KHARAGPUR OPEN SOURCE SOCIETY

GIT & GITHUB WORKSHOP 2025

WHO ARE WE?

We are a group of Open Source Enthusiasts who share something more fundamental, **‘a love for coding’**.

Every year KOSS holds events to familiarize students with Git and GitHub, Google Summer of Code, as well as conducts workshops on topics such as Linux Installation and Cybersecurity.

>> OVERVIEW

- Terminal
- Version Control
- What is Git?
- Git Commands
- Branching
- What is GitHub?
- Pull Requests

THE TERMINAL

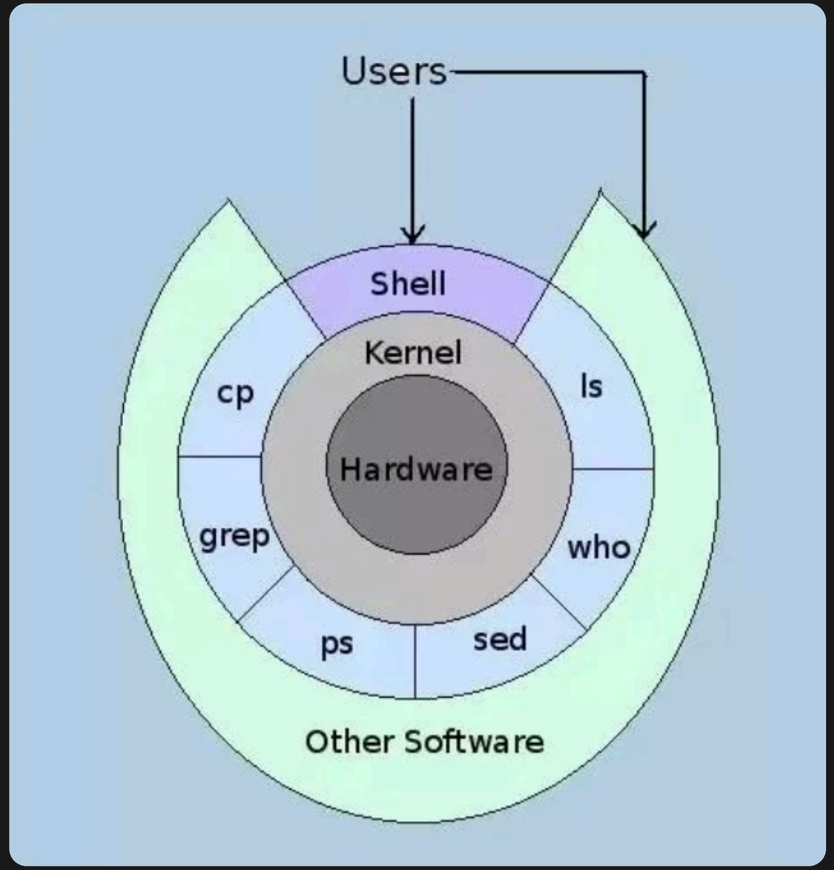
> What is a Terminal?

```
 ~                                                    impure 11:48:39 PM IST
❯ fortune | lolcat
timesharing, n:
        An access method whereby one computer abuses many people.
```

THE TERMINAL

> What is a Terminal?

- A text-based interface to give instructions to your computer
- Faster and more powerful than only using GUIs

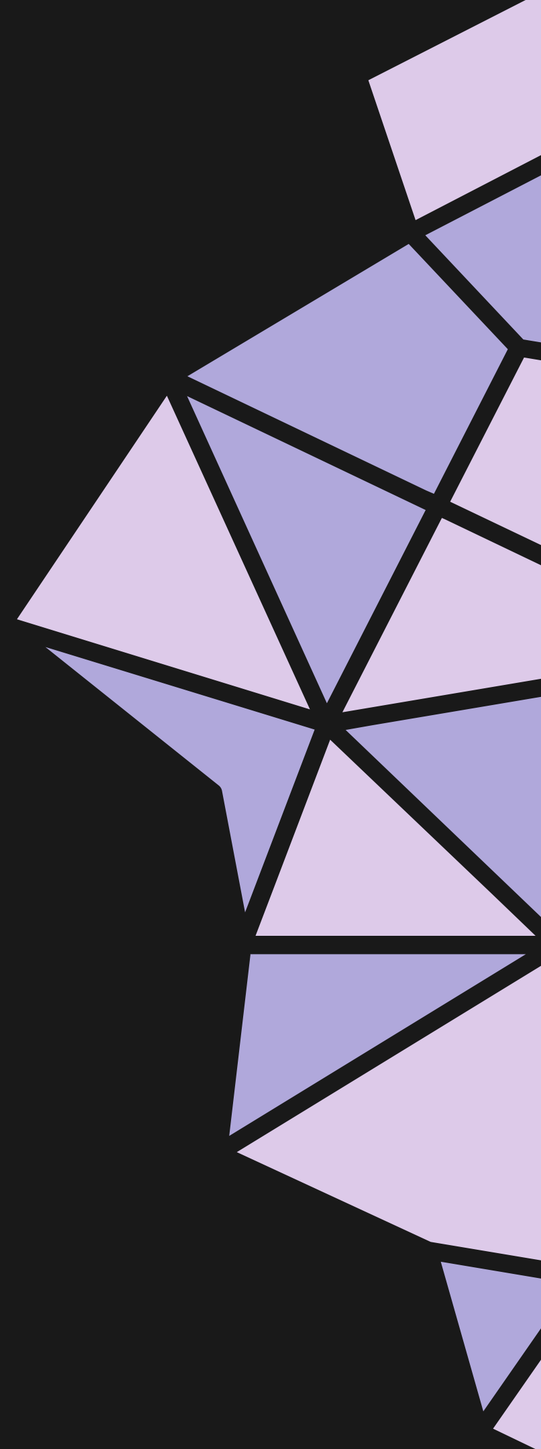


VERSION CONTROL

> *What is Version Control?*

- Version Control or source control is the process of keeping track of **changes** made to software code

- Version Control System tools help software teams **manage and organize** these changes over time



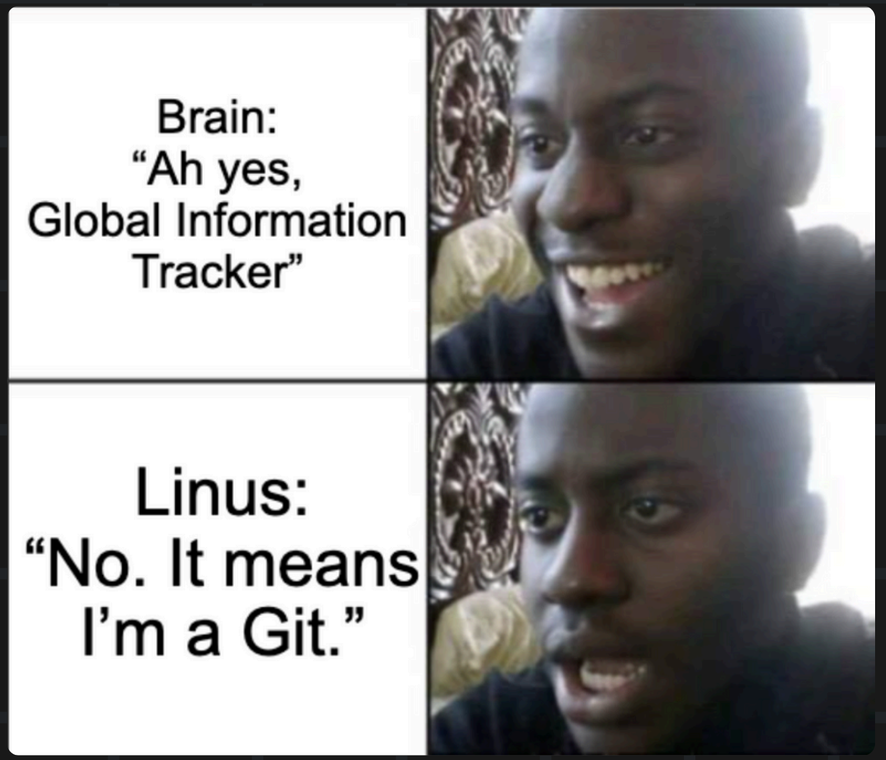
GIT

Git is a **free and open source** version control system, used for source code management.

