6. Branching and Merging

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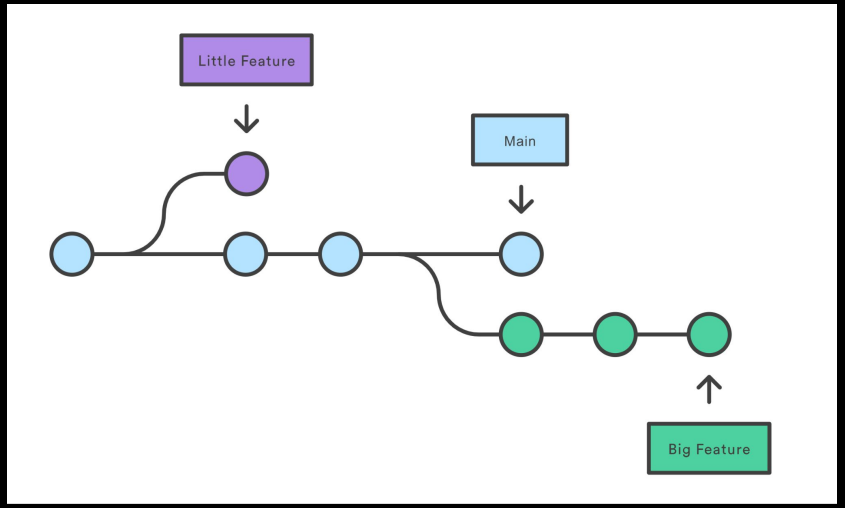
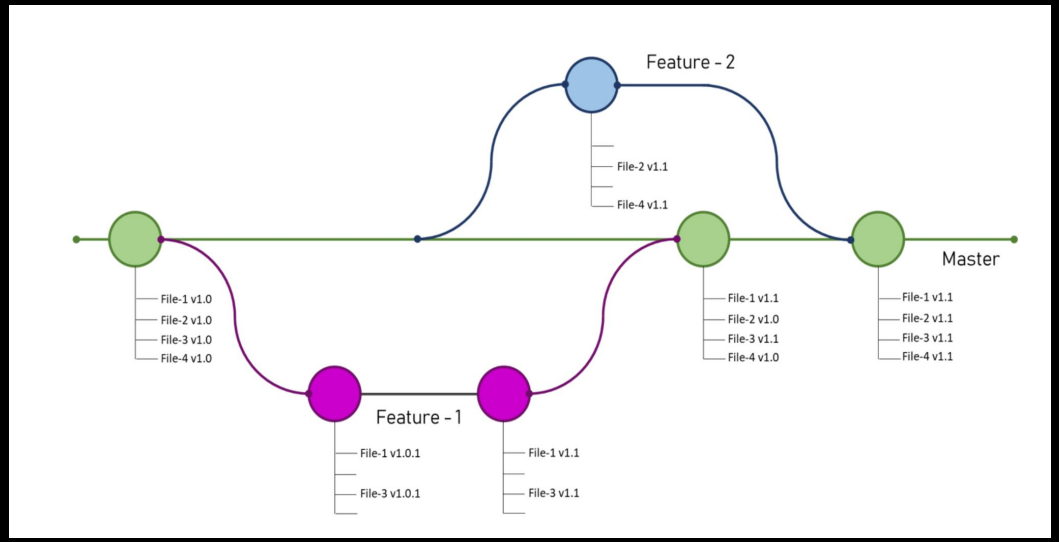
React

