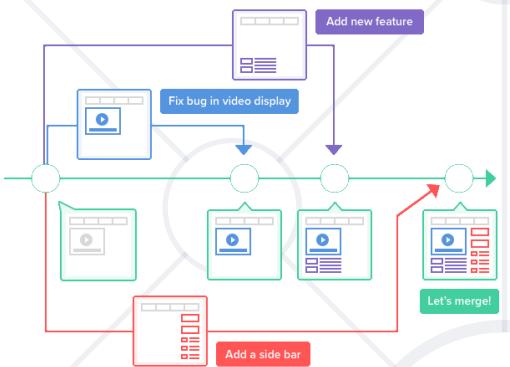


Development Workflow

Issues, Workflow, Branches, Environments



SoftUni Team
Technical Trainers



SoftUni



Software University
<https://softuni.bg>

Have a Question?



sli.do

#Dev-Ops

A network diagram is centered on the slide. It features a large, light-gray circle at the bottom containing the text "#Dev-Ops" in a bold, dark blue sans-serif font. Above it, a smaller circle contains the text "sli.do" in a bright orange sans-serif font. Both the main text and the URL are positioned within these circles. The entire diagram is set against a background of light gray lines forming a network of nodes and connections, with several smaller, empty circles scattered around the central area.

Table of Contents

1. Issues, Branches and Environments
2. Software Development Workflow
3. Development Workflow in Action





Issues, Branches and Environments

In the Software Development Workflow

Development Workflow Introduction

- Set of **processes** that a software development team uses to convert a user story into a working software
- Includes **coding**, **build** processes and automation, **testing** and **running** the application in **different environments**
- **Optimizes** work processes
- Ensures easy navigating the complexities of a software project
 - Aims for quality, reducing delays and agile development

- Development workflow includes **various stages** for addressing issues
 - Help maintain a **structured** and **organized approach** to software development
- **Issues** are usually **visualized** on a Trello board / GitHub Project Board / Jira Board / other board
 - Issues are systematically addressed in a controlled manner
- Promotes collaboration among team member, transparency and enable efficient delivery

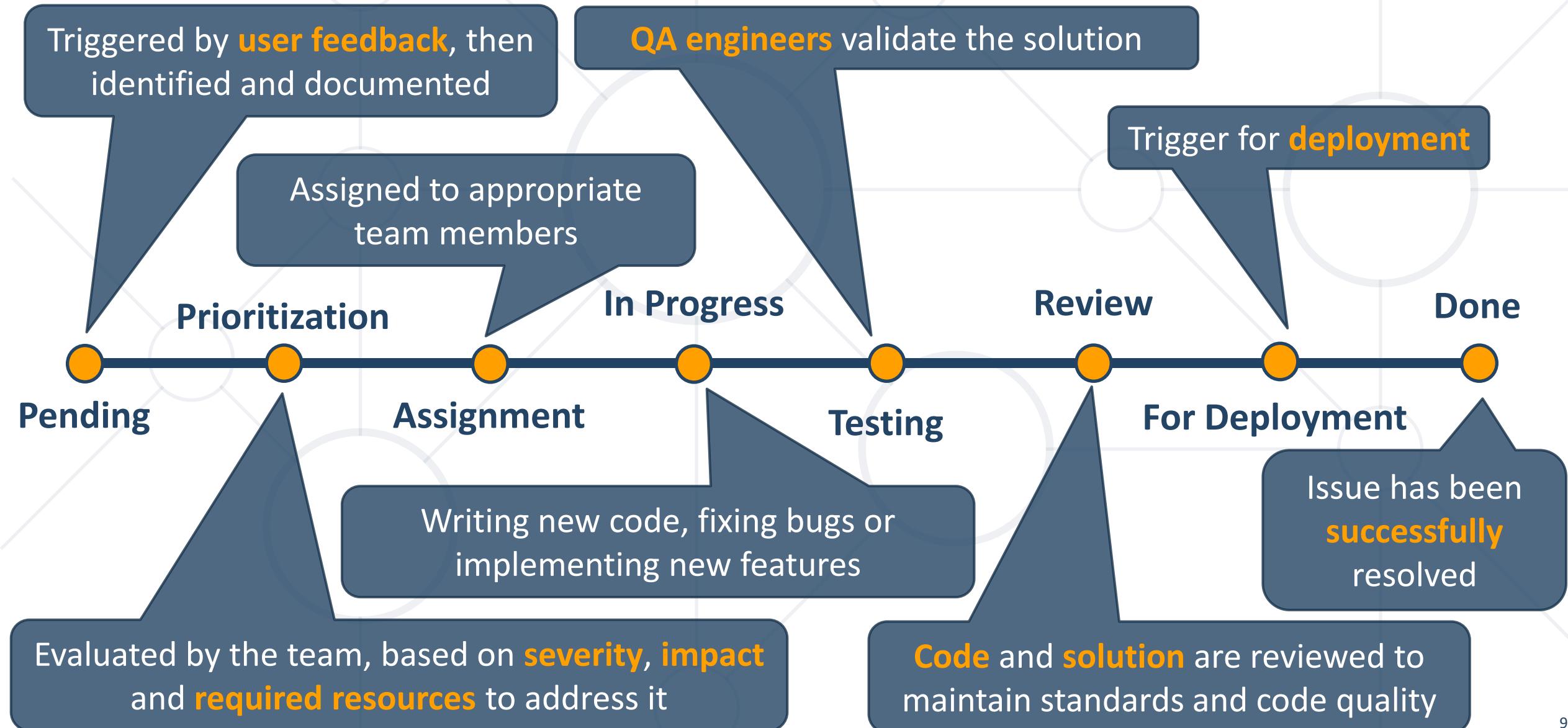
Types of Issues

- **Pending**
 - Issues are waiting to be **addressed** and **prioritized**
- **Sprint TODO**
 - **Selected issues** to be worked on during the **current sprint**
 - **Agile** development environment
- **In Progress**
 - Issues that are **actively** being worked on
 - Developers implement the required features to address the issues

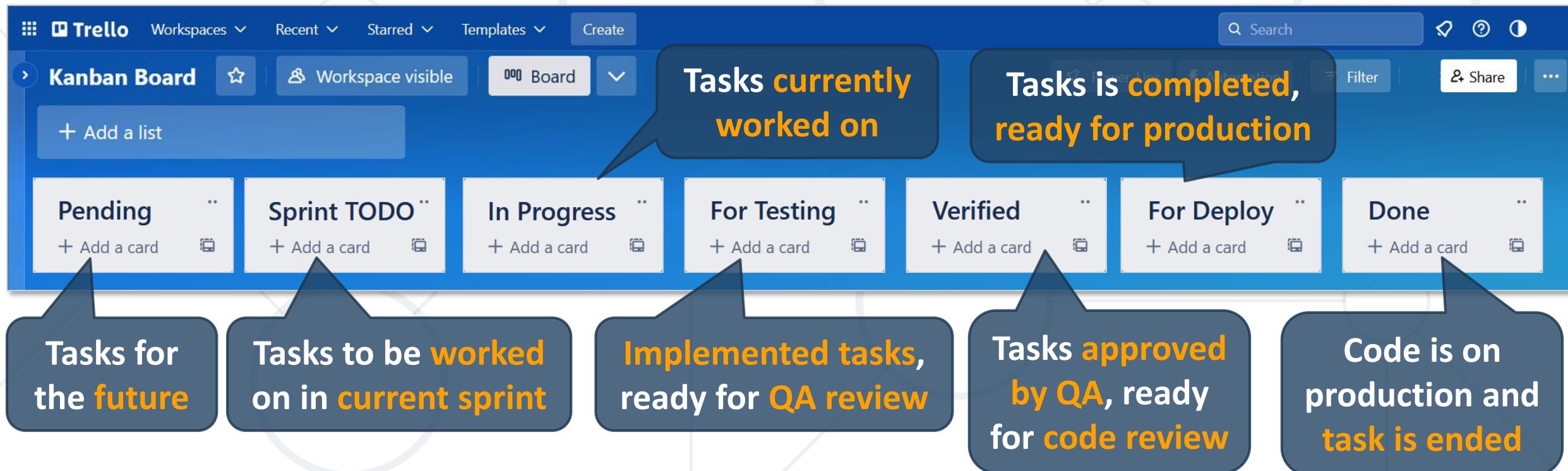
Types of Issues

- **For Testing**
 - Ready for **QA** testing
- **Verified**
 - Testing is **complete** and ready for further actions
- **For Deploy**
 - **Verified** and approved
- **Done**
 - Successful **deployment**

Issue Lifecycle



Issues – Example



Issue Trackers

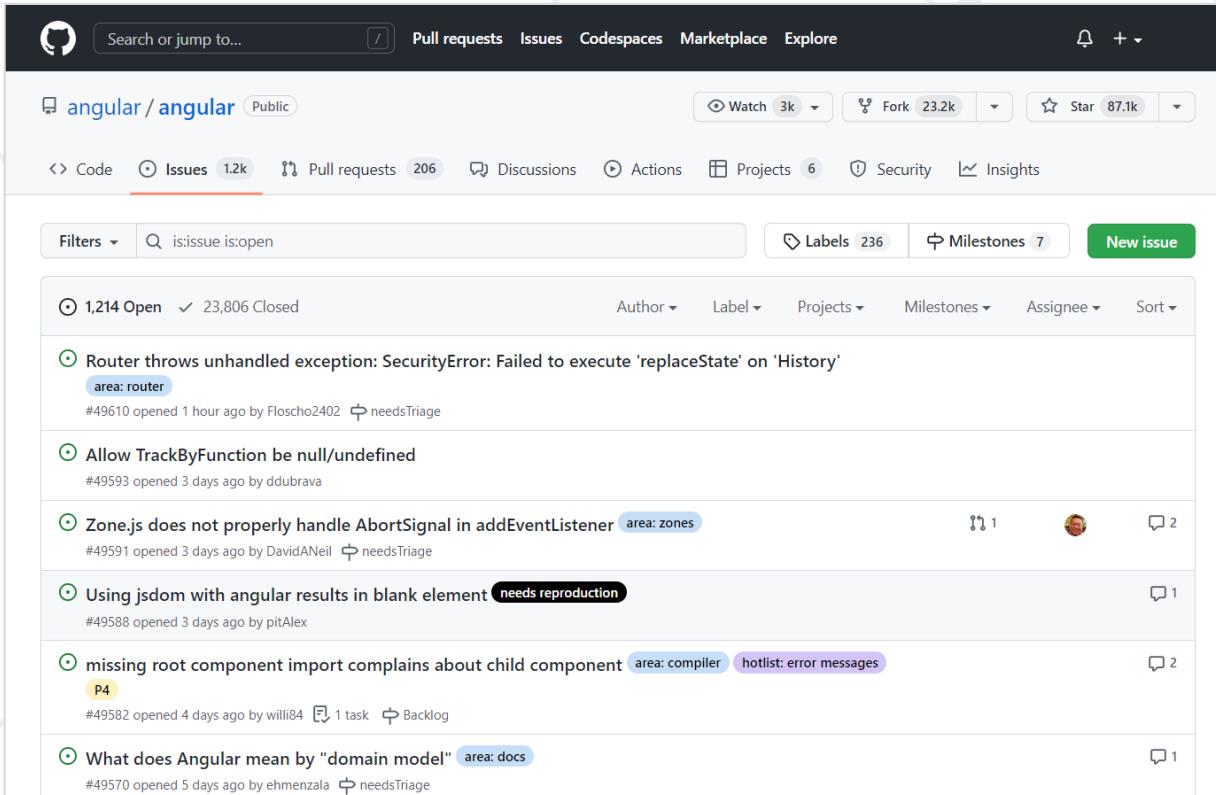
■ GitHub Issues

- Built-in feature of GitHub
- Holds **all project issues** (requirements + bugs)
- Bug reports
- Feature requests
- [GitHub Issues example](#)

