

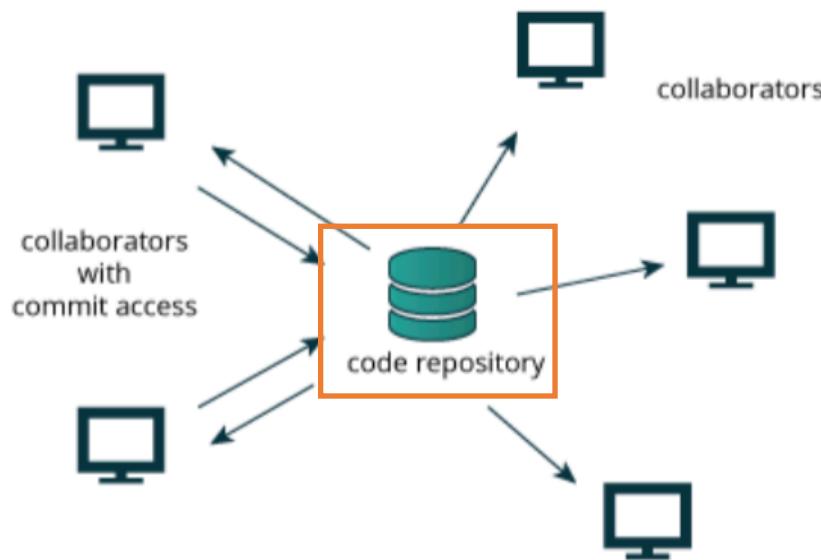
# Online “Remote” Repositories

BIOS/BIOI/HG 606 Day 4

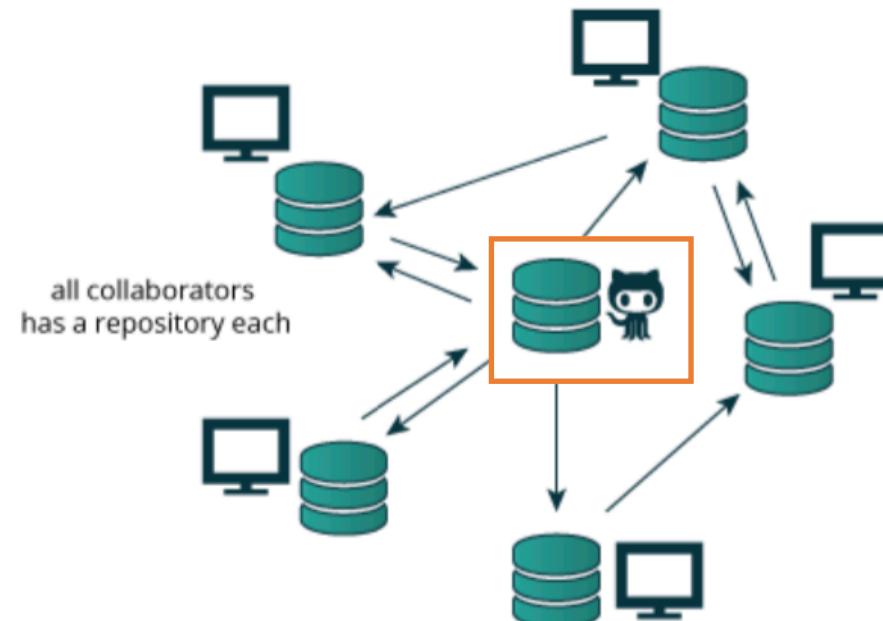
**Hyun Min Kang**  
**University of Michigan**

