 days ago
ed1ec4e

Live demo

<http://github.com/hyunminkang/bioboot-demo-2019>

Summary: Collaboration via GitHub

- Using shared repository, you can collaboratively contribute to a repo with others as a team.
- Using fork, pull requests, and code review, you can contribute to any public project even if you don't have write access.
 - You first “fork” the repo you are interested in. This creates a completely separate copy of the repo by cloning it and adding a copy to YOUR GitHub account.
 - You then make your changes (in your forked repo) and submit a pull request back to the original repo.