■ GitHub Projects

- Project management feature of GitHub
- Enables planning, organizing and tracking the progress of a software development project
- Visualizes the issues (tasks) workflow as a Kanban board
- [GitHub Projects example](#)

Issue Trackers – Example



Search or jump to... Pull requests Issues Codespaces Marketplace Explore

angular / angular Public Watch 3k Fork 23.2k Star 87.1k

Code Issues 1.2k Pull requests 206 Discussions Actions Projects 6 Security Insights

Filters is:issue is:open Labels 236 Milestones 7 New issue

1,214 Open ✓ 23,806 Closed

Router throws unhandled exception: SecurityError: Failed to execute 'replaceState' on 'History'
area:router #49610 opened 1 hour ago by Floscho2402 needsTriage

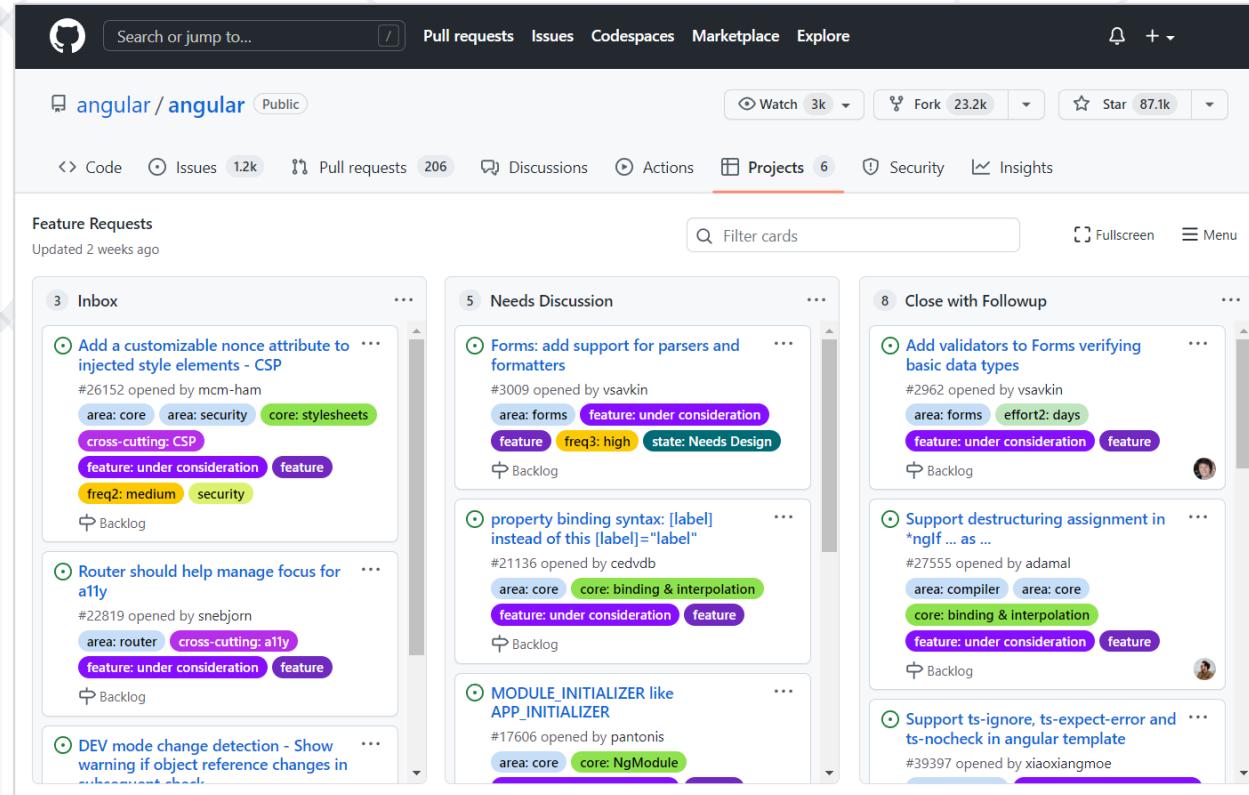
Allow TrackByFunction be null/undefined
#49593 opened 3 days ago by ddubrava

Zone.js does not properly handle AbortSignal in addEventListener area: zones
#49591 opened 3 days ago by DavidANeil needsTriage

Using jsdom with angular results in blank element needs reproduction
#49588 opened 3 days ago by pitAlex

missing root component import complains about child component area: compiler hotlist: error messages P4
#49582 opened 4 days ago by willi84 1 task Backlog

What does Angular mean by "domain model" area: docs
#49570 opened 5 days ago by ehmenzala needsTriage



Search or jump to... Pull requests Issues Codespaces Marketplace Explore

angular / angular Public Watch 3k Fork 23.2k Star 87.1k

Code Issues 1.2k Pull requests 206 Discussions Actions Projects 6 Security Insights

Feature Requests Updated 2 weeks ago Filter cards Fullscreen Menu

3 Inbox

- Add a customizable nonce attribute to ... injected style elements - CSP
#26152 opened by mcm-ham area: core area: security core: stylesheets cross-cutting: CSP feature: under consideration freq: medium security Backlog
- Router should help manage focus for a1ly
#22819 opened by snebjorn area: router cross-cutting: a1ly feature: under consideration feature Backlog
- DEV mode change detection - Show warning if object reference changes in ...
#17606 opened by pantonis area: core core: NgModule Backlog

5 Needs Discussion

- Forms: add support for parsers and formatters
#3009 opened by vsavkin area: forms feature: under consideration freq: high state: Needs Design Backlog
- property binding syntax: [label] instead of this [label]= "label"
#21136 opened by cedvdb area: core core: binding & interpolation feature: under consideration feature Backlog
- MODULE_INITIALIZER like APP_INITIALIZER
#17606 opened by pantonis area: core core: NgModule Backlog
- Support destructuring assignment in *ngIf ... as ...
#27555 opened by adamal area: compiler area: core core: binding & interpolation feature: under consideration feature Backlog
- Support ts-ignore, ts-expect-error and ts-nocheck in angular template
#39397 opened by xiaoxiangmoe area: core core: NgModule Backlog

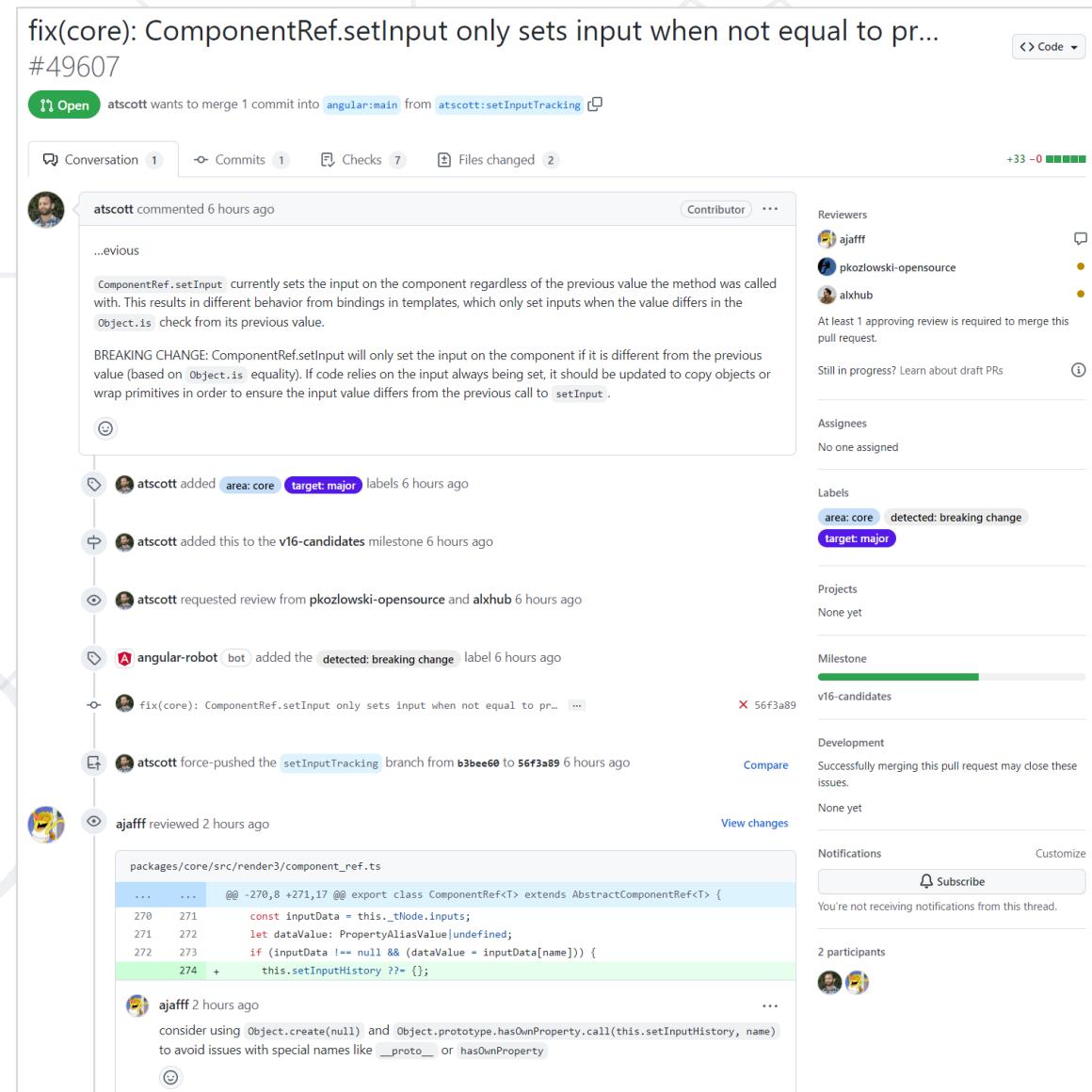
Inside an Issue

- **Title**
- **Main body**
 - Requirements
 - Outline of the desired functionality and its use case
 - Bug description
 - Steps to reproduce the issue, expected and actual behavior