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

# Recap: Client-Server vs. Distributed VCS



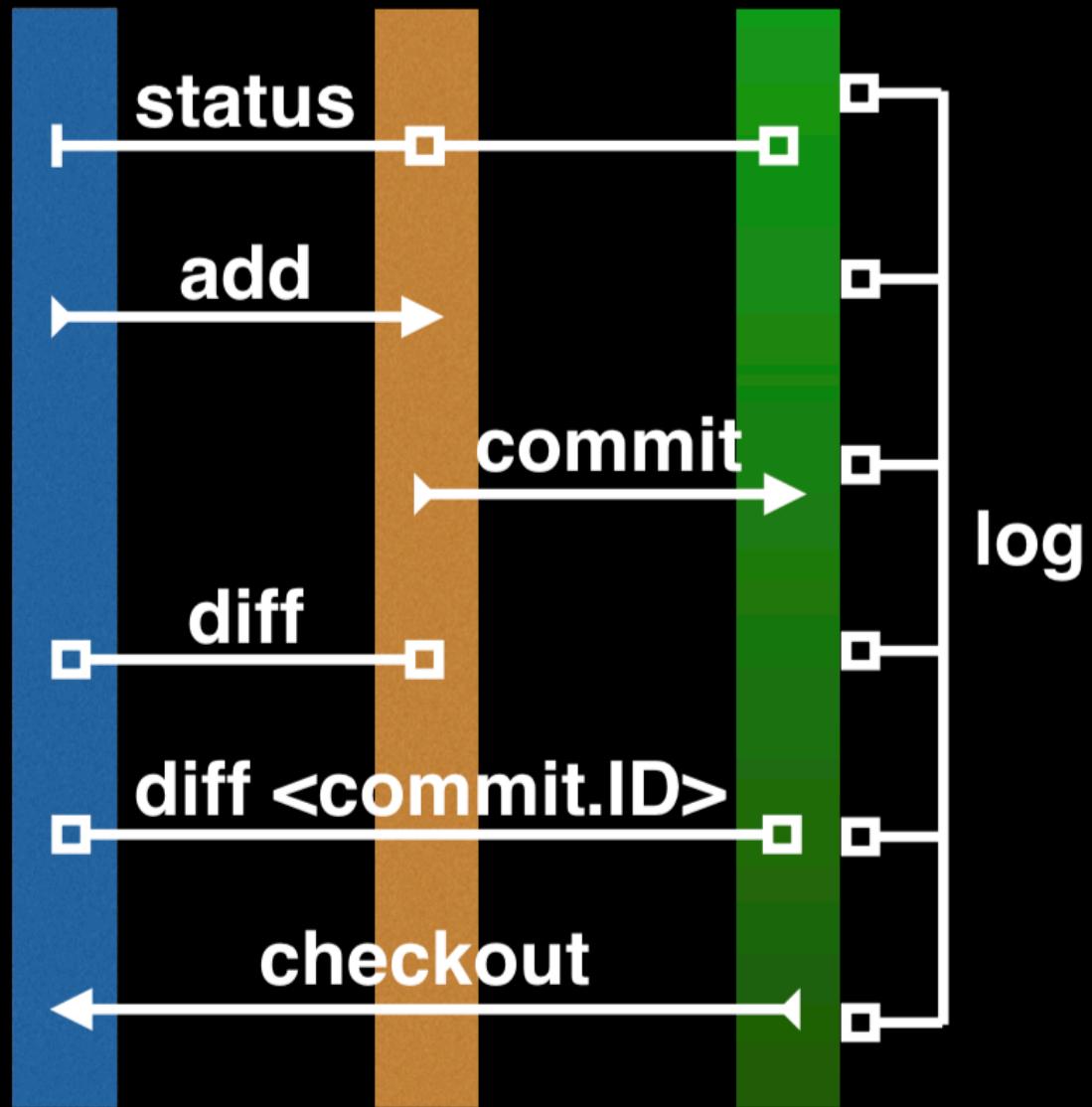
**Client-server approach**



