Issue tracking and code review

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Issue tracking system

- An issue is reported by developer or tester or user when encountered, this needs to be saved and tracked till it is fixed. We need a system to do this.

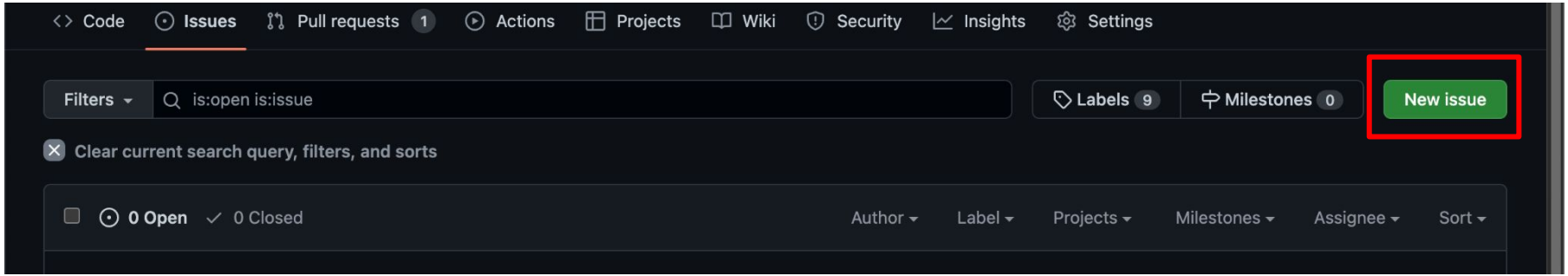
- Issue tracking system is a tool that helps in managing and tracking all the issues reported in software development projects.

Importance of issue tracking system

- Deliver high quality products to end user by tracking and minimizing issues in your software.
- Reduce the cost of development by prioritizing issues and focusing on important and frequent use cases.
- Keeping history of previously reported issues and testing against them for newer or patched versions.
- Better service and satisfaction to customers by providing a way for them to report and track issues.
- Increase efficiency and communication within team by providing a means to report and track issues efficiently.