6.1 What are Branches ?



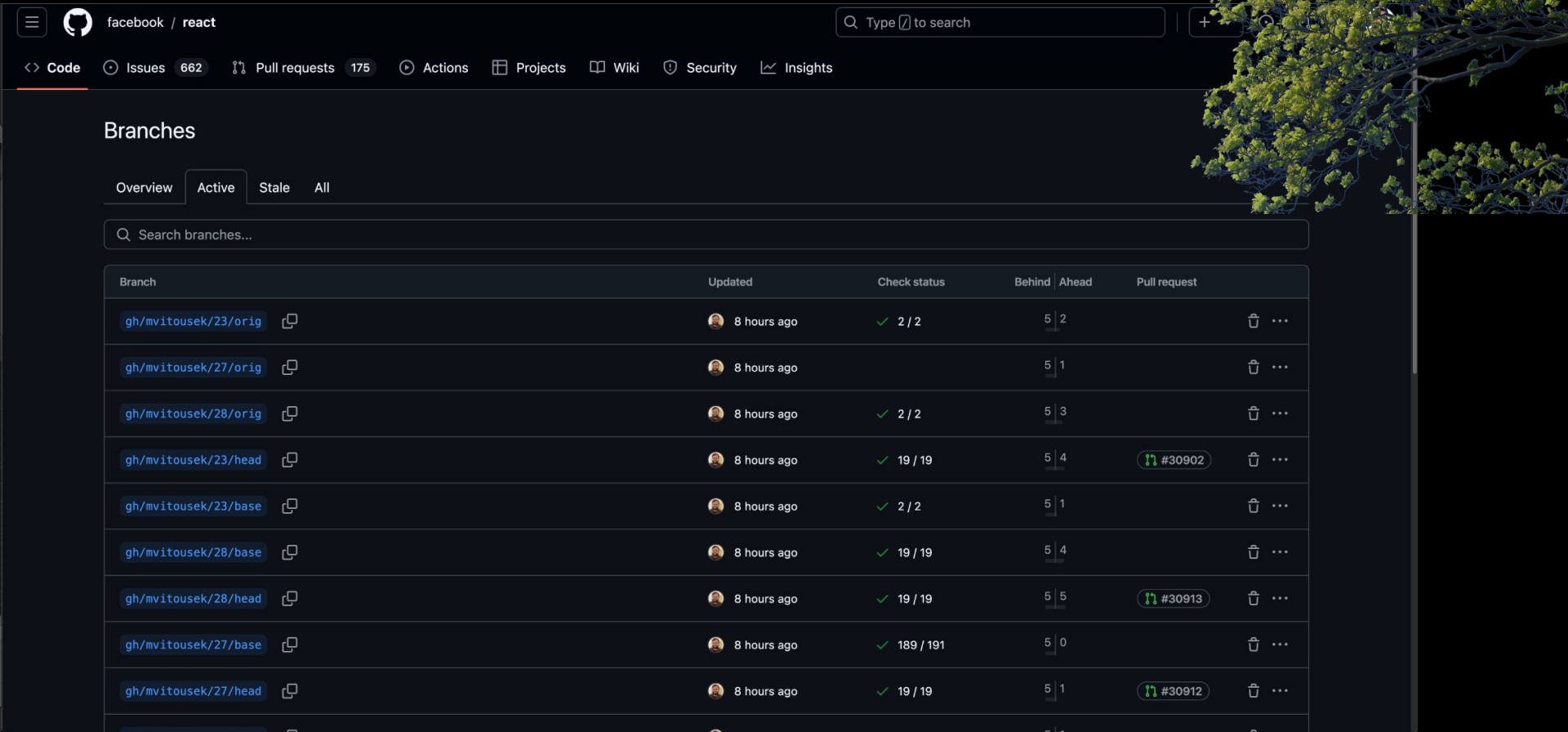
- Git branches are pointers to snapshots of your changes.
- New branches isolate work when adding features or fixing bugs.
- Branching prevents unstable code from affecting the main codebase.
- It allows you to clean up the commit history before merging.
- Each branch represents an independent line of development and records new commits separately.

6.1 What are Branches ?



- **Isolated Development**: Git branches allow working on features independently without affecting the main codebase.
- **Parallel Workflows**: Multiple branches enable team members to collaborate without conflicts.
- **Version Control**: Each branch tracks a separate set of changes.
- **Easy Integration**: Completed branches can be merged back into the main project.

6.2 Branches on GitHub



6.3 git branch

```
git branch
```

List all of the branches in your repository. This is synonymous with `git branch --list`.

```
git branch <branch>
```

Create a new branch called `<branch>`. This does *not* check out the new branch.

```
git branch -d <branch>
```

Delete the specified branch. This is a “safe” operation in that Git prevents you from deleting the branch if it has unmerged changes.

