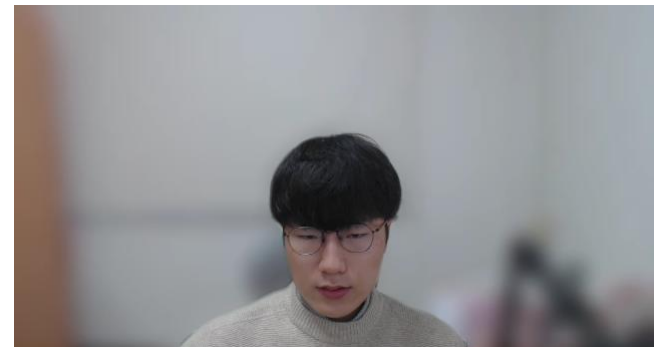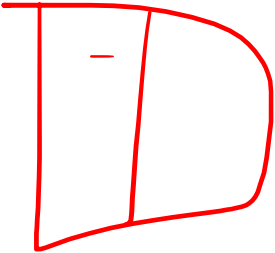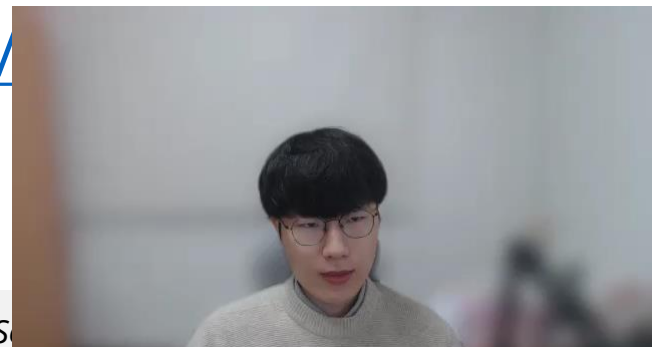# Open-Source Software Practice

11. Collaboration

Instructor: Jaemin Jo (조재민, jmjo@skku.edu)
Interactive Data Computing Lab (*IDCLab*),
College of Computing and Informatics,
Sungkyunkwan University

Markdown

- **Markdown** is a lightweight markup language that you can use to format text documents.
  - Similar to HTML, but much simpler.

- It is used everywhere in GitHub, e.g., documentation, issues, pull requests, etc.

- Heading, lists, tables, images, links, …

- https://guides.github.com/features/mastering-markdown/
- https://www.markdownguide.org/basic-syntax

Markdown

Markdown	HTML	Rendered Output
# Heading level 1	Heading level 1	# Heading level 1
## Heading level 2	Heading level 2	## Heading level 2
### Heading level 3	Heading level 3	### Heading level 3
#### Heading level 4	Heading level 4	#### Heading level 4
##### Heading level 5	Heading level 5	##### Heading level 5
###### Heading level 6	Heading level 6	Heading level 6

Markdown	HTML	Rendered Output
I just love **bold text**	I just love bold text.	I just love **bold text**.

Markdown	HTML	Rendered Output
Italicized text is the *cat's meow*.	Italicized text is the cat's meow.	Italicized text is the *cat's meow*.

Markdown	HTML	Rendered Output
- First item - Second item - Third item - Fourth item	 - First item - Second item - Third item - Fourth item 	• First item • Second item • Third item • Fourth item

Markdown	HTML	Rendered Output
1. First item 2. Second item 3. Third item 4. Fourth item	 - First item - Second item - Third item - Fourth item 	1. First item

Open-S

Markdown

My favorite search engine is [Duck Duck Go](https://duckduckgo.com).

The rendered output looks like this:

My favorite search engine is Duck Duck Go.
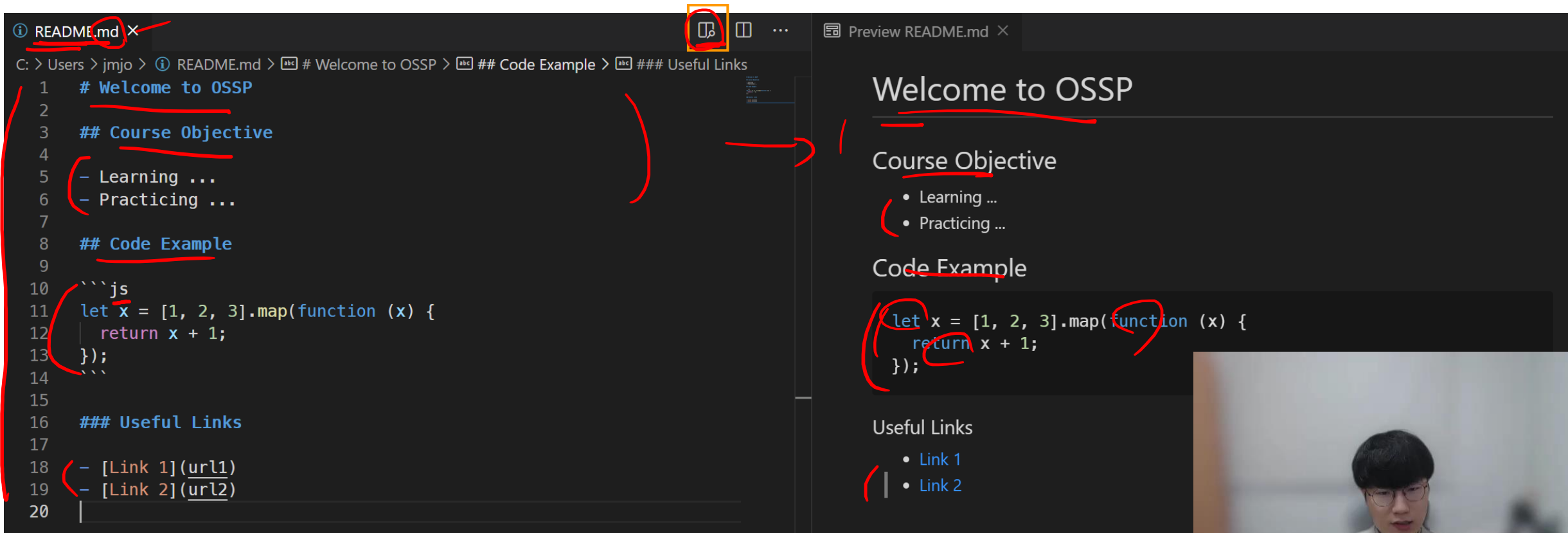
```ruby
require 'redcarpet'
markdown = Redcarpet.new("Hello World!")
puts markdown.to_html
```

```
require 'redcarpet'
markdown = Redcarpet.new("Hello World!")
puts markdown.to_html
```