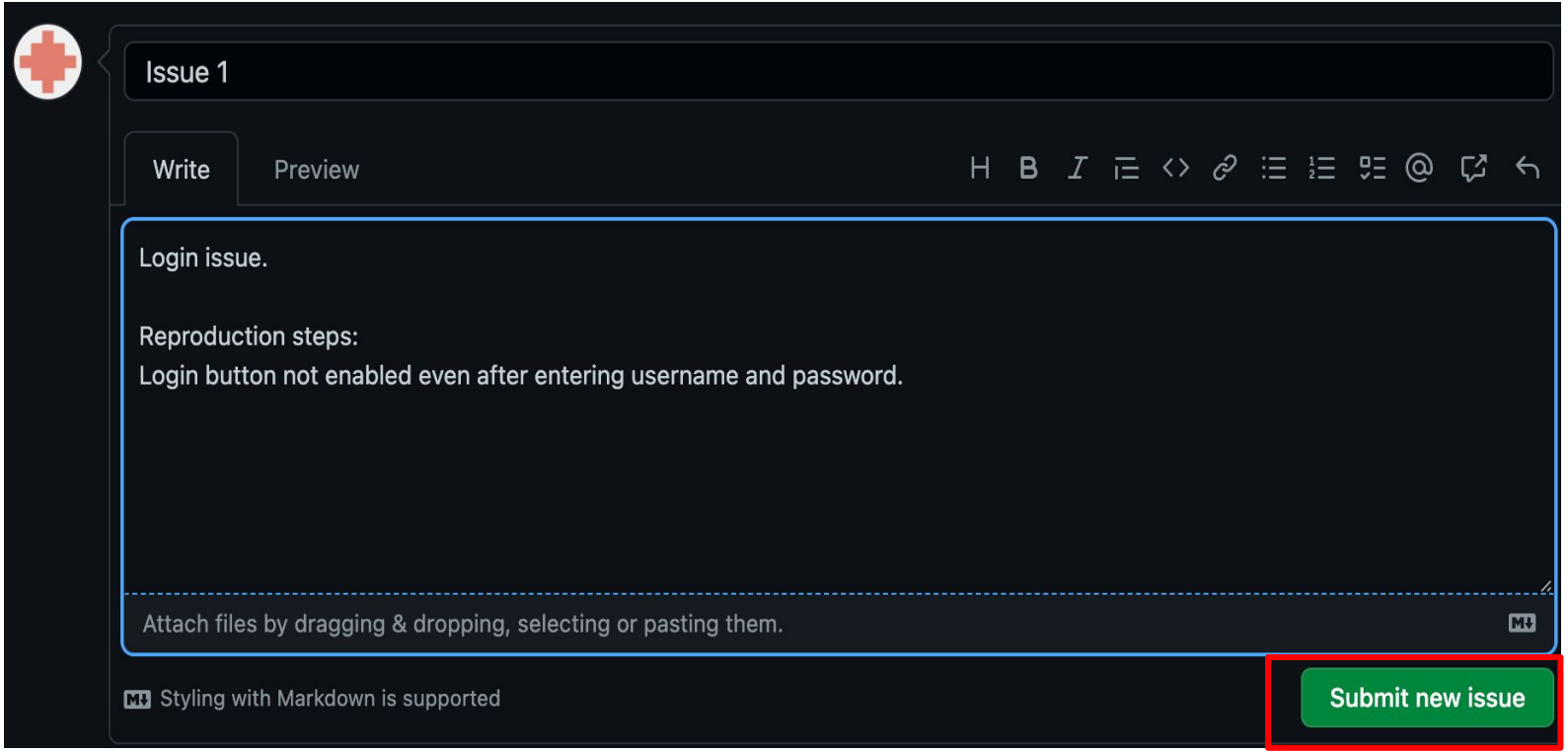
Issue tracking using GitHub

- Easy to create and track issues on GitHub. Create new issues directly from your project repository home page.



- Enter issue details and submit new issue.