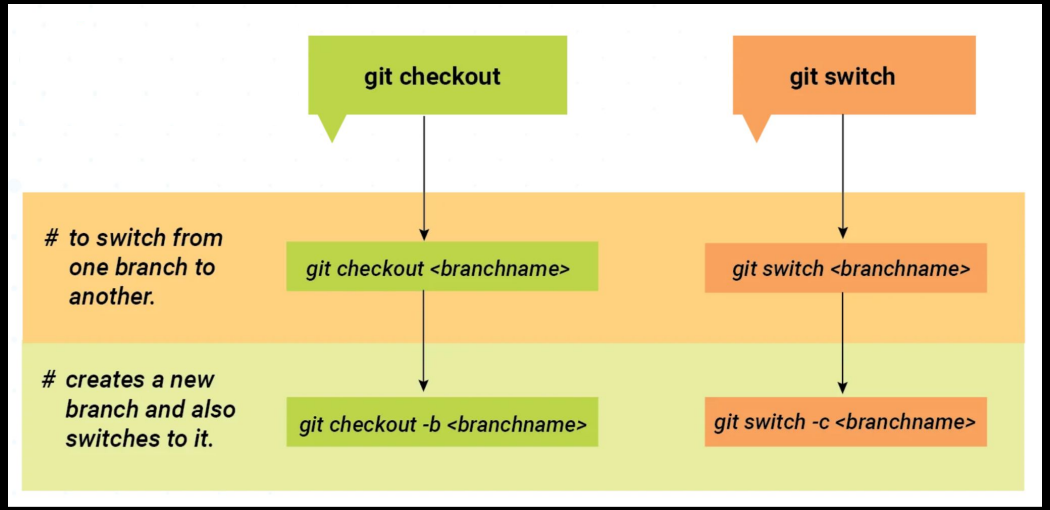
```
git branch -D <branch>
```

Force delete the specified branch, even if it has unmerged changes. This is the command to use if you want to permanently throw away all of the commits associated with a particular line of development.

```
git branch -m <branch>
```

- Lists all branches in the repository.
- Can create, delete, or rename branches.
- It's important to understand that branches are just pointers to commits. When you create a branch, all Git needs to do is create a new pointer, it doesn’t change the repository in any other way.

6.4 git checkout & git switch



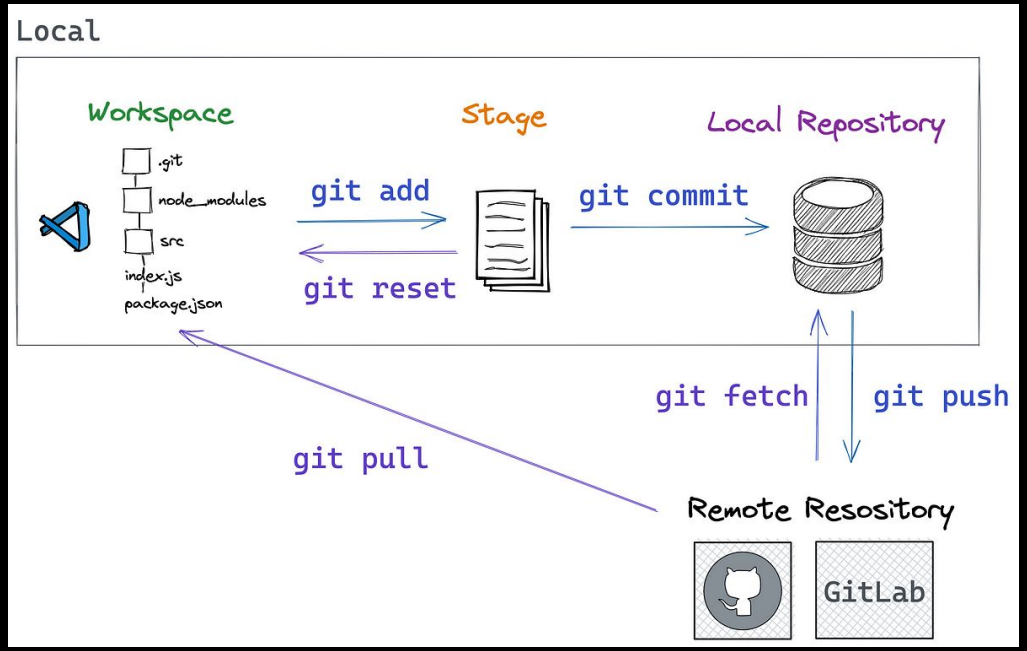
git checkout

- Switches between branches or restores files.
- Can also create and switch to a new branch.