Inside an Issue

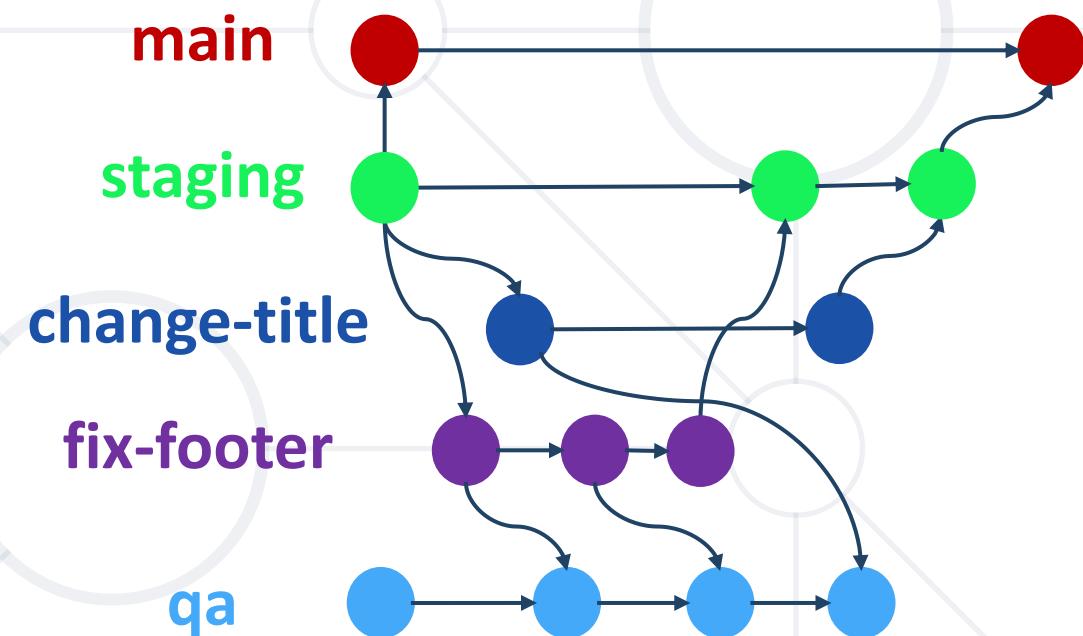
- **Labels**
 - Categorize for easy organization
- **Discussion**
 - Comments from team members
- **History**
 - Changes over time

Inside an Issue – Example



Branches

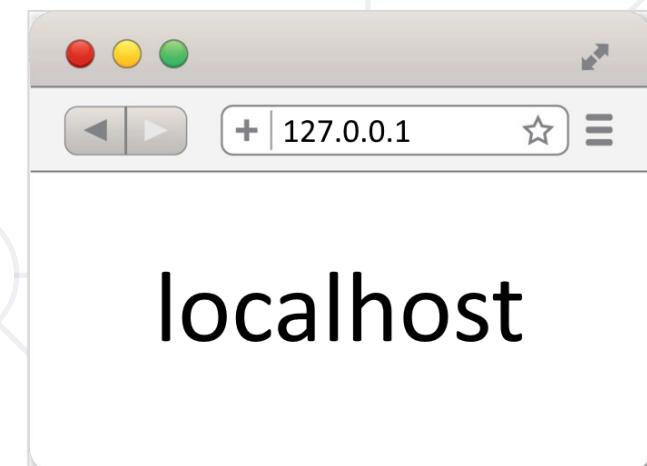
- **Feature** branch, e.g. *change-title, fix-footer*
 - Holds feature / bug fix under development
- **QA** branch: *qa*
 - Holds completed features, ready for testing by QAs
- **Staging** branch: *staging*
 - Holds completed and approved features, ready for production
- **Production** branch: *main*
 - Holds the production code (already deployed)



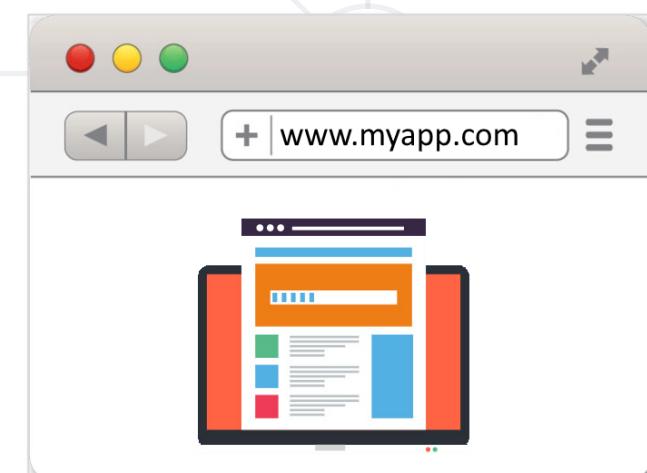
Environments

- **Local environment** (developer's laptop, localhost)
 - Where developers write code and do updates (add features, fix bugs, etc.)

- **QA environment** (testing)
 - Where QAs perform tests (automated or manual) on new or changed code



- **Staging environment** (pre-production)
 - Nearly exact replica of the production environment
 - The purpose is to test on a near-production level but in a non-production environment to verify the app will behave correctly after deployment
- **Production environment**
 - Software is running on production server; it's live for real users





Software Development Workflow

What Happens at Each Step?

Software Development Workflow

- Feature branch code is available only on local environment
- QA branch code is deployed to the QA environment
- Staging branch → staging env.
- Main branch → production env.

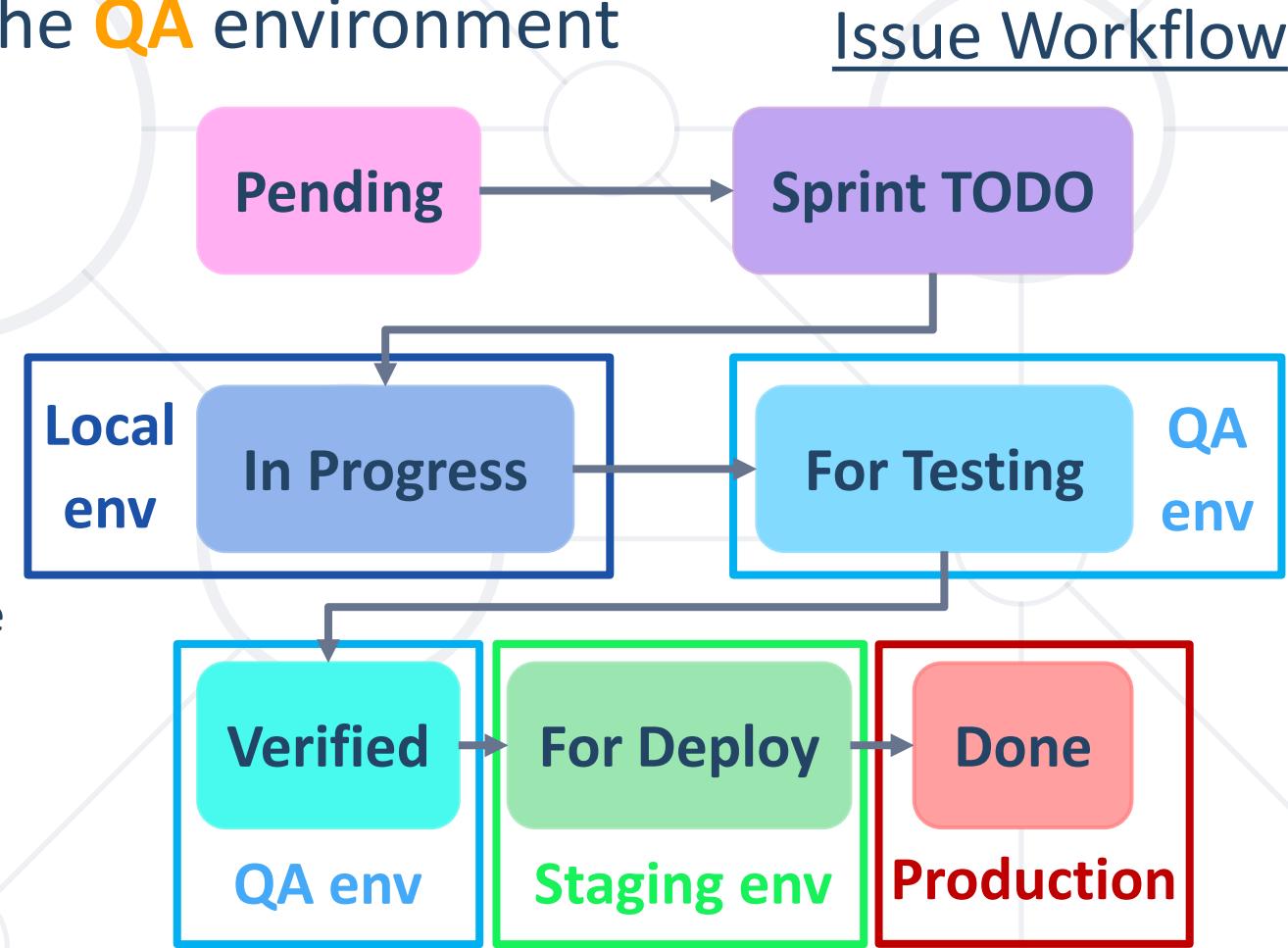
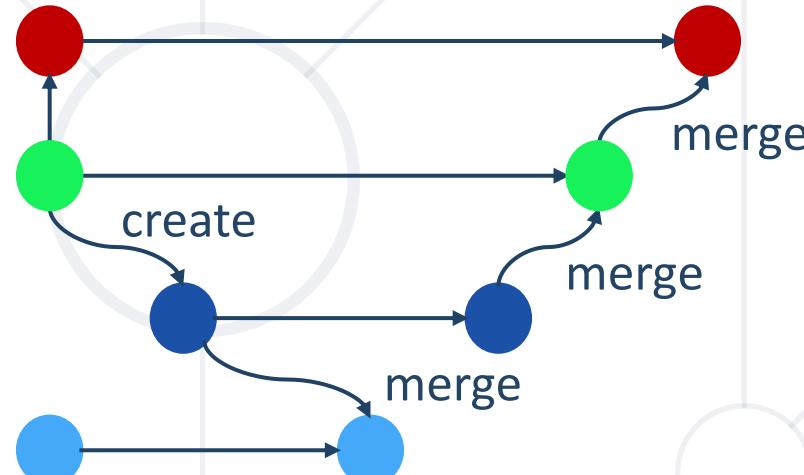
Branches

