

# Software Engineering

## Issue tracking and code review

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Dr. Sridhar Iyer, IIT Bombay

Dr. Prajish Prasad, FLAME University

Ankur Parmar, IIT Madras



# Issue tracking system

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- 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

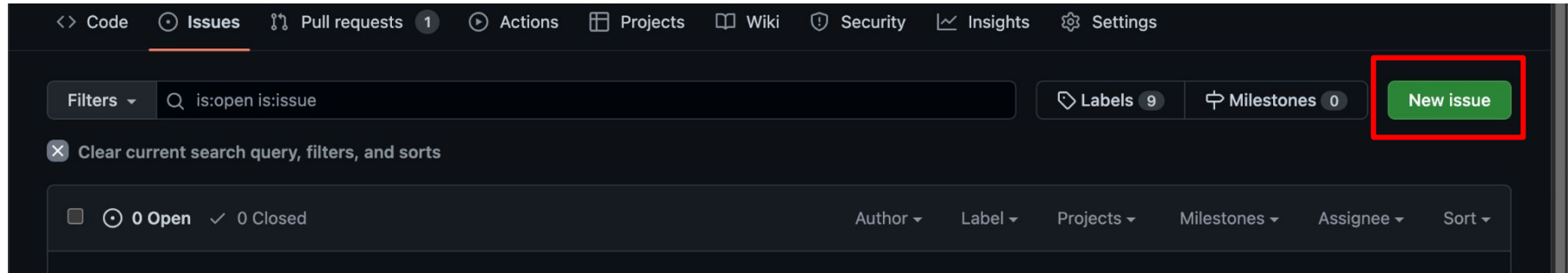
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- Deliver high quality products to end user by tracking and minimizing issues in your software.
- Reduce the cost of development by prioritizing issues and focusing on important and frequent use cases.
- Keeping history of previously reported issues 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

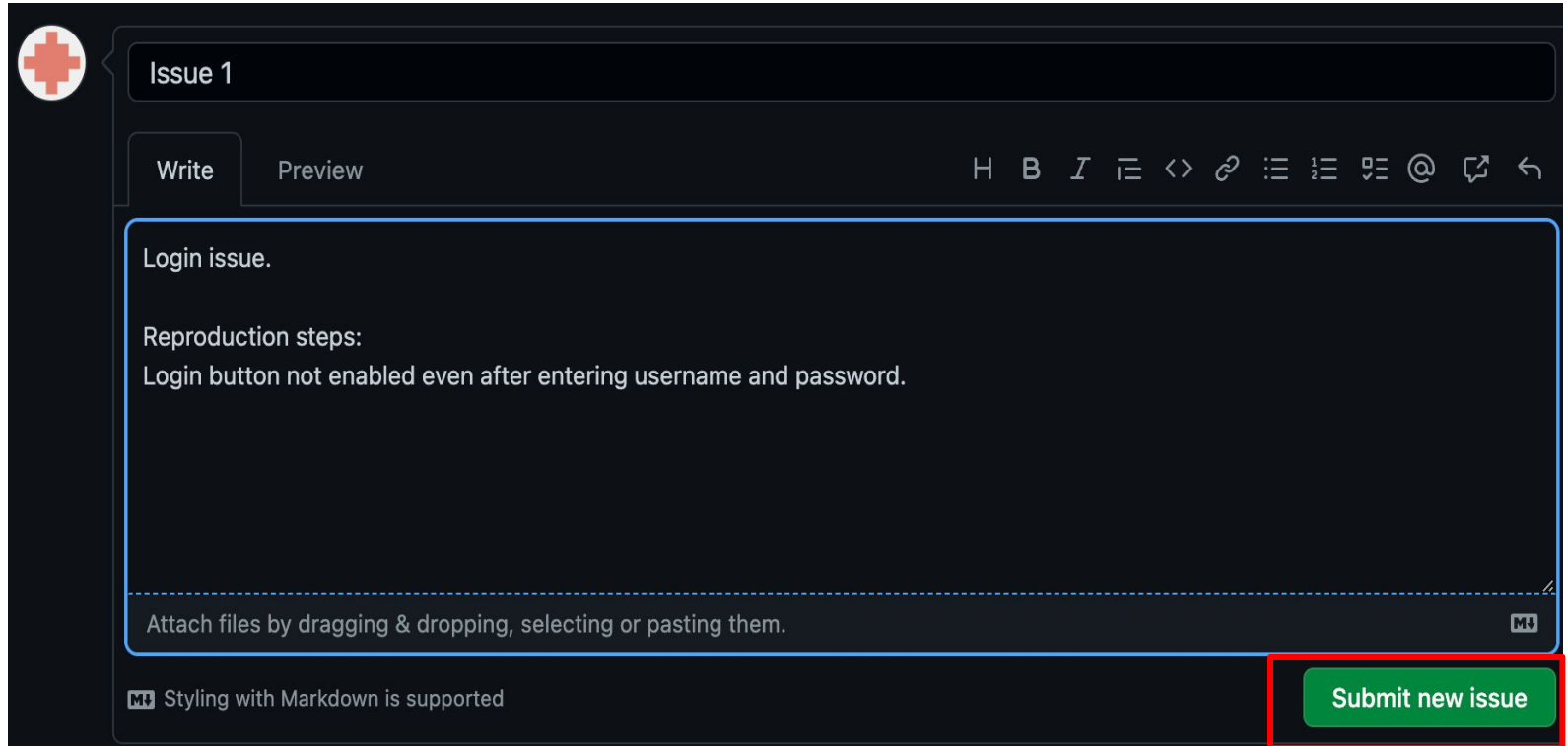
- Easy to create and track issues on GitHub. Create new issues directly from your project repository home page.



