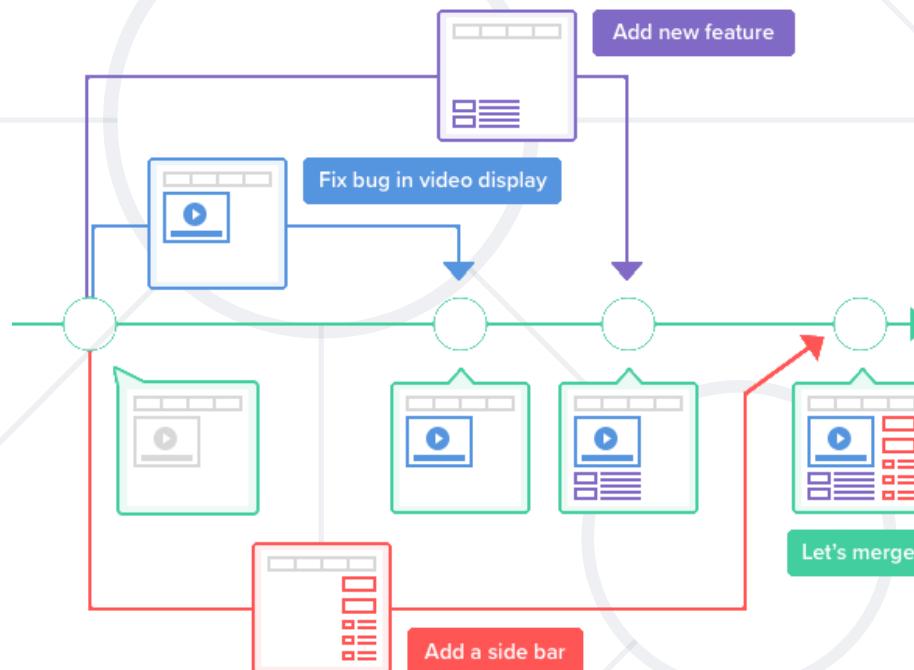


Development Workflow

Issues, Workflow, Branches, Environments



SoftUni

SoftUni Team
Technical Trainers

 Software University



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 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

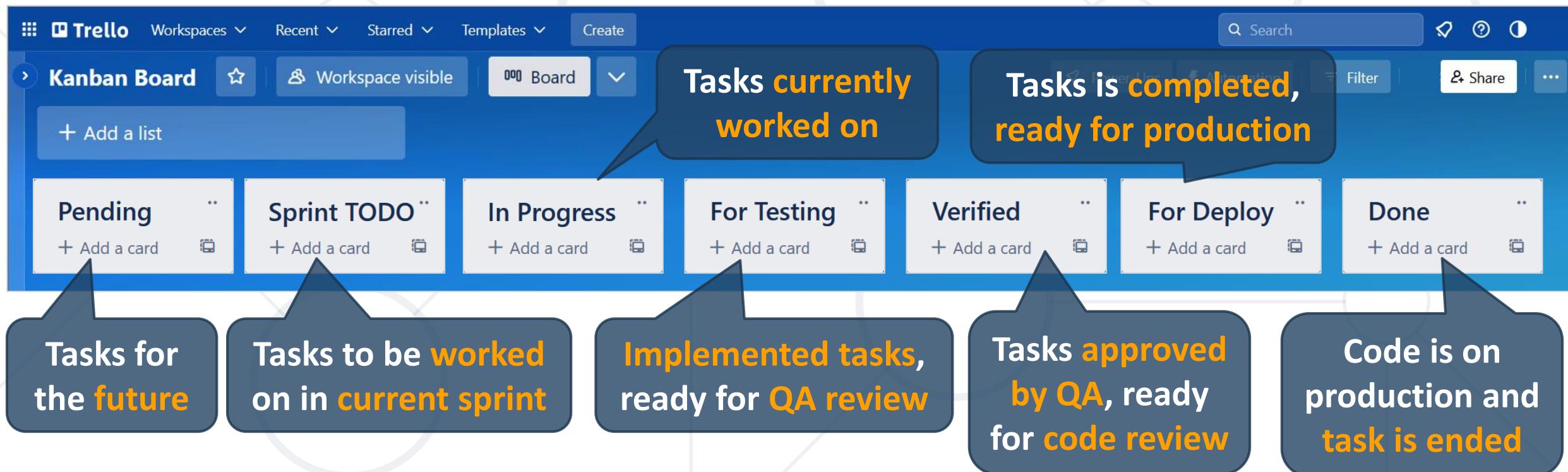
Types of Issues (1)

- **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 (2)

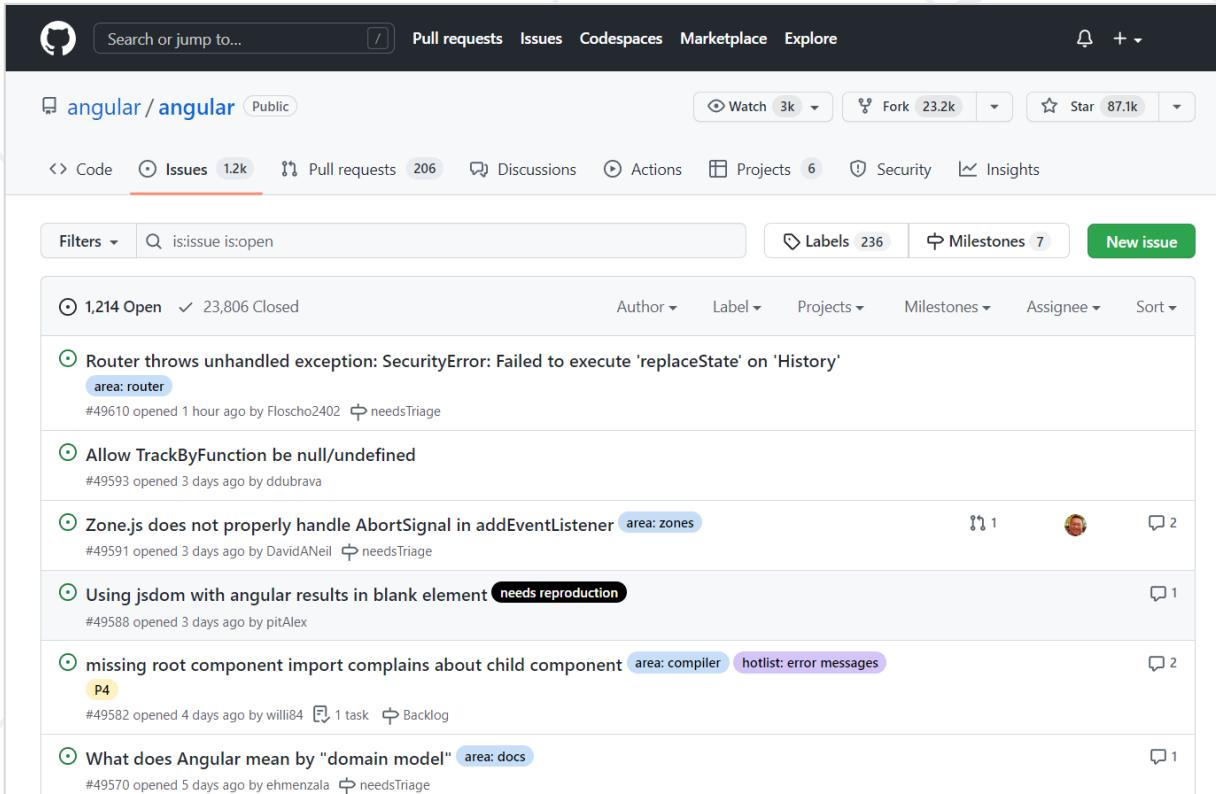
- **For Testing**
 - Ready for **QA** testing
- **Verified**
 - Testing is **complete** and ready for further actions
- **For Deploy**
 - **Verified** and approved
- **Done**
 - Successful **deployment**