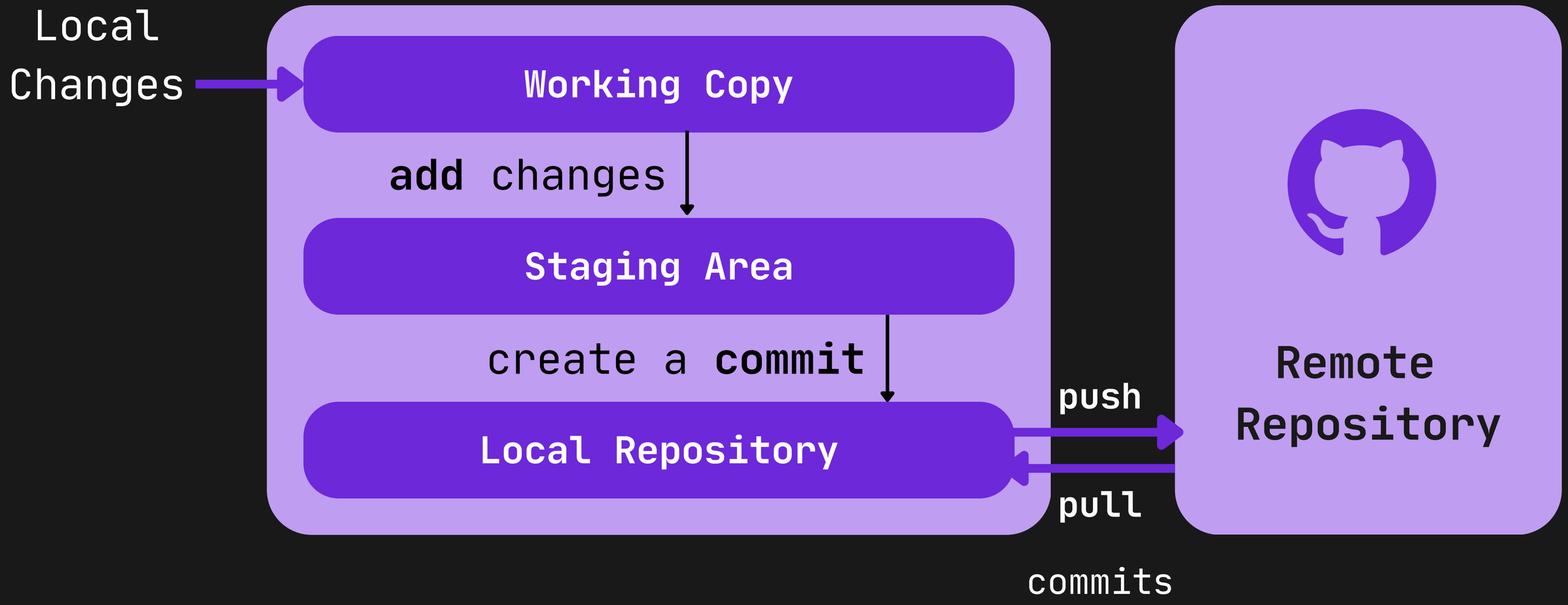
Git was originally created by Linus Torvalds, (who also happens to be the creator of Linux) for version control in the development of the Linux kernel.

In British slang, “git” means an unpleasant person (roughly like "jerk" or "idiot").

According to official docs. GIT can be *‘anything’* depending on your mood



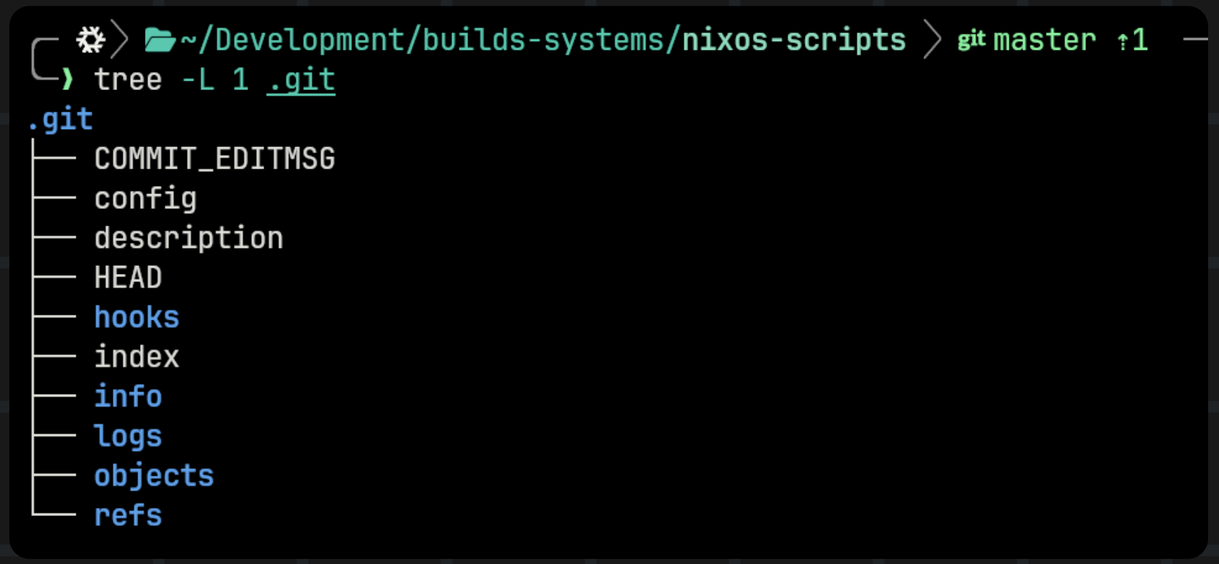
GIT WORKFLOW



INITIALISING A REPOSITORY

INITIALISATION:

```
$ cd dir-name
$ git init
```



GIT COMMANDS

```
$ git add <path>
```

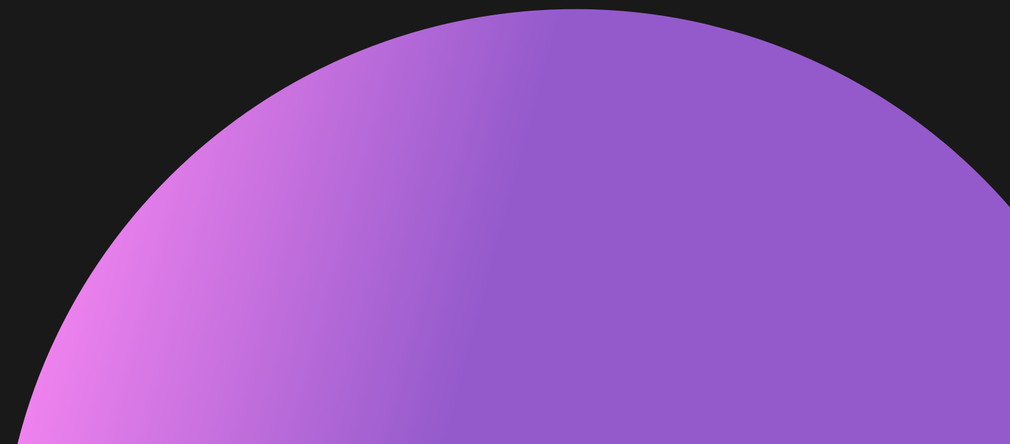
adds the specified files to the staging area

```
$ git status
```

shows files in current working directory and staging area

```
$ git commit -m “message”
```