git switch

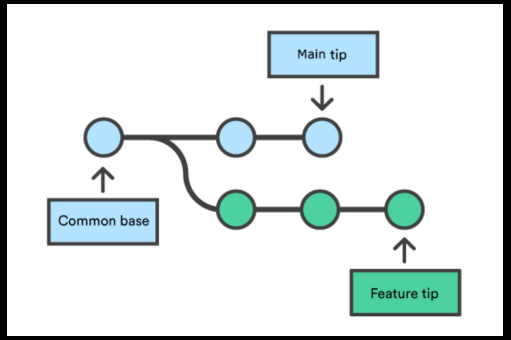
- A simpler command to switch between branches.
- Similar to git checkout but only for switching branches.

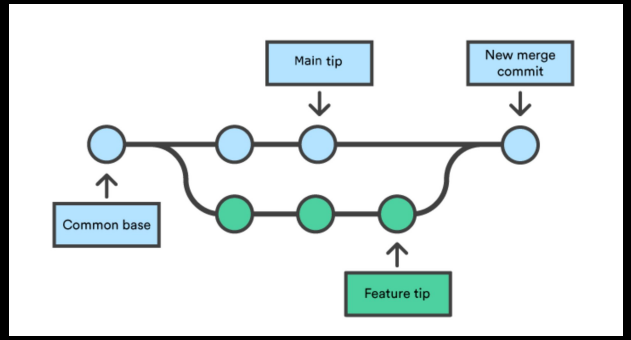
6.5 git fetch



- Downloads changes from a remote repository without merging them.
- Updates local tracking branches.

6.6 git merge






```
# Merge in the new-feature branch
git checkout main
git merge new-feature
git branch -d new-feature
```

- Combines changes from one branch into the current branch.
- Merges commit histories and resolves conflicts if needed.
- Git merge will combine multiple sequences of commits into one unified history.

6.7 Branch Tracking

1. **View Tracking Information**:

```
git branch -vv
```

2. **Tracking a Remote Branch**:

   - You can set a local branch to track a remote branch, meaning it will automatically fetch updates from the remote branch.
   - Command:

```
git branch -u origin/branch_name
```

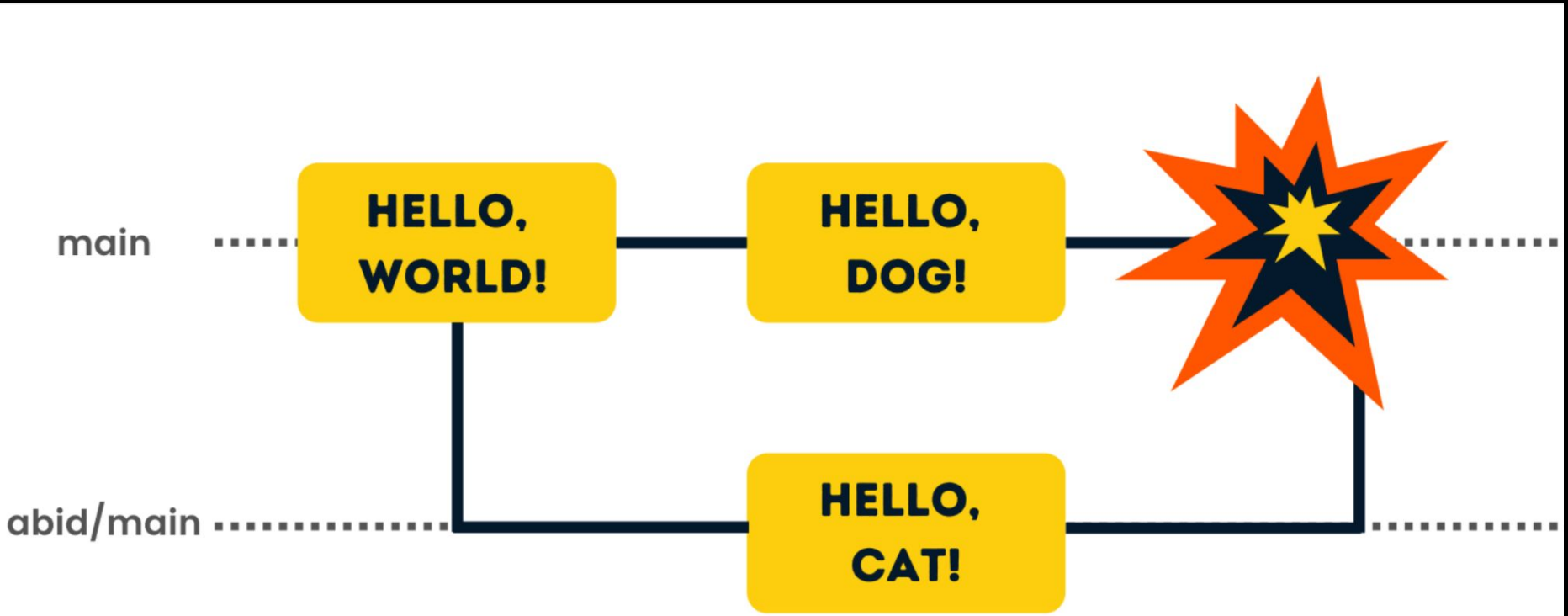
3. **Set Upstream During Checkout**:

   - When creating a new branch and you want it to track the remote branch immediately, use:

```
git checkout -b branch_name --track origin/branch_name
```

React

6.8 Resolving conflicts



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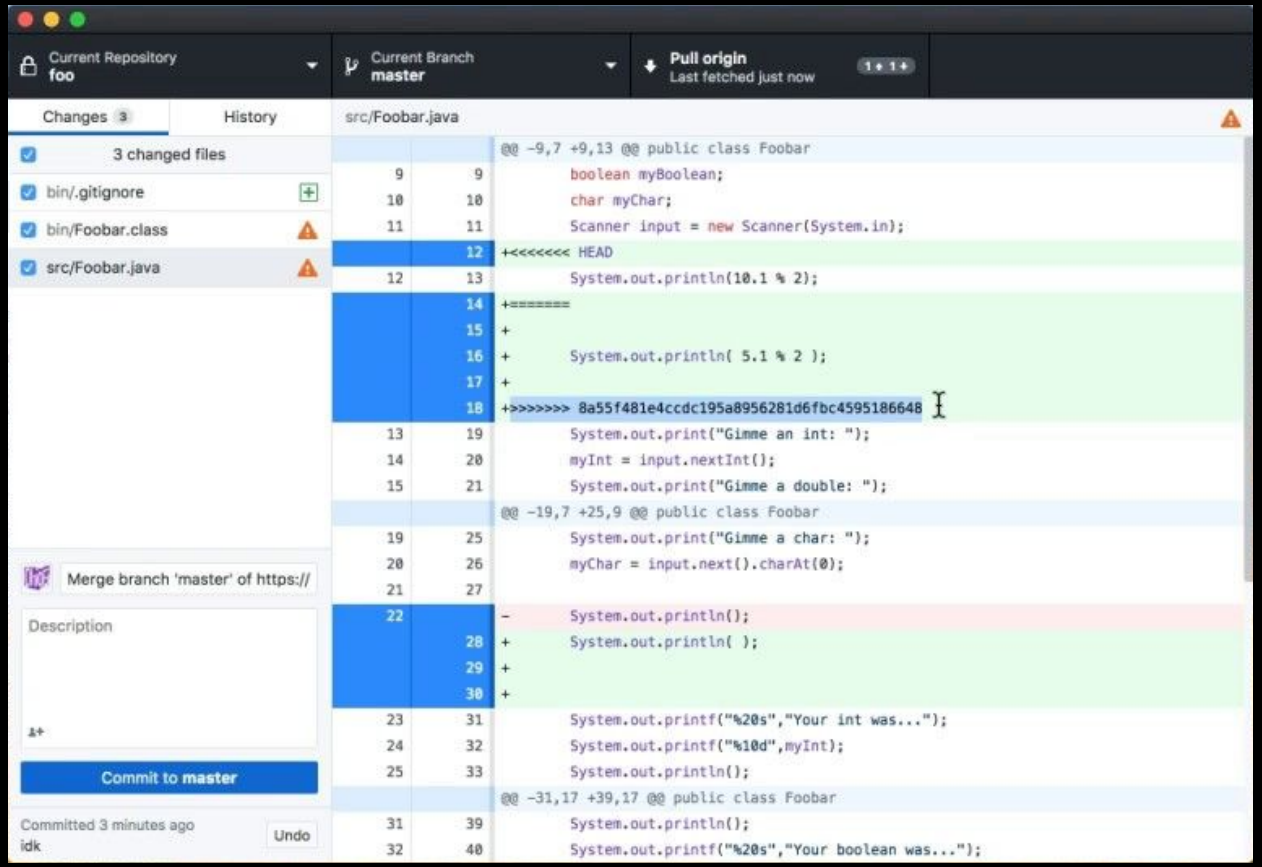