- Enter issue details and submit new issue.



# Creating new issue



The screenshot shows the GitHub 'New Issue' page. At the top left is a red cross icon. Below it is a text input field containing 'Issue 1'. To the right of the input field are two tabs: 'Write' (active) and 'Preview'. Further right is a rich text editor toolbar with icons for heading (H), bold (B), italic (I), list (≡), code (<>), link (🔗), unlink (🔗), quote (≡), mention (@), share (🔗), and undo (↶). The main text area contains the following text: 'Login issue.' followed by 'Reproduction steps:' and 'Login button not enabled even after entering username and password.' Below the text area is a dashed line and the text 'Attach files by dragging & dropping, selecting or pasting them.' with a file upload icon (M+). At the bottom left, there is a note 'Styling with Markdown is supported' with a Markdown icon (M+). At the bottom right, there is a green button labeled 'Submit new issue' which is highlighted with a red border.

Issue 1

Write Preview

H B I ≡ <> 🔗 🔗 ≡ ≡ M+

Login issue.

Reproduction steps:

Login button not enabled even after entering username and password.

Attach files by dragging & dropping, selecting or pasting them.

M+ Styling with Markdown is supported

Submit new issue



# GitHub: Issue tracking features

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- 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 1 #2

Open

adminsoftengg opened this issue 9 minutes ago · 0 comments




adminsoftengg

commented 9 minutes ago


Login issue.

Reproduction steps:  
Login button not enabled even after entering username and password.




adminsoftengg

self-assigned this 7 minutes ago



ankurparmariitm

assigned **ankurparmariitm** and unassigned **adminsoftengg** and **ankurparmariitm** 7 minutes ago




ankurparmariitm

commented 3 minutes ago · edited

The issue is debugged.  
Bad assignment in file xxx.py. Will fix by Friday.

Assignees

 **ankurparmariitm**

Labels

None yet

Projects

None yet

Milestone

No milestone

Development

[Create a branch](#) for this issue or link a pull request.