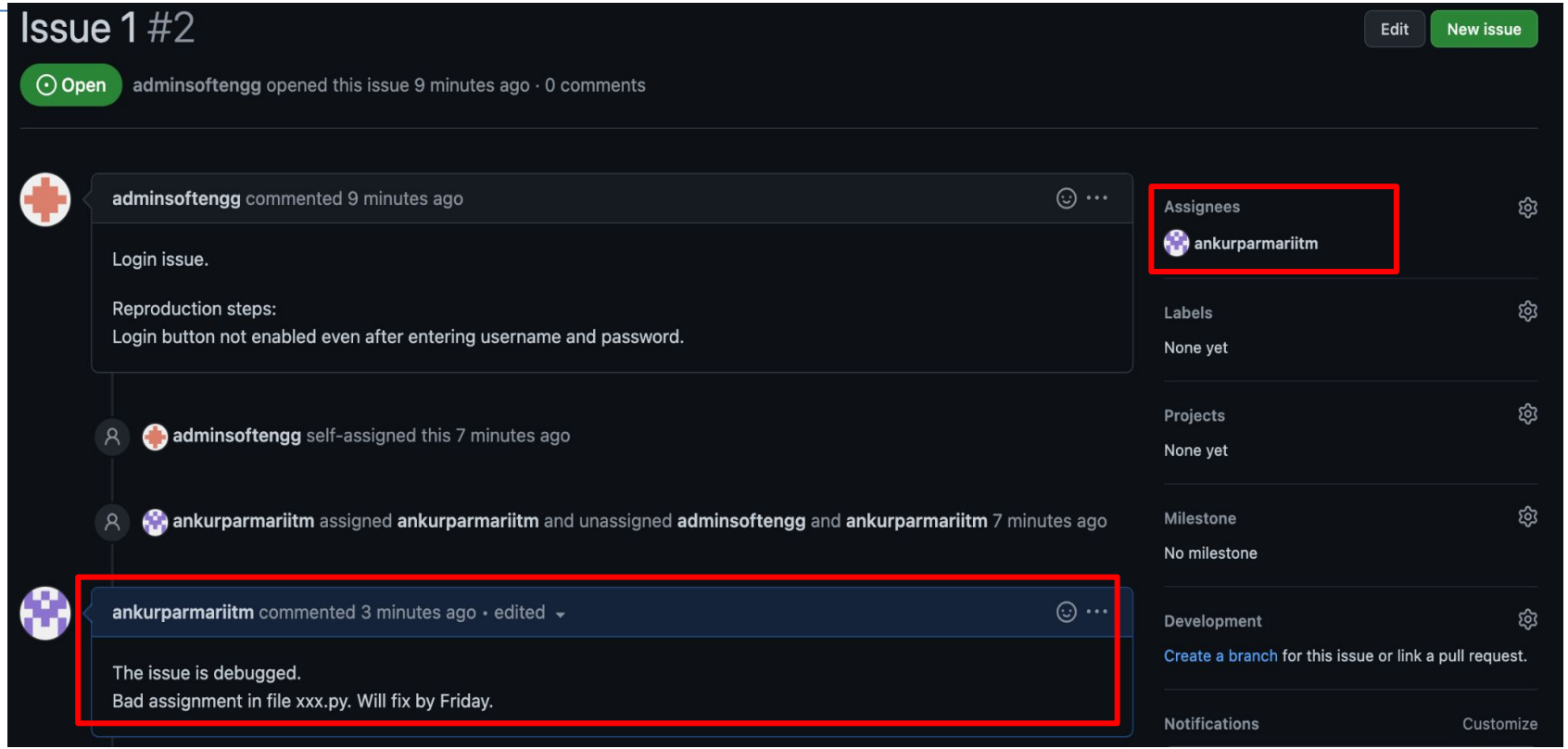
Creating new issue



GitHub: Issue tracking features

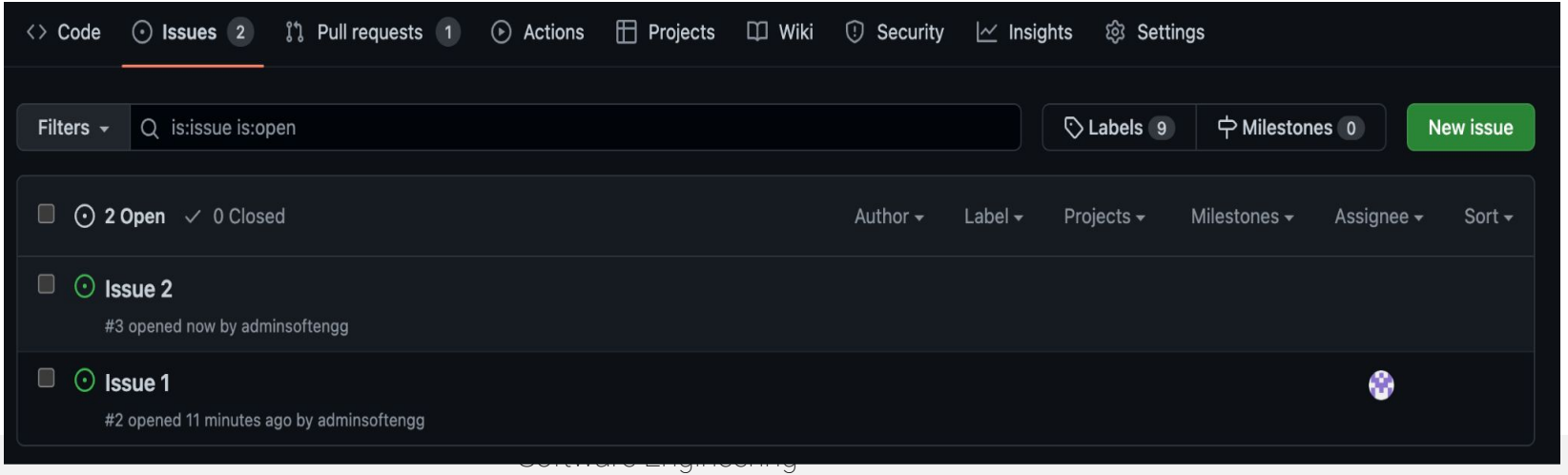
- Other developers can see this issue, add comments etc.
- If required issue can be assigned to specific developers for their attention.
- On bug assignment or tagging someone, email notification sent.
- Can set labels on the issue, so later similar issues or issues specific to a module can be listed and tracked.
- Can create a branch or Pull request to map to an issue. Can map more than one issues to a branch or vice-versa.
- Can close the issue when fixed.

