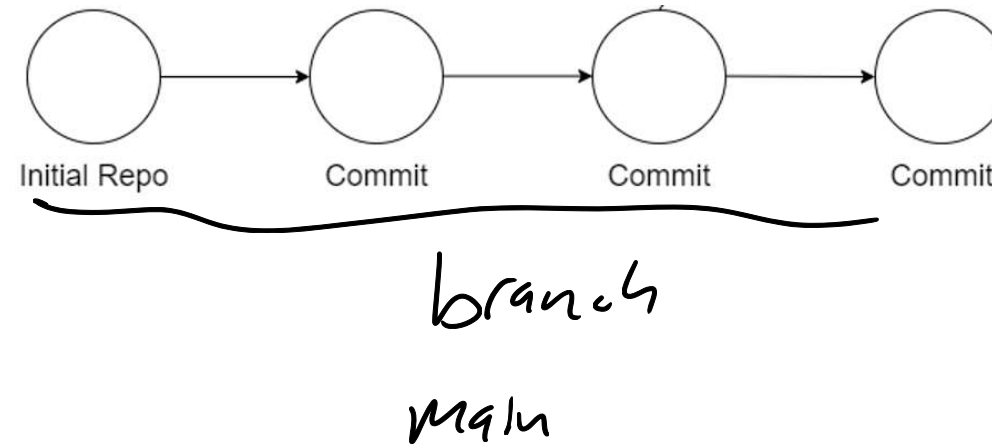# Collaborating with Git & Github

Justin Post

Recap

- **Git** is a version control software

  - Associated with a folder (repo)
  - Tracks changes to files

- **Github** is an online hosting service for Git-based projects

- Workflow:

  - Pull down most recent files (`git pull`) or do initial download (`git clone`)
  - Add files you want to keep changes to (`git add`)
  - Commit to the changes (`git commit`)
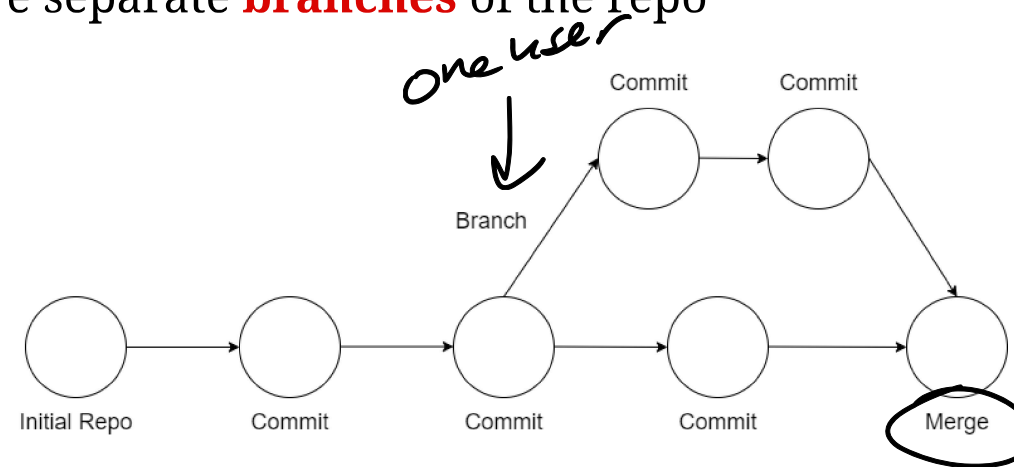 - Push the changes to the remote repo (`git push`)

Collaboration Idea

- Everyone can work on the same `branch` and just take turns working

Initial Repo → Commit → Commit → Commit

branch

main

Working on Branches

- Alternatively, you can have separate **branches** of the repo

one user

Commit   Commit

Branch

Initial Repo   Commit   Commit   Commit   Merge

- Work on a branch is similar to working on the main branch

- Can merge when happy!