Markdown

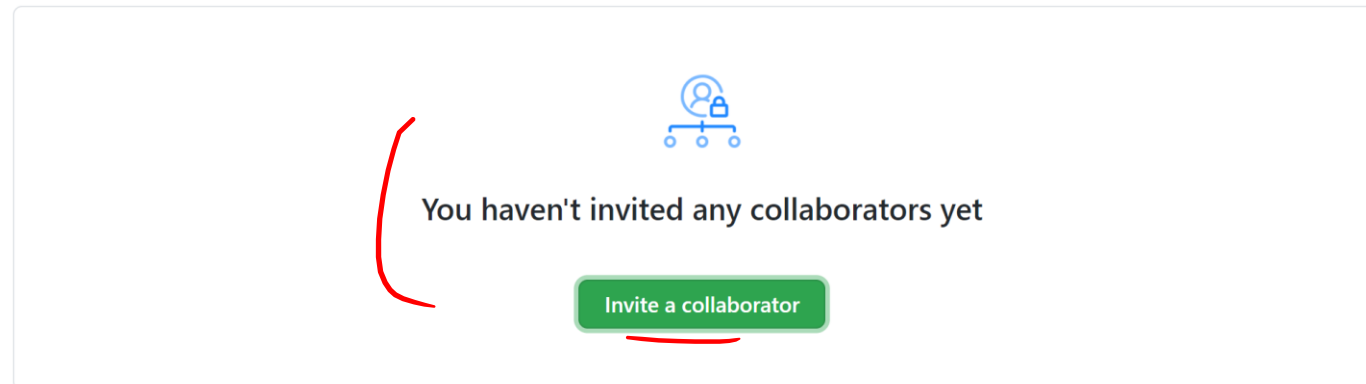- VSCode supports Markdown!
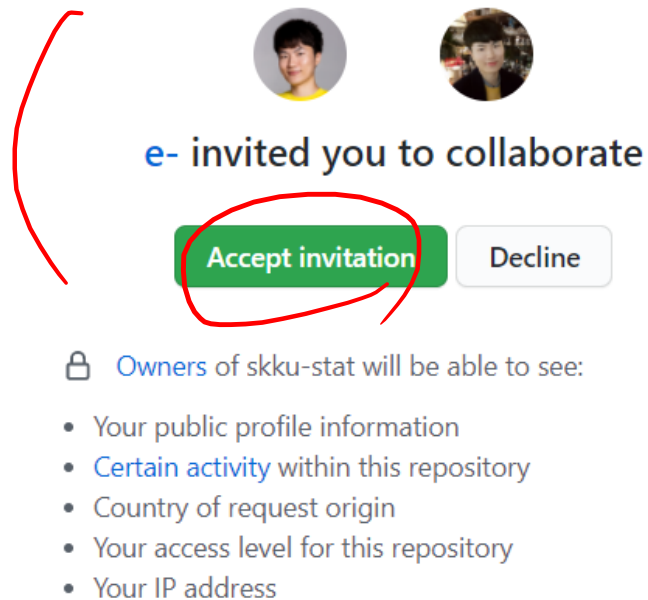- Create a .md file and open it on VSCode.

Open-S...

Owner vs Collaborators

- **Owner**: the user who created a repository.
  - https://github.com/**e-**/skku-stat

- You can invite collaborators to your repo as you want.
  - Settings -> Manage Access

Manage access

You haven't invited any collaborators yet

Invite a collaborator

Owner vs Collaborators

- Send the invitation link after inviting a collaborator

e- invited you to collaborate

Accept invitation   Decline

🔒 Owners of skku-stat will be able to see:

- Your public profile information
- Certain activity within this repository
- Country of request origin
- Your access level for this repository
- Your IP address

Manage access

☐ Select all

🔍 Find a collaborator...

☐ Jaemin Jo
   jaeminjo • Collaborator
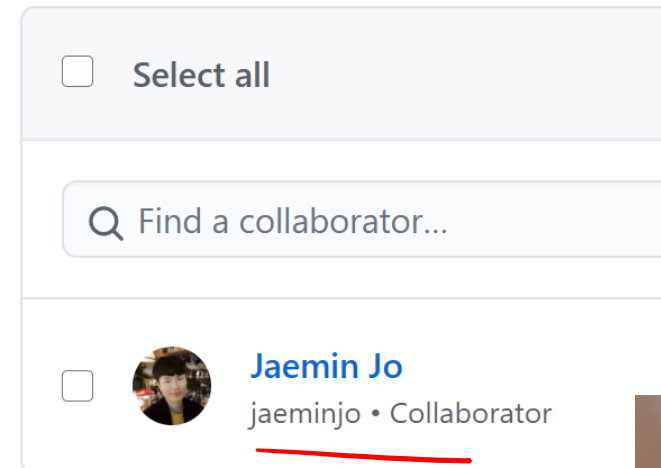
Owner vs Collaborators

- Things that both the owner and collaborators can do:
  - Pull the content (read)
  - Push changes (write)
  - Rename a branch
  - Create, assign, close, and re-open issues
  - Create, merge, and close pull requests
  - ... almost everything that you do to maintain the repository

Open-S

Owner vs Collaborators

- Things that the owner can do but collaborators cannot do:
  - Invite collaborators
  - Change the visibility of the repo (e.g., public -> private)
  - Delete the repo
  - Manage security settings

- In your project, one of your team member should be an owner and invite others to the repo.

External Contributors

- But, how can I contribute to an open-source project if I am not invited as a collaborator?

- In this case, you are **an external contributor**.

- Fork the target repo to your account.

- Modify your repo.

- Write **a pull request**.

- The collaborators of the original repo will approve your pull request
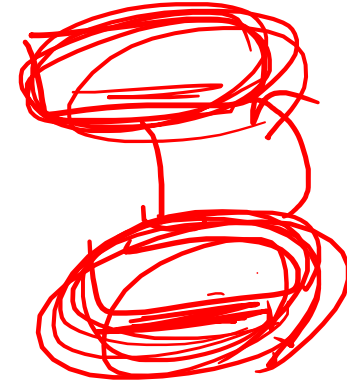
Forking a Repository

- If you fork a repo, you will get a clone of the original repo under your account.
  - e.g., *d3/d3* becomes *e-/d3*
- You are the owner of the repo, so you can do anything, e.g., committing changes.

Open-S
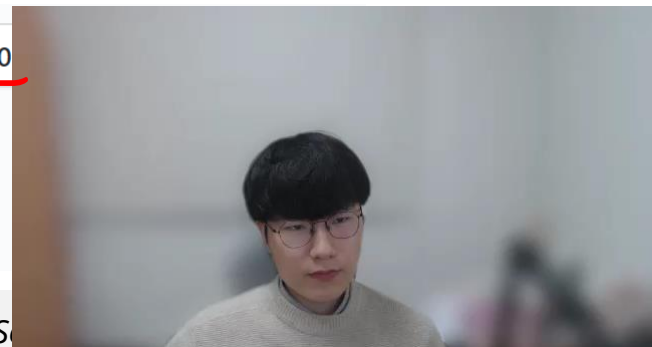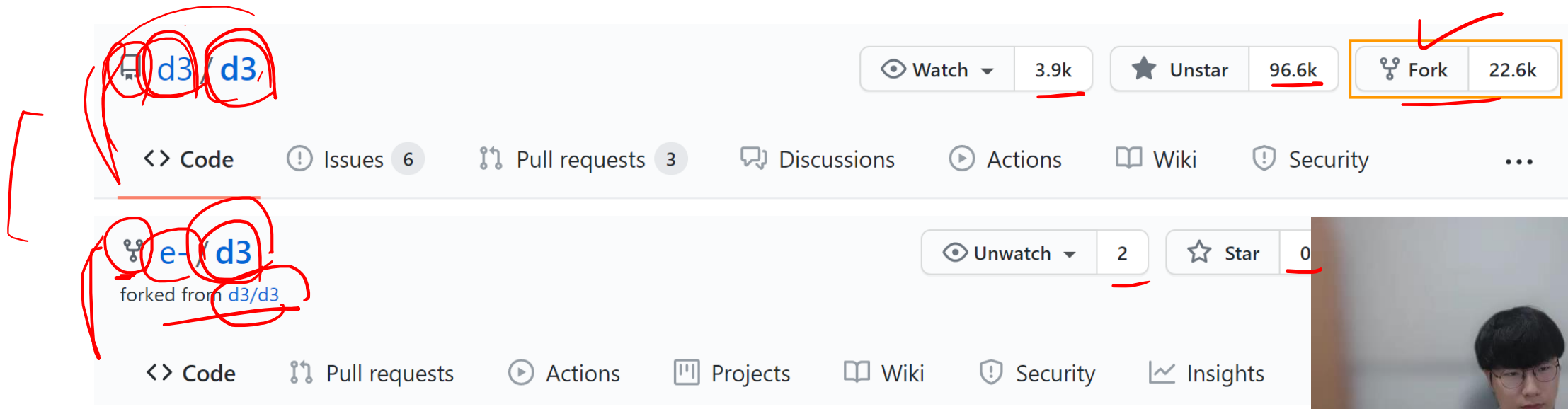
Creating a Pull Request

- However, changes you made (to e-/d3) are not visible in the original repo (d3/d3).

- To reflect the changes on the original repo, you need to create **a pull request** to d3/d3.