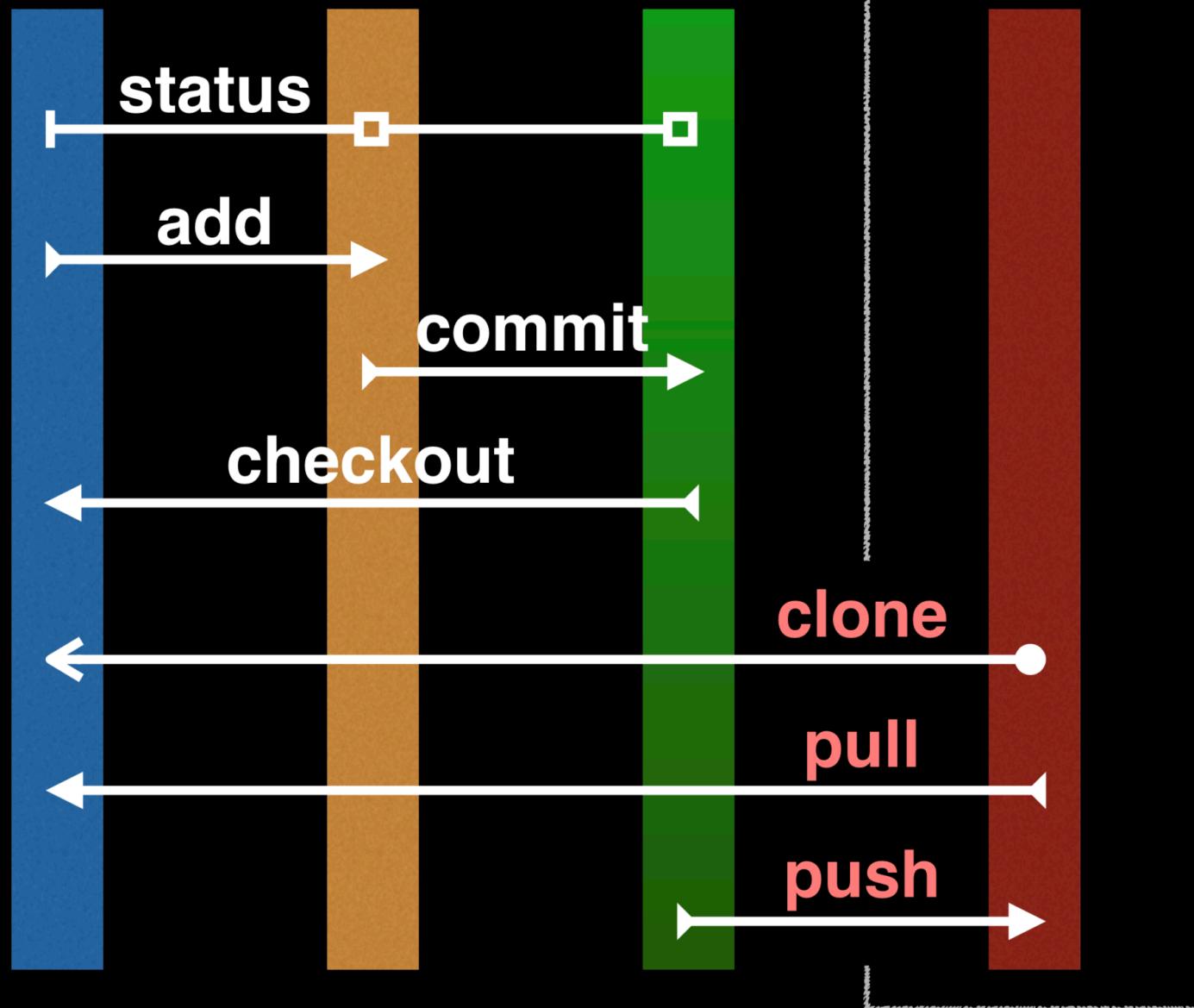
**Distributed approach**

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 'Staging Local  
Directory Area' Repository