creates a commit object with the added changes



lol
harshkhandeparkar committed on Nov 3, 2024 · ✓ 1/1

irritating
harshkhandeparkar committed on Nov 3, 2024 · ✓ 1/1

fix: stupid spaces in html
harshkhandeparkar committed on Nov 3, 2024 · ✓ 1/

feat: this looks horrendous. will rollback
Devansh-bit committed last week

feat: trying dark stuff
Devansh-bit committed last week

fix: fuck push-popd
proffapt committed on Jun 5, 2024

fix: .PHONY good practices
proffapt committed on Jun 5, 2024

fix: mega giga fixes
harshkhandeparkar committed on M

it is what it is
rajivharlalka committed on Feb 16, 2024

bhul ho gyi
rajivharlalka committed on Feb 16, 2024

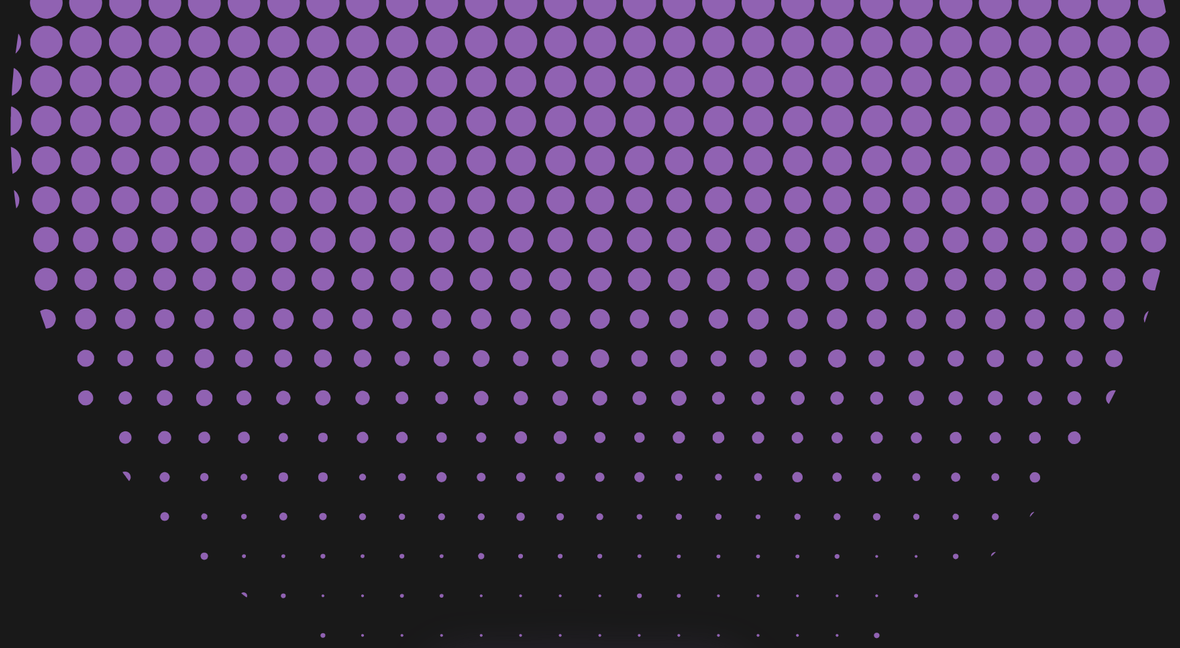
wanna do a injection war?
rajivharlalka committed on Feb 16, 2024

COMMIT MESSAGE

The commit message should succinctly describe (to you and others) what changes have been made in the commit.

Examples:

```
feat: add user login and sign up
fix: cart is persistent across different tabs
```



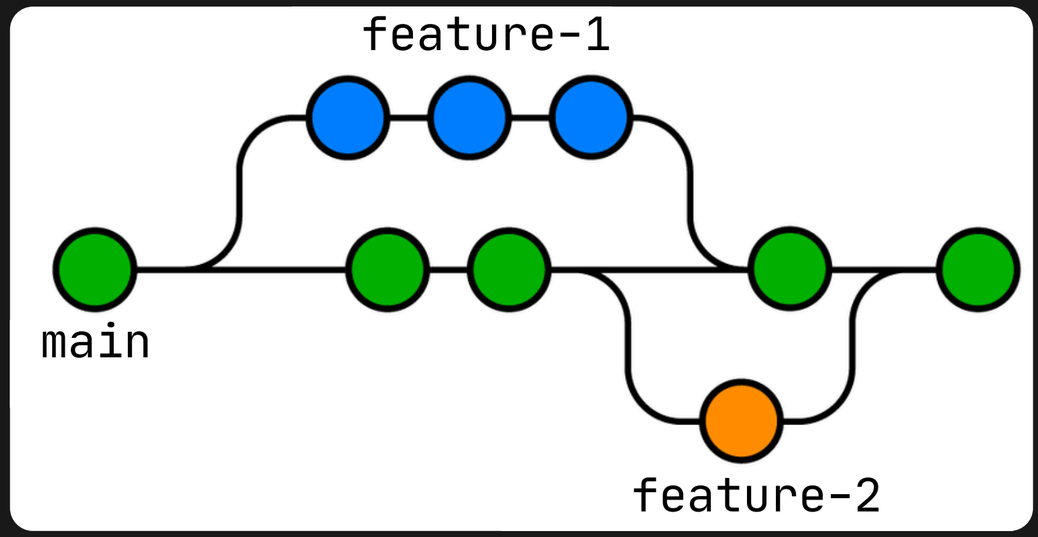
DEMO

BRANCHING

In a git repository, you can create multiple ‘**branches**’, which are different versions of the source code.

Branches allow you to work on different tasks in the repository separately, without affecting the main version of the code.

Changes made in the branches can be combined with the main code, when it is ready.



Switch branches/tags

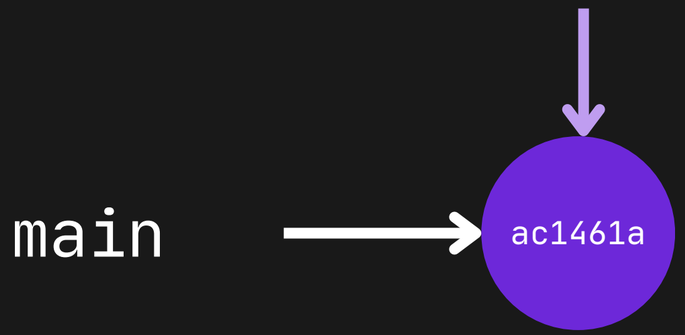
Find or create a branch...

Branches | Tags

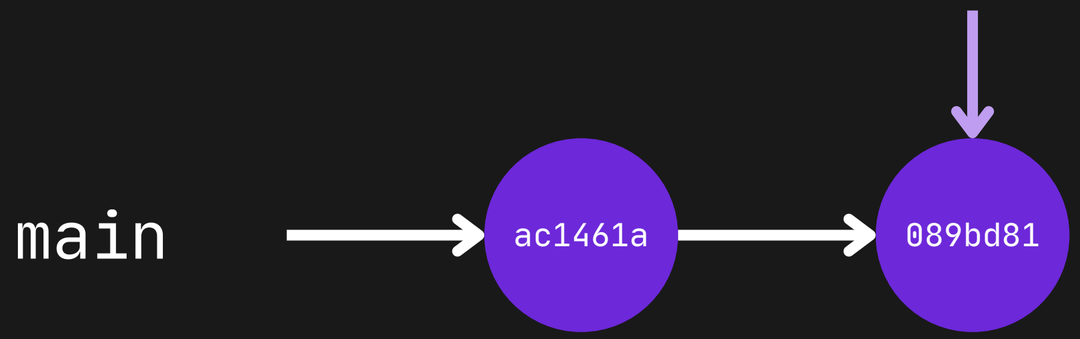
- ✓ main — default
- algorithm-1
- algorithm-2
- final_final_final
- final_final
- final