- **Pull request**: "please review what I have done and merge the changes if you like".
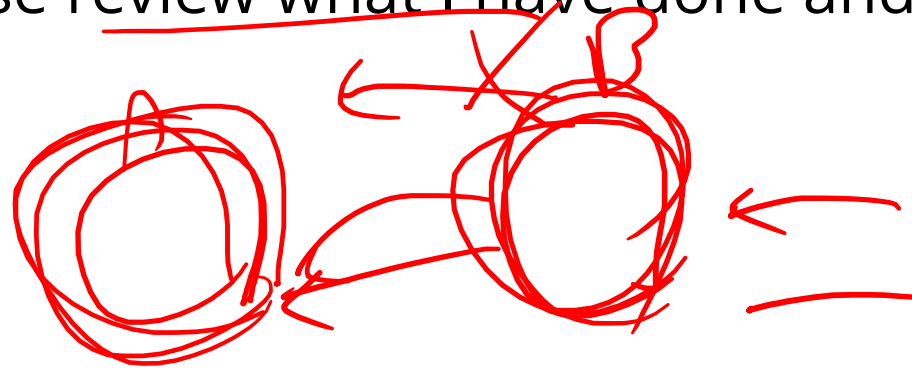
Creating a Pull Request

- **User A** creates a repo A/skku-stat.

- **User B** forks the repo as B/skku-stat.

- **User B** clones B/skku-stat into B's local machine.

- **User B** makes changes and push them to B/skku-stat.
  - *git commit* and *git push*

- **User B** goes to the "Pull requests" tab of A/skku-stat .
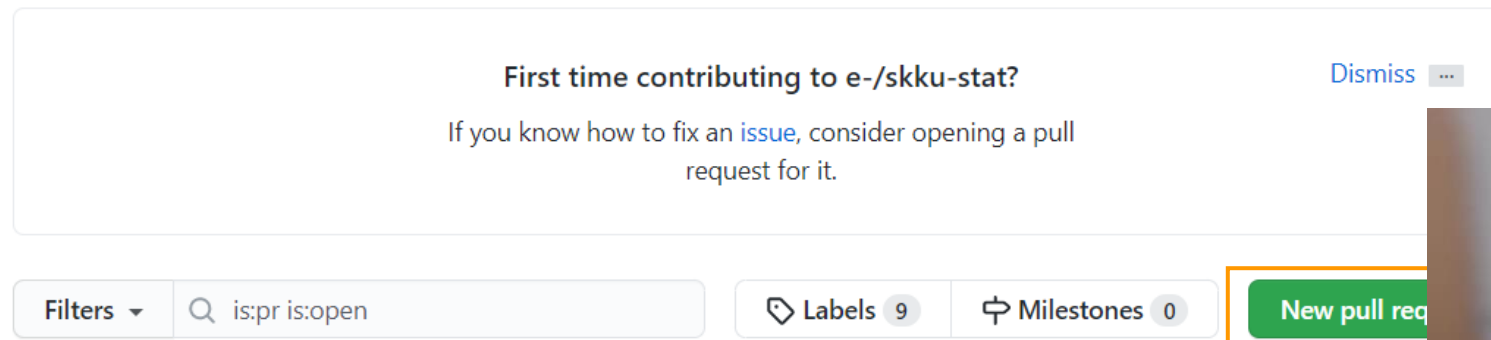
Creating a Pull Request

- **User B** clicks on "New pull request".
- **User B** clicks on "Compare across forks".

Compare changes

Compare changes across branches, commits, tags, and more below. If you need to, you can also compare across forks.

⇅ base: main ▾ ← compare: main ▾

Compare changes

Compare changes across branches, commits, tags, and more below. If you need to, you can also compare across forks.

⇅ base repository: e-/skku-stat ▾ base: main ▾ ← head repository: e-/skku-stat ▾ compare: main ▾
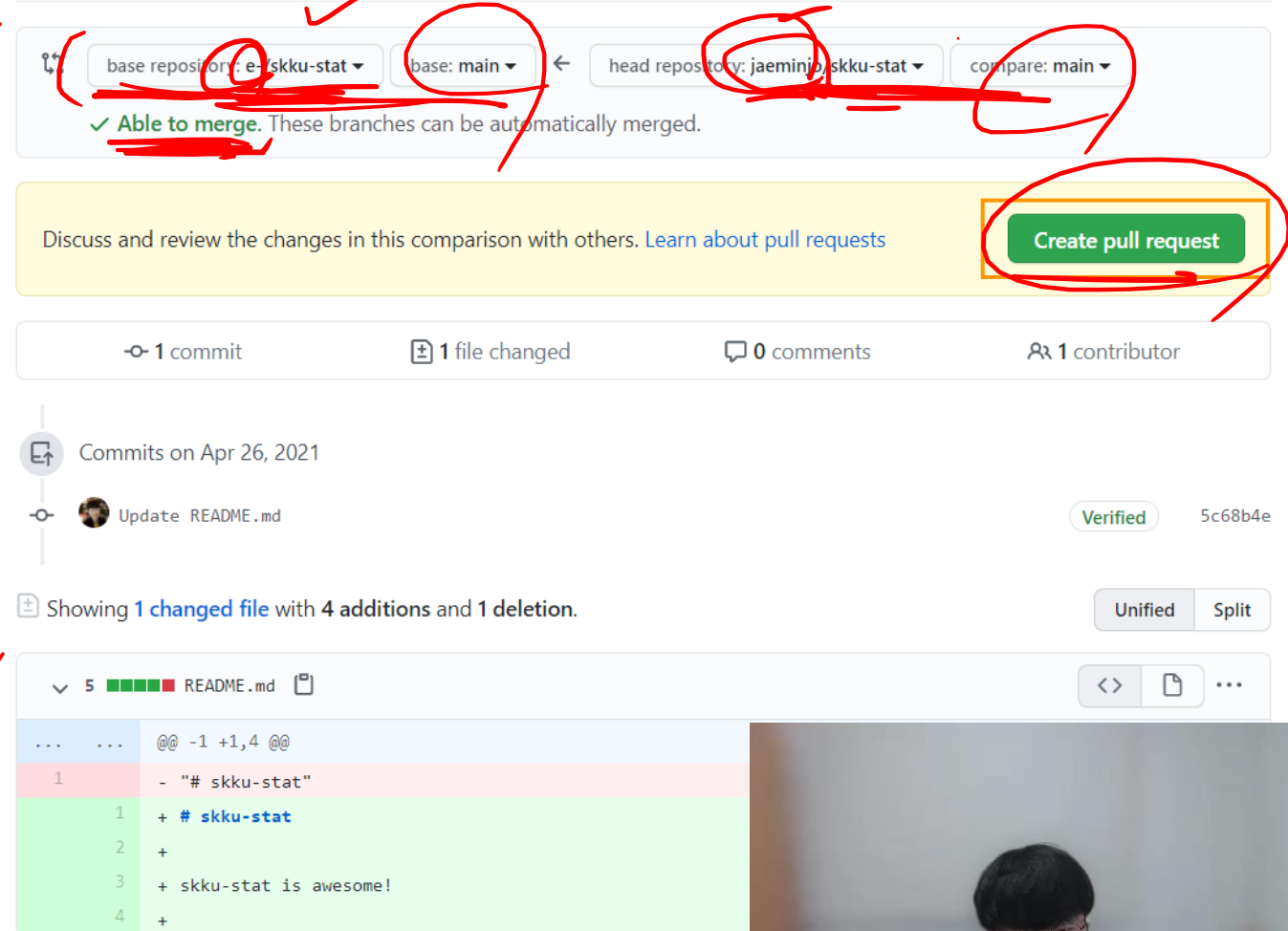
Creating a Pull Request

- Left: A's branch into which B wants to merge B's.

