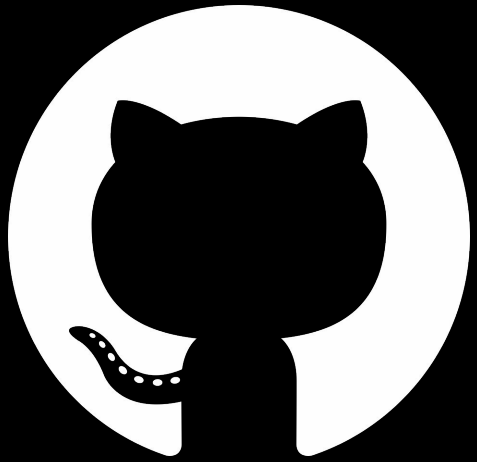
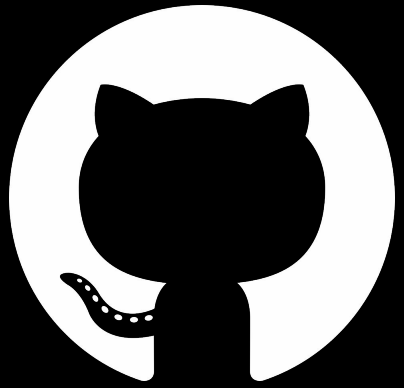


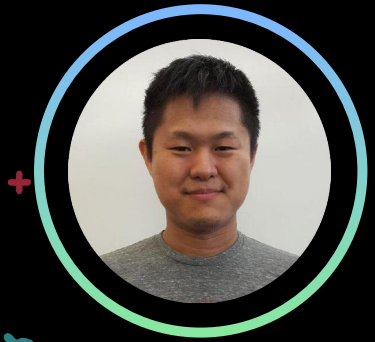


Basic Introduction to GitHub

Agenda

- Presenter Introduction
- What is GitHub?
- GitHub as a Platform
- How Does It Work?
- GitHub Features
- Git & GitHub Terms
- Demo: Browsing Repositories
- Demo: Creating a New Repository

Introduction



John Koh
freezerb@github.com

- Customer Reliability Engineer at GitHub
  - Since July 2021
- 10 years of software development and IT experience
- Carleton University Alumnus
  - Computer Systems Engineering, Class of 2011

What is GitHub?

"[GitHub] is an Internet hosting service for software development and ***version control*** using ***Git***."

GitHub

What is GitHub?

Version Control

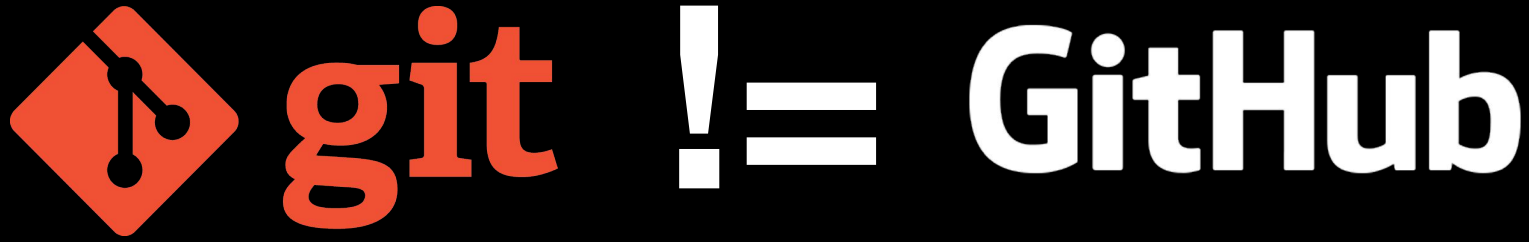
aka. source control, source control management

Systems and processes of tracking and managing changes to code within software development.

