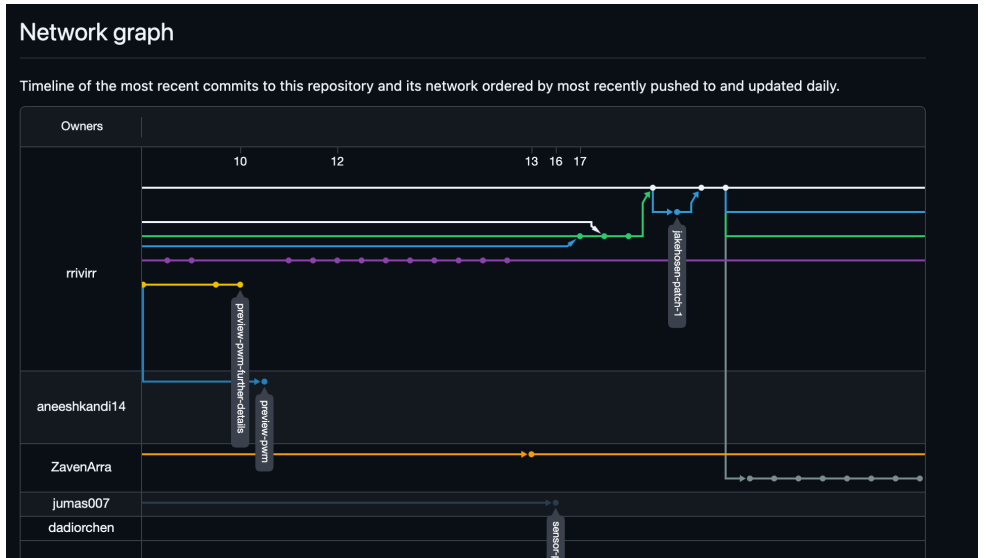
Why Use Git?

Track your work and collaborate efficiently

- Take snapshots, known as commits, of your work to track progress and easily rewind.
- Avoid file fragmentation.
- Collaborate efficiently.

```
analysis.R
analysis_v2.R
analysis_final.R
analysis_final_FINAL.R
analysis_final_FINAL_use_this_one.R
```