- Right: B's branch (newer)

- The diff view below shows the changes.
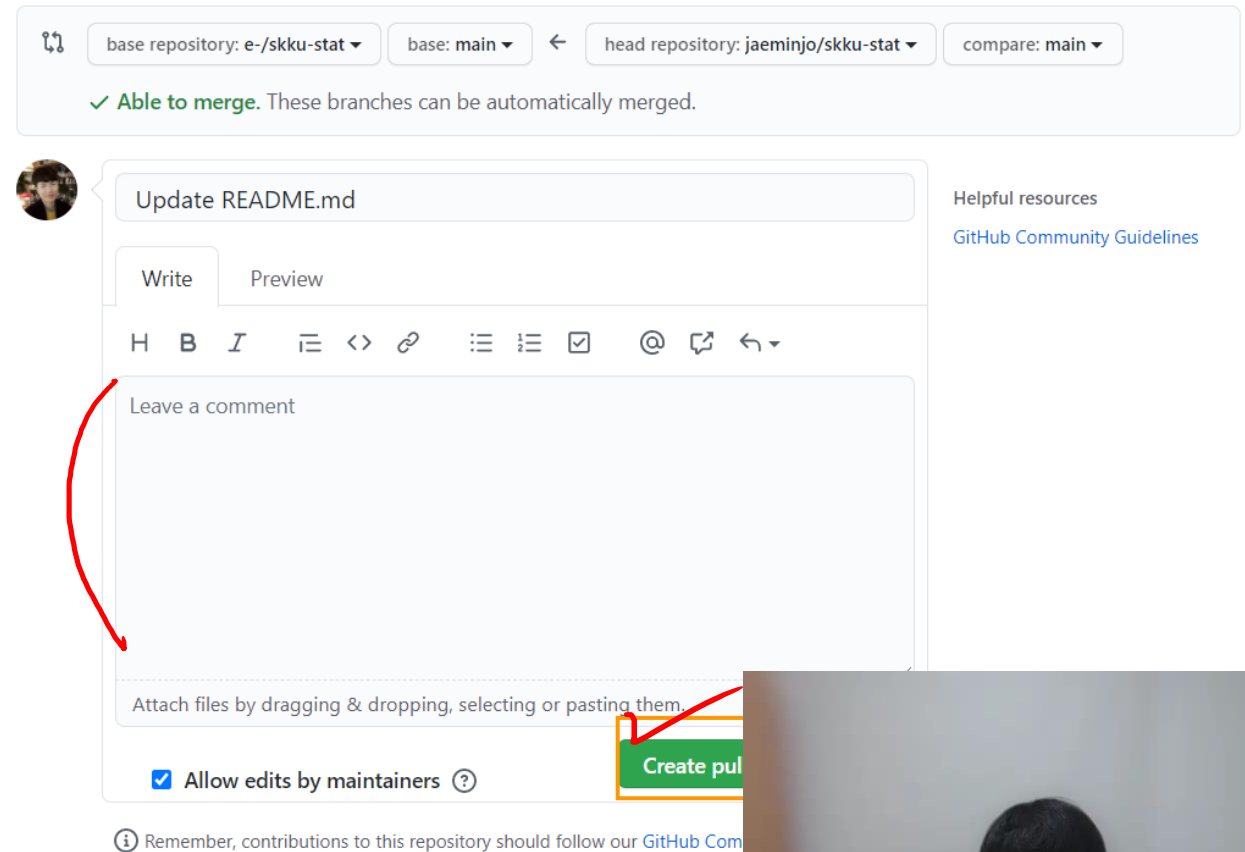
- **User B** clicks on "Create pull request".

Creating a Pull Request

- Leave a message so that the owner and collaborators of the repo can understand what you did.
  - Use the markdown syntax!

- **User B** clicks on "Create pull request".

Pull Request

- GitHub automatically runs the tests the repo has and checks merge conflicts.

- You can discuss with the maintainers (owner or collaborators).
  - Maybe they require some changes.

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Creating a Pull Request

- **User A** finds the pull request that **User B** left and comments on it.
- **User B** modifies the source code again.
- The additional changes that **User B** made is automatically reflected on the old pull request.
  - No need to remove the old one and create a new one.
- **User A** clicks on "Merge pull request".

- B's code has been applied to A's repo.
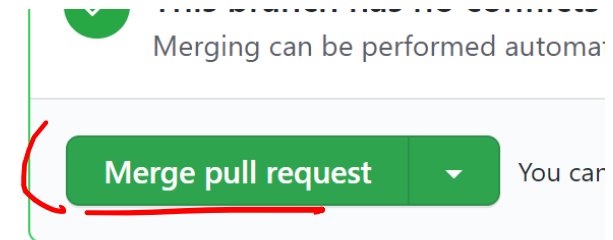
Issue Management

- Go to "Issues" tab

- Use Markdown

- You can notify a user using @(username).

- Assign to a specific user (maintainers only).

- Labels are very useful. Categorize the issues (maintainers only).

① **30 Open** ✓ 70 Closed

Author ▾　Label ▾　Projects ▾　Milestones ▾　Assignee ▾　Sort ▾

① **Frontend stucks at loading** `question`
#125 opened 3 hours ago by huzeyfecoskun

① **Add ccxt proxy configuration** `enhancement`
#124 opened 3 hours ago by 556isback

① **How to get a Binance API test key?** `question`　💬 2
#122 opened 10 hours ago by baptisteArno

① **Filter symbols in the Frontend** `enhancement`
#120 opened 3 days ago by chrisleekr

① **Set last buy prices for same quote assets** `enhancement` `wontfix`　💬 1
#119 opened 3 days ago by chrisleekr

① **Calculation of % of available balance asset** `question`　💬 20
#118 opened 3 days ago by gilmillasseau

① **Enhancement: graphing on UI** `enhancement` `wontfix`
#117 opened 3 days ago by horstefan

① **docker-stack.yml is not compatible with Portainer running on aarch64** `enhancement`
#114 opened 4 days ago by Licrefin

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Issue Management

- Issues and pull requests are closely related.
- **User C** reports a bug as an issue.
- **User B** fixes the issue and creates a pull request.
- **User A** approves the pull request.

- You can re-open or close a relevant issue in a pull request message.

Write | Preview

close #

⚠ #2 **My first issue**
⇅ #1 **Update README.md**

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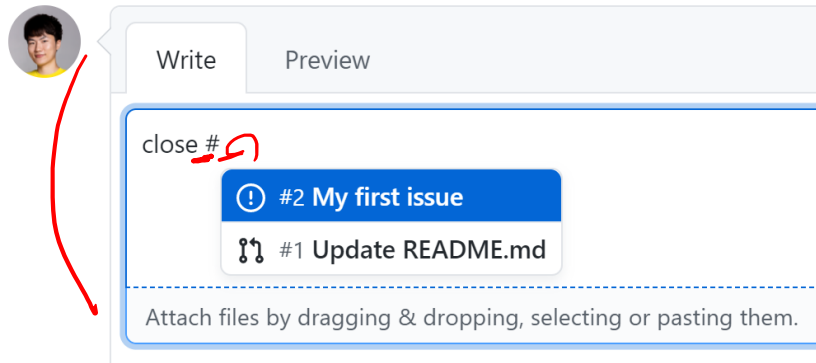
Code Review

- To ensure the code quality, you can enforce people to do code review before merging a pull request.
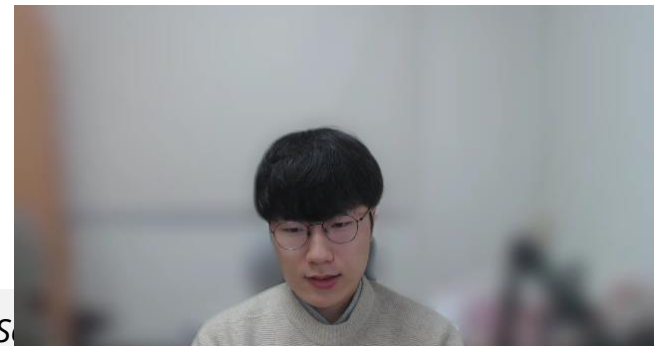
- Settings -> Branches -> Branch protection rules

Branch protection rules

You haven't protected any of your branches
Define a protected branch rule to disable force pushing, prevent branches from being deleted, and optionally require status checks before merging. Learn more about protected branches

Add branch protection rule

Code Review

- Make at least one reviewer review the pull request before merging it.