Issue tracking features



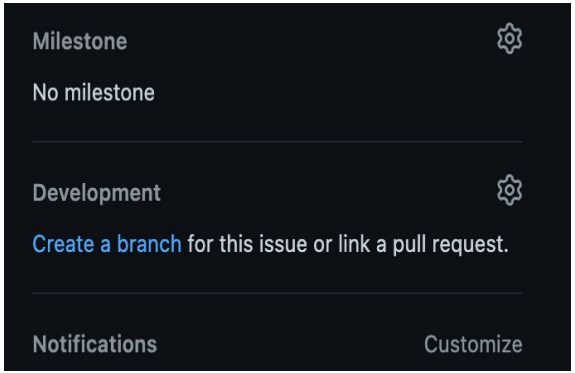
Issue tracking features

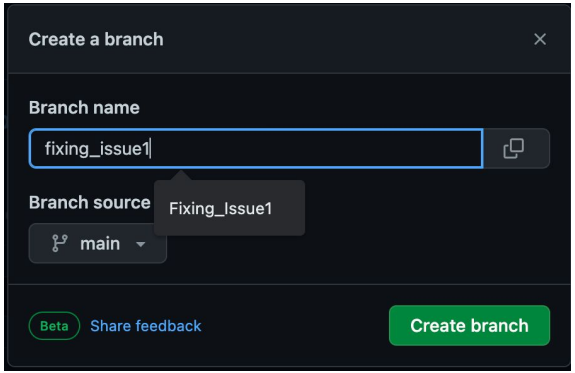
- Can list all issue.
- Can also list issues based on filter.
- E.g. All open issues, all closed issues, all issues assigned to a person etc.



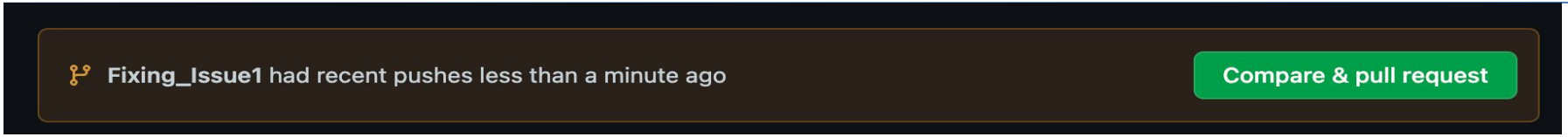
Creating pull requests to fix issues

- Create a new branch or use existing one to create a pull request.
- Create new branch from the option available at issue page or from branches tab.
- You can see available branches in the “branches” tab under “<> Code” tab.
- Make the required changes and commit your changes. You can directly commit on GitHub, it handles rest.

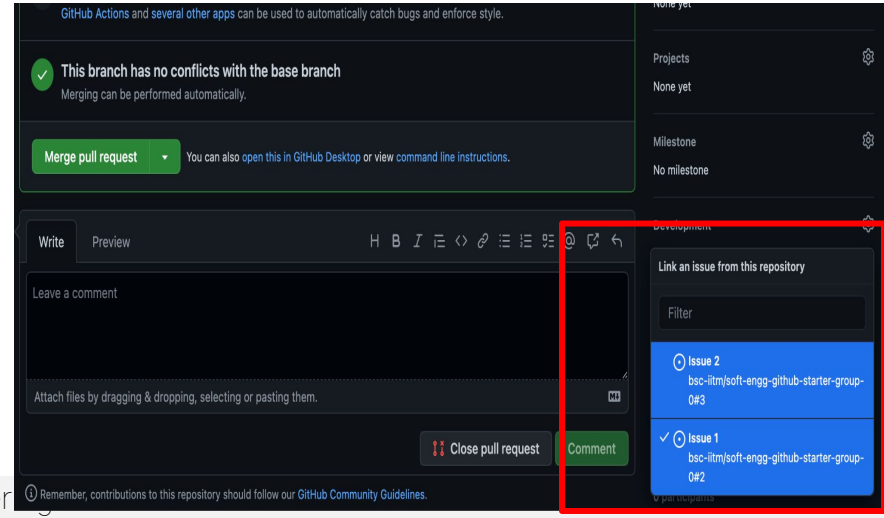




Creating pull requests to fix issues



- Option to create pull request available on branch page.
- Use that to create a pull request. This pull request will be automatically linked to issue
  Through branch if branch was created from the issue page.
- Or option to map available at pull request page as shown.