View all branches

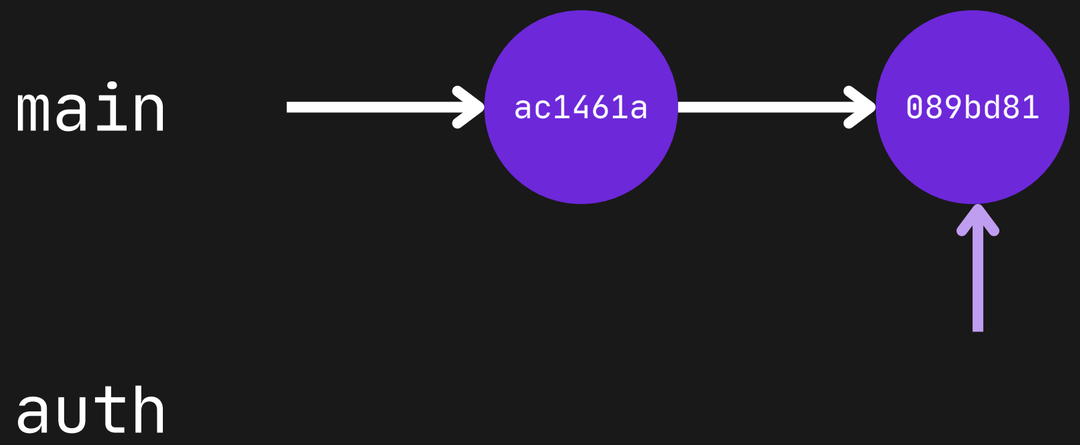
```
(main) $
```



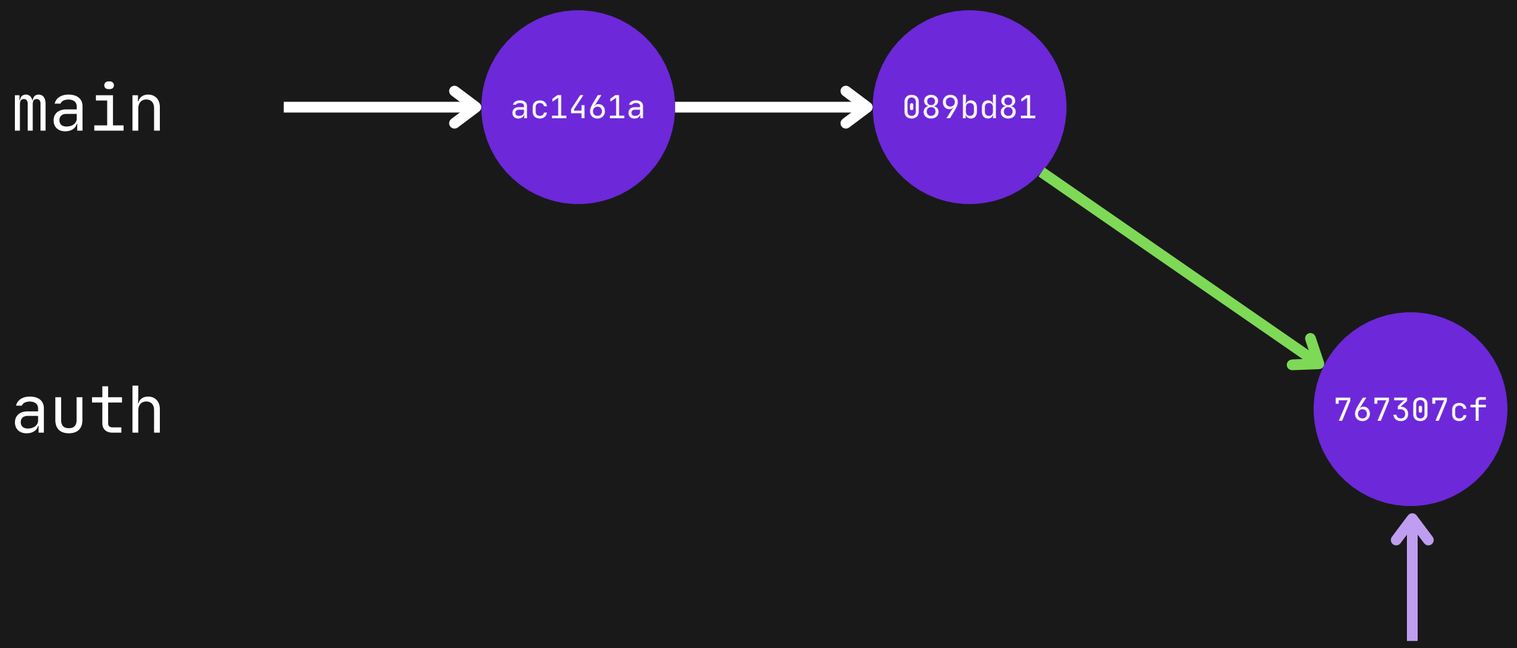
```
(main) $ git add .
(main) $ git commit -m “feat: add about us page”
```



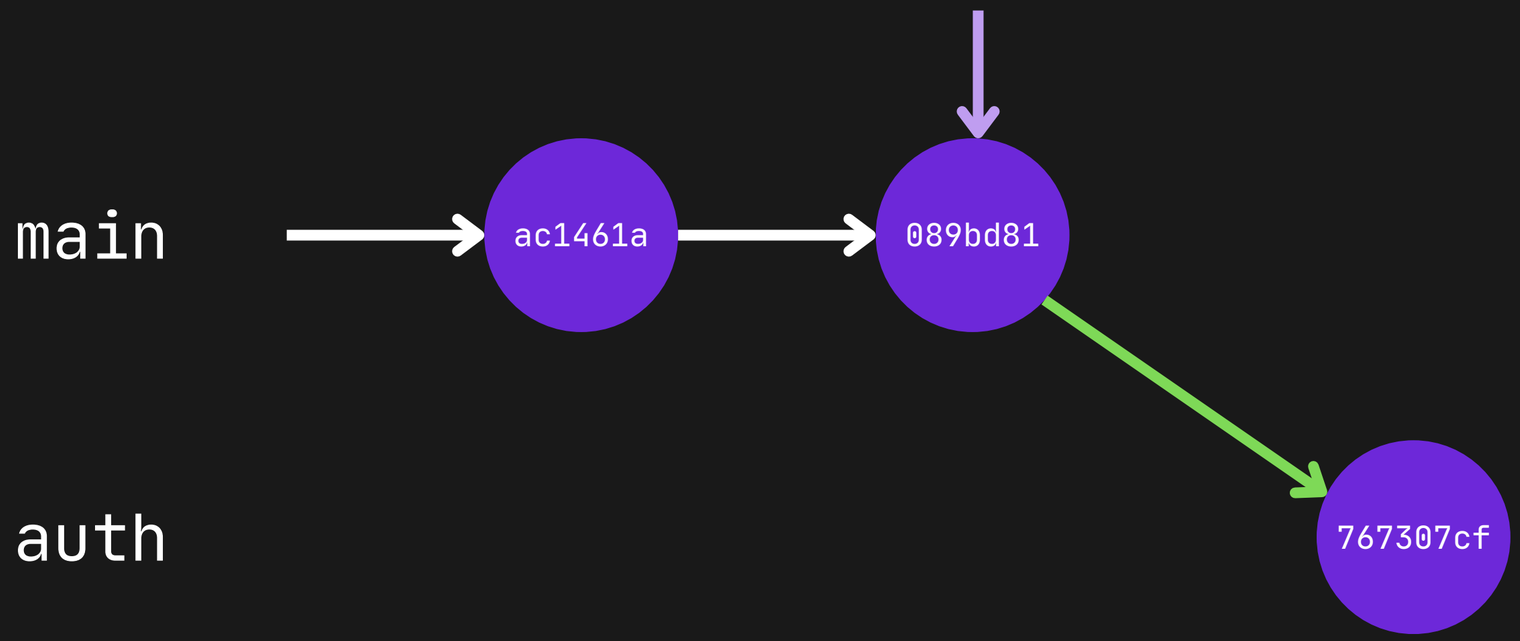
```
(main) $ git branch auth
(main) $ git checkout auth
```