- Set the branch name pattern to "main".
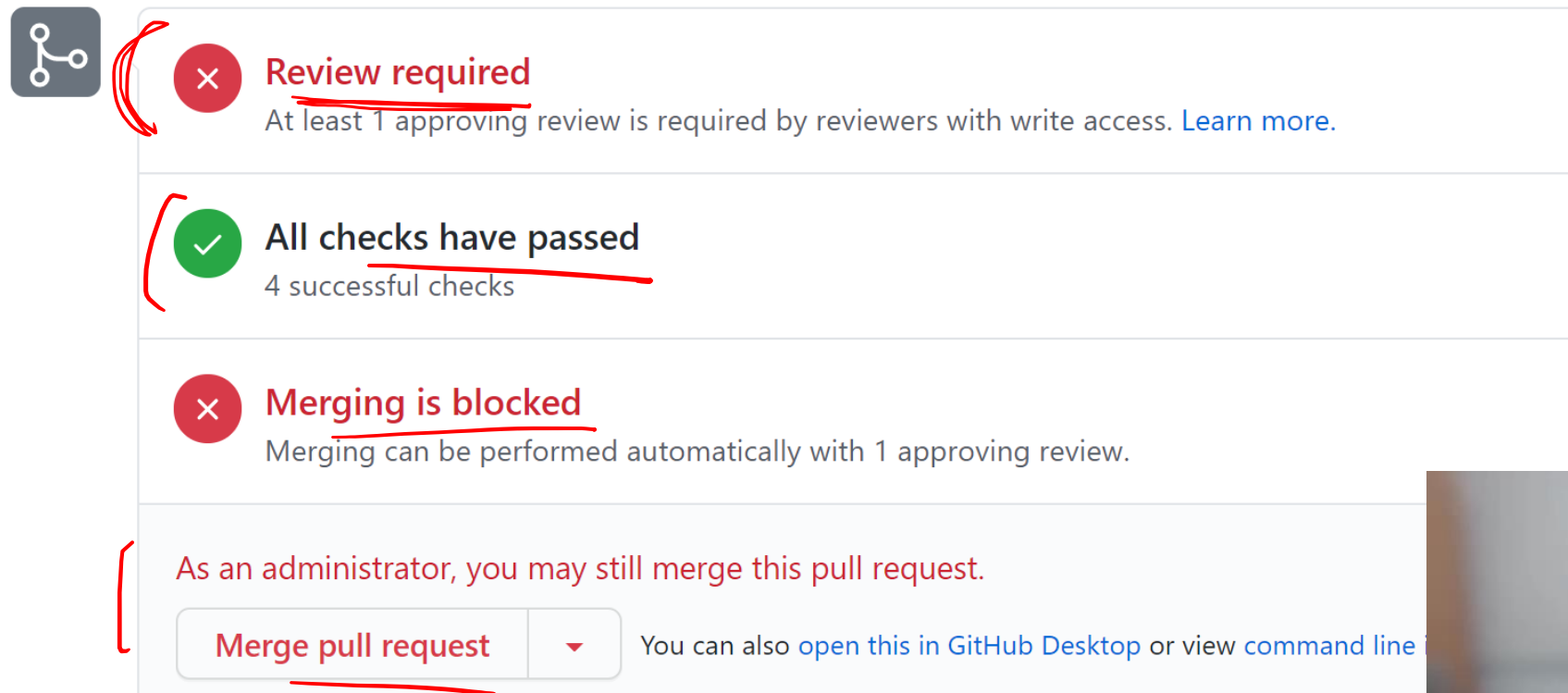
Branch name pattern *

Protect matching branches

☑ **Require a pull request before merging**
When enabled, all commits must be made to a non-protected branch and submitted via a pull request before they can be merged into a branch that matches this rule.

☑ **Require approvals**
When enabled, pull requests targeting a matching branch require a number of approvals and no changes requested before they can be merged.

Required number of approvals before merging: 1 ▾

☐ **Dismiss stale pull request approvals when new commits are pushed**
New reviewable commits pushed to a matching branch will dismiss pull request review approvals.

☐ **Require review from Code Owners**
Require an approved review in pull requests including files with a designated code owner.

☐ **Require approval from someone other than the last pusher**
Require review approval from someone other than the last pusher to the pull request branch.

☐ **Require status checks to pass before merging**
Choose which status checks must pass before branches can be merged into a branch that matches this rule. When enabled, commits must first be pushed to another branch, then merged or pushed directly to a branch that matches this rule after status checks have passed.

☐ **Require conversation resolution before merging**
When enabled, all conversations on code must be resolved bef...
Learn more.

☐ **Require signed commits**
Commits pushed to matching branches must have verified sign...

☐ **Require linear history**
Prevent merge commits from being pushed to matching branc...

23

Code Review

- Before a reviewer approves a pull request, you cannot merge the pull request.

Code Review

- To review the pull request, go to the "File changed" tab.
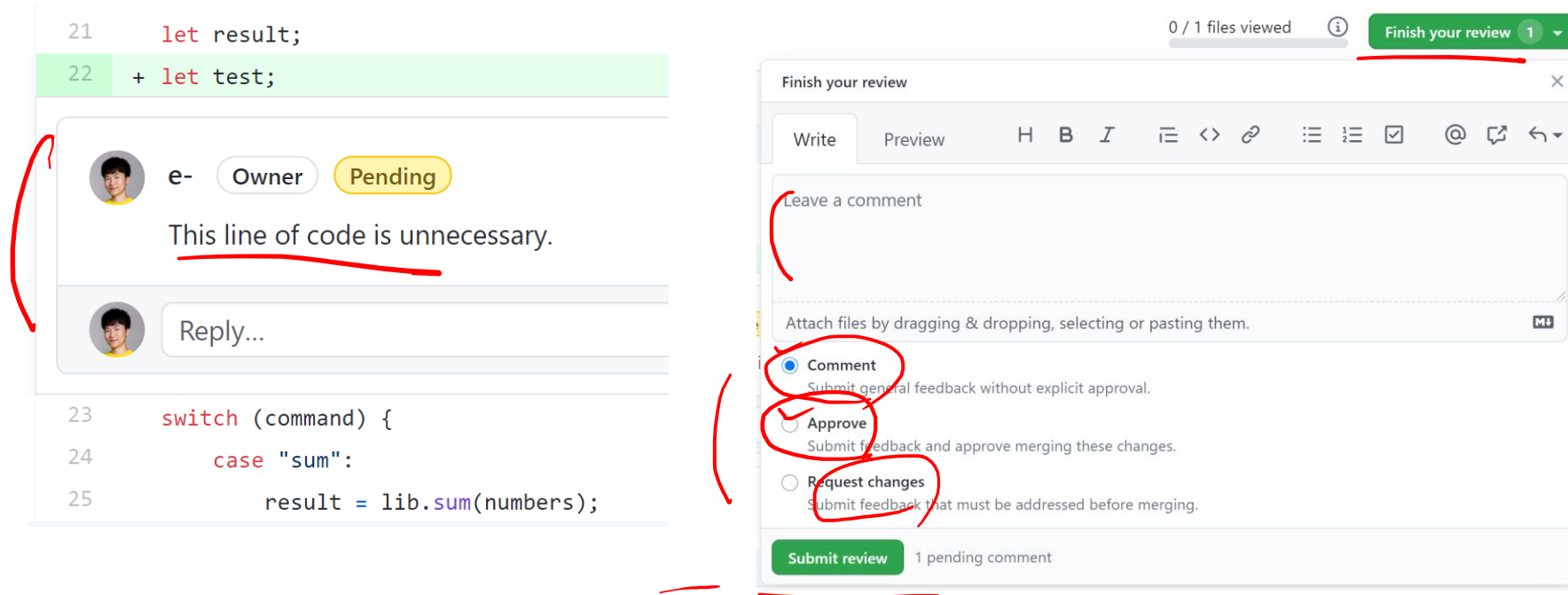
Code Review

- You can comment on the files changed line by line.

- Discuss with the person who made the pull request.

- If you are done, finish the review by approving the request.

Code Review

- To make your pull request approved:
  - Pass all tests
  - No merge conflict
  - Receive an enough number of reviews

Add more commits by pushing to the `main` branch on **jaeminjo/skku-stat**.

Changes approved   Show all reviewers
1 approving review by reviewers with write access. Learn more.

✓ 1 approval   ⌄

All checks have passed   Show all checks
4 successful checks

This branch has no conflicts with the base branch
Merging can be performed automatically.