Forking

- People often `fork` the repo

- This creates a copy of the repo on your account

- You can then work as normal

- If you do a commit on your branch, you may notice something like this
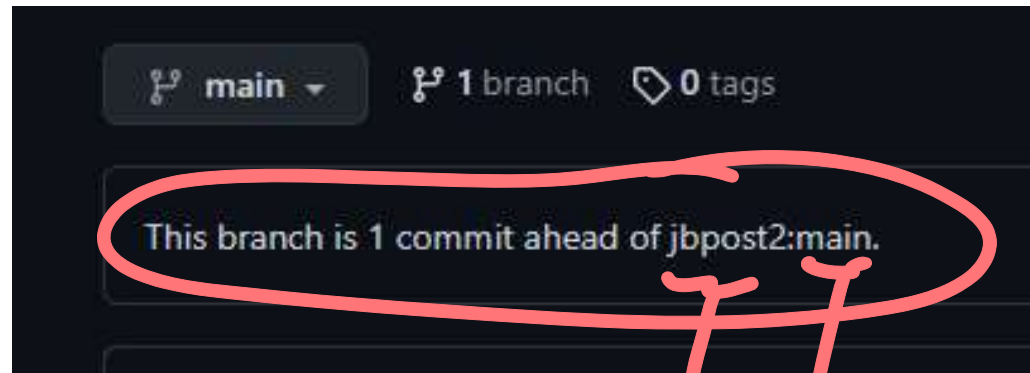
original repo owner

branch you forked from

Merging Branches

Suppose you like your commit and you think the original owner will too!

- You can do a `pull` request

Merging Branches

Suppose you like your commit and you think the original owner will too!

- You can do a `pull` request

Merging Branches

If you are lucky, there won't be any merge conflicts.

- Allows the owner of the original repo to accept the pull request without needing to modify things

- The owner will get a notification that a pull request has been made
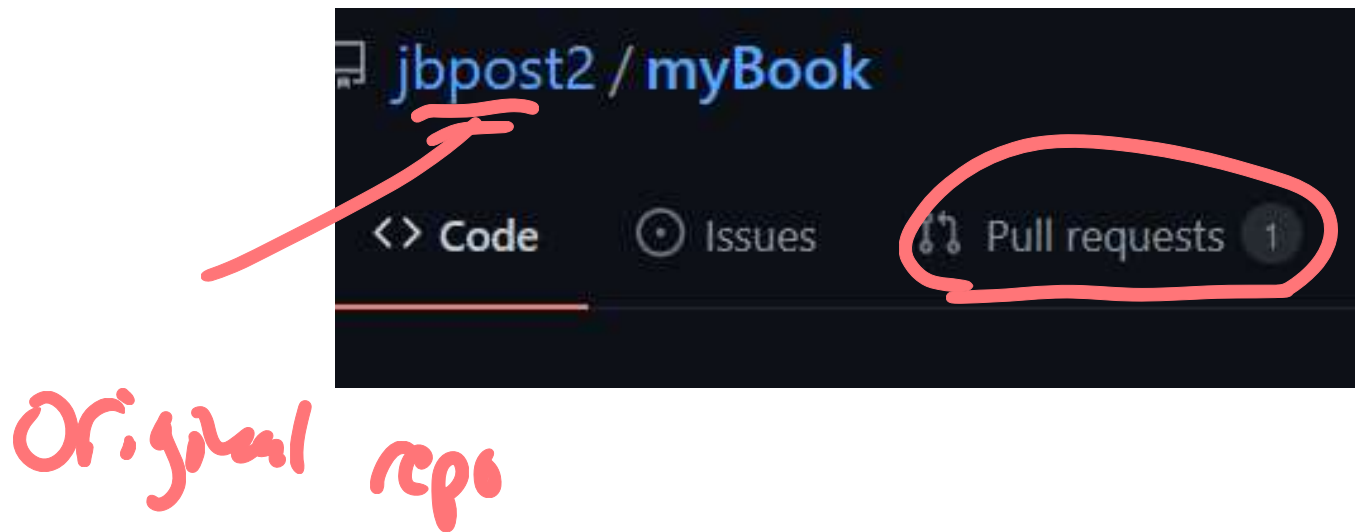
Merging Branches

Owner can then investigate the request and choose whether or not to accept it or they can ask for more details