main

staging

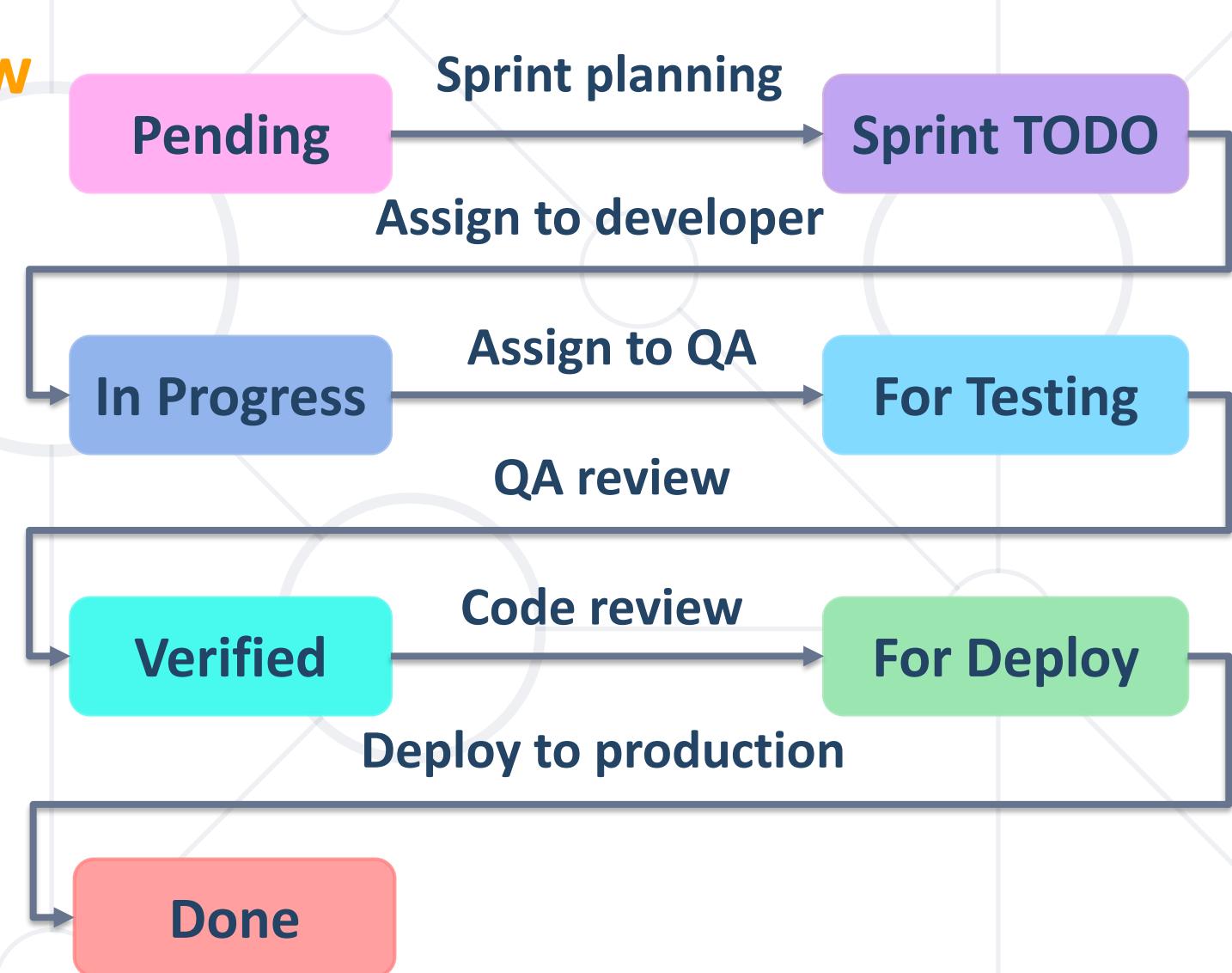
feature 1

qa



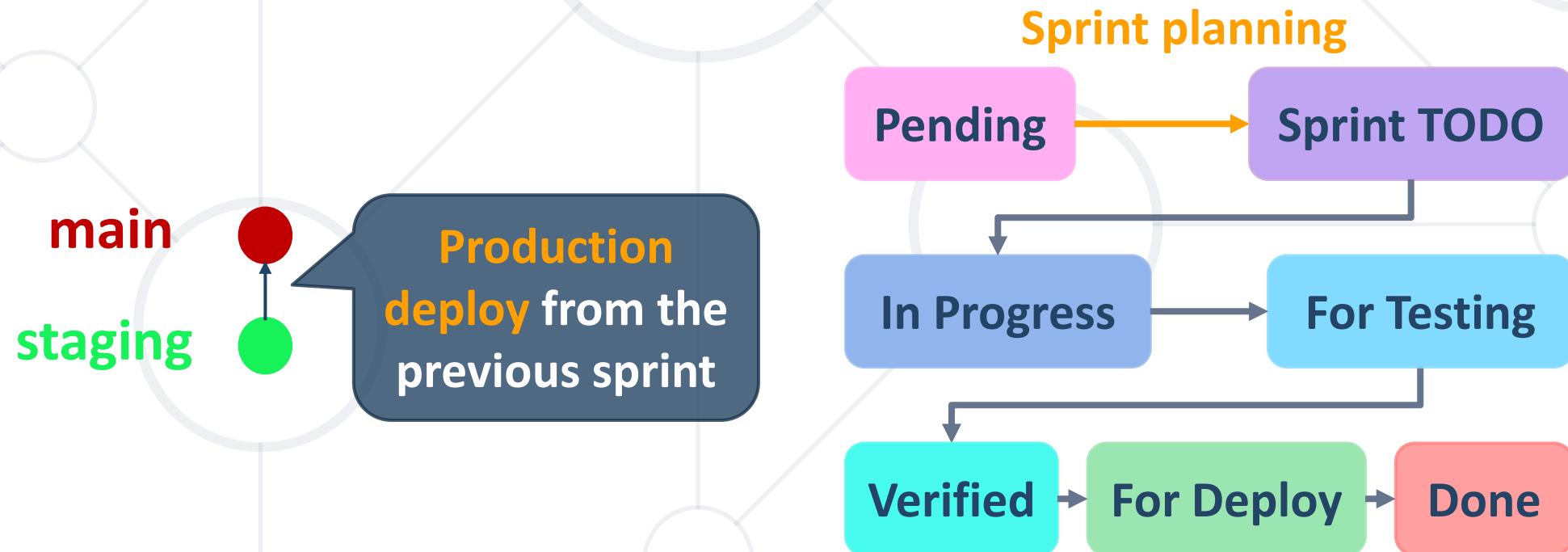
Development Workflow Steps

- The **development workflow** consists of **several steps**
- They define
 - When **issues are moved**
 - When **branches** are **created** and **merged**
 - In which **environment** dev's last changes are



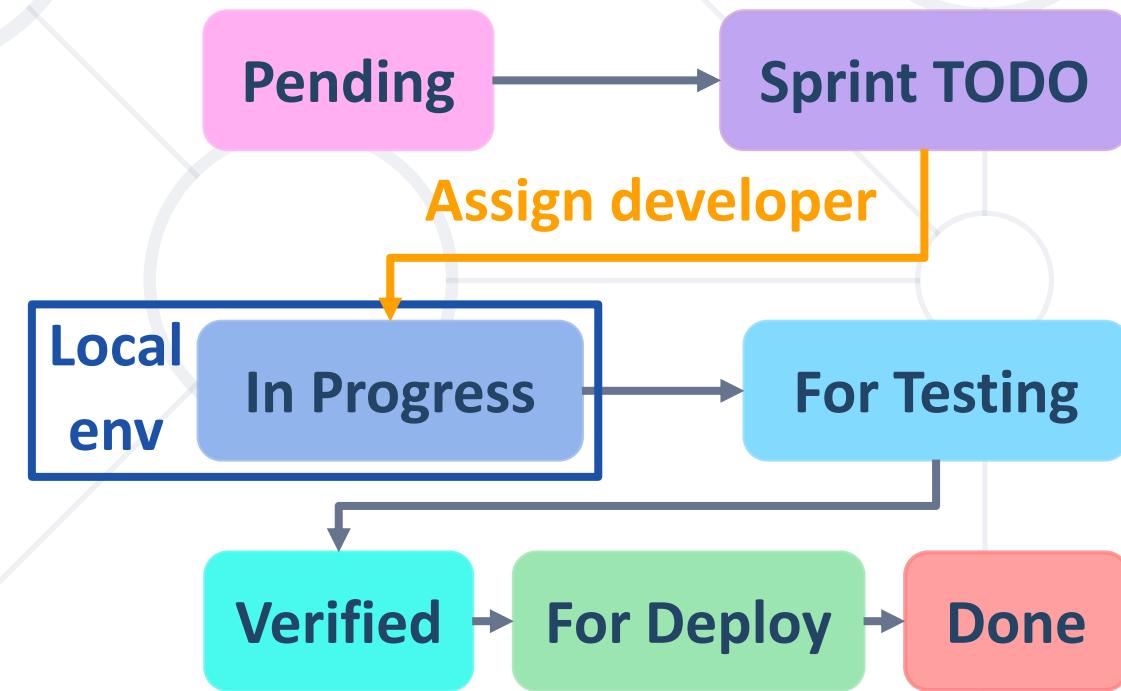
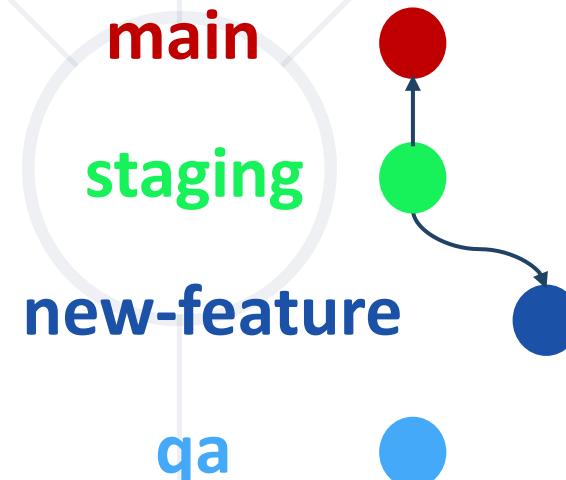
Step 1: Sprint Planning

- The most **high-priority issues** (tasks) are selected **to be implemented** during the **following sprint** (e.g., this week)
- Issues are moved from "**Pending**" to "**Sprint TODO**" column



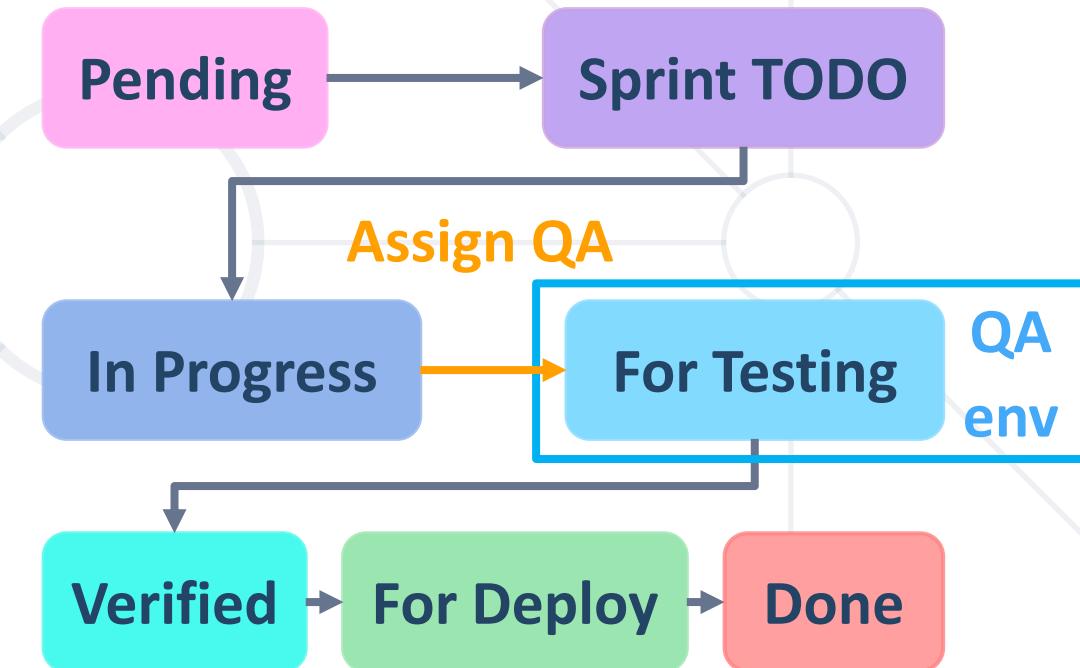
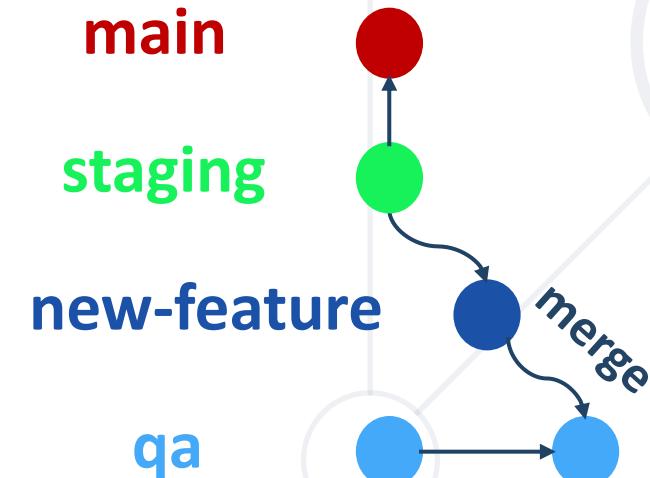
Step 2: Assign a Developer to Work on an Issue