Merge pull request   ▾   You can also open this in GitHub Desktop or view command line instructions.

Documentation

- To make your code accessible by others, documentation is a must.
  - Usually written in README.md using Markdown

- A brief overview
- Links to resources
- Installation
- API reference
- Examples
- Releases (versions)
- How to contribute
- License
- Code of Conduct
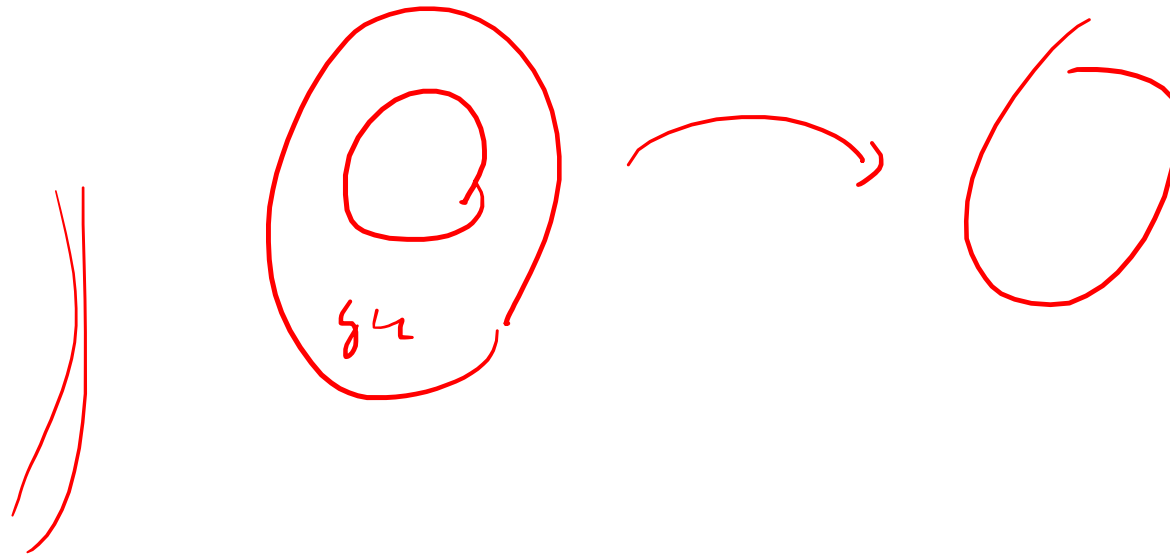
-
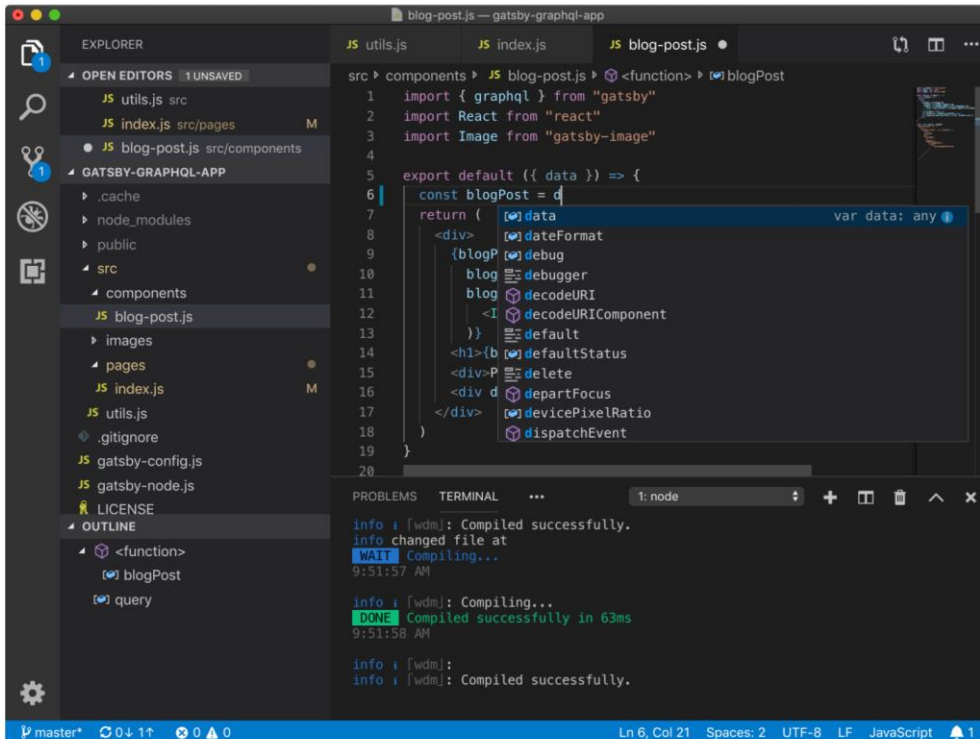
Contributing

There are many ways in which you can participate in the project, for example:

- Submit bugs and feature requests, and help us verify as they are checked in
- Review source code changes
- Review the documentation and make pull requests for anything from typos to new content

If you are interested in fixing issues and contributing directly to the code base, please see the document How to Contribute, which covers the following:

- How to build and run from source
- The development workflow, including debugging and running tests
- Coding guidelines
- Submitting pull requests
- Finding an issue to work on
- Contributing to translations

Feedback

- Ask a question on Stack Overflow
- Request a new feature
- Upvote popular feature requests
- File an issue
- Follow @code and let us know what you think!

See our wiki for a description of each of these channels and inform channels.

Related Projects

Many of the core components and extensions to VS Code live in their own repositories on GitHub. For example, the node debug adapter and the mono debug adapter have their own repositories. For a complete list, please visit the Related Projects page on our wiki.

Bundled Extensions

VS Code includes a set of built-in extensions located in the extensions folder, including grammars and snippets for many languages. Extensions that provide rich language support (code completion, Go to Definition) for a language have the suffix `language-features`. For example, the `json` extension provides coloring for `JSON` and the `json-language-features` provides rich language support for `JSON`.

Development Container

This repository includes a Visual Studio Code Remote - Containers / Codespaces development container.

- For Remote - Containers, use the **Remote-Containers: Open Repository in Container...** command which creates a Docker volume for better disk I/O on macOS and Windows.
- For Codespaces, install the Visual Studio Codespaces extension in VS Code, and use the **Codespaces: Create New Codespace** command.

Docker / the Codespace should have at least **4 Cores and 6 GB of RAM (8 GB recommended)** to run full build. See the development container README for more information.

Code of Conduct

This project has adopted the Microsoft Open Source Code of Conduct. For more information see the Code of Conduct FAQ or contact opencode@microsoft.com with any additional questions or comments.

License

Copyright (c) Microsoft Corporation. All rights reserved.

Licensed under the MIT license.

Open-Sou

- https://github.com/d3/d3-array

Statistics

Methods for computing basic summary statistics.

d3.**min**(*iterable*[, *accessor*]) · Source, Examples

Returns the minimum value in the given *iterable* using natural order. If the iterable contains no comparable values, returns undefined. An optional *accessor* function may be specified, which is equivalent to calling Array.from before computing the minimum value.

Unlike the built-in Math.min, this method ignores undefined, null and NaN values; this is useful for ignoring missing data. In addition, elements are compared using natural order rather than numeric order. For example, the minimum of the strings ["20", "3"] is "20", while the minimum of the numbers [20, 3] is 3.

See also extent.

d3.**minIndex**(*iterable*[, *accessor*]) · Source, Examples

Returns the index of the minimum value in the given *iterable* using natural order. If the iterable contains no comparable values, returns -1. An optional *accessor* function may be specified, which is equivalent to calling Array.from before computing the minimum value.

Unlike the built-in Math.min, this method ignores undefined, null and NaN values; this is useful for ignoring missing data. In addition, elements are compared using natural order rather than numeric order. For example, the minimum of the strings ["20", "3"] is "20", while the minimum of the numbers [20, 3] is 3.

d3.**max**(*iterable*[, *accessor*]) · Source, Examples

Returns the maximum value in the given *iterable* using natural order. If the iterable contains no comparable values, returns undefined. An optional *accessor* function may be specified, which is equivalent to calling Array.from before computing the maximum value.