Issues – Example



- **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 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

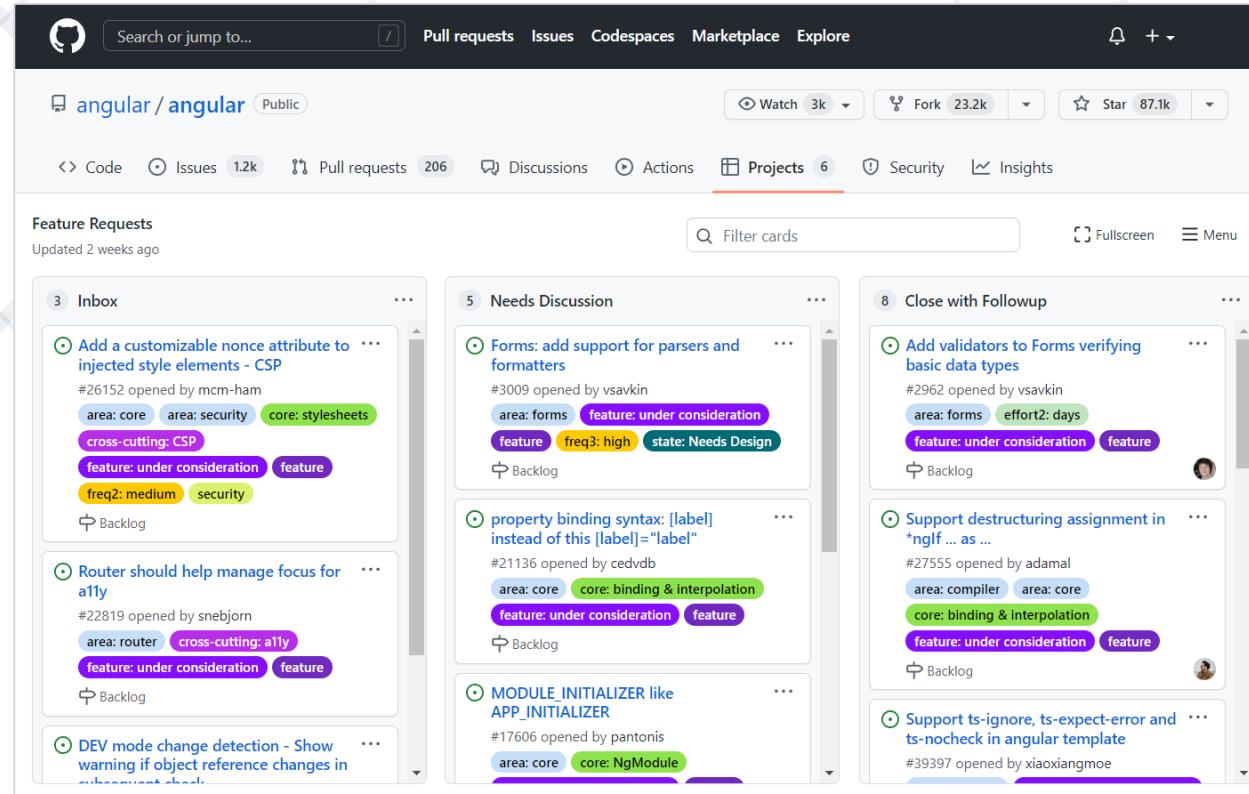
Allow TrackByFunction be null/undefined
#49593 opened 3 days ago by ddubrava

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

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 a11y
#22819 opened by snebjorn area: router cross-cutting: a11y 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

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

Inside an Issue (1)

- **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 (2)

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

Inside an Issue – Example

fix(core): ComponentRef.setInput only sets input when not equal to pr... #49607

[Open](#) atscott wants to merge 1 commit into `angular:main` from `atscott:setInputTracking`

Conversation 1 · Commits 1 · Checks 7 · Files changed 2 · +33 -0

atscott commented 6 hours ago

...evious

ComponentRef.setInput currently sets the input on the component regardless of the previous value the method was called with. This results in different behavior from bindings in templates, which only set inputs when the value differs in the Object.is check from its previous value.

BREAKING CHANGE: ComponentRef.setInput will only set the input on the component if it is different from the previous value (based on Object.is equality). If code relies on the input always being set, it should be updated to copy objects or wrap primitives in order to ensure the input value differs from the previous call to setInput.

atscott added `area: core` `target: major` labels 6 hours ago

atscott added this to the `v16-candidates` milestone 6 hours ago

atscott requested review from `pkozlowski.opensource` and `alxhub` 6 hours ago

angular-robot bot added the `detected: breaking change` label 6 hours ago

fix(core): ComponentRef.setInput only sets input when not equal to pr... 56f3a89

atscott force-pushed the `setInputTracking` branch from `b3bee60` to `56f3a89` 6 hours ago

ajafff reviewed 2 hours ago

View changes

```
packages/core/src/render3/component_ref.ts
...
    ...
    @@ -270,8 +271,17 @@ export class ComponentRef<T> extends AbstractComponentRef<T> {
    270   271     const inputData = this._tNode.inputs;
    271   272     let dataValue: PropertyAliasValue|undefined;
    272   273     if (inputData !== null && (dataValue = inputData[name])) {
    274     +       this.setInputHistory ??= {};
    ...
    ...
    consider using Object.create(null) and Object.prototype.hasOwnProperty.call(this.setInputHistory, name)
    to avoid issues with special names like __proto__ or hasOwnProperty
```

ajafff 2 hours ago

...