- First, each **issue** is assigned to a developer to work on
- When developer **starts working** on it: "**Sprint TODO**" → "**In Progress**"
- Dev creates a **feature branch**
- Issue label: "**In Progress**"
- Environment: **local** (localhost)



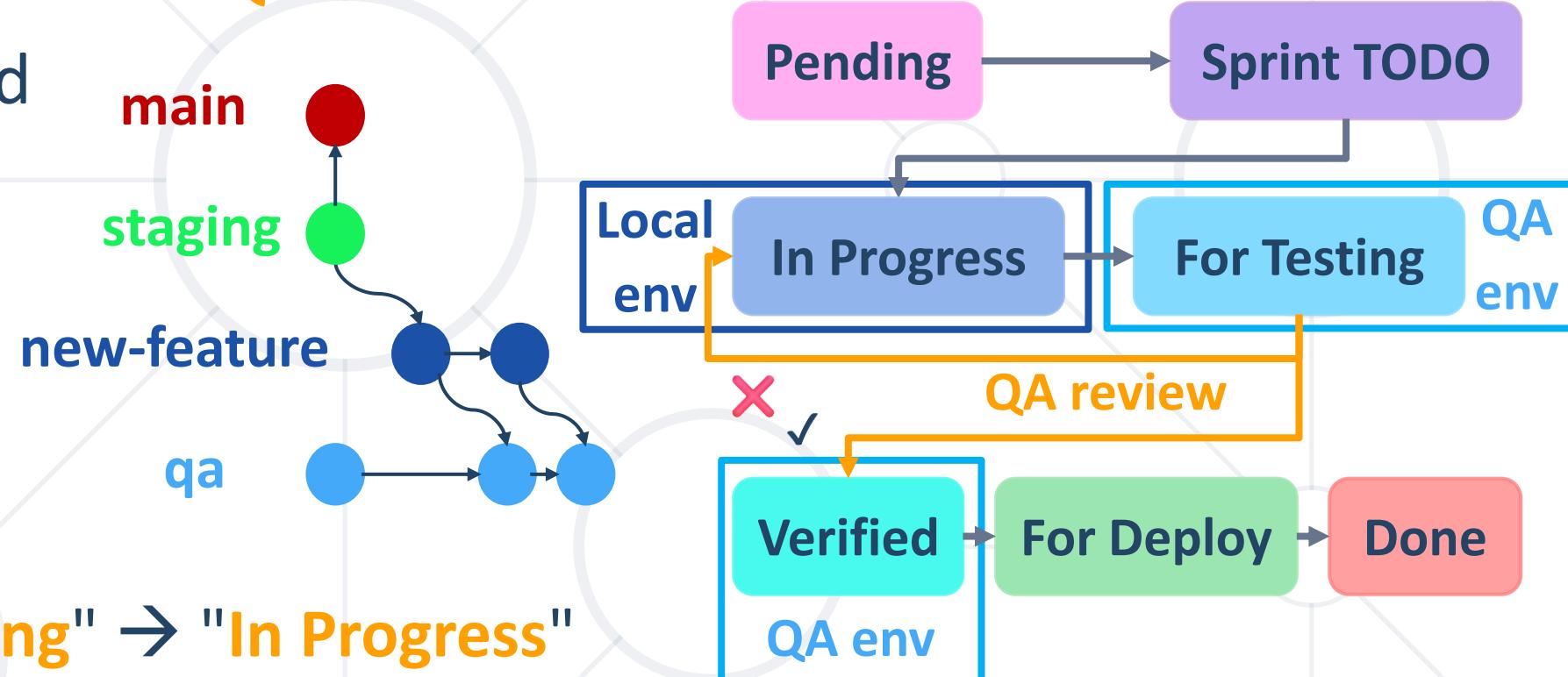
Step 3: Assign Completed Task to QA

- Developer has **completed their task** in their **feature branch**
- Issue: "In Progress" → "For Testing" and **assigned to a QA** for testing
- Feature branch** is merged into the **QA branch**
- Issue label: "**For Testing**"
- Code is deployed to **QA environment**
 - Automated tests should pass
 - Often done automatically



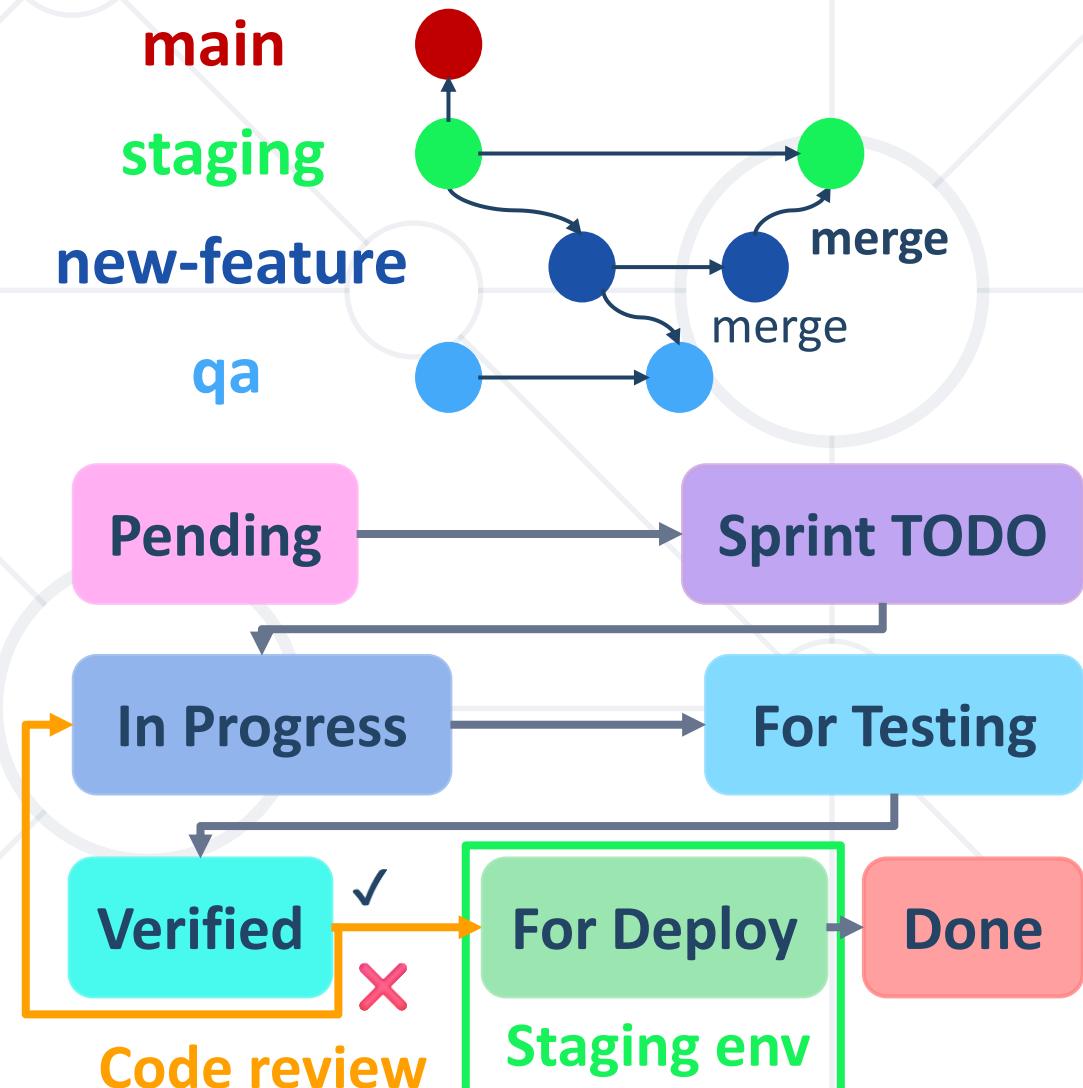
Step 4: QA Review

- QA tests the app on the **QA environment**
- No bugs are found
 - "For testing" → "Verified"
 - Issue label: "**QA Verified**"
- If a **bug is found**
 - Issue: "**For Testing**" → "**In Progress**"
 - Issue label: "**QA Failed**"
 - Developer should make changes in their **feature branch**, then create a **new merge** into the **QA branch**, so that tests are performed again