Unlike the built-in Math.max, this method ignores undefined values; this is useful for ignoring missing data. In addition, elements are compared using natural order rather than numeric order. For example, the maximum of the strings ["20", "3"] is "3", while the maximum of the numbers [20, 3] is 20.

See also extent.

d3.**disjoint**(*a*, *b*) · Source

Returns true if *a* and *b* are disjoint: if *a* and *b* contain no shared value.

```
d3.disjoint([1, 3], [2, 4]) // true
```

Bins
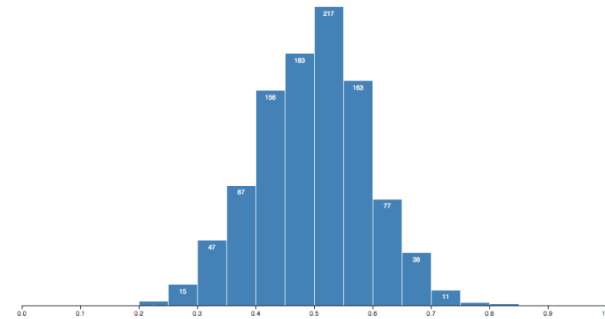
Binning groups discrete samples into a smaller number of consecutive, non-overlapping intervals. They are often used to visualize the distribution of numerical data as histograms.

d3.**bin**() · Source, Examples

Constructs a new bin generator with the default settings.

bin(*data*) · Source, Examples

Bins the given iterable of *data* samples. Returns an array of bins, w elements from the input *data*. Thus, the `length` of the bin is the n additional attributes:

- `x0` - the lower bound of the bin (inclusive).
- `x1` - the upper bound of the bin (exclusive, except for the las

Open-Sou

Documentation

- You can embed documentation in the code.

- e.g., jsdoc (https://jsdoc.app/)

```
/**
 * Represents a book.
 * @constructor
 * @param {string} title - The title of the book.
 * @param {string} author - The author of the book.
 */
function Book(title, author) {}
```

Class: Book

Book(title, author)

```
new Book(title, author)
```

Represents a book.

Parameters:

Name	Type	Description
title	string	The title of the book
author	string	The author of the book

Source: temp.js, line 7

Open-S

Tips for Documentation

- Apply formatting (Markdown!)
  - Readable and consistent

- Provide quick start instructions
- Provide examples (with **expected outputs**)
- Document how to document
- Code of conduct
- A feedback mechanism
- An issue template

Code of Conduct

- Safe work environments

- Mutual respect

- Empathy and kindness

- Constructive feedback

- No trolling, insulting, harassment, etc.

Code of Conduct

This project has adopted the Microsoft Open Source Code of Conduct. For more information see the Code
FAQ or contact opencode@microsoft.com with any additional questions or comments.

Microsoft's CoC

- https://opensource.microsoft.com/codeofconduct/

Our Pledge

We as members, contributors, and leaders pledge to make participation in our community a harassment-free experience for everyone, regardless of age, body size, visible or invisible disability, ethnicity, sex characteristics, gender identity and expression, level of experience, education, socio-economic status, nationality, personal appearance, race, caste, color, religion, or sexual identity and orientation.

We pledge to act and interact in ways that contribute to an open, welcoming, diverse, inclusive, and healthy community.

Our Standards

Examples of behavior that contributes to a positive environment for our community include:.

- Demonstrating empathy and kindness toward other people

- Being respectful of differing opinions, viewpoints, and experiences

- Giving and gracefully accepting constructive feedback

- Accepting responsibility and apologizing to those affected by our mistakes, and learning from the experience

- Focusing on what is best not just for us as individuals, but for the overall community

Examples of unacceptable behavior include:

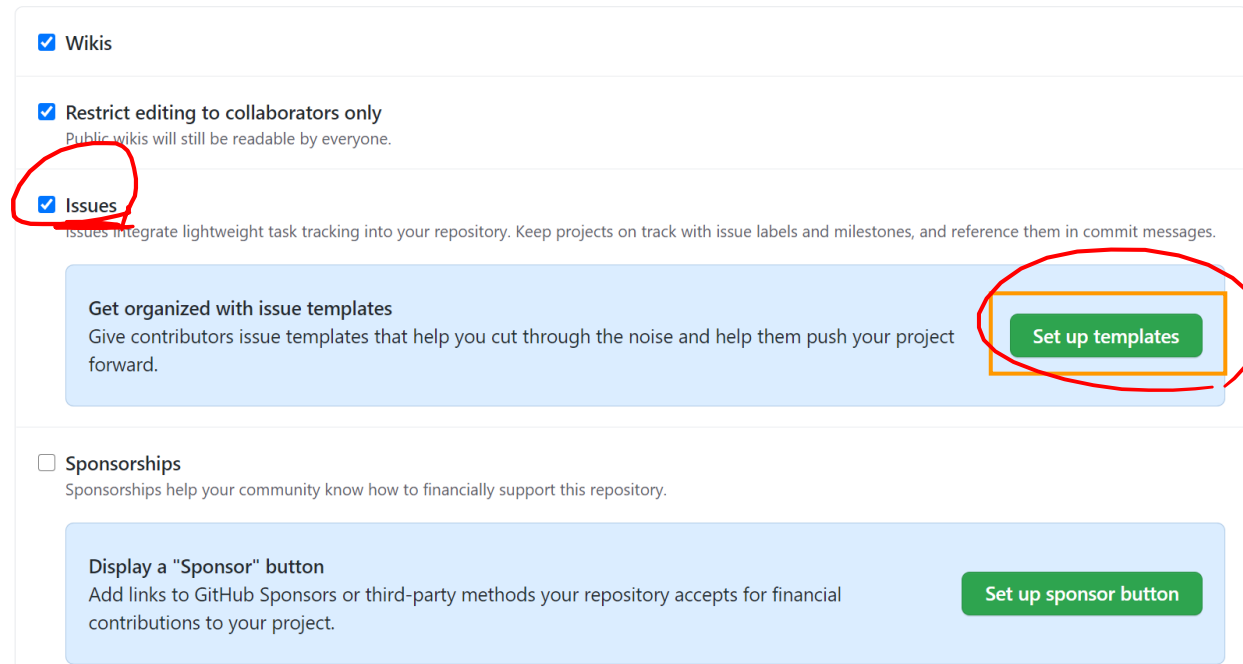- The use of sexualized language or imagery, and sexual attention or advances of any kind

- Trolling, insulting or derogatory comments, and perso

- Public or private harassment

- Disruptive behavior

- Publishing others' private information, such as a physi

- Other conduct which could reasonably be considered

Issue Templates

- Use a consistent format for issues or bug reports
- Setting -> Options -> Features

Issue Template

Bug report

Create a report to help us improve

Close preview

Issue: Bug report ✎

Create a report to help us improve

Describe the bug
A clear and concise description of what the bug is.

To Reproduce
Steps to reproduce the behavior:

1. Go to '...'
2. Click on '....'
3. Scroll down to '....'
4. See error

Expected behavior
A clear and concise description of what you expected to happen.

Screenshots
If applicable, add screenshots to help explain your problem.

Desktop (please complete the following information):

- OS: [e.g. iOS]
- Browser [e.g. chrome, safari]
- Version [e.g. 22]

Smartphone (please complete the following information):

- Device: [e.g. iPhone6]
- OS: [e.g. iOS8.1]
- Browser [e.g. stock browser, safari]
- Version [e.g. 22]

Additional context

Issue: Bug report

Create a report to help us improve. If this doesn't look right, choose a different type.

Title

Write   Preview

Describe the bug
A clear and concise description of what the bug is.

To Reproduce
Steps to reproduce the behavior:
1. Go to '...'
2. Click on '....'
3. Scroll down to '....'
4. See error

Expected behavior
A clear and concise description of what you expected to happen.

Screenshots
If applicable, add screenshots to help explain your problem.