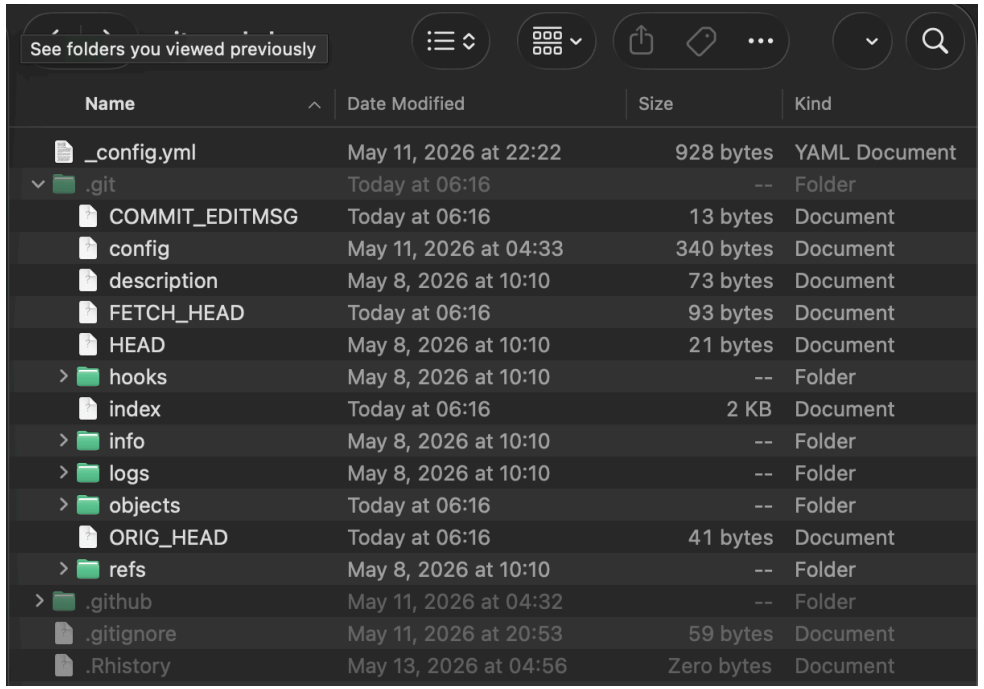
Git and GitHub

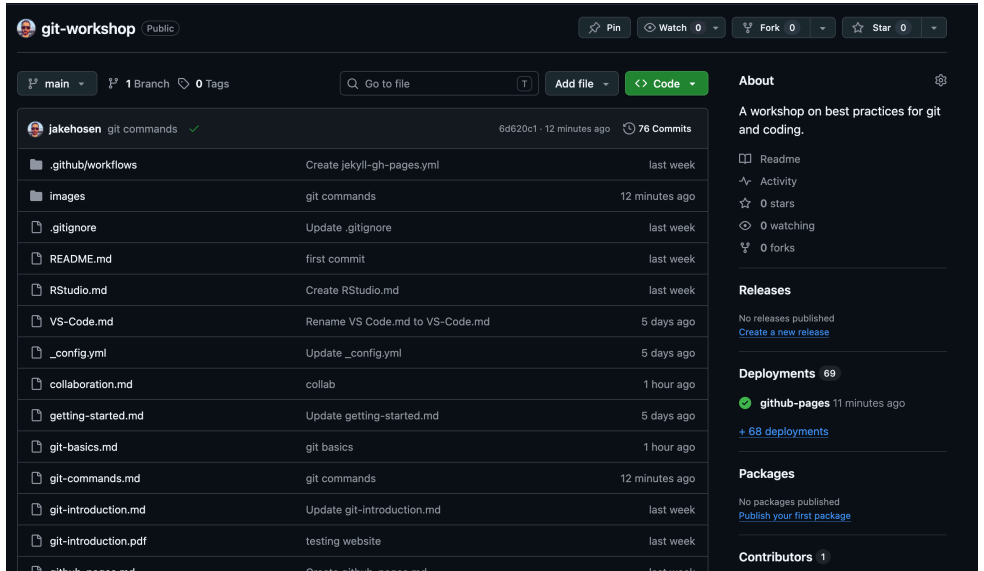
- Git is the software, GitHub, now run by Microsoft, is one of many services for hosting online git repositories.
- Other Git hosts:
  - Bit Bucket
  - GitLab