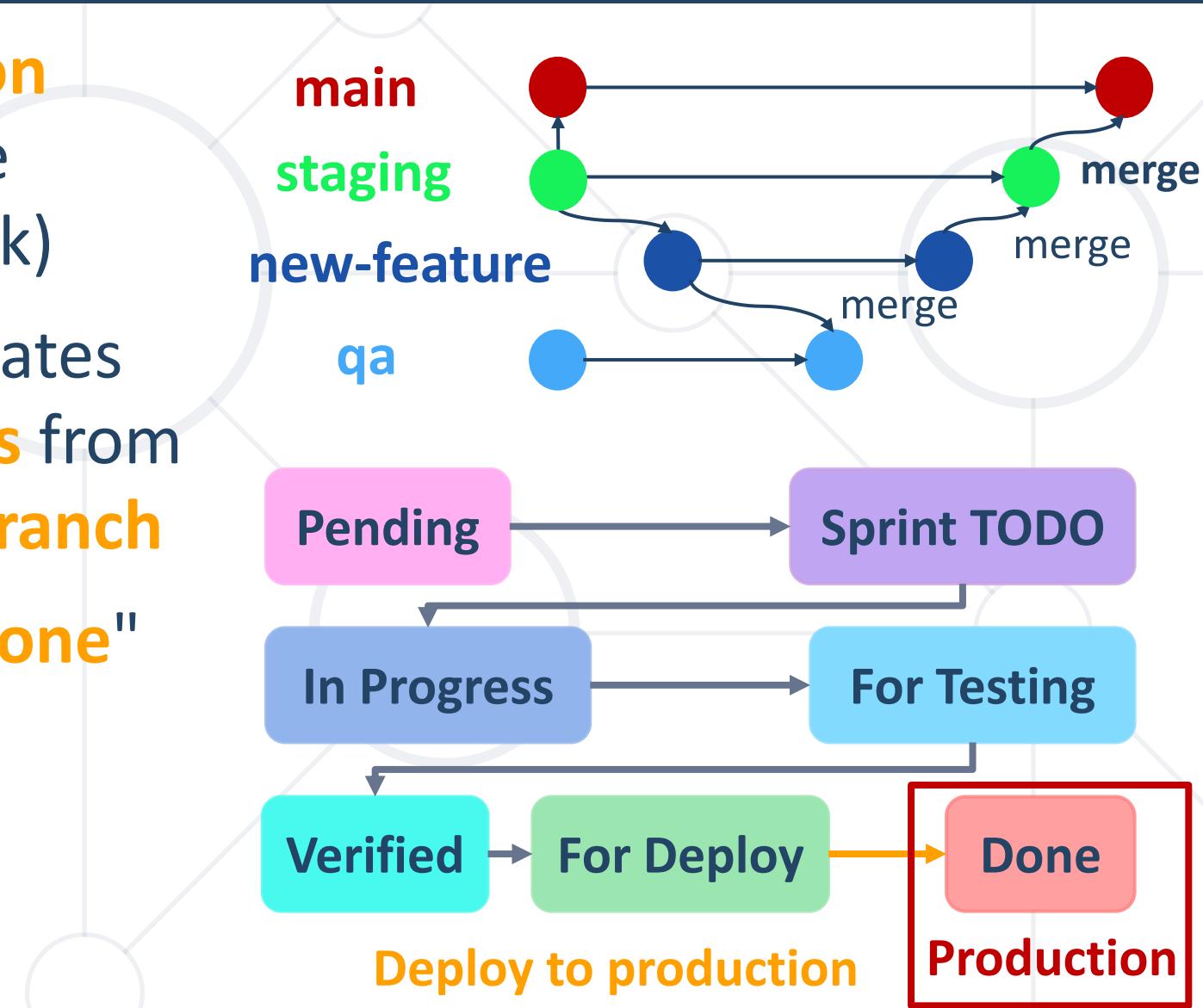
Step 5: Code Review

- Dev creates a **pull request to merge from the feature to staging branch**
- Other devs conduct a **code review**
- Code review **failed**
 - Issue is moved to "**In Progress**"
 - Label: "**Code Review Failed**"
- Code review **passed**
 - Label and column: "**For Deploy**"
 - Code is merged to the **staging branch** and deployed to **staging env.**
 - **Close** the issue & delete the branch



Step 6: Deploy to Production

- **Deployment to production** happens at the end of the sprint (e.g., once per week)
- Person from the team creates a **pull request** and **merges** from the **staging** to the **main branch**
- Issue: "**For Deploy**" → "**Done**"
- Code is deployed to the **production environment**
 - Often done manually



Development Workflow – Overview

- **Issues flow** describes the **issue progress** over the time

Pending → Sprint TODO → In Progress → For Testing → Verified → For Deploy → Done

- **GitHub branches flow**
 - Feature branch → QA branch (*qa*)
 - Feature branch → **staging** branch (*staging*) → **production** branch (*main*)
- **Dev environments flow**
 - Feature branch → **local** laptop (localhost)
 - QA branch → **QA** environment (qa.myapp.com) – auto deploy by CI/CD
 - Staging branch → **staging** environment (staging.myapp.com)
 - Main branch → **production** environment (myapp.com) – manual deploy



Development Workflow in Action

Sample GitHub Project

Development Workflow in Action



The screenshot shows a GitHub repository interface with a pull request and a branch selection dialog.

Pull Request: A pull request titled "Senior Added functionality" has been merged "yesterday". It has 4 reviews and 0 stars. The commit message is "Initial commit".

Branch Selection Dialog: A modal window titled "Switch branches/tags" is open. It contains a search bar with placeholder text "Find or create a branch...". Below it are tabs for "Branches" (selected) and "Tags". The "Branches" tab lists several branches: "main" (marked with a checkmark and highlighted with a blue border), "background", "email-field", "new-title", "qa", and "staging". The "default" branch is also listed. At the bottom of the dialog is a "View all branches" link.

Repository Summary: The repository summary shows the following statistics:

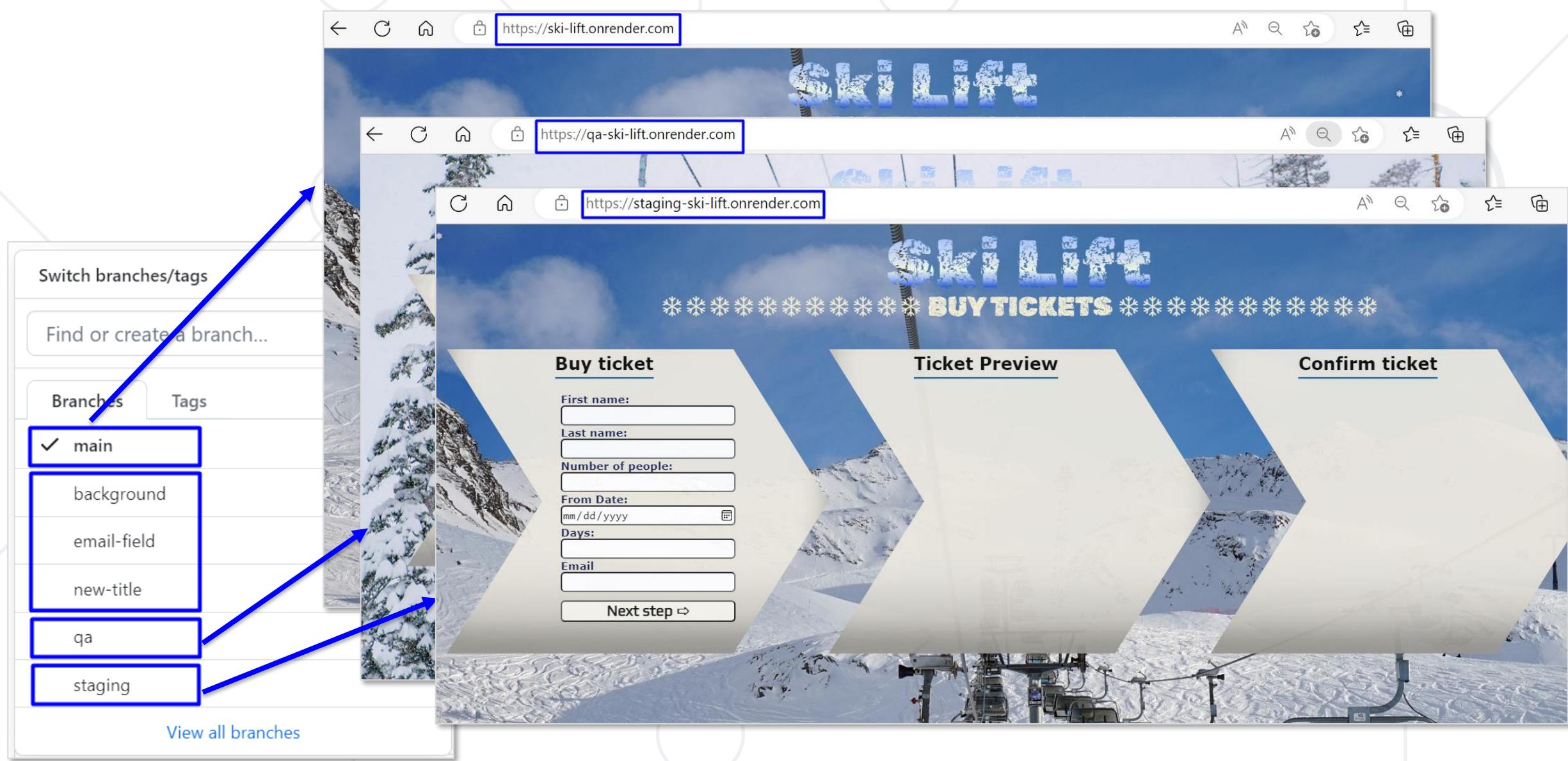
- Readme
- 0 stars
- 1 watching
- 0 forks

Releases: No releases have been published. There is a link to "Create a new release".

Packages: No packages have been published. There is a link to "Publish your first package".

Languages: The repository uses CSS (46.5%) and JavaScript (31.7%).

Development Workflow in Action



The image shows a composite view illustrating a software development workflow. On the left, a screenshot of a GitHub interface displays a list of branches and tags. A blue arrow points from the 'main' branch to the top browser tab. Another blue arrow points from the 'staging' branch to the bottom browser tab. The middle browser tab shows a QA environment. The top browser tab shows the main production environment.

Switch branches/tags

Find or create a branch...

Branches Tags

- ✓ main
- background
- email-field
- new-title
- qa
- staging

[View all branches](#)

https://ski-lift.onrender.com

https://qa-ski-lift.onrender.com

https://staging-ski-lift.onrender.com

Ski Lift

Buy ticket

First name:

Last name:

Number of people:

From Date: mm/dd/yyyy

Days:

Email:

[Next step ➔](#)

Ticket Preview

Confirm ticket

Development Workflow in Action



Ski Lift

View 1 + New view

Filter by keyword or by field

Save changes

Pending 3 This item hasn't been started

- Ski-Lift #6 Room Type Field new field
- Ski-Lift #5 Price Field duplicate new field
- Ski-Lift #7 Room Type Card bug duplicate

