

# Collaborating with Git & Github

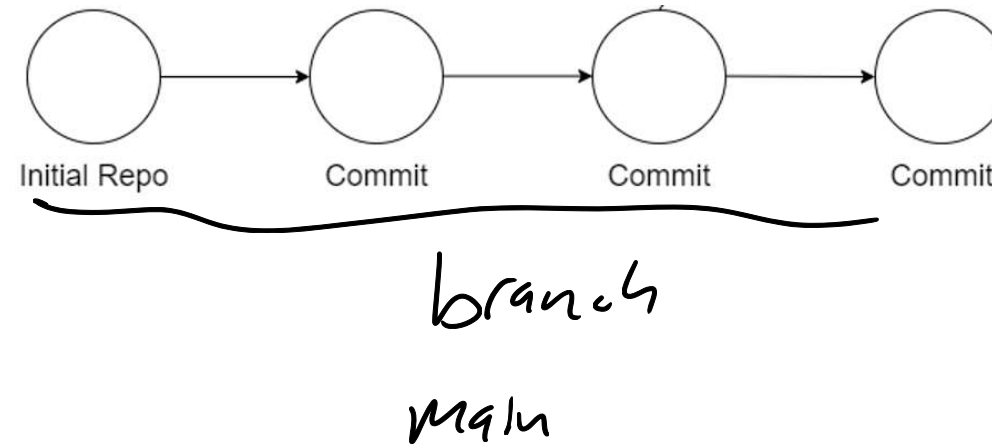
Justin Post

# 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`)

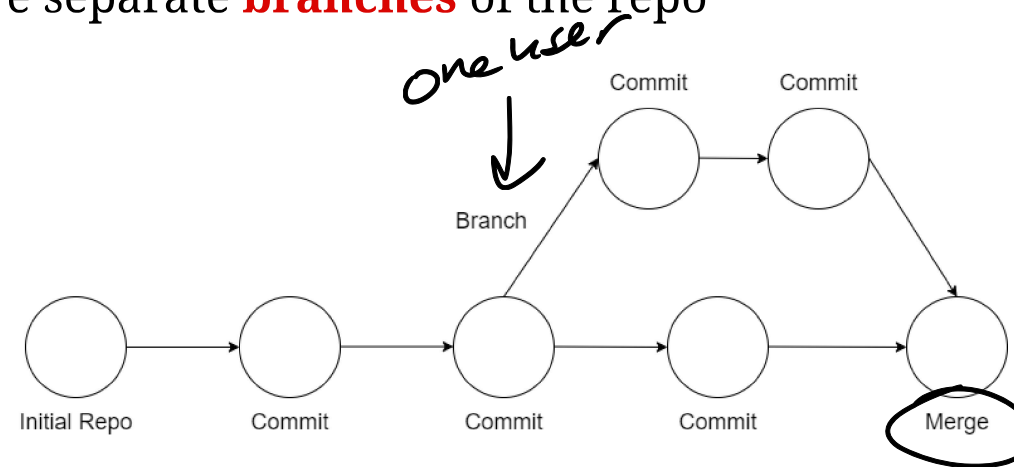
# Collaboration Idea

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



# Working on Branches

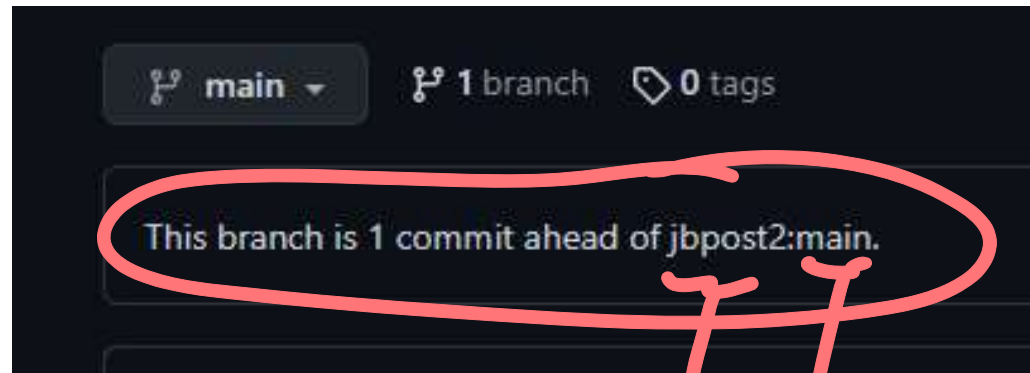
- Alternatively, you can have separate **branches** of the repo