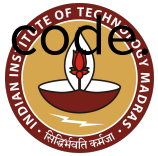


Code Reviewing

Code review is a software quality assurance in which one or more people examine the program/changes done by a developer.

Also referred as peer review, as it is carried out by peers other than the author of the change.

It is not limited to examining logical errors, but can also helps in examining that the code is well documented, adheres to best practices, is consistent with standards of the project/team etc. Which in turn results in better quality and maintainability of the code



Importance of Code reviewing

- **Improves code Quality**. Focus not just on correctness but also on aspects like efficiency, complexity and security.
- **Minimize Technical debt**. Well documented code with consistent design and implementation reduces maintenance costs and efforts.
- **Risk reduction**. Testing cannot guarantee software to be completely bug free.
- **Supports Knowledge transfer.** Learn from others expertise.
- **Make QA testing easier**: Many risks can be identified at earlier stage itself.

Pair Programming

- An agile software development technique in which two programmers work together at one workstation.

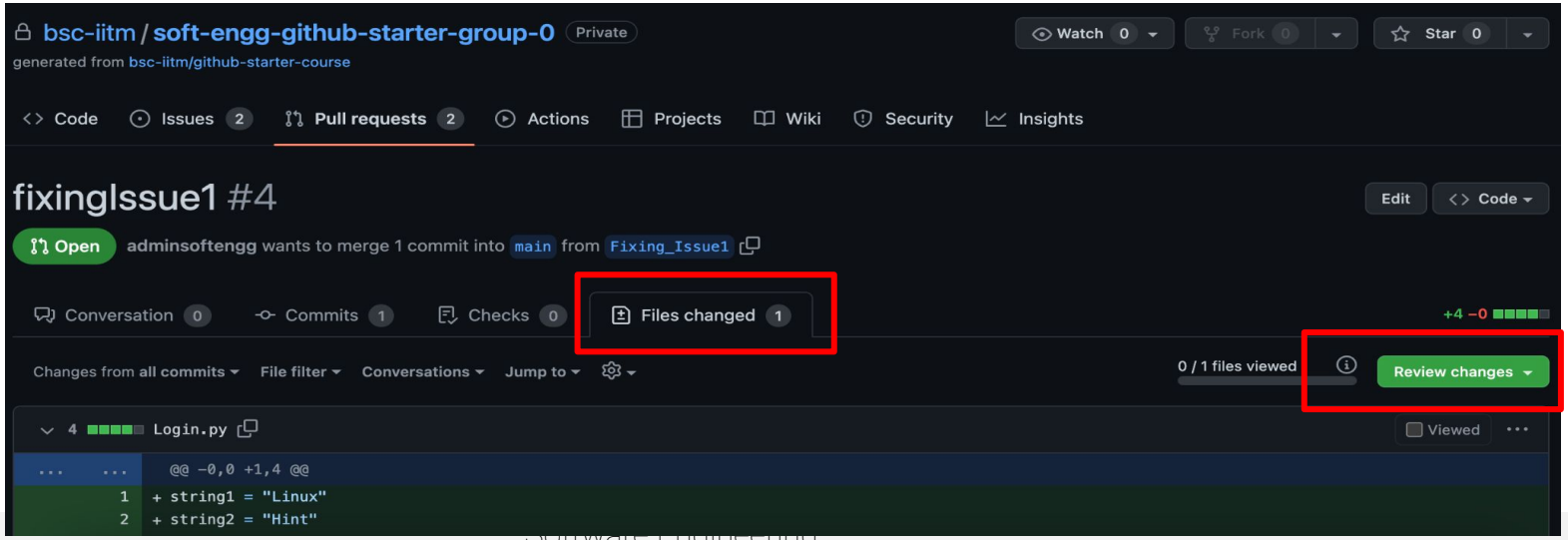
- One writes code while the other reviews the code simultaneously.