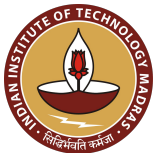
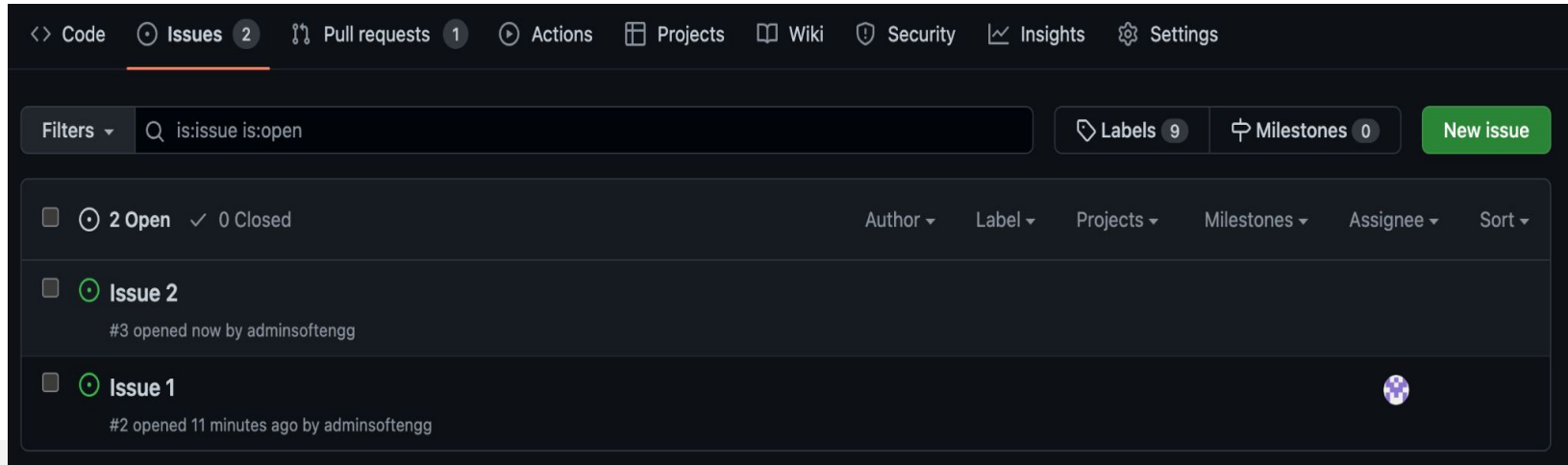
Notifications

Customize

Software Engineering

# Issue tracking features

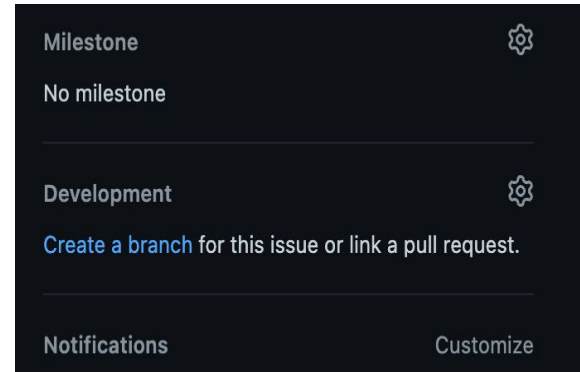
- Can list all issue.
- Can also list issues based on filter.
- E.g. All open issues, all closed issues, all issues assigned to a person etc.







# 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.



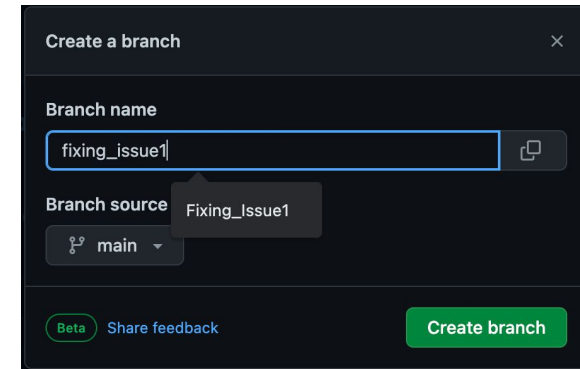
Milestone 


No milestone

Development 


[Create a branch](#) for this issue or link a pull request.