- 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



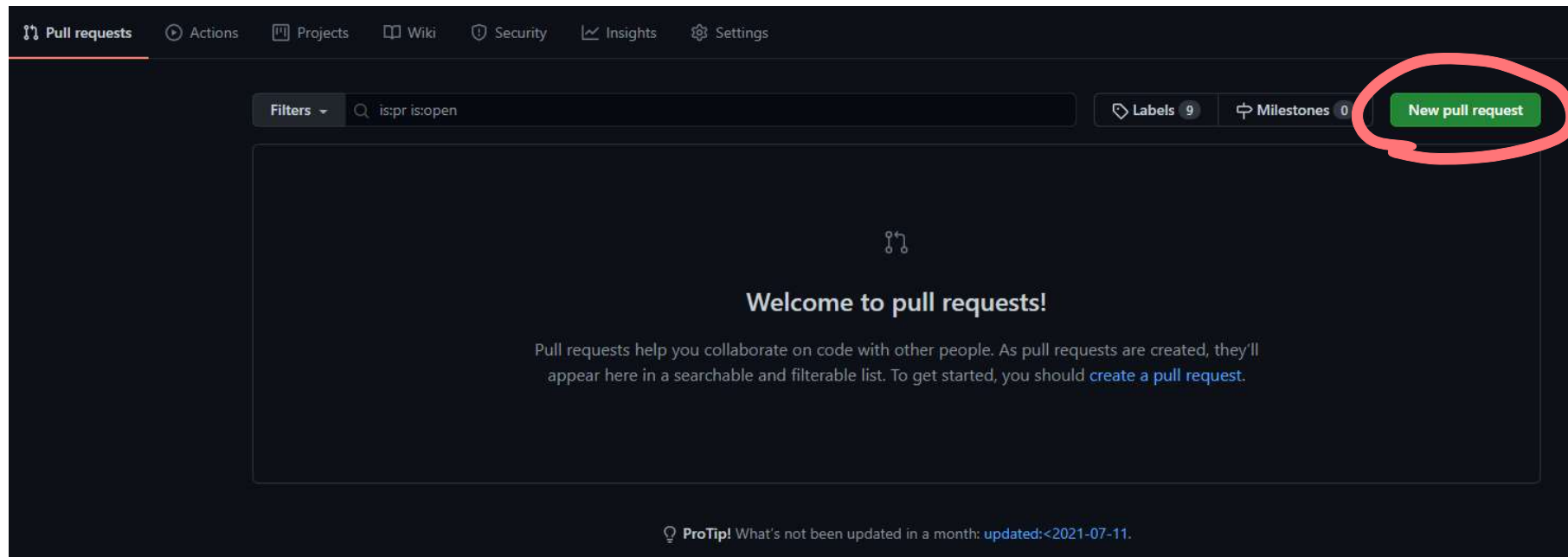
original repo owner

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!