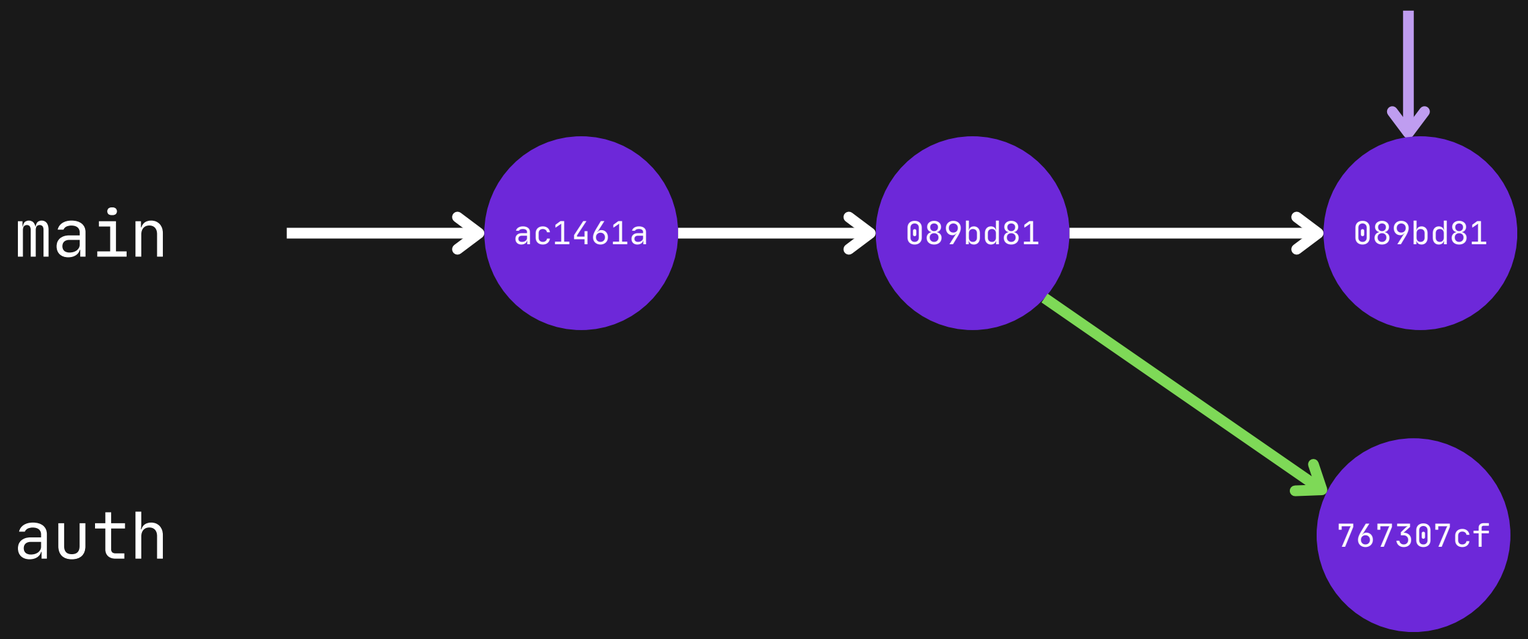
```
(auth) $ git add .
(auth) $ git commit -m “feat: implement login page”
```



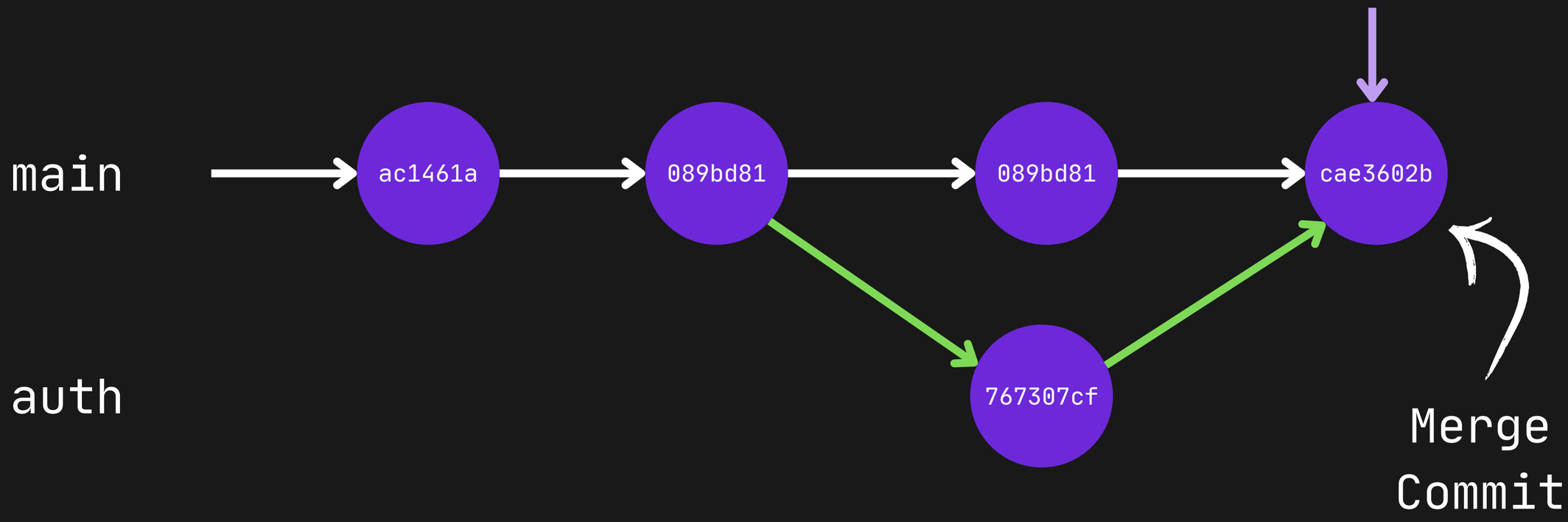
```
(auth) $ git checkout main
```



```
(main) $ git add .
(main) $ git commit -m “fix: typo”
```

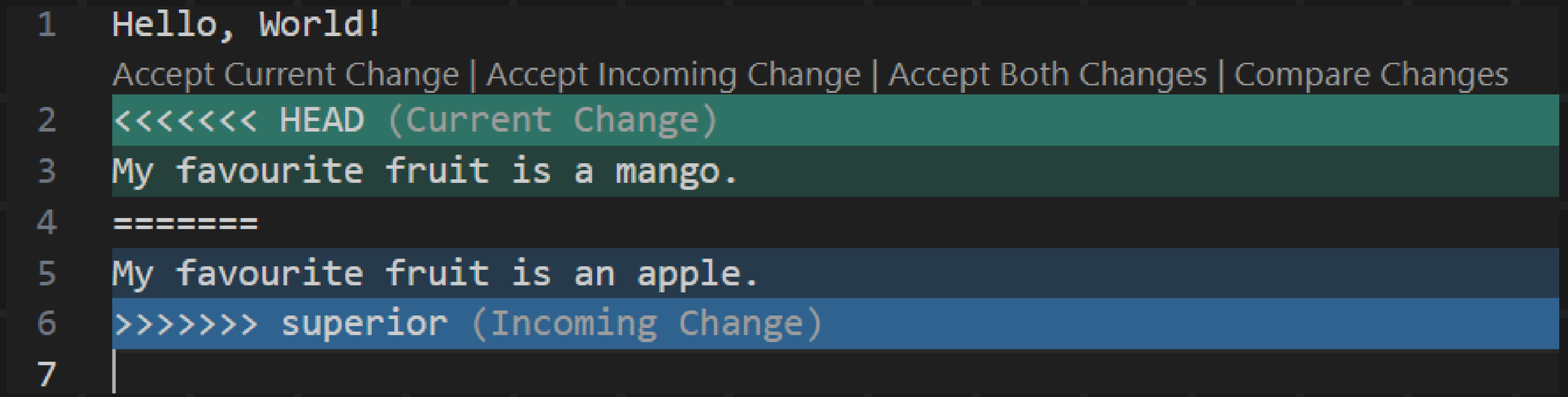


```
(main) $ git merge auth
```



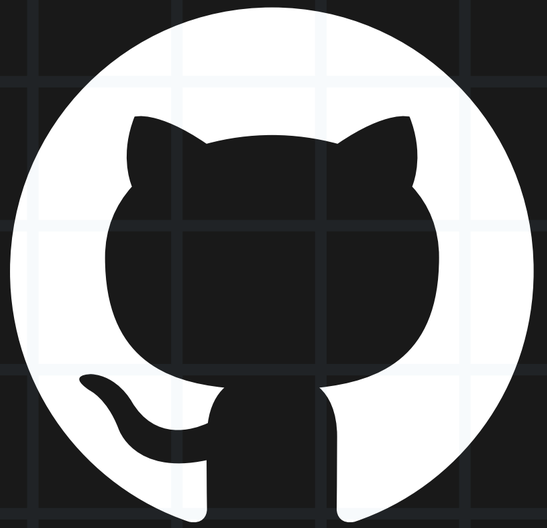
Merge Conflicts

While performing the merge, there may be some conflicts in the code, if e.g. the same file has been changed both in the current branch, and in the incoming branch. If this happens, the user has to fix the merge conflicts, before the merge commit can be created.