Notifications Customize



Create a branch 

Branch name

fixing\_issue1 

Branch source  main 

Fixing\_Issue1

Beta [Share feedback](#) [Create branch](#)

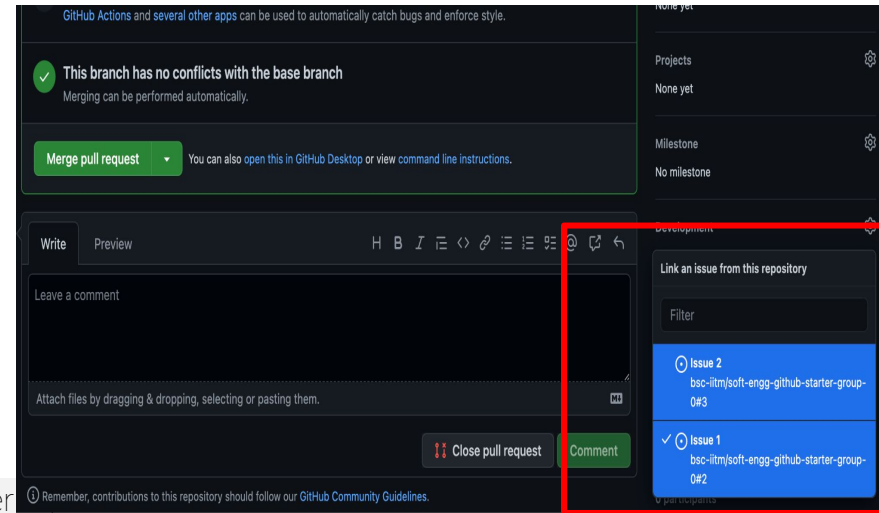


# Creating pull requests to fix issues

🔑 Fixing\_Issue1 had recent pushes less than a minute ago

Compare & pull request

- 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

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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



# Importance of Code reviewing

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- **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

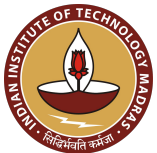
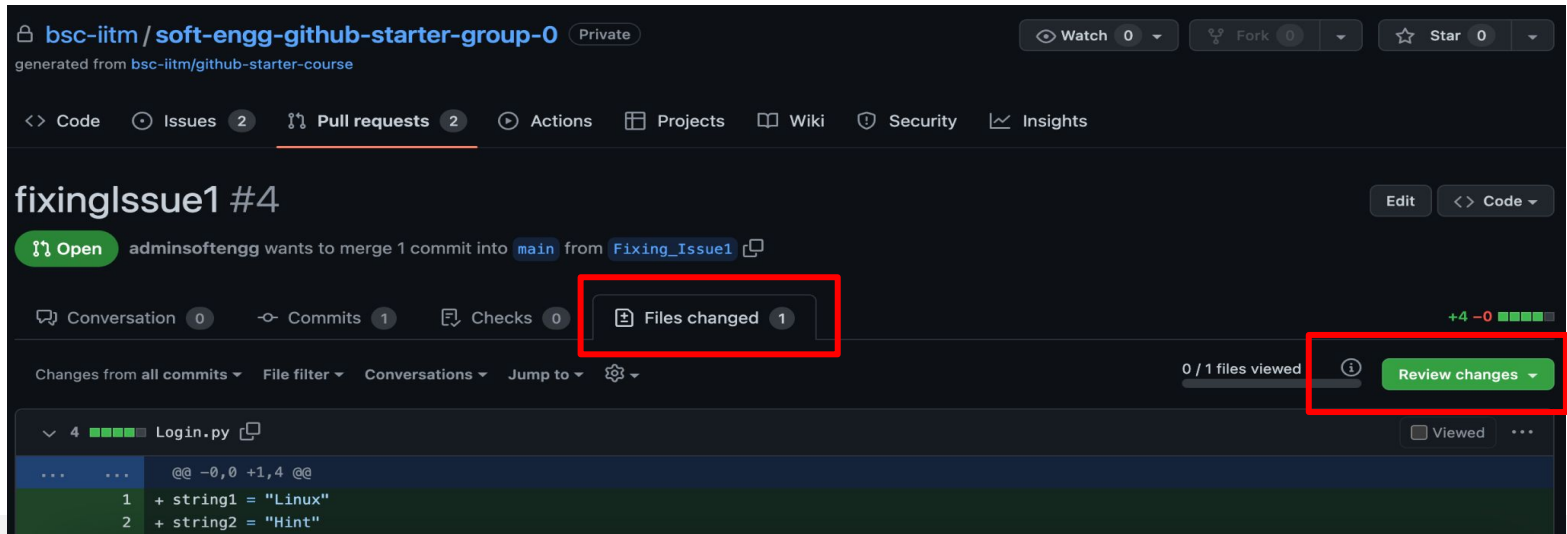
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- An agile software development technique in which two programmers work together at one workstation.
- One writes code while the other reviews the code simultaneously.
- The two programmers switch roles frequently.
- Getting popular slowly.