...

Code

Reviewers

- ajafff
- pkozlowski.opensource
- alxhub

At least 1 approving review is required to merge this pull request.

Still in progress? Learn about draft PRs

Assignees

No one assigned

Labels

- area: core
- detected: breaking change
- target: major

Projects

None yet

Milestone

v16-candidates

Development

Successfully merging this pull request may close these issues.

None yet

Notifications

Customize

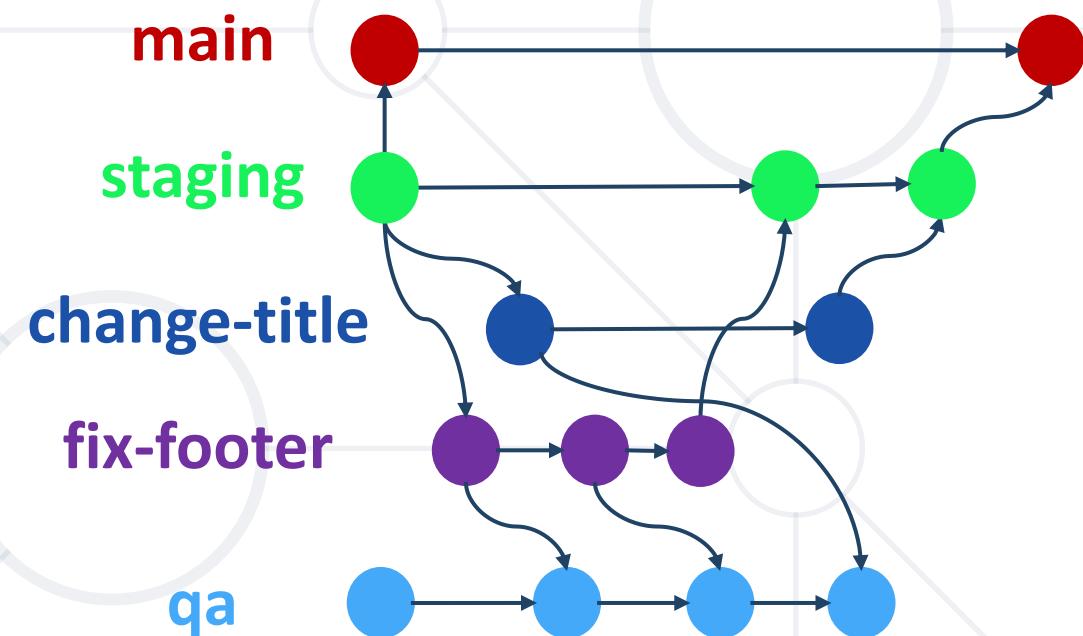
Subscribe

You're not receiving notifications from this thread.

2 participants

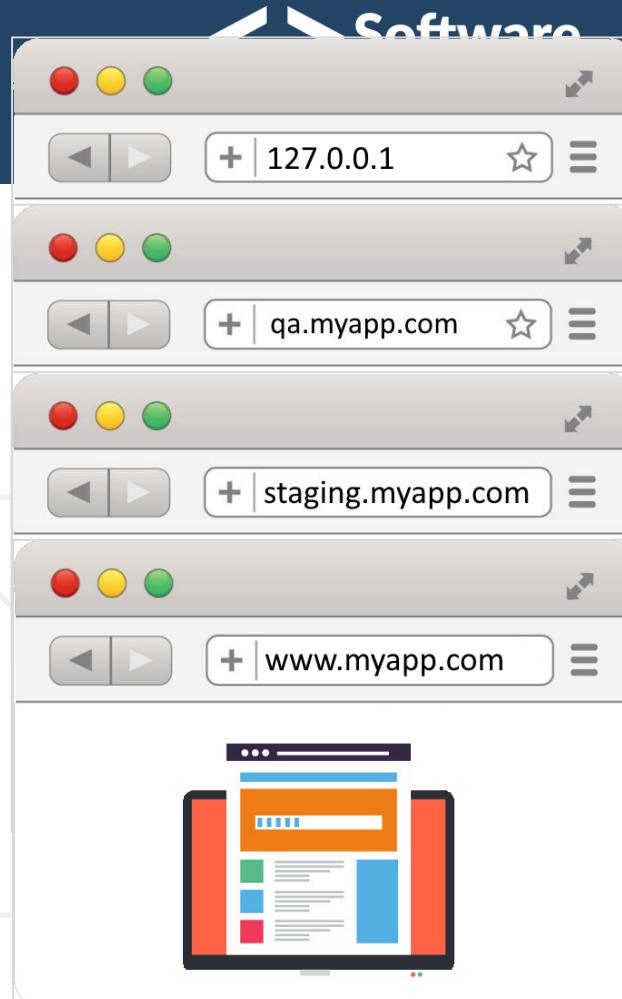
Branches

- **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.