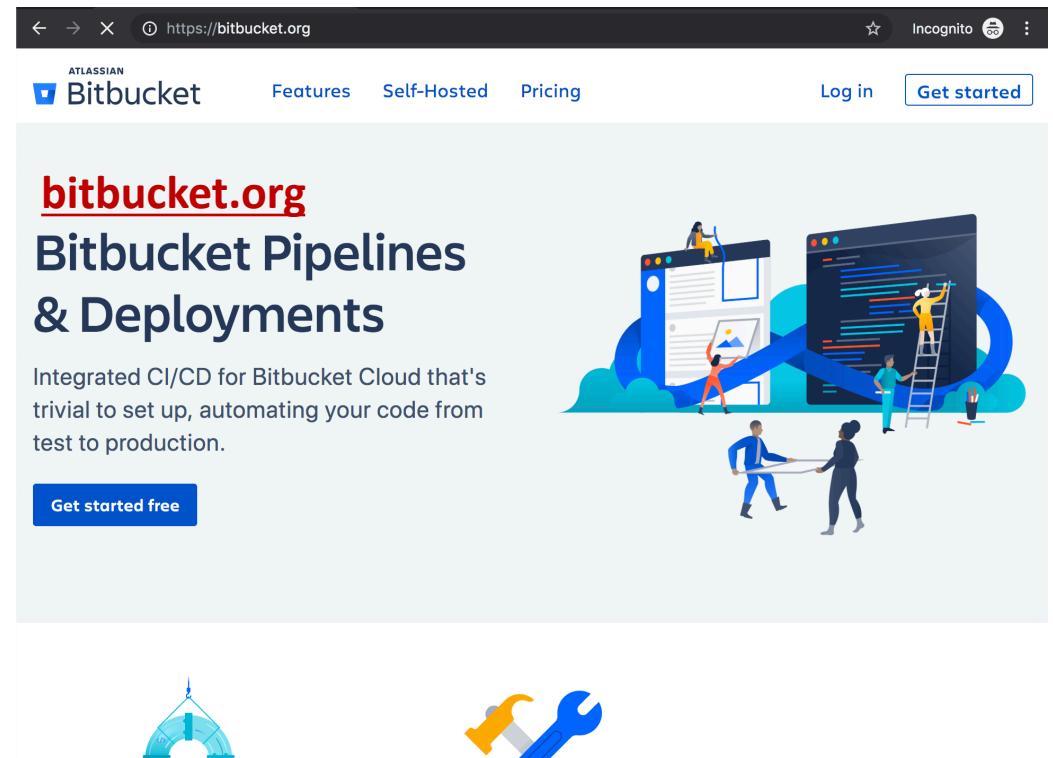
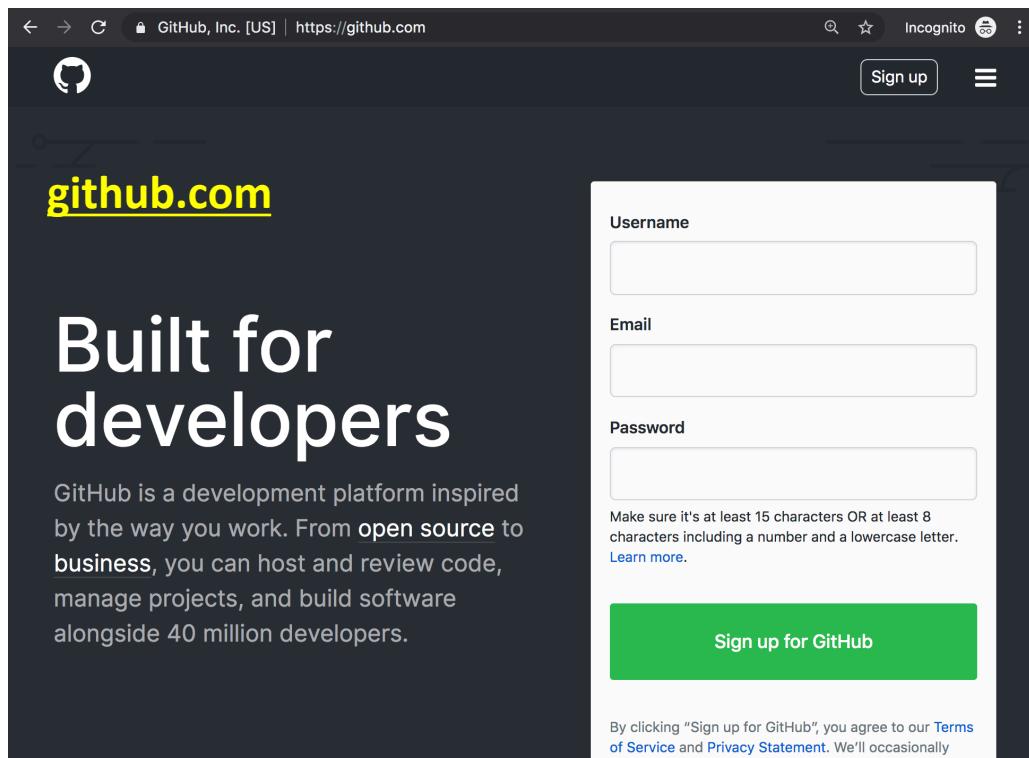


Your Directory    ‘Staging Area’    Local Repository    Remote Repository



# GitHub & Bitbucket

- **Github** and **Bitbucket** 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.



# Microsoft has acquired GitHub for \$7.5B in stock



Frederic Lardinois, Ingrid Lunden 1 year ago

Comment



After a week of rumors, Microsoft [i](#) 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 [i](#) [raised](#) \$350 million and we know that the company was valued at [about \\$2 billion](#) in 2015.