- The two programmers switch roles frequently.

- Getting popular slowly.

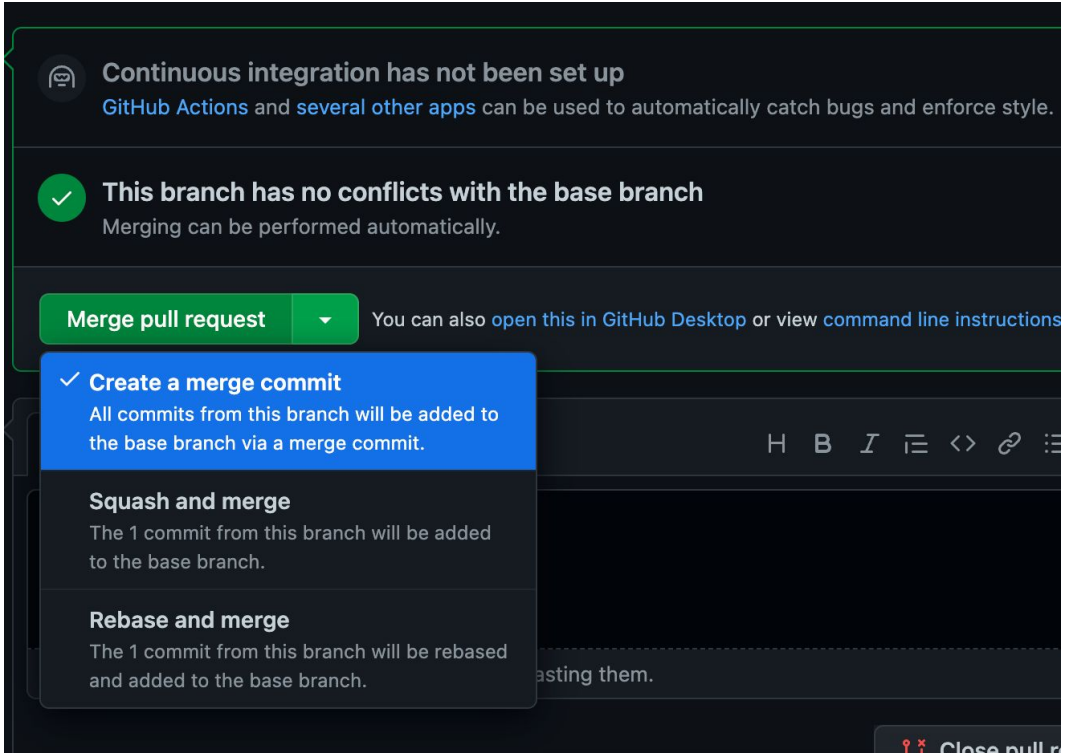
Code review on GitHub

- Peers open the pull request, review the “Files changed”,
- Adds their comments, marks the changes as approved when satisfied.



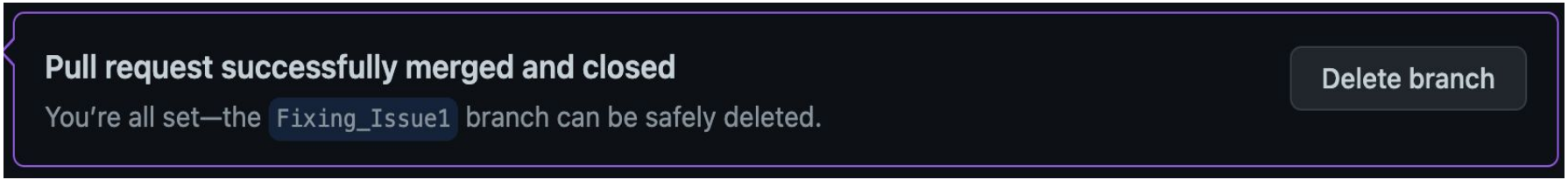
Merging the changes

- After the changes are approved, the author of changes is good to merge the changes to the source branch which is main in this case.



Merging the fix and closing the issue.

After merging the changes are sent to the main branch.



The issue mapped to this pull request is automatically closed.

But can be viewed(closed issues) for future reference to check the details.