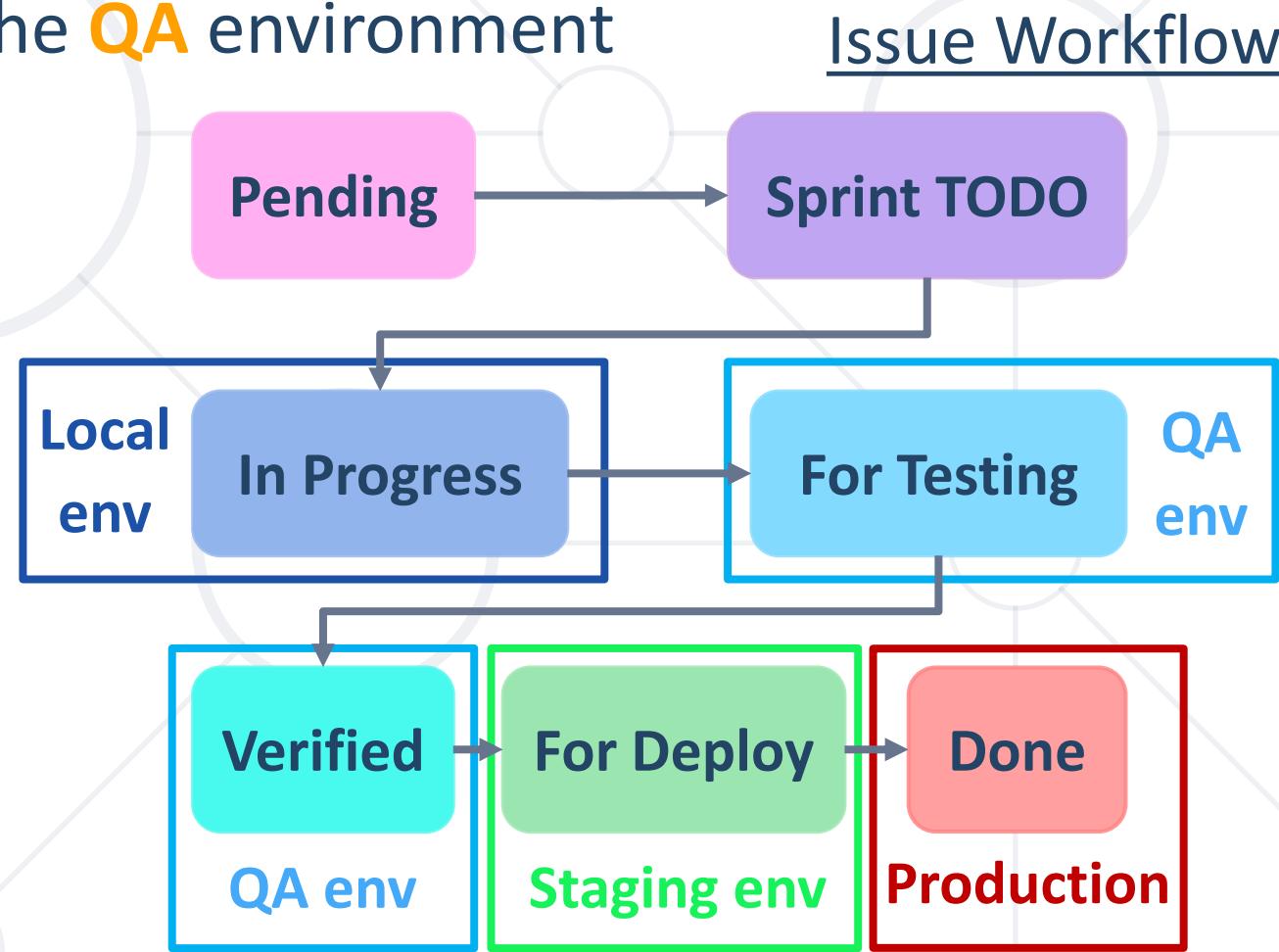
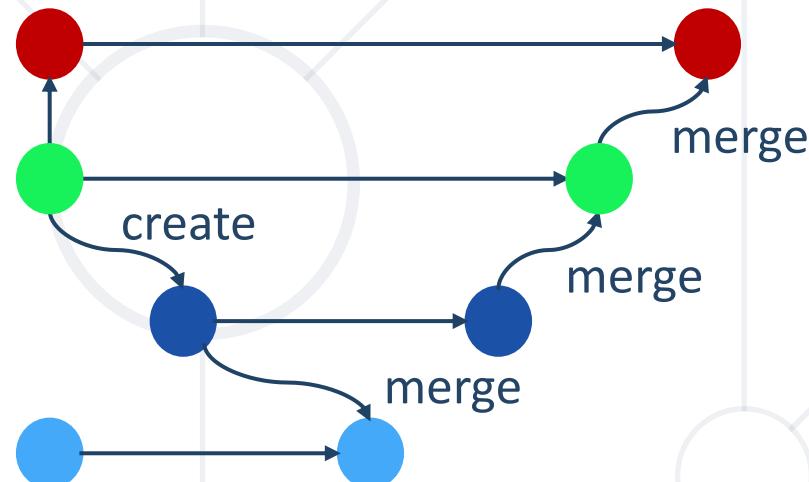
Branches