Git Fundamentals

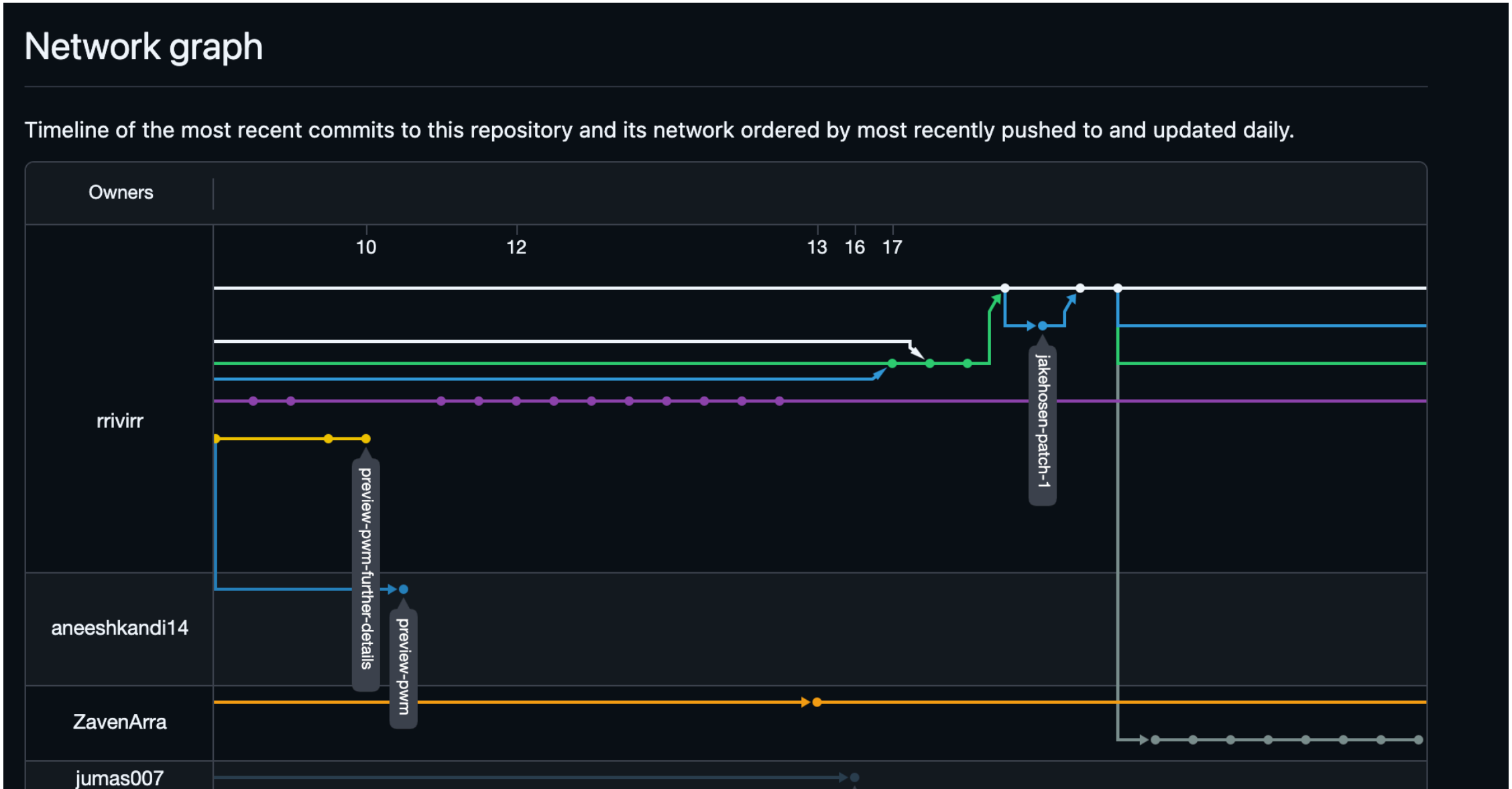
- Repository: A folder where Git tracks your project and its history.
- Branch: Different version of the code connected by a tree
- Fork: Make a new copy of a repository on your own computer.
- Clone: Make a copy of a remote repository on your computer.
- Stage: Tell Git which changes you want to save next.
- Commit: Save a snapshot of your staged changes.
- Merge: Combine changes from different branches.
- Pull: Get the latest changes from a remote repository.
- Push: Send your changes to a remote repository.

- Git repositories exist in two places: 1. on your hard drive and 2. on a cloud-based repository service like GitHub
- On your hard drive a git repository exists as a directory/folder with a hidden directory called `.git` (in Linux and macOS files begging with '.' are automatically hidden).
- This hidden folder contains the files that tell git what repo you are using. Changes you have staged are also saved here.