DOUBTS?

GITHUB



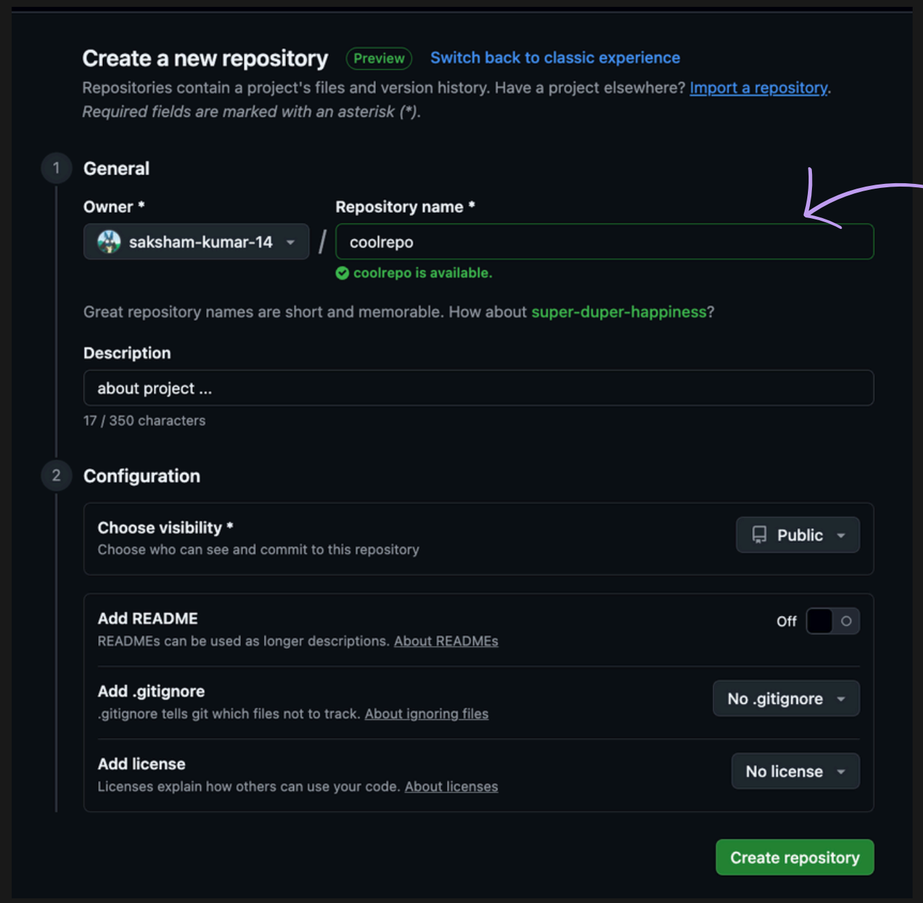
GitHub is a platform that allows users to manage their git repositories.

It is used commonly to host open source projects.

GitHub allows developers to collaborate on a project from anywhere.

CREATING A REPO

Click this!



Name of your repo

CREATING A REPO

Quick setup — if you've done this kind of thing before

Set up in Desktop or HTTPS SSH https://github.com/dipamsen/my-repo.git

Get started by creating a new file or uploading an existing file. We recommend every repository include a README, LICENSE, and .gitignore.

...or create a new repository on the command line

```
echo "# my-repo" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/dipamsen/my-repo.git
git push -u origin main
```

...or push an existing repository from the command line

```
git remote add origin https://github.com/dipamsen/my-repo.git
git branch -M main
git push -u origin main
```

use these commands to push an existing git repo to GitHub

MAKING CHANGES TO A REPO

The beauty of Open Source Software is that anyone can contribute to it!

To contribute to a repo (which you don’t have write-access to):

1. **Fork** the Repo to your GitHub account
2. **Clone** the fork locally
3. Make changes to your local repository (on a different branch)
4. Create a **Pull Request** from your branch to the repo.
5. Wait for the maintainers to review and merge your Pull Request! :)

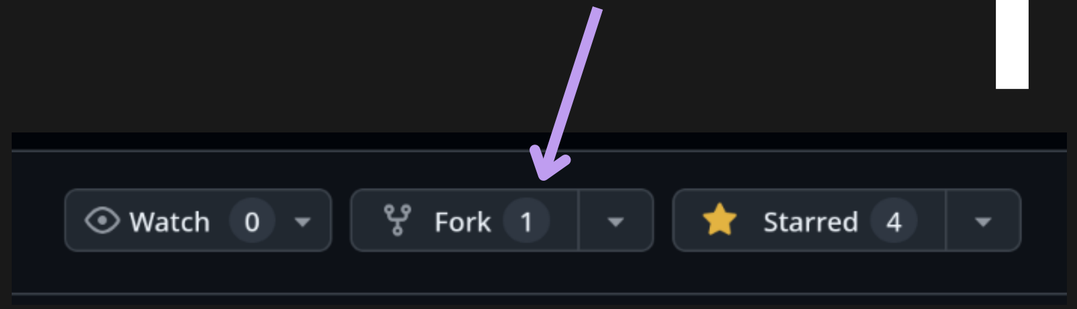
ISSUES 

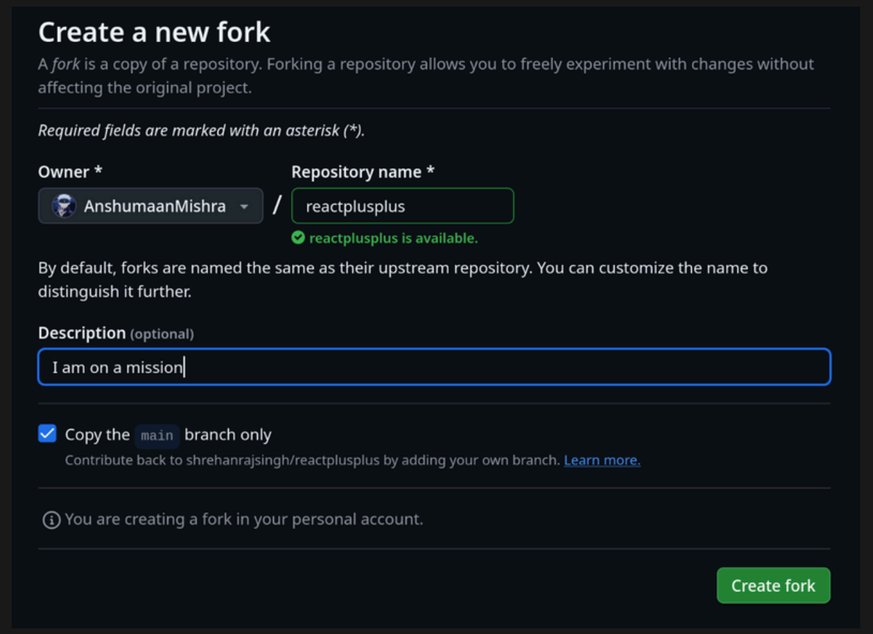
- Issues can represent a wide range of tasks, including bug reports, feature requests, enhancements, documentation needs, or general project tasks.

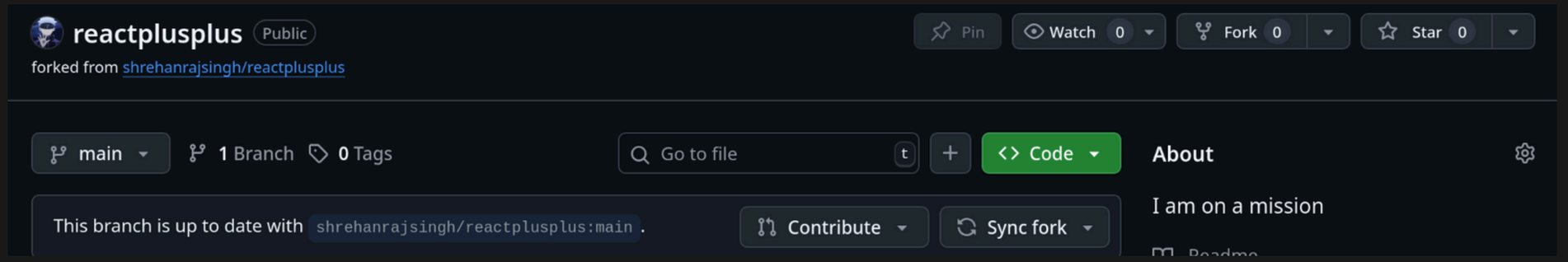
- Issues can be assigned labels - *‘good first issues’*, *‘bug’*, *‘enhancement’*.