main

staging

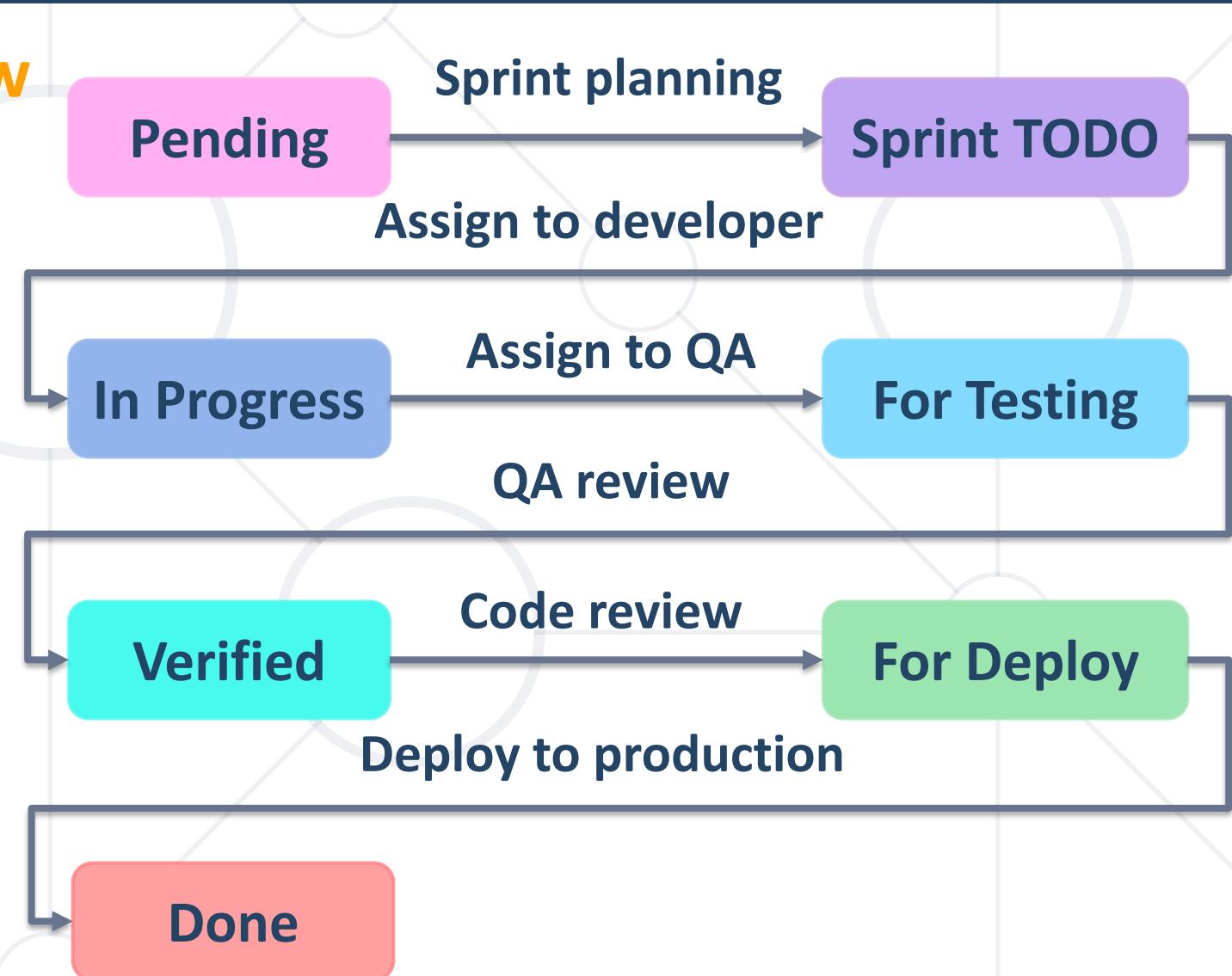
feature 1

qa



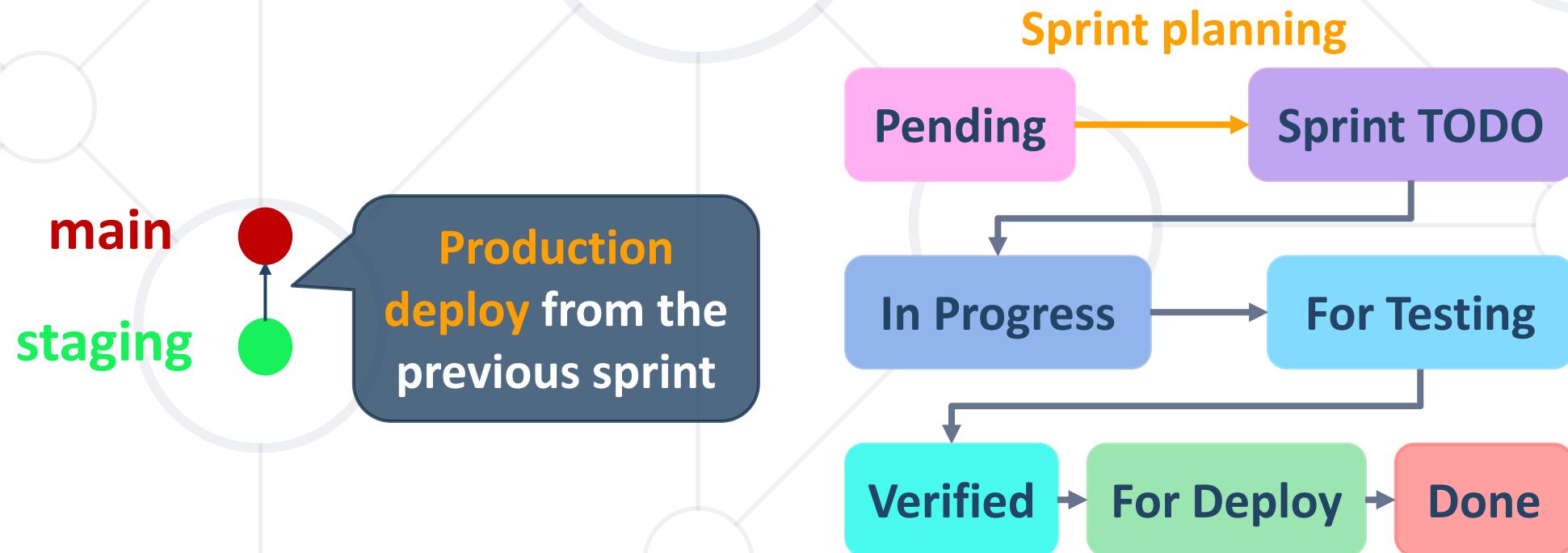
Development Workflow Steps

- 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



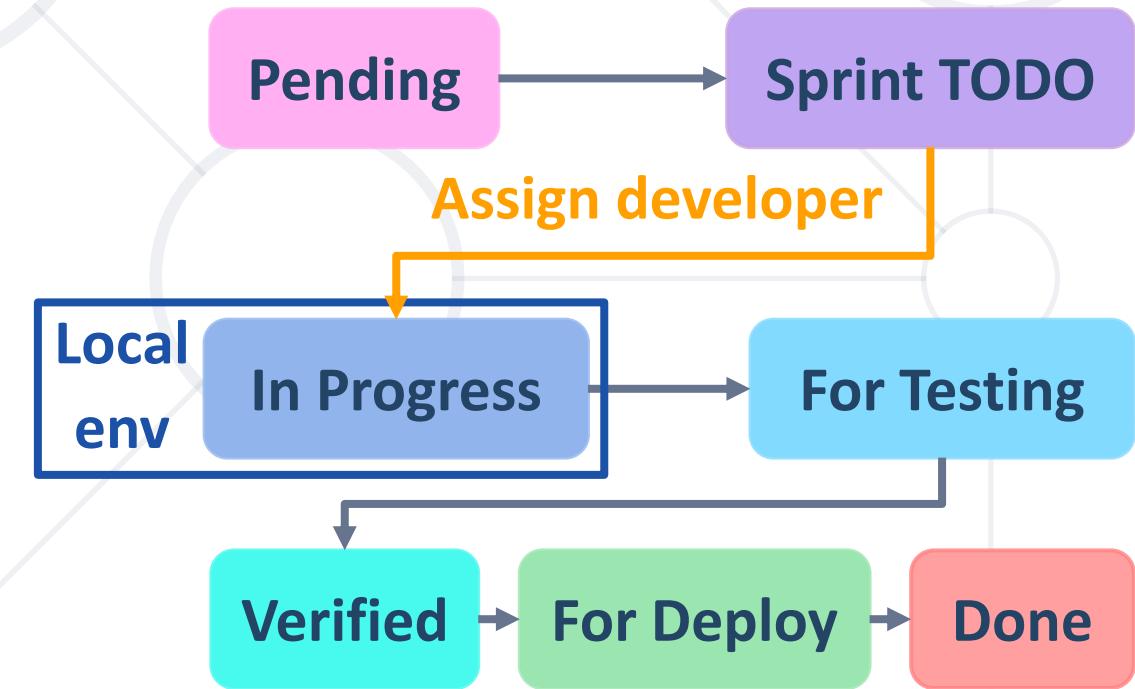
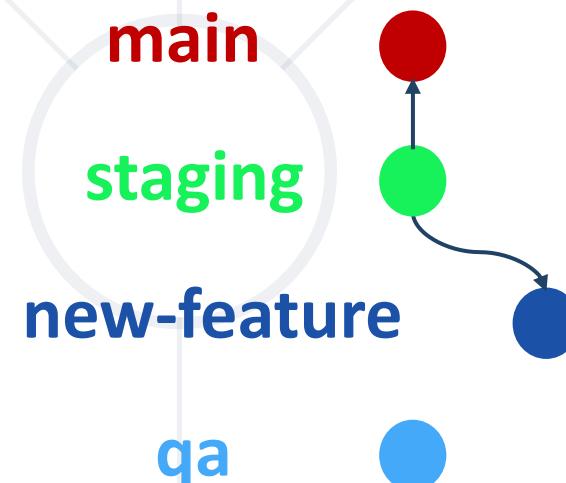
Step 1: Sprint Planning