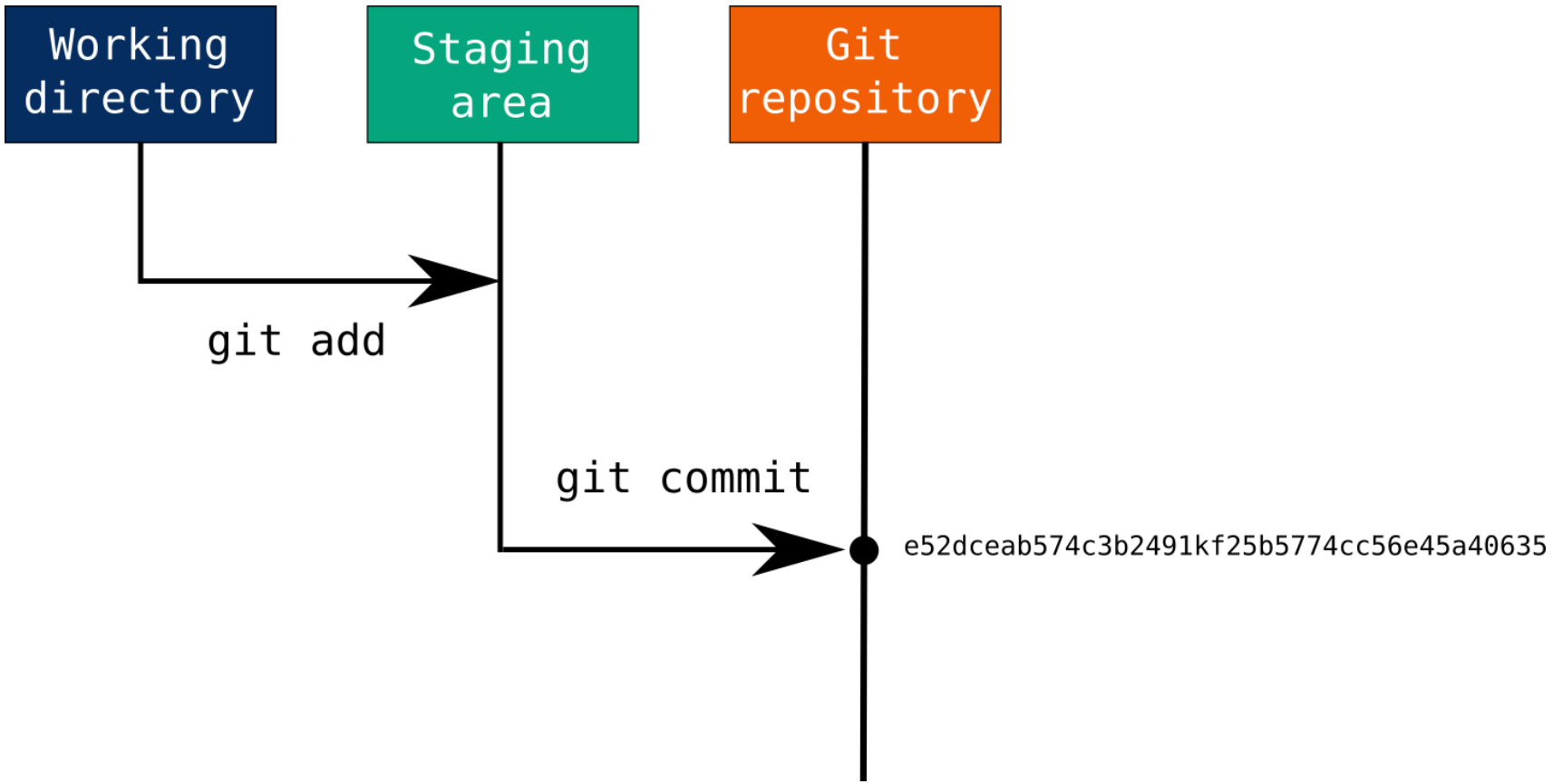




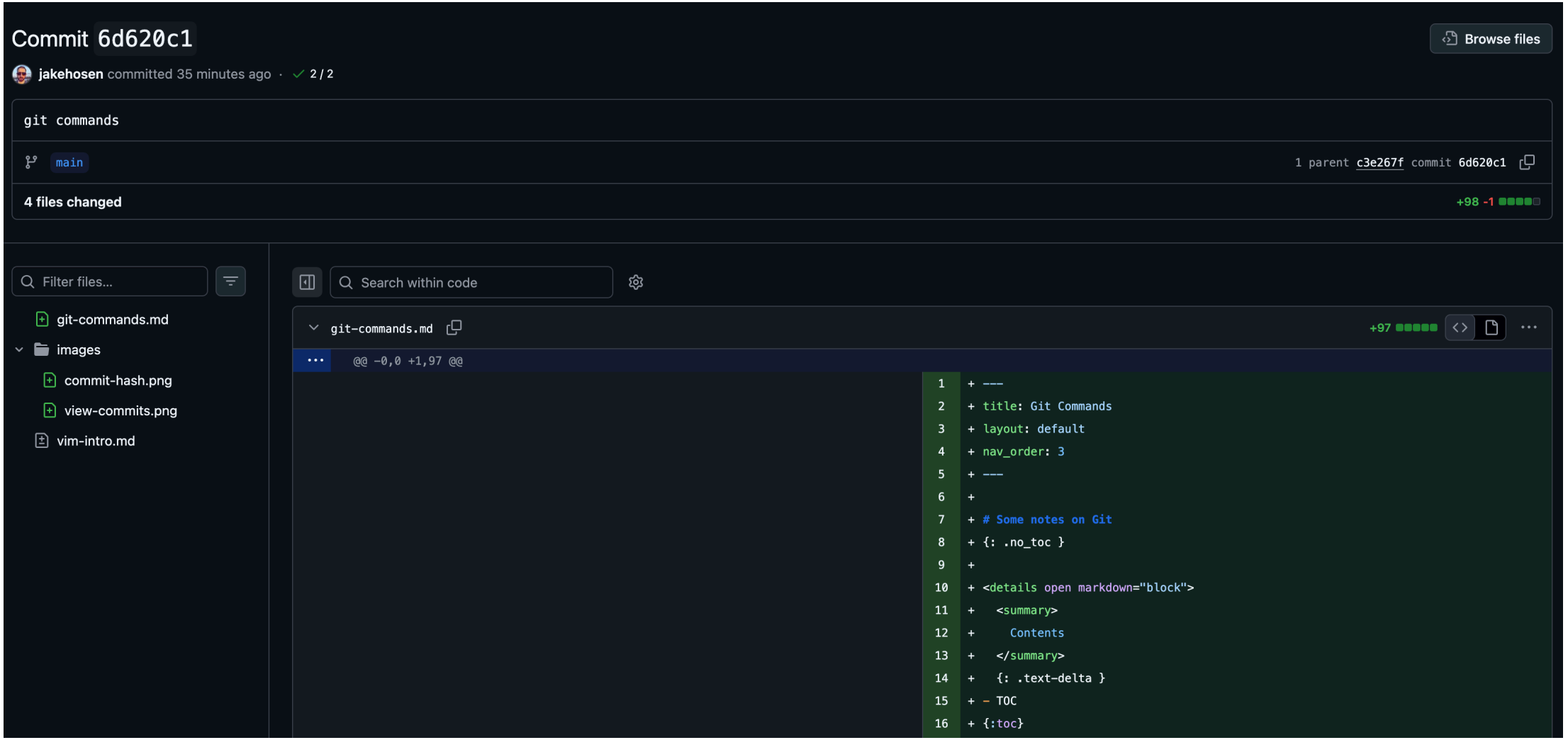
Branches and Forking



Committed with Git

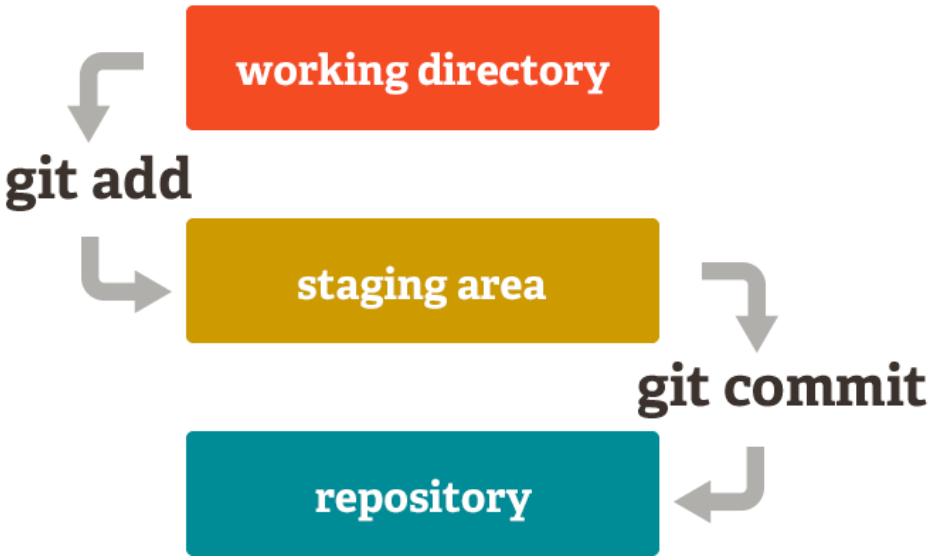


Commit changes



Git Workflow

- Basic git workflow for a *commit* is as follows:
  - Select files to be added to a commit with `git add`.
  - Add those files to the staging area with `git commit`
  - Send those files to the cloud with `git push`.
  - Get changes made by others with `git pull`.



A few tips

- Read the documents: help files are your friends.
- Try to figure it out: use web search/stack overflow search of errors or other questions you might have before asking another human or AI.
- Undoing a problem created by a bad command is time consuming: always make sure you know what a particulate command or action will do before executing.
- Do all the steps of your instructions **in order**.
- If you can copy and paste commands either by highlighting or better yet with the copy/paste button (the two rectangle icon).