- Other features -
  - Assignees
  - Comments
  - References

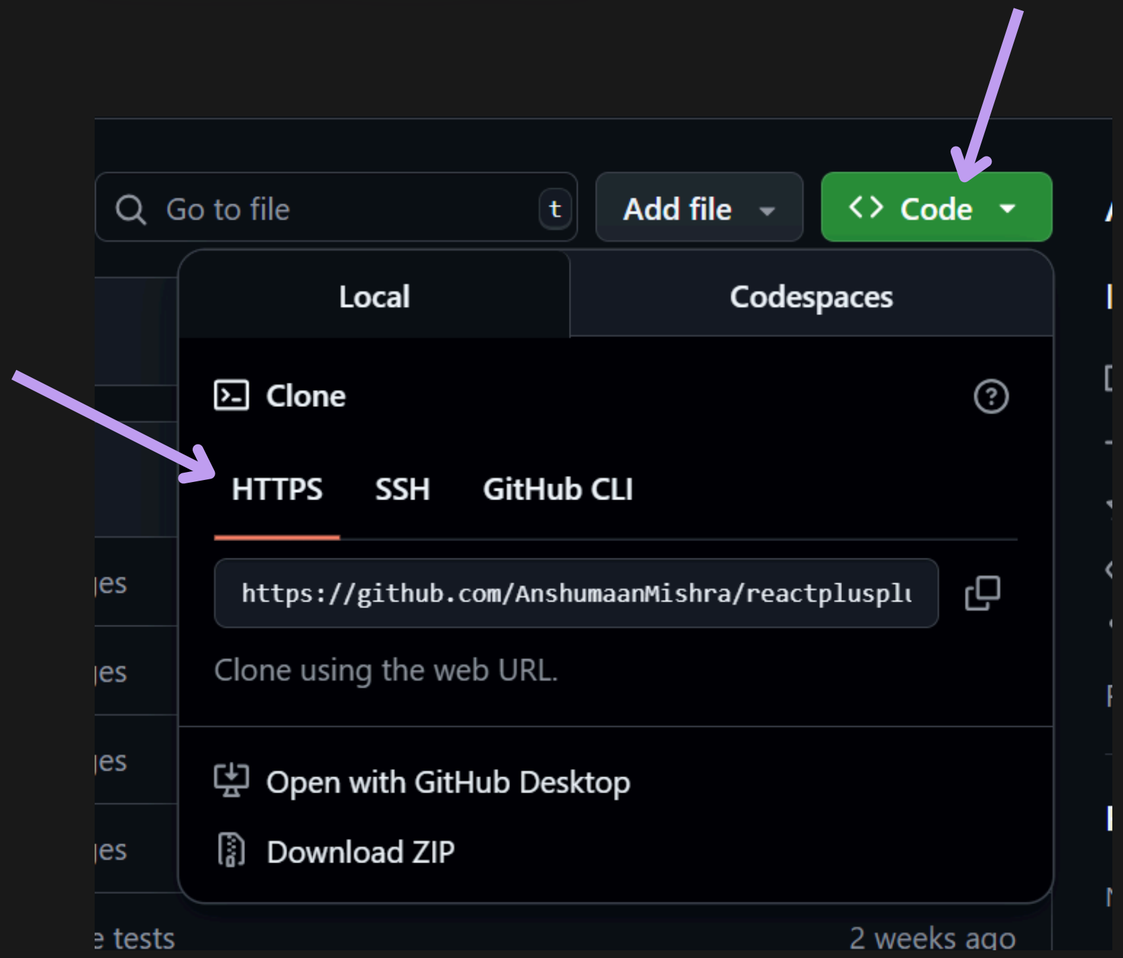
FORKING


Watch 0
Fork 1
Starred 4


Create a new fork
A fork is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project.
Required fields are marked with an asterisk (*).
Owner *
Repository name *
AnshumaanMishra
/
reactplusplus
reactplusplus is available.
By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.
Description (optional)
I am on a mission
Copy the main branch only
Contribute back to shrehanrajsingh/reactplusplus by adding your own branch. Learn more.
You are creating a fork in your personal account.
Create fork


reactplusplus
Public
forked from shrehanrajsingh/reactplusplus
Pin
Watch 0
Fork 0
Star 0
main
1 Branch
0 Tags
Go to file
t
Code
About
I am on a mission
This branch is up to date with shrehanrajsingh/reactplusplus:main.
Contribute
Sync fork

CLONING



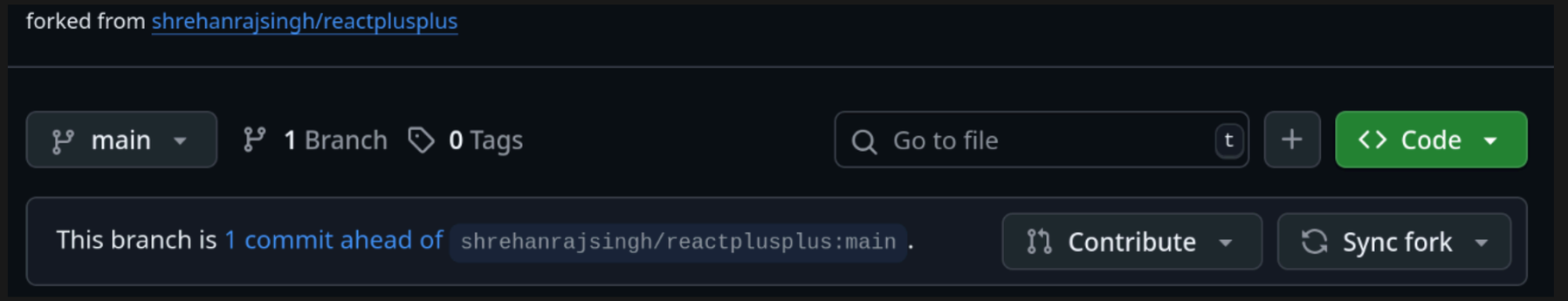

```
$ git clone <url>
```

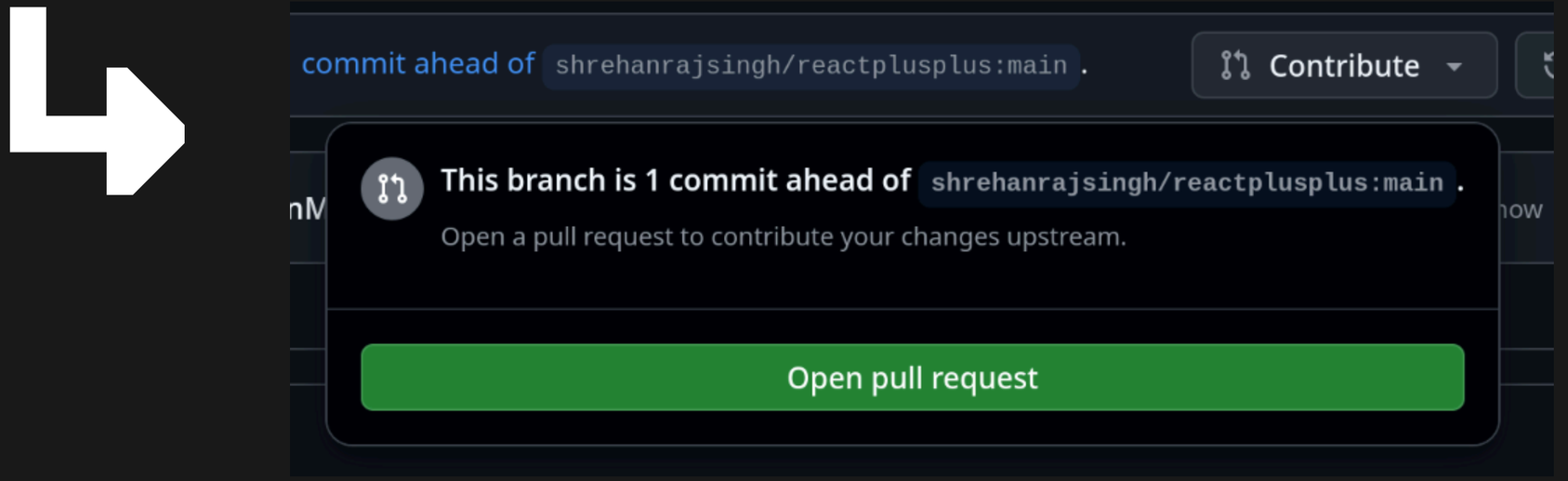
Clones (downloads) a repository from GitHub to your computer.