Sprint TODO 1

- Ski-Lift #4 Added new color

In Progress 0 This is actively being worked on

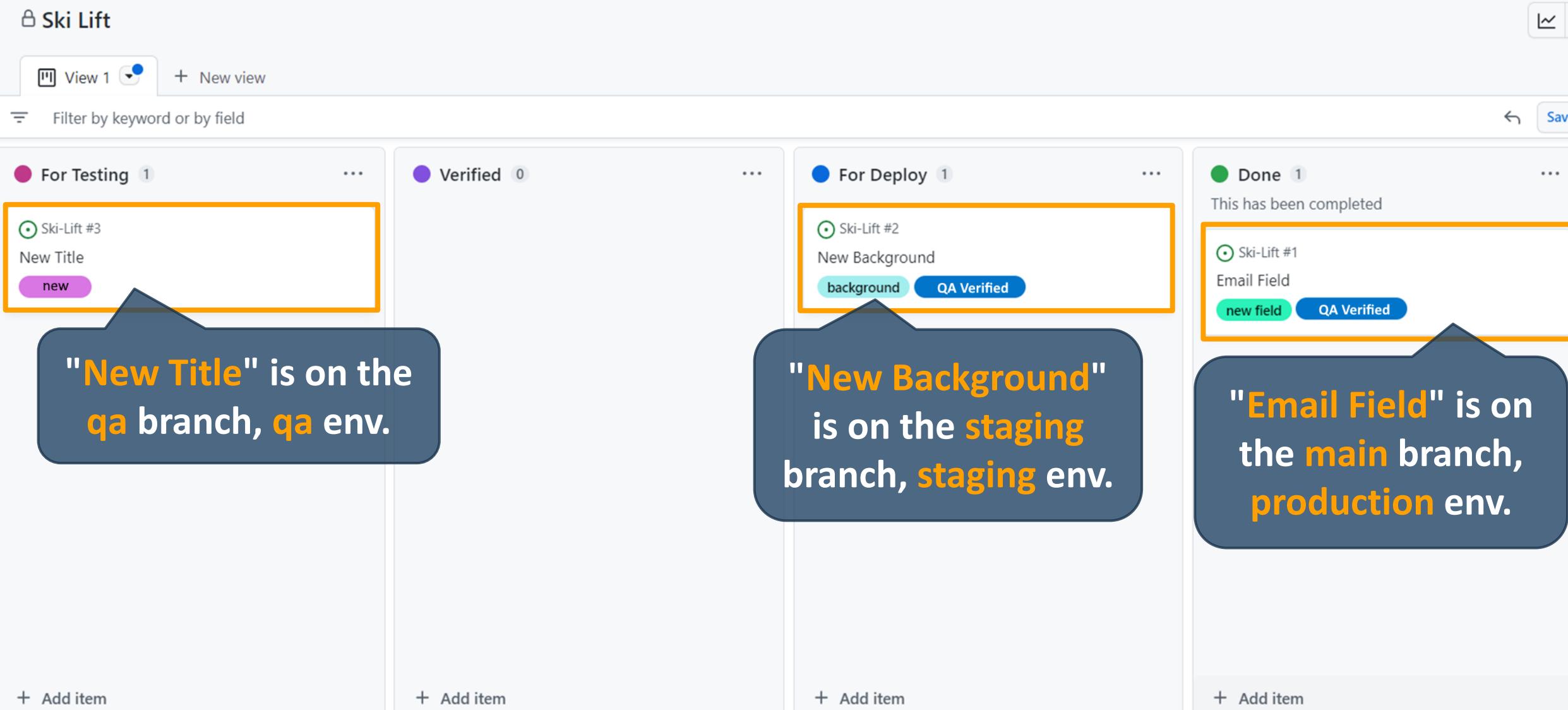
For Testing 1

- Ski-Lift #3 New Title new

+ Add item + Add item + Add item + Add item

This interface shows a development workflow for a 'Ski Lift' project. It features four main columns representing different stages: Pending, Sprint TODO, In Progress, and For Testing. Each column contains a summary message and a list of items. The Pending column has 3 items, the Sprint TODO column has 1 item, the In Progress column has 0 items, and the For Testing column has 1 item. Each item card includes a title, a brief description, and various actions like 'new field', 'duplicate', 'bug', and 'duplicate'. A global 'Add item' button is located at the bottom of each column.

We have GitHub Projects Board with Issues



The image shows a GitHub Projects board for a project named "Ski Lift". The board is organized into four columns based on status:

- For Testing** (1 item): Contains an issue titled "Ski-Lift #3" with the description "New Title". A purple button labeled "new" is visible.
- Verified** (0 items)
- For Deploy** (1 item): Contains an issue titled "Ski-Lift #2" with the description "New Background". It has two status indicators: a green button labeled "background" and a blue button labeled "QA Verified".
- Done** (1 item): Contains an issue titled "Ski-Lift #1" with the description "Email Field". It has two status indicators: a green button labeled "new field" and a blue button labeled "QA Verified". The text "This has been completed" is displayed above the card.

Each column has a header with a circular icon and the count of items. At the bottom of each column, there is a "+ Add item" button.

Three callout boxes highlight specific items:

- "New Title" is on the qa branch, qa env.** (points to the "new" button in the For Testing column)
- "New Background" is on the staging branch, staging env.** (points to the "background" button in the For Deploy column)
- "Email Field" is on the main branch, production env.** (points to the "new field" button in the Done column)

Email Field Issue



Email Field #1

Closed Senior opened this issue 1 hour ago · 0 comments · Fixed by #2

 Senior commented 1 hour ago · edited

Owner ...

TODO: add an email field in form.
As an end user, I want to be able to provide my email address when submitting a form so that I can receive email notifications and updates related to my form submission.
Overall, the addition of an email field to the form will enhance the user experience by providing them with a way to receive important notifications related to their form submission, and will also improve the functionality of the application by allowing for better communication with users.

 Senior added the **new field** label 1 hour ago

 Senior added this to **Ski Lift** 1 hour ago

 Senior linked a pull request 59 minutes ago that will close this issue

Email field #2 Merged

 Senior moved this from Pending to Sprint TODO in **Ski Lift** 58 minutes ago

Assignees
No one—assign yourself

Labels
new field **QA Verified**

Projects
 **Ski Lift**
Status: Done

Milestone
No milestone

Development
Successfully merging a pull request may close this issue.

 **email-field**
senior/Ski-Lift-Demo-Practice

 **Email field**
senior/Ski-Lift-Demo-Practice

Email Field Issue

 **Closed** Email Field #1
Senior opened this issue 1 hours ago · 0 comments · Fixed by #2

 Junior added 2 commits 48 minutes ago

-  Added HTML
-  Added functionality

 Junior merged commit [4a149af](#) into [qa](#) 45 minutes ago

 [Revert](#)

 Junior moved this from In Progress to For Testing in **Ski Lift** 43 minutes ago

 [Lock conversation](#)

 [Pin issue](#) ⓘ

 [Transfer issue](#)

 [Delete issue](#)

 Qa added the **QA Verified** label 35 minutes ago

 Qa moved this from For Testing to Verified in **Ski Lift** 35 minutes ago

 [Unsubscribe](#)

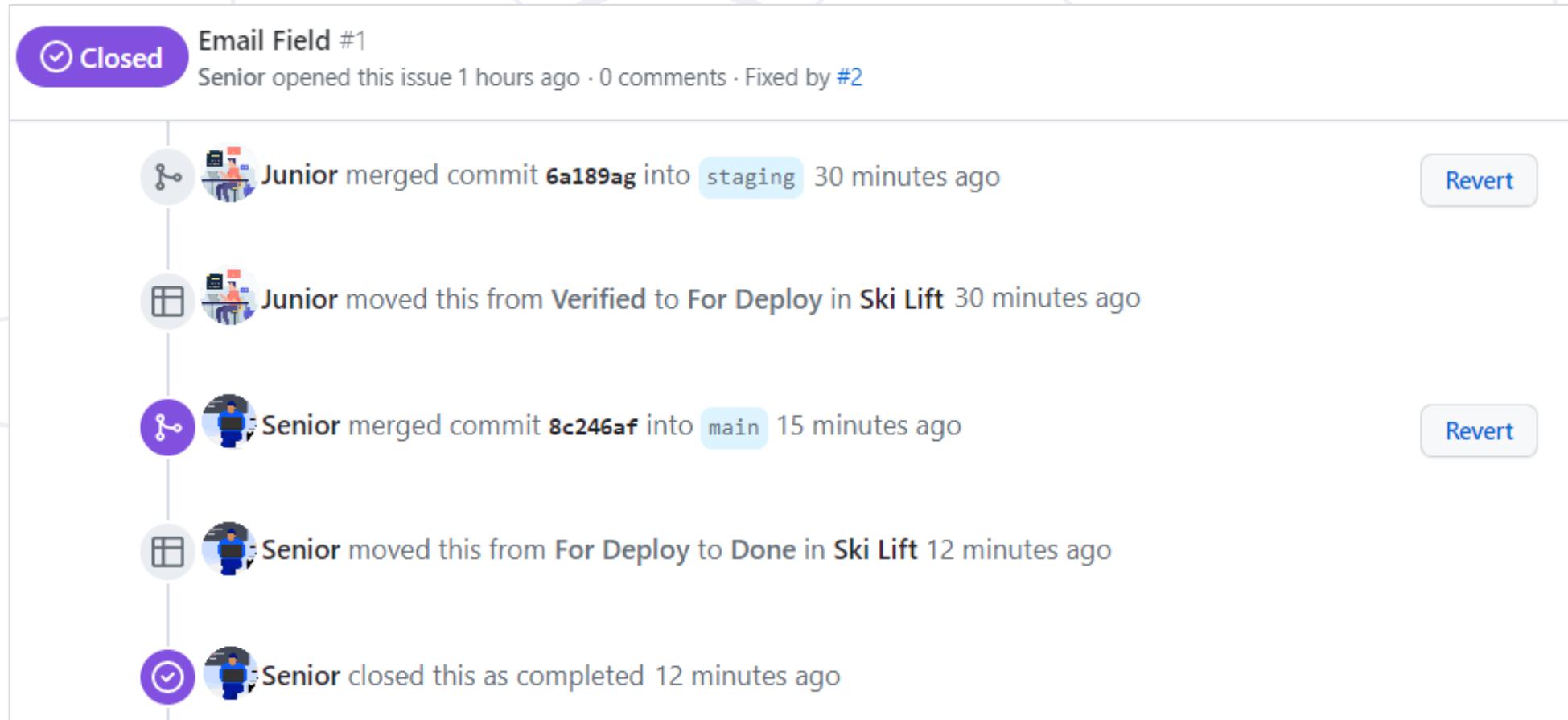
You're receiving notifications because you're watching this repository.

3 participants



Email Field Issue

Closed Email Field #1
Senior opened this issue 1 hours ago · 0 comments · Fixed by #2



The timeline shows the following sequence of events:

- Junior merged commit `6a189ag` into `staging` 30 minutes ago. A "Revert" button is available.
- Junior moved this from `Verified` to `For Deploy` in `Ski Lift` 30 minutes ago.
- Senior merged commit `8c246af` into `main` 15 minutes ago. A "Revert" button is available.
- Senior moved this from `For Deploy` to `Done` in `Ski Lift` 12 minutes ago.
- Senior closed this as completed 12 minutes ago.

Email Field Issue

Closed Email Field #1
Senior opened this issue 1 hours ago · 0 comments · Fixed by #2

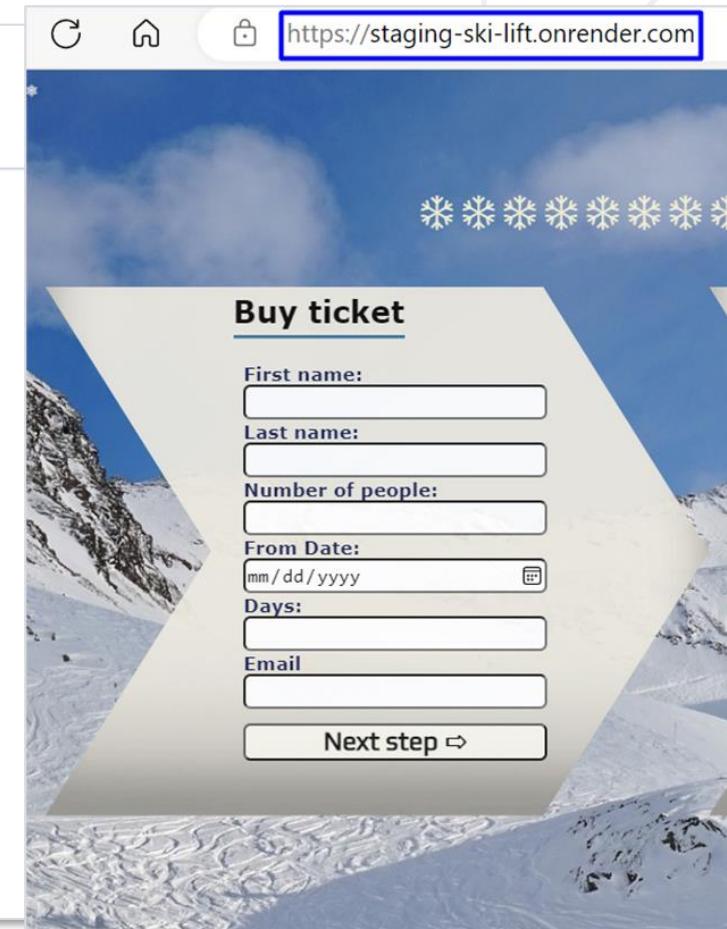
Junior merged commit `6a189ag` into `staging` 30 minutes ago