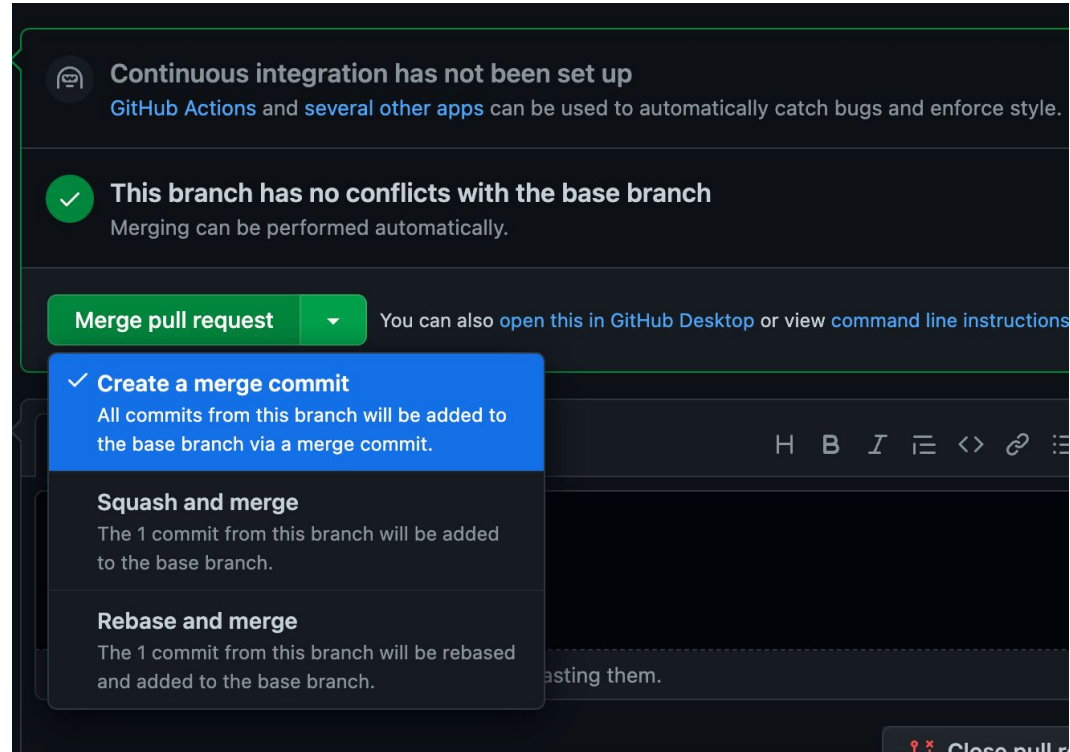
# Code review on GitHub

- 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.

**Pull request successfully merged and closed**

You're all set—the `Fixing_Issue1` branch can be safely deleted.

Delete branch

The issue mapped to this pull request is automatically closed. But can be viewed(closed issues) for future reference to check the details.