A directory will be created with the same name as the repo. So to open the repo in your terminal, use

```
$ cd <repo-name>
```

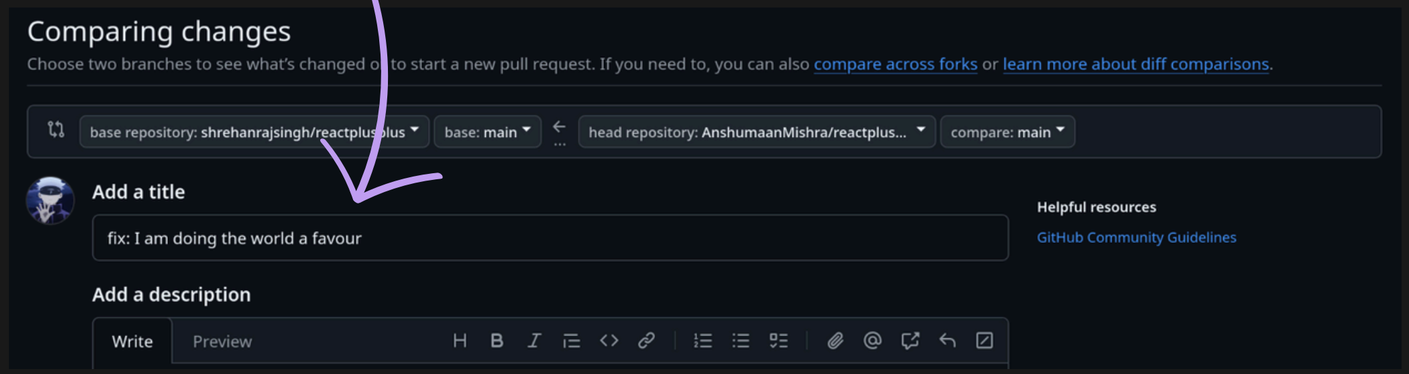
PULL REQUESTS





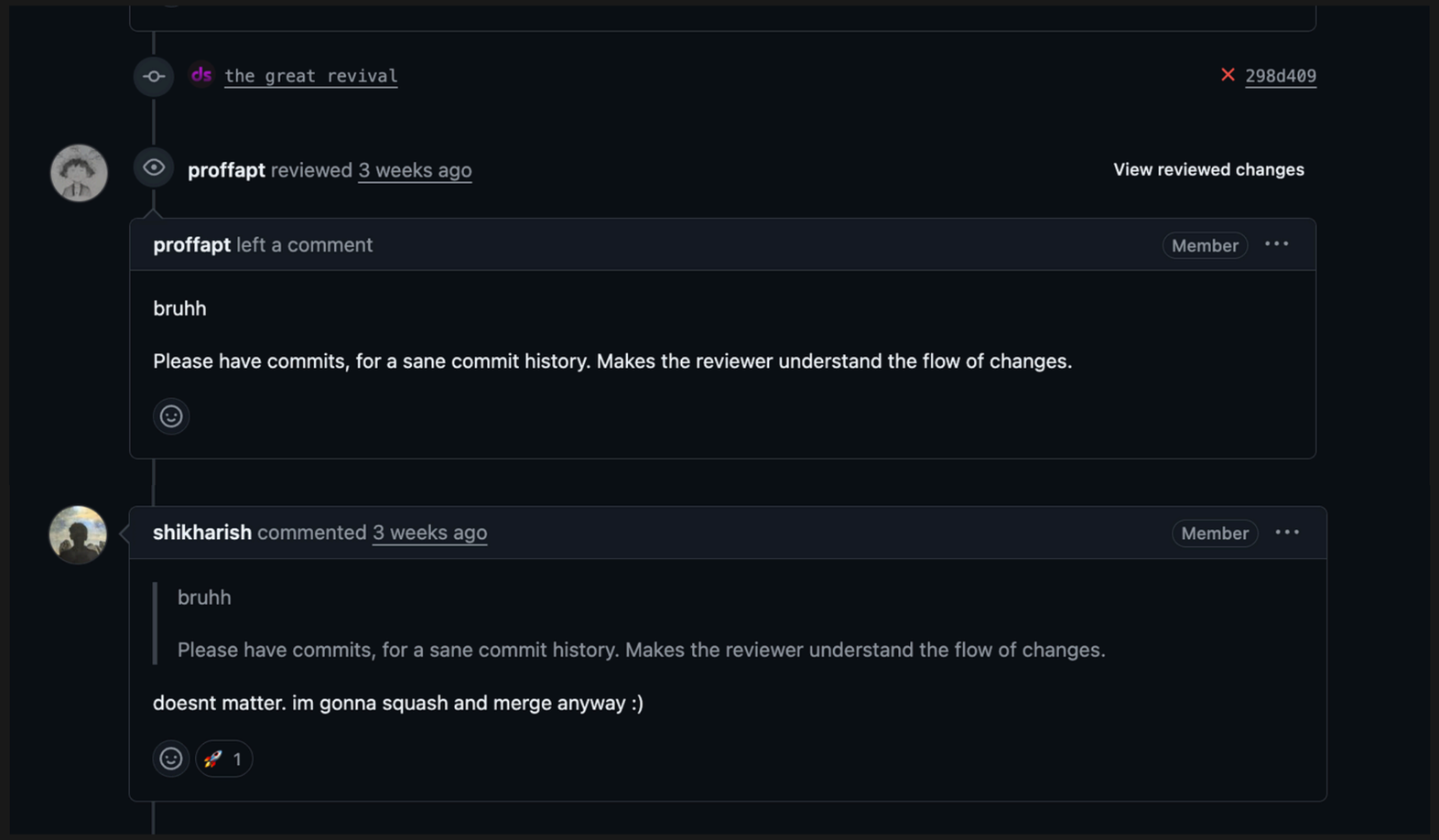
PULL REQUESTS

Give your PR a descriptive title



In the description, describe what your PR does, what issue it fixes, etc.

- Your **PR** will get discussed in the comments
- Maintainers will review your PR and sometimes request for changes.
- Maintainers will merge your PR once it has approved.



LIST OF COMMANDS

`git init`	Initialises a git repository in the current directory
`git clone <url>`	Clones a GitHub repository on your computer
`git add .`	Adds the changes made to the ‘staging area’ so they are ready for committing
`git commit -m “msg”`	Creates a commit with the added changes
`git status`	Shows the current status of the repo
`git push origin <branch>`	Pushes the new commits in <branch> to GitHub
`git branch`	Shows a list of branches and the current branch
`git branch <branch>`	Creates a new branch called <branch>
`git checkout <branch>`	Switch to the branch <branch>

DO IT YOURSELF!

- Search for kossiitkgp/sandbox on GitHub
- Fork the repository to your GitHub account
- Clone your fork to your computer
- Create a new branch named update-info, switch to that branch
- Create a file called <your-github-username>.txt
- Write some message in the file
- Add and Commit your changes and push it to GitHub
- Create a Pull Request from your update-info branch to the main repo

GIT GOOD :)

- learngitbranching.js.org
- ohmygit.org
- Git cheatsheet
- Build your own Git

MAKE YOUR FIRST CONTRIBUTION

- Check out metaKGP respositories
- Start with issues labelled as ***Good first issue***
- goodfirstissue.dev
- Participate in KWoC 2025 (Follow KOSS on ***socials***)

WE NEED YOUR FEEDBACK!

tinyurl.com/git-25-feedback


THANK-YOU
FOR LISTENING