# What is the **big deal**?

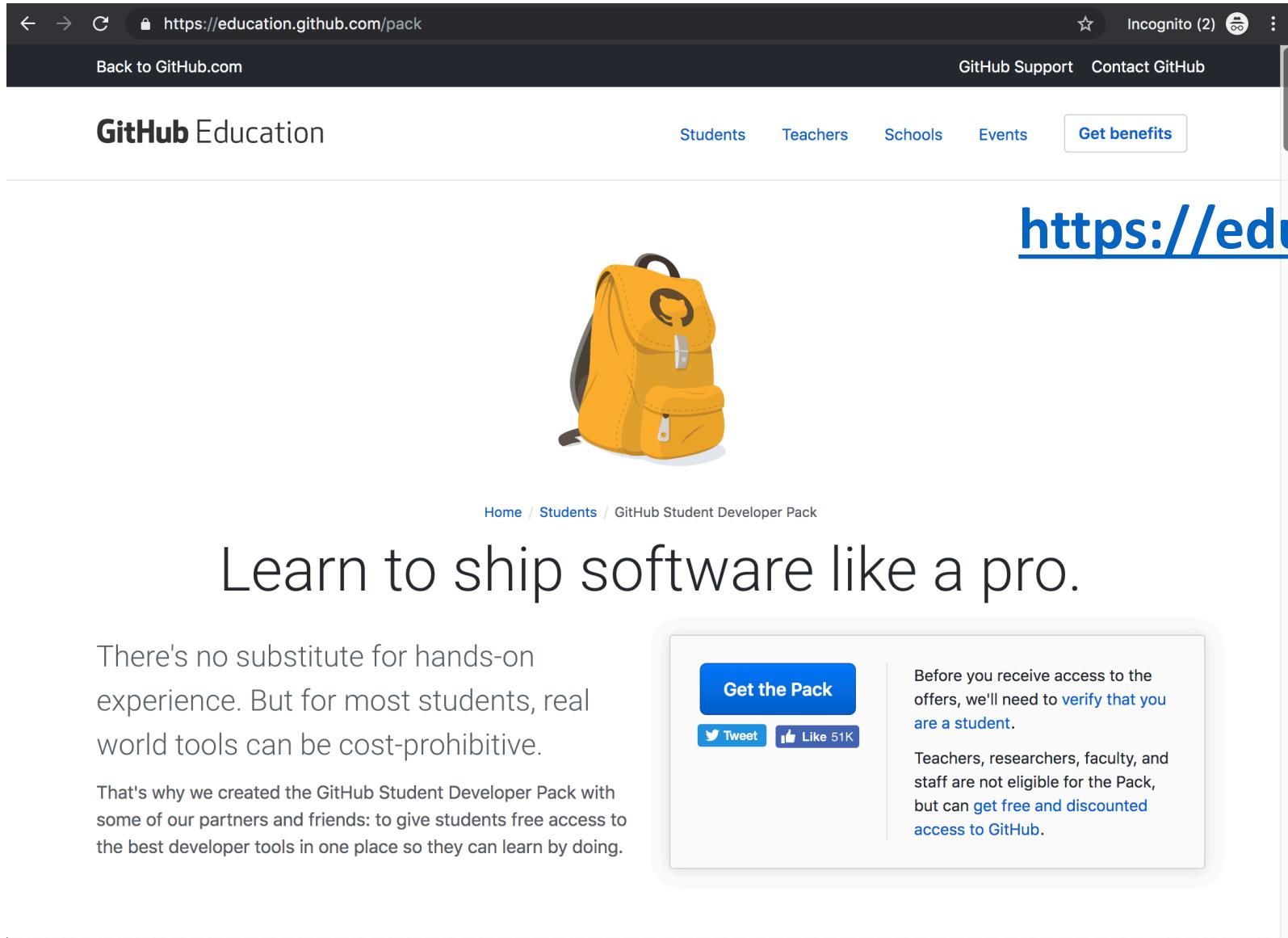
- At the simplest level, **Github** and **Bitbucket** offer backup of your projects' history and a centralized mechanism for sharing with others by putting **your Git repository online**.
  - Github, in particular, is often referred to as the “A nerd's Facebook and LinkedIn combined”
- At their core, 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 the GitHub Education website at <https://education.github.com/pack>. The page features a large yellow backpack icon. The main heading is "Learn to ship software like a pro.". Below it, there's a paragraph about the cost-prohibitive nature of real-world tools for students, followed by a note about GitHub creating the Student Pack for them. A call-to-action button says "Get the Pack". To the right, a sidebar explains the verification process for students.

Back to GitHub.com

GitHub Support Contact GitHub

GitHub Education Students Teachers Schools Events Get benefits

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

Home / Students / GitHub Student Developer Pack

Learn to ship software like a pro.

There's no substitute for hands-on experience. But for most students, real world tools can be cost-prohibitive.

That's why we created the GitHub Student Developer Pack with some of our partners and friends: to give students free access to the best developer tools in one place so they can learn by doing.

Get the Pack

Tweet Like 51K

Before you receive access to the offers, we'll need to verify that you are a student.

Teachers, researchers, faculty, and staff are not eligible for the Pack, but can get free and discounted access to GitHub.

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 or 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



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
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```
> 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*



Search or jump to...



Pull requests Issues Marketplace Explore



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?*

[Code](#)[Issues 0](#)[Pull requests 0](#)[Projects 0](#)[Wiki](#)[Security](#)[Insights](#)[Settings](#)

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 ▾](#)

 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

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
- Update README  
hyunminkang committed 8 minutes ago

Commits on Aug 9, 2019

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

Newer Older

# 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.