- 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



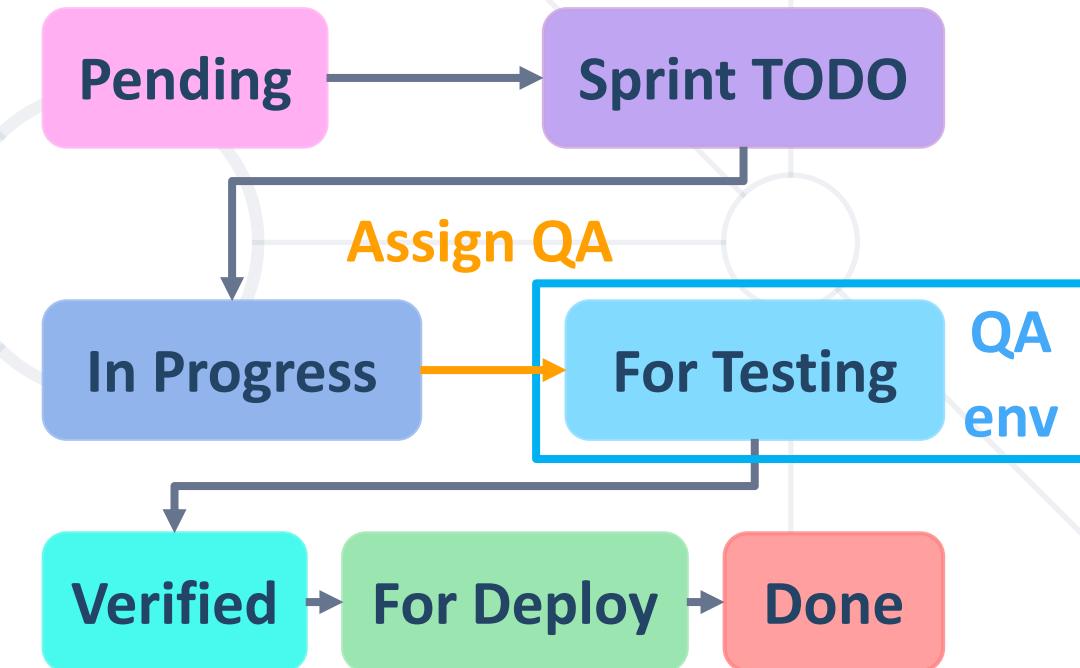
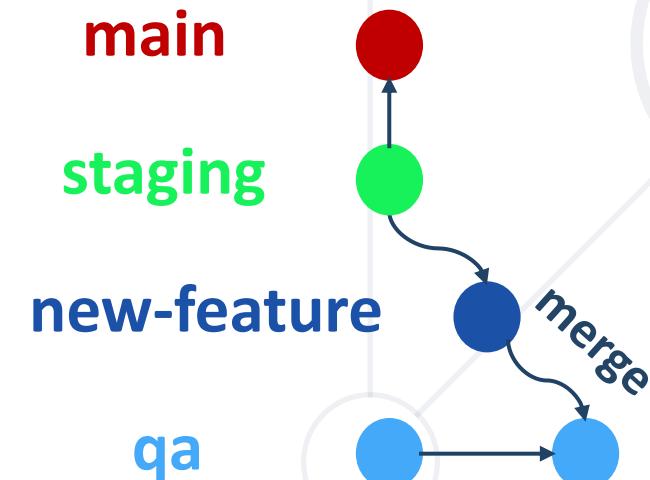
Step 2: Assign a Developer to Work on an Issue

- 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)