Git

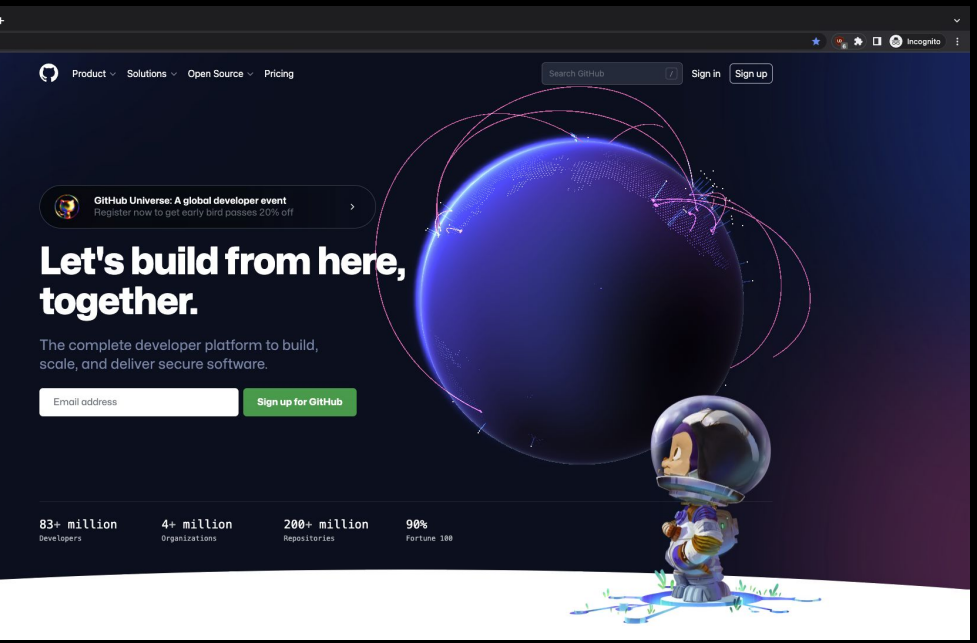
Free and *open source* version control software that tracks changes made to any set of files. A command-line utility that allows users to define, update and navigate different or previous states of software.

What is GitHub?



While they share a close relationship, GitHub and Git are separate entities. GitHub is a Git host and provider.

GitHub as a Platform



GitHub hosts the largest open source community in the world, with prominent free and open source projects. The Linux OS project is hosted on GitHub. Git itself is hosted on GitHub!

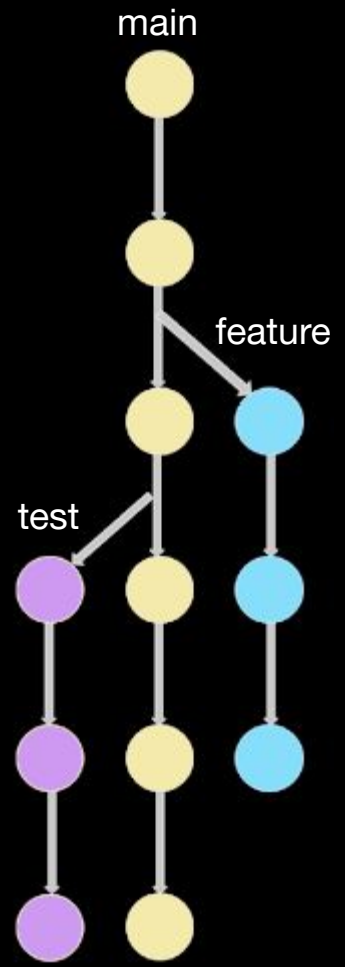
GitHub is a popular choice for any project, as it provides a host of features for users everywhere.

How Does It Work?

In Git, projects are defined as ***repositories*** or ***repos***. Repositories are a collection of ***branches***.

Branches represent a timeline of files hosted on a repository, defined by ***commits.***

Commits are defined points on a branch that track the state of files.

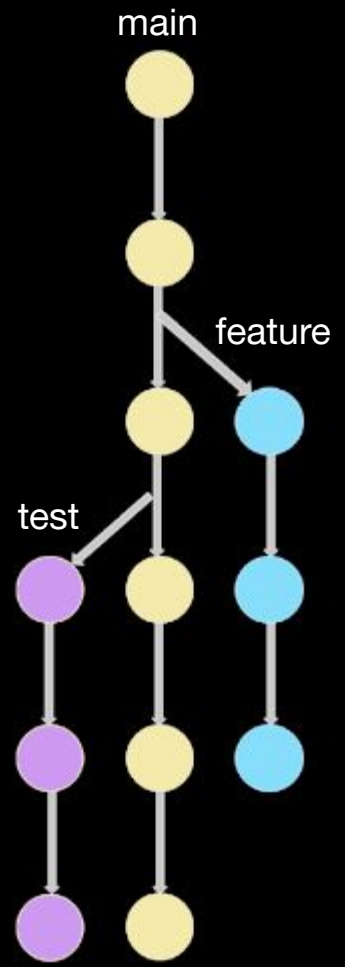


How Does It Work?