Dealing with conflicts

- Sometimes changes requested conflict with changes already made

Dealing with conflicts

Owner sees a notification about conflicts that must be resolved
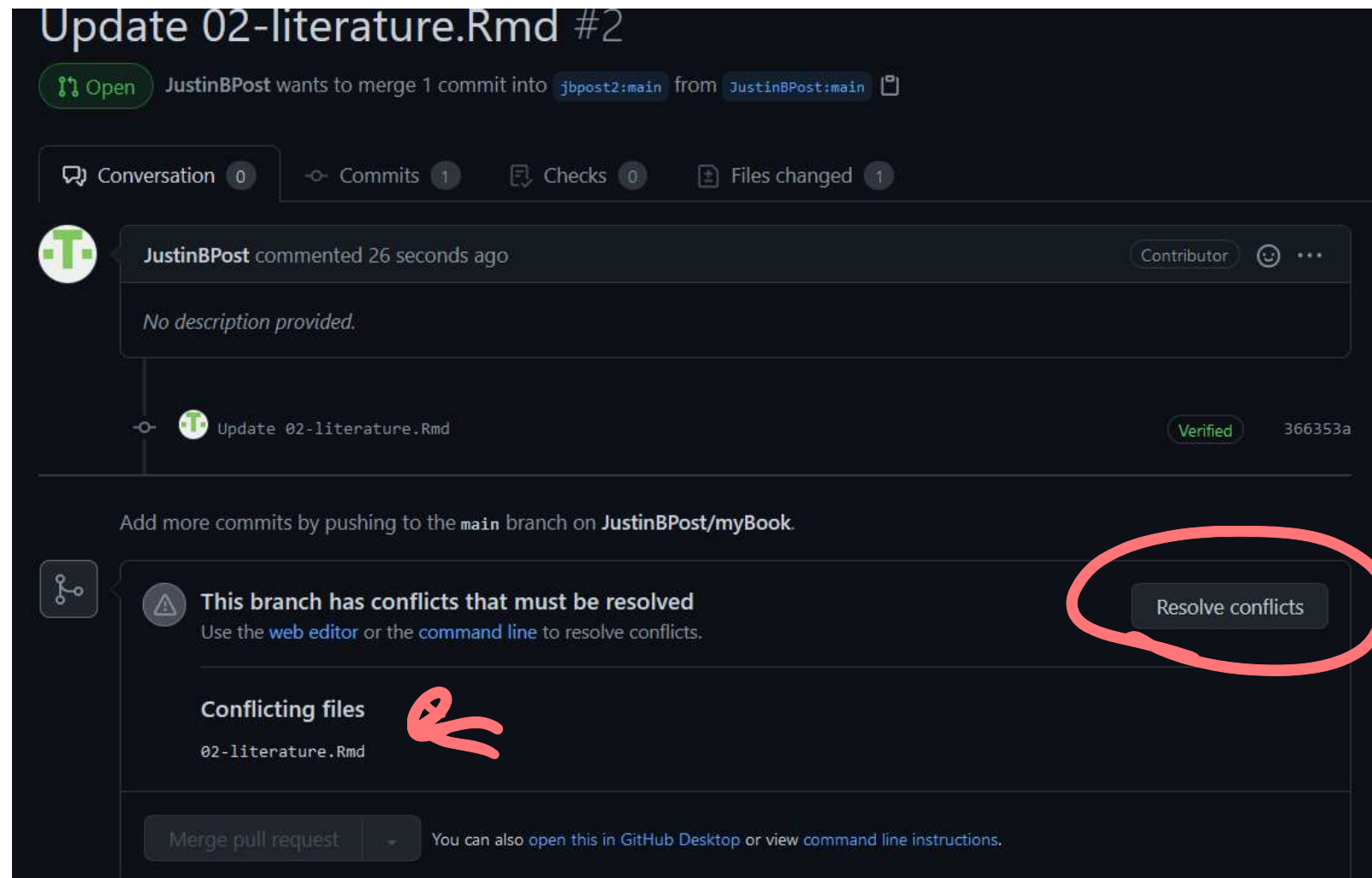
Dealing with conflicts

They can view the issues and pick which to include or to include both with a modification

`<<<<<<<` is a conflict marker

- Figure out what to do and delete the `<<<` `===` `>>>` lines

(handwritten annotations: "federal repos change", "original line")