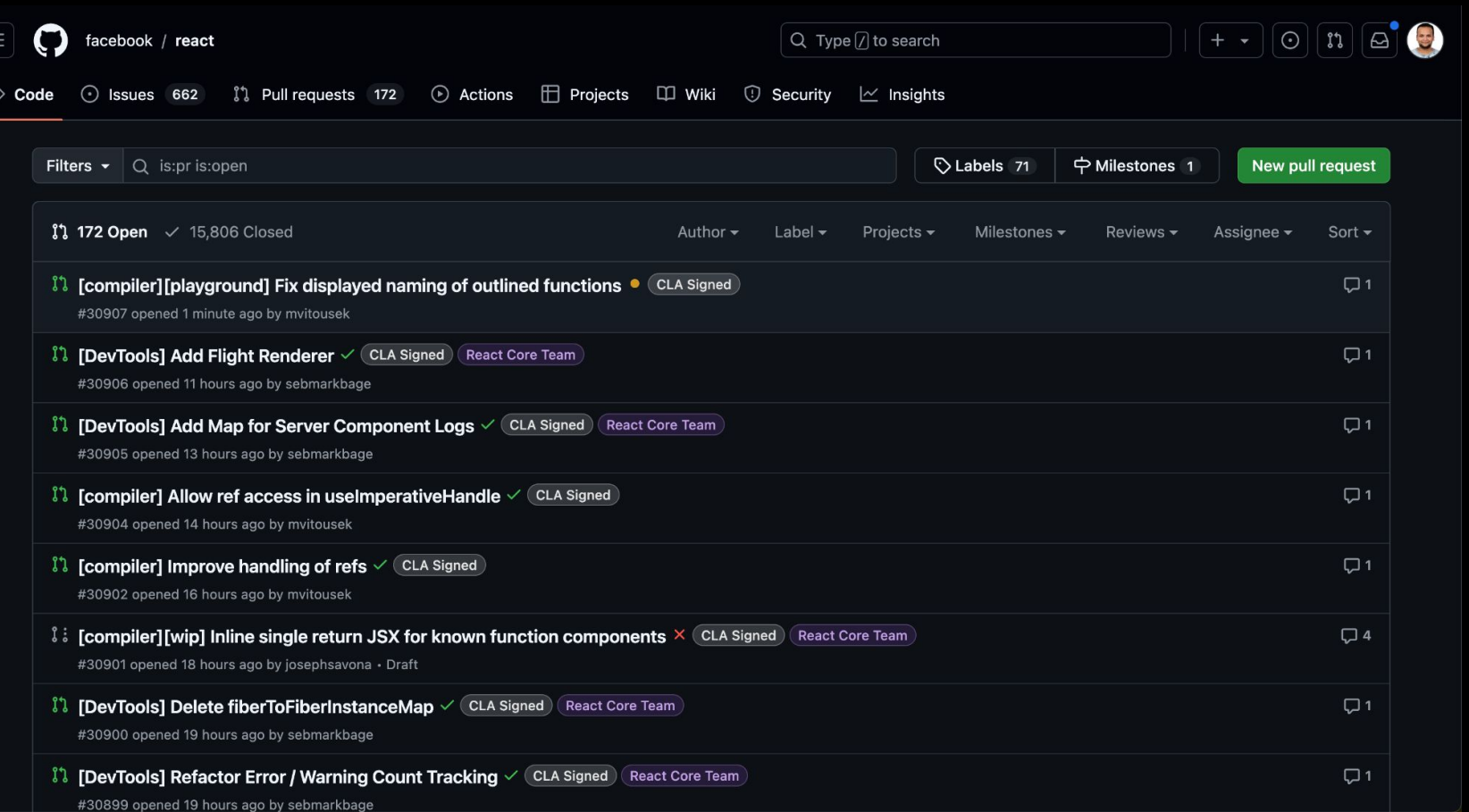
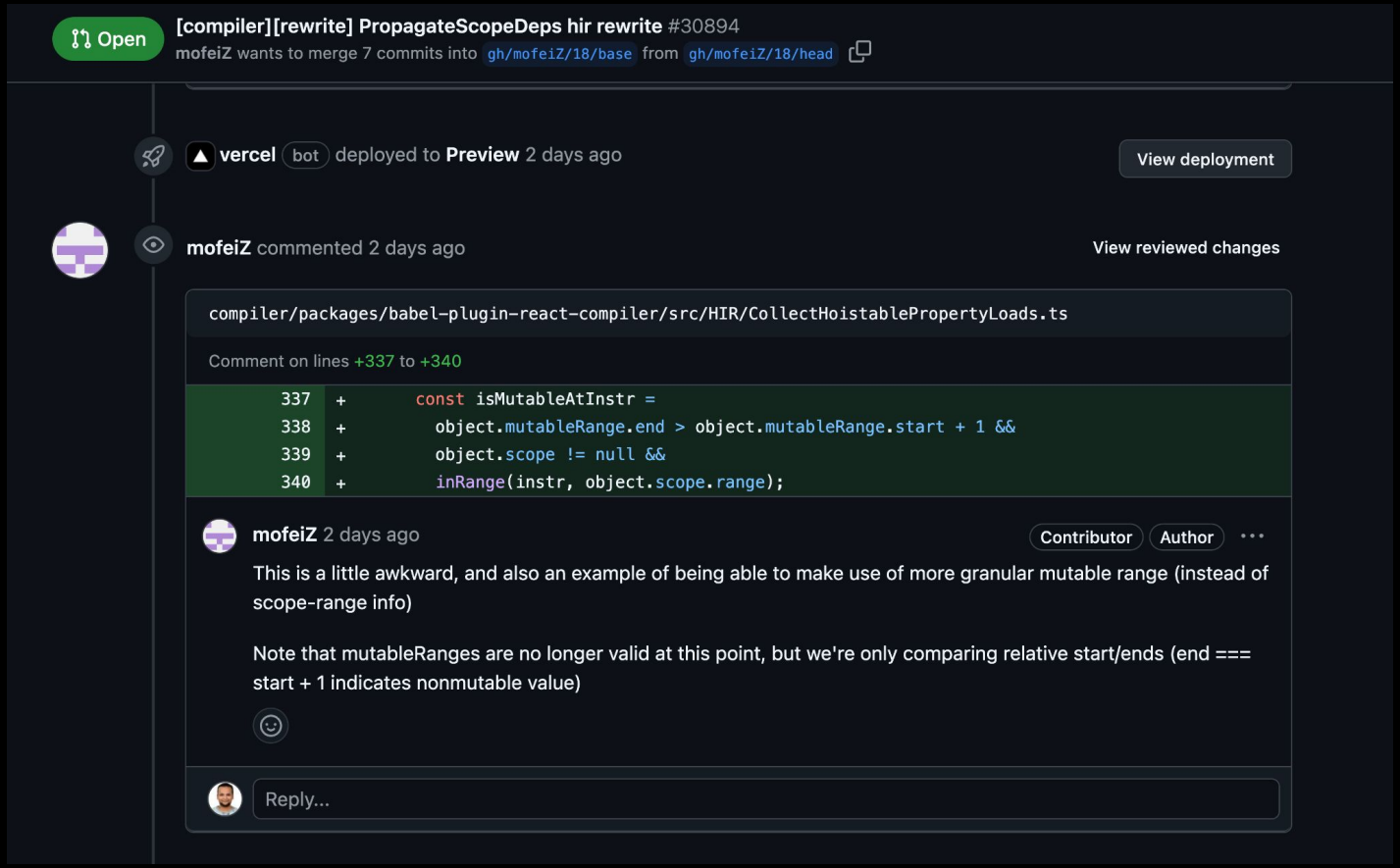


6.9 Pull Requests and Merging on Github



6.10 Reviewing Code on Github