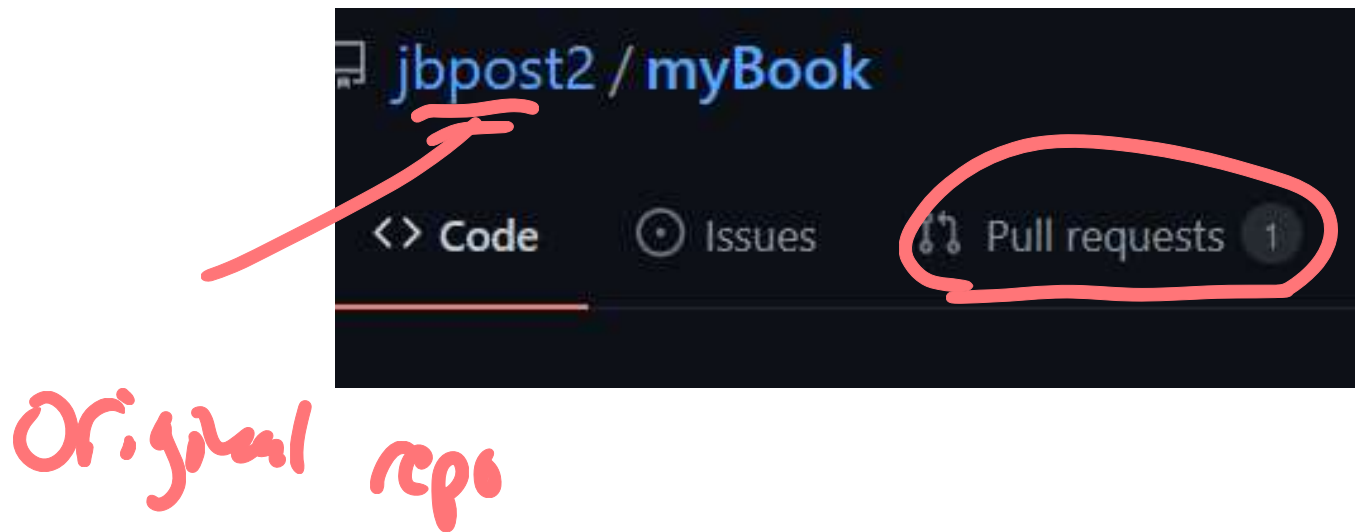
- You can do a **pull** request

The screenshot shows the GitHub 'Comparing changes' interface. At the top, it says 'Comparing changes' and 'Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).' Below this, there are two dropdown menus: 'base repository: jbpost2/myBook' and 'head repository: JustinBPost/myBook'. The 'base' is set to 'main' and the 'compare' is also set to 'main'. A green checkmark indicates 'Able to merge. These branches can be automatically merged.' Below the repository information, there is a blue bar with the text 'Discuss and review the changes in this comparison with others. [Learn about pull requests](#)'. To the right of this bar is a green button labeled 'Create pull request', which is circled in red. Below the bar, there are statistics: '1 commit', '1 file changed', '0 comments', and '1 contributor'. Further down, it shows 'Commits on Aug 12, 2021' and a commit 'Update: 05-summary.Rmd' with a 'Verified' badge and hash '2f7ad8f'. At the bottom, it says 'Showing 1 changed file with 2 additions and 0 deletions.' and shows a diff for '05-summary.Rmd' with two additions: '# Final Words' and 'We have finished a nice book.' followed by two more lines of text.

# 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

The screenshot shows the GitHub 'Comparing changes' interface. At the top, it says 'Comparing changes' and 'Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).' Below this, there are dropdowns for 'base repository: jbpost2/myBook', 'base: main', 'head repository: JustinBPost/myBook', and 'compare: main'. A red circle highlights a message that says 'X Can't automatically merge. Don't worry, you can still create the pull request.' Below this message is a green button that says 'Create pull request'. Further down, there are statistics: '1 commit', '1 file changed', '0 comments', and '1 contributor'. Below these are 'Commits on Aug 12, 2021' and a commit 'Update 02-literature.Rmd' with a 'Verified' badge and hash '366353a'. Below the commit is a summary: 'Showing 1 changed file with 1 addition and 0 deletions.' To the right of this summary are 'Unified' and 'Split' buttons. Below the summary is a diff view for the file '02-literature.Rmd'. The diff shows a comparison between two versions of the file. The first version (base) has three lines: '# Literature', 'Yes I like this line.', and 'Here is a review of existing methods.' The second version (head) has the same three lines plus a fourth line: '+ This line is better than yours, approve this change.'

Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).

base repository: jbpost2/myBook base: main head repository: JustinBPost/myBook compare: main

X Can't automatically merge. Don't worry, you can still create the pull request.

Discuss and review the changes in this comparison with others. [Learn about pull requests](#) [Create pull request](#)