Desktop (please complete the following information):
 - OS: [e.g. iOS]
 - Browser [e.g. chrome, safari]
 - Version [e.g. 22]

Smartphone (please complete the following information):
 - Device: [e.g. iPhone6]
 - OS: [e.g. iOS8.1]
 - Browser [e.g. stock browser, safari]
 - Version [e.g. 22]

Additional context
Add any other context about the problem here.

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

Styling with Markdown is supported
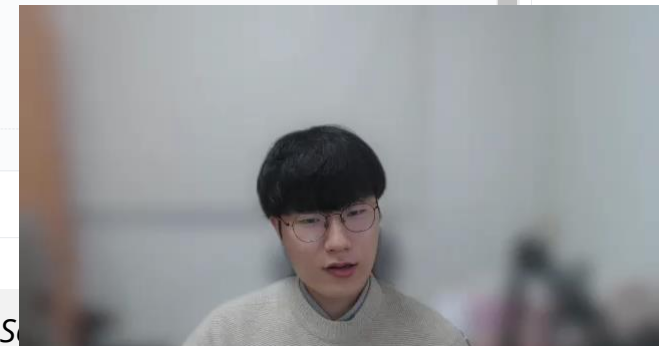
License

- **License**: a legal instrument governing the use or redistribution of software.

- Usually in LICENSE file in a repo

- Commercial use
- Modification
- Distribution
- Private use
- Liability
- Warranty

License

- You can include a LICENSE file when you create a repo.

- https://choosealicense.com/licenses/

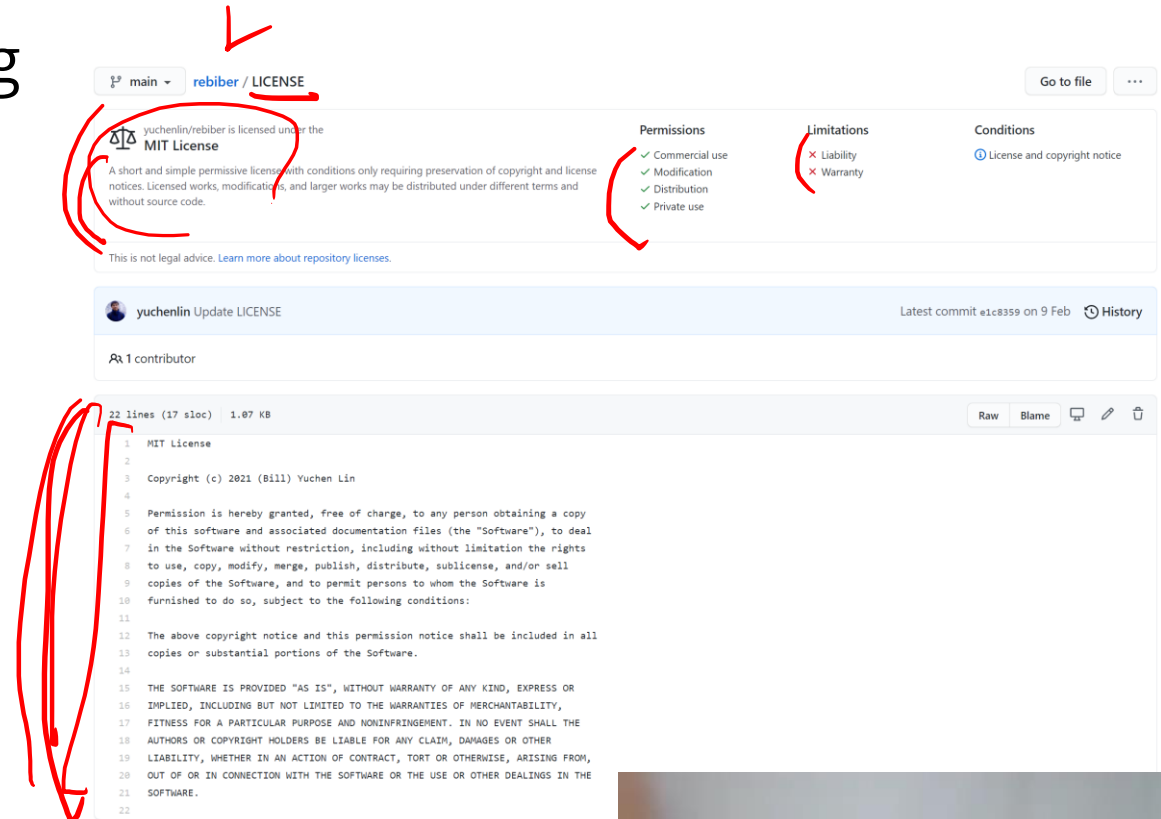- The MIT license is one of the most permissive licenses.

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Permissions
- Commercial use
- Distribution
- Modification
- Private use

Conditions
- License and copyright notice

Limitations
- Liability
- Warranty

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Choose a license
A license tells others what they can and can't do with your code. Learn more.

License: None ▾

This ... e default name in your settings.

License ✕

Filter licenses...

- ✓ None
- Apache License 2.0
- GNU General Public License v3.0
- MIT License
- BSD 2-Clause "Simplified" License
- BSD 3-Clause "New" or "Revised" License
- Boost Software License 1.0
- Creative Commons Zero v1.0 Universal
- Eclipse Public License 2.0
- GNU Affero General Public
- GNU General Public License
- GNU Lesser General Public

Contact GitHub

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License

- Some licenses require you to use the same license for modified code when you release your software to public.
  - GNU GPLv3, GNU LGPLv3, …
- Be careful when you use code under these licenses.
  - You must disclose your source!
  - Software under GPL, Git, MariaDB, MySQL, Notepad++, …

**Does the GPL require that source code of modified versions be posted to the public?** (#GPLRequireSourcePostedPublic)

The GPL does not require you to release your modified version, or any part of it. You are free to make modifications and use them privately, without ever releasing them. This applies to organizations (including companies), too; an organization can make a modified version and use it internally without ever releasing it outside the organization.

But *if* you release the modified version to the public in some way, the GPL requires you to make the modified source code available to the program's users, under the GPL.

Thus, the GPL gives permission to release the modified program in certain ways, and not in other ways; but the decision of whether to release is up to you.
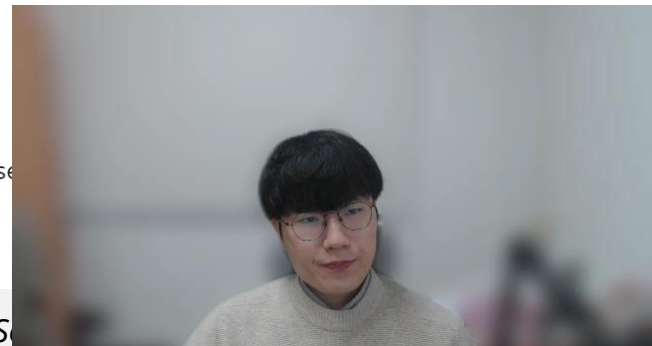
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Summary: Collaboration

- **Markdown** is a simple markup language for documents in GitHub.
  - Issues/pull requests/documentation/...
- External collaborators contribute to an open-source projects by making **a fork and pull requests**.
- Issue management and code review
- Document your source code to make it reusable.
- **License**: commercial use/modification/distribution/liability/warranty

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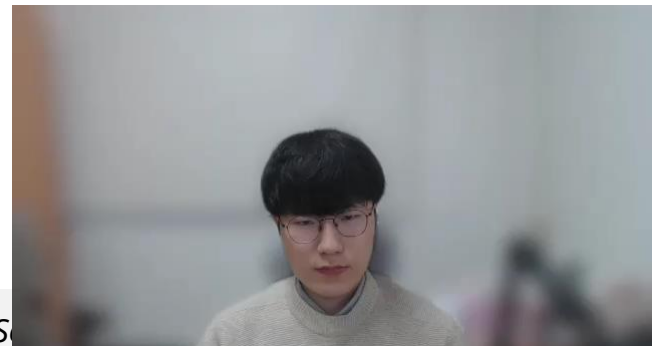
Summary: Collaboration

- Can you figure out what the following files/directories do?

- .github/workflows
- .git
- .editorconfig
- .gitignore
- ISSUE_TEMPLATE
- LICENSE.md
- main.js
- package.json
- README.md
- node_modules