Junior moved this from Verified to For Deploy in Ski Lift 30 minutes ago

Senior merged commit `8c246af` into `main` 15 minutes ago

Senior moved this from For Deploy to Done in Ski Lift 12 minutes ago

Senior closed this as completed 12 minutes ago



Email Field Issue

Email Field #1
Senior opened this issue 1 hours ago · 0 comments · Fixed by #2

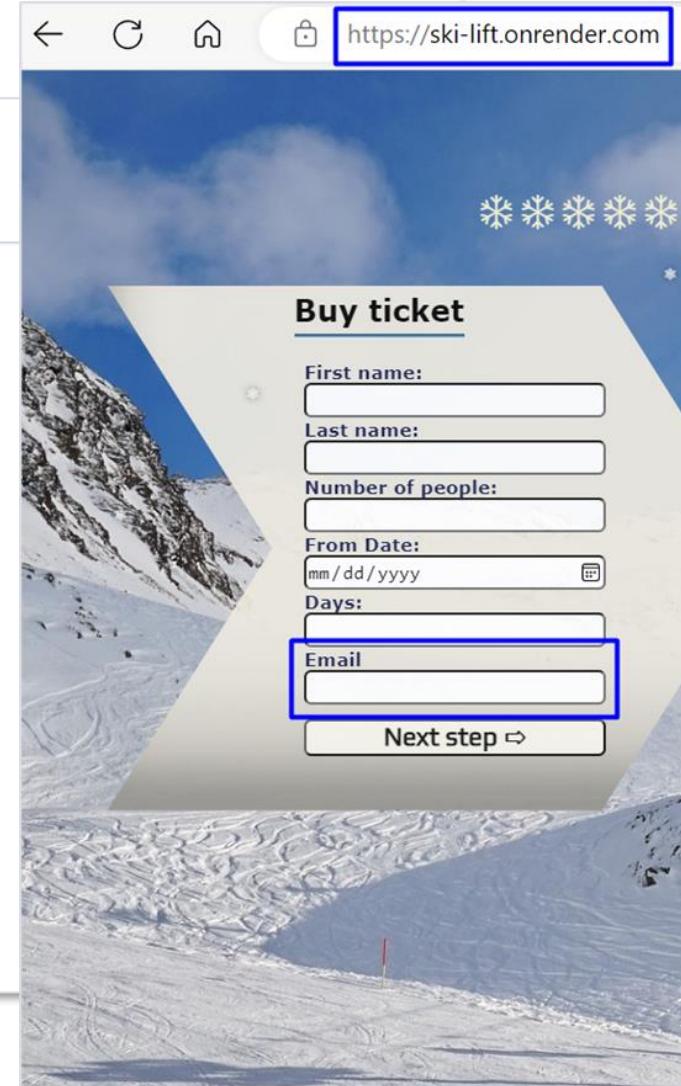
Junior merged commit `6a189ag` into `staging` 30 minutes ago

Junior moved this from **Verified** to **For Deploy** in **Ski Lift** 30 minutes ago

Senior merged commit `8c246af` into `main` 15 minutes ago

Senior moved this from **For Deploy** to **Done** in **Ski Lift** 12 minutes ago

Senior closed this as completed 12 minutes ago



New Background Issue

New Background #2

Open Senior opened this issue 1 hours ago · 0 comments

Senior commented 1 hours ago · edited

Owner ...

TODO: Change the background image.
As an end user, I want to see a visually appealing background image on the website so that it creates a pleasant and engaging experience while using the website.
Overall, changing the background image will improve the aesthetics of the website, enhance the user experience, and make the website more engaging and visually appealing to users.

...

Senior added the **background** label 1 hours ago

Senior added this to **Ski Lift** 1 hours ago

Senior linked a pull request 1 hour ago that will close this issue
Background image#3

Senior moved this from Pending to Sprint TODO in **Ski Lift** 1 hours ago

Open

Assignees
No one—assign yourself

Labels
background **QA Verified**

Projects
Ski Lift
Status: Done

Milestone
No milestone

Development
Successfully merging a pull request may close this issue.

background-image
senior/Ski-Lift-Demo-Practice

Background image
senior/Ski-Lift-Demo-Practice

New Background Issue

New Background #2
Senior opened this issue 1 hour ago · 0 comments

Open

Junior added 2 commits 36 minutes ago

- Added img
- Changes in code

Junior merged commit `9a149af` into `qa` 36 minutes ago

Revert

Junior moved this from In Progress to For Testing in Ski Lift 34 minutes ago

Qa added the **QA Verified** label 12 minutes ago

Qa moved this from For Testing to Verified in Ski Lift 11 minutes ago

a1518c2
a5b658f

Notifications

Customize

Unsubscribe

You're receiving notifications because you're watching this repository.

3 participants

Lock conversation

Pin issue ⓘ

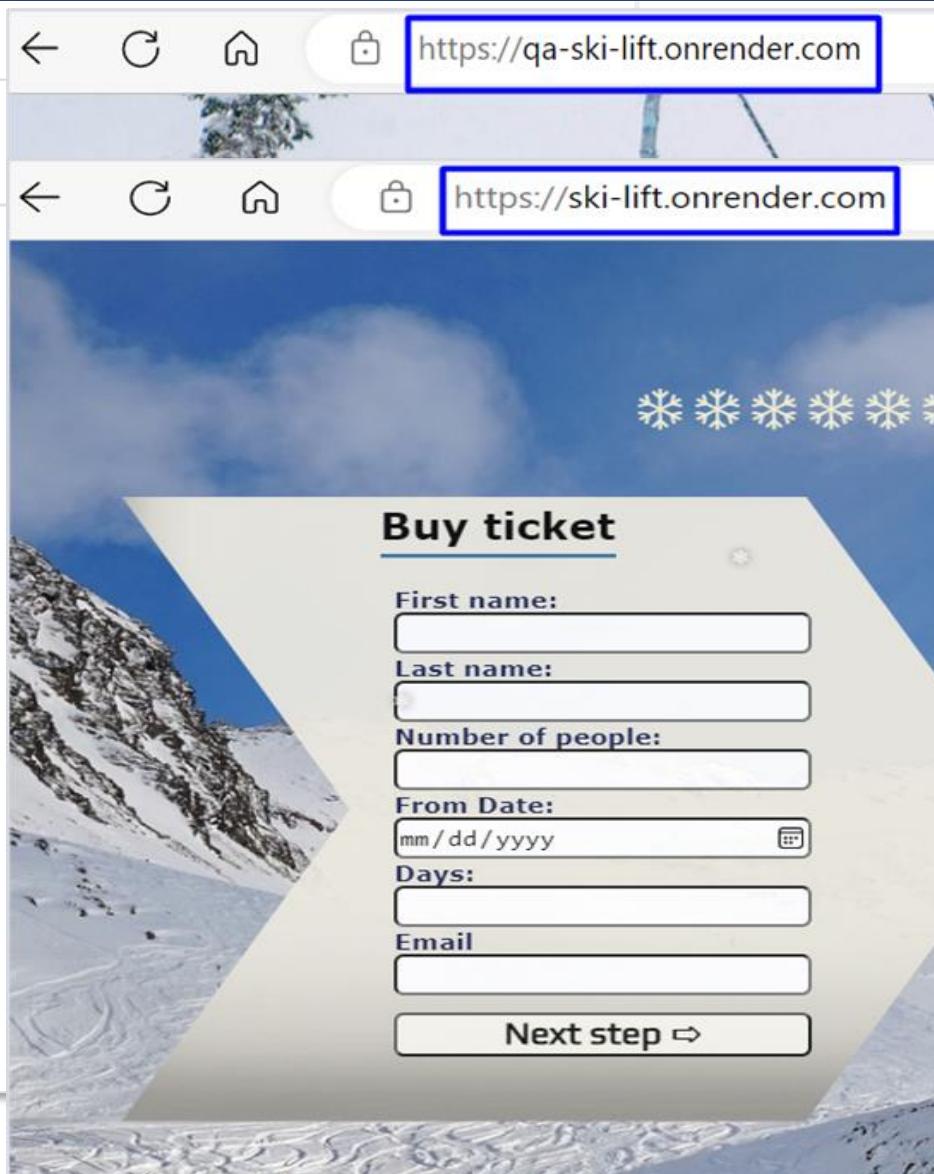
Transfer issue

Delete issue

New Background Issue

New Background #2
Senior opened this issue 1 hour ago · 0 comments

-  Junior added 2 commits 36 minutes ago
 -  Added img
 -  Changes in code
-  Junior merged commit `9a149af` into `qa` 36 minutes ago
-  Junior moved this from In Progress to For Testing in Ski Lift 34 minutes ago
-  Qa added the **QA Verified** label 12 minutes ago
-  Qa moved this from For Testing to Verified in Ski Lift 11 minutes ago



The screenshot shows a web browser window with two tabs open. The top tab's URL is <https://qa-ski-lift.onrender.com>. The bottom tab's URL is <https://ski-lift.onrender.com>. The main content area displays a "Buy ticket" form set against a background image of a snowy mountain peak under a blue sky with clouds. The form includes fields for First name, Last name, Number of people, From Date (with a date picker), Days, Email, and a "Next step" button.

New Title Issue



New Title #3

Open Senior opened this issue 1 hours ago · 0 comments

 Senior commented 1 hours ago · edited

Owner ...

TODO: Change the color of title.
As an end user, I want to be able to easily **read** and **distinguish** the **title** of the page from the rest of the content, so that I can quickly identify what the page is about.
Overall, changing the **color** of the title will **improve** the **aesthetics** and **readability** of the website, making it easier for users to identify the main purpose of the page and navigate the website more efficiently.



  Senior added the new label 1 hours ago

  Senior added this to **Ski Lift** 1 hours ago

  Senior linked a pull request 1 hour ago that will close this issue
New title#4

  Senior moved this from Pending to Sprint TODO in **Ski Lift** 1 hours ago

Open

Edit New issue

Assignees
No one—assign yourself

Labels
new

Projects
Ski Lift
Status: Done

Milestone
No milestone

Development
Successfully merging a pull request may close this issue.

 **new-title**
senior/Ski-Lift-Demo-Practice

 **New Title**
senior/Ski-Lift-Demo-Practice

New Title Issue



Open

New Title #3

Senior opened this issue 1 hour ago · 0 comments



Junior added 2 commits 36 minutes ago



Changes in HTML



Changes in code



Junior merged commit [9a149af](#) into [qa](#) 35 minutes ago

a1518c2

a5b658f

Revert



Junior moved this from In Progress to For Testing in [Ski Lift](#) 34 minutes ago

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Summary

- Issues maintain an organized software development workflow
 - Moved across board columns to visualize progress
- Branches and environments feature (local env.), qa (QA env.), staging (staging env), main (production env.)
- Software development workflow steps (sprint planning, assign to developer, assign to QA, QA review, code review, deploy to production)



Questions?



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