1 commit 1 file changed 0 comments 1 contributor

Commits on Aug 12, 2021

Update 02-literature.Rmd Verified 366353a

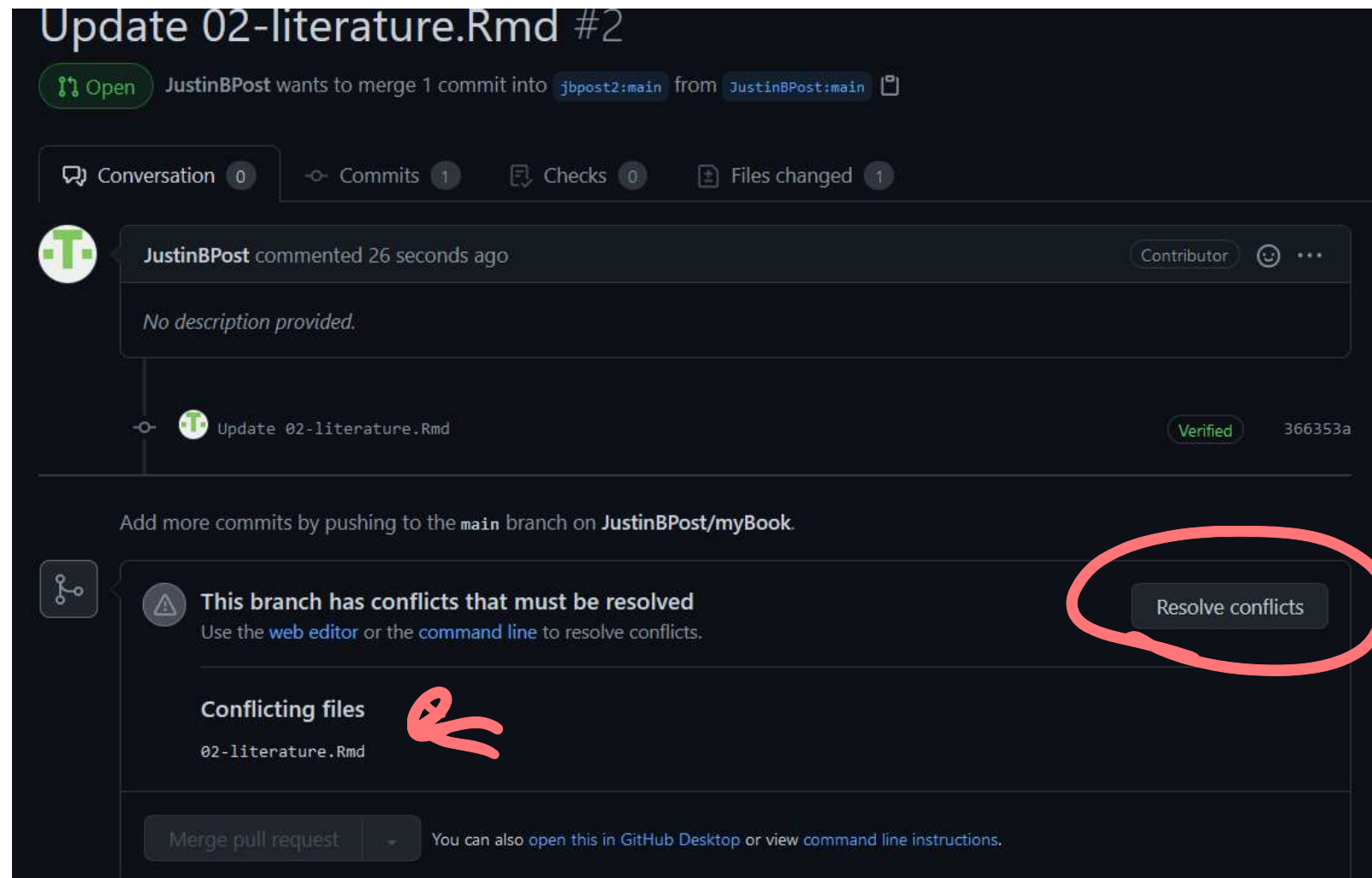
Showing 1 changed file with 1 addition and 0 deletions. Unified Split

1 02-literature.Rmd

```
... @@ -1,3 +1,4 @@
1 1 # Literature
2 2 Yes I like this line.
3 3 Here is a review of existing methods.
4 + This line is better than yours, approve this change.
```

# 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

```
Update 02-literature.Rmd #2
Resolving conflicts between Justin8Post:main and jbpost2:main and committing changes → Justin8Post:main

1 conflicting file

02-literature.Rmd
02-literature.Rmd

1 # Literature
2 Yes I like this line.
3 Here is a review of existing methods.
4 <<<<<< main
5 This line is better than yours, approve this change.
6 |=====
7 This line isn't so good.
8 >>>>>> main
9
```

fucked  
✓ repos change  
original line

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