Branching is when a branch is created from another branch.

Merging is when two or more branches merge together as one branch.

Commits can be made to any branch by anyone with repository access, asynchronously. This allows people to collaborate on one project simultaneously without depending on or impacting each other's updates.

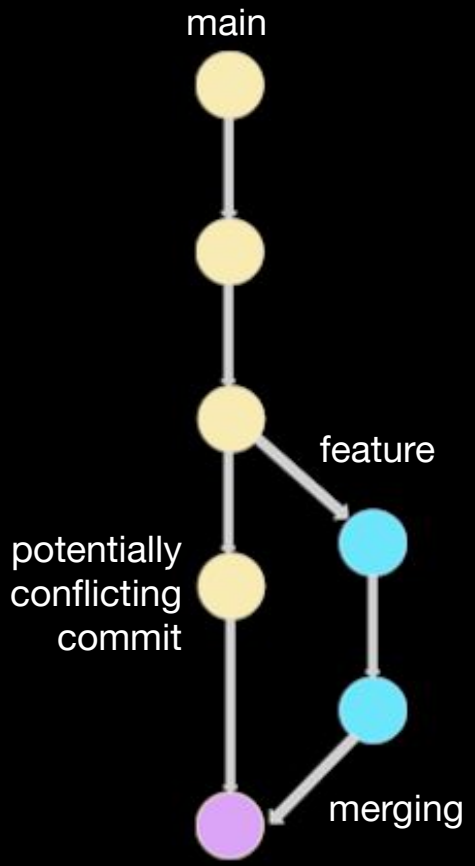


How Does It Work?

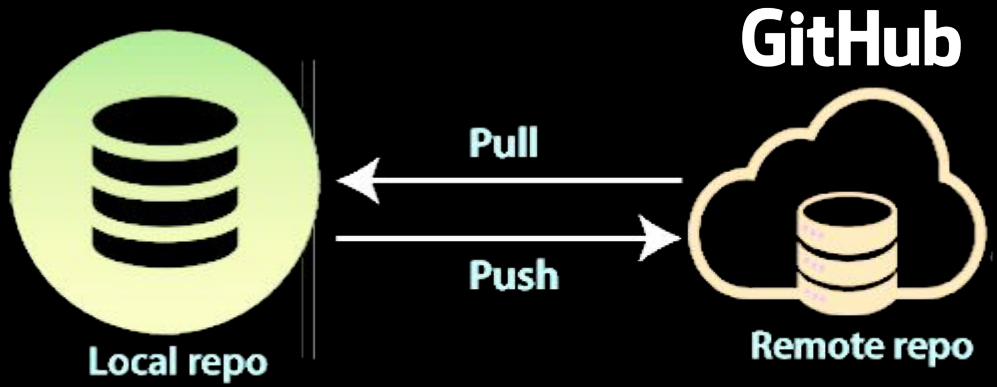
Branches need to be merged together to account for all work done, as a single entity.

If work happens on the same files on different branches, they may face conflicts as the branches are merged. Git detects these conflicts and requires manual intervention to define what end result of the file needs to be.

If the changes do not conflict with each other, they will merge without issue.



How Does It Work?



Pushing is when changes are uploaded from the local copy to the remote repository.

Pulling is when changes are downloaded from the remote repository to a local copy.

GitHub Features

GitHub provides a feature called ***forks.*** Forks are copies of a repository under a new owner. Forks remain connected to the parent repository but are disconnected from the users of the original repository.

GitHub also provides the ***pull request*** feature. Pull requests are when a user proposes changes to a repository or branch to its owner to perform a merge of their changes.

Git & GitHub Terms

Repository: Git project, consists of branches

Branch: Timeline of files, consists of commits

Commit: Changes made to files within a branch

Merge: Two branches becoming one

Push: Promoting local changes to the remote repo

Pull: Downloading remote repo changes to local

Forks: Copy of a repo, owned by someone else

Pull Request: Request to the owner to merge proposed file changes

Demos

Thank you!