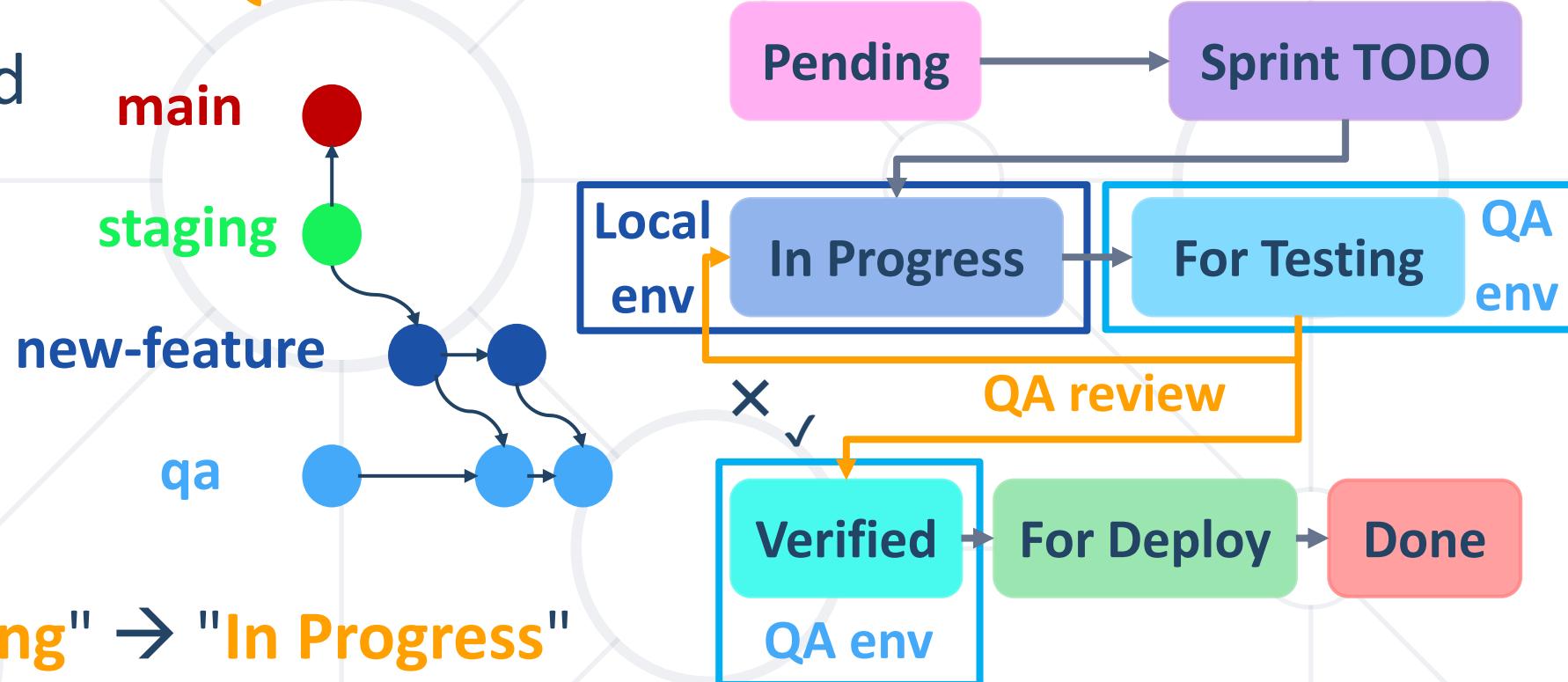
Step 3: Assign Completed Task to QA

- 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



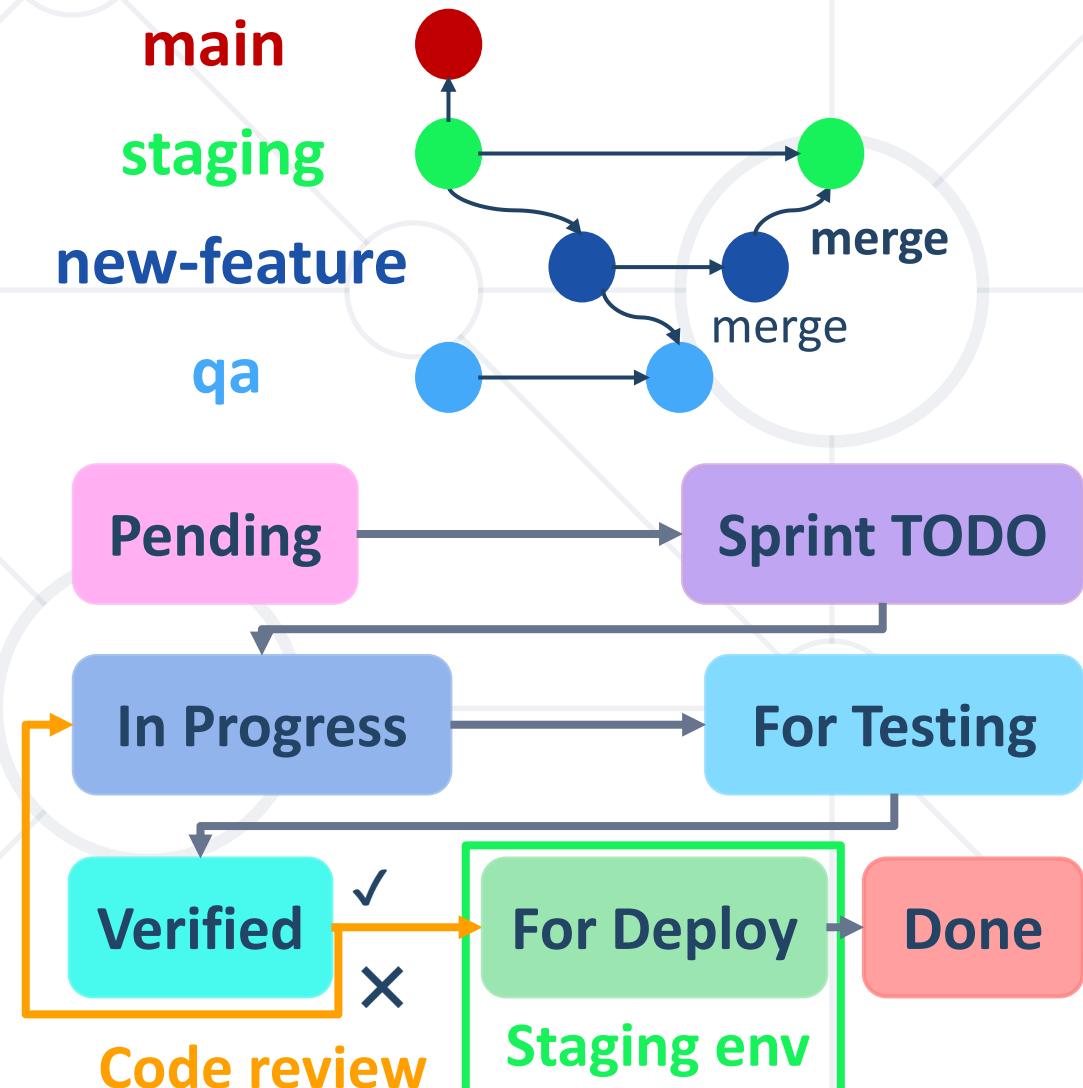
Step 4: QA Review

- 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**



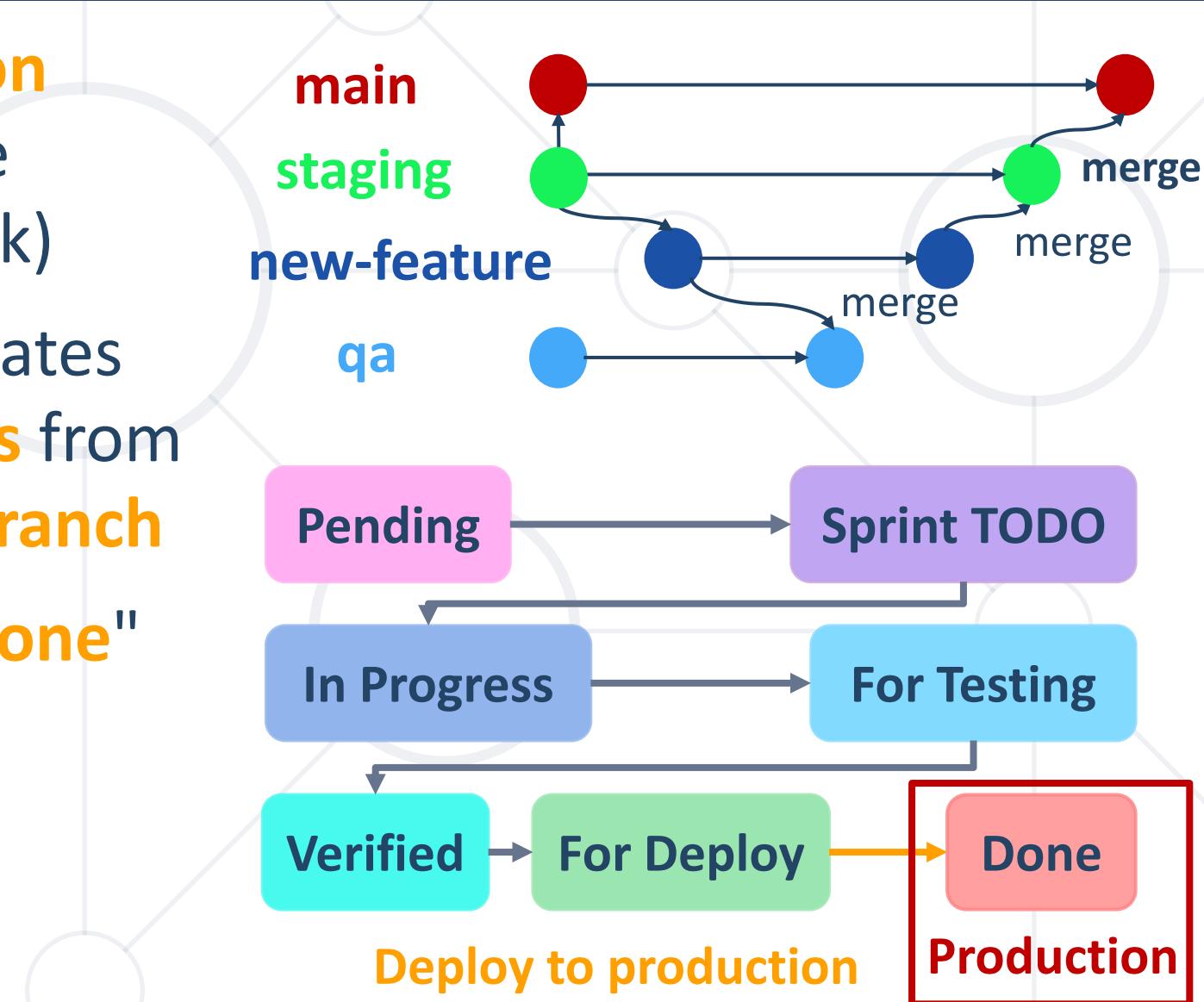
Step 5: Code Review

- 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**

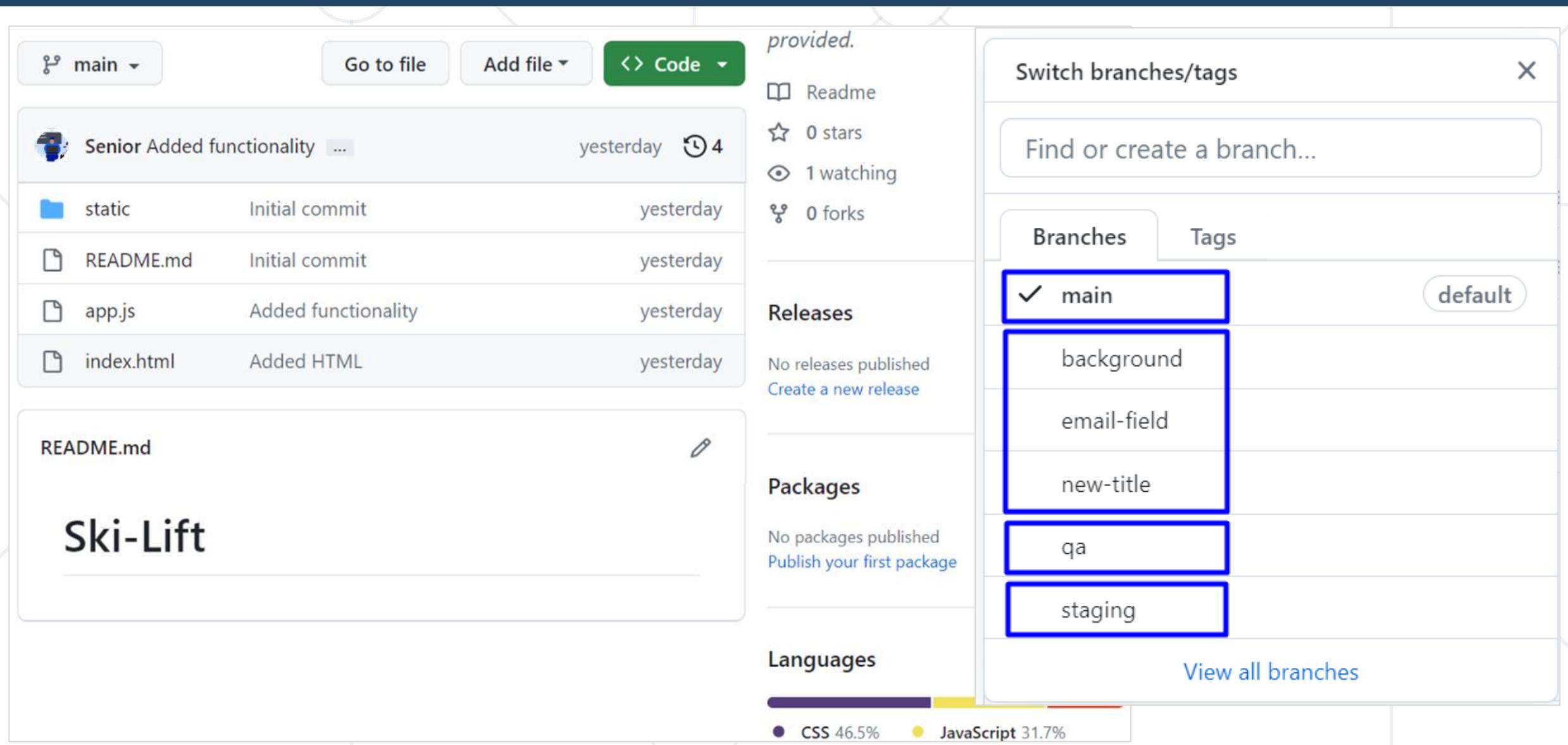
- Feature branch → **local** laptop (localhost)
- QA branch → **QA** environment (qa.myapp.com) – auto deploy by CI/CD
- Staging branch → **staging** environment (staging.myapp.com)
- Main branch → **production** environment (myapp.com) – manual deploy



Development Workflow in Action

Sample GitHub Project

Development Workflow in Action



The screenshot illustrates a development workflow involving a pull request and a branch selection process.

Pull Request Details:

- Title:** Senior Added functionality
- Author:** Senior
- Status:** Yesterday
- Comments:** 4

Repository Overview:

- Static:** Initial commit, yesterday
- README.md:** Initial commit, yesterday
- app.js:** Added functionality, yesterday
- index.html:** Added HTML, yesterday

File Editor: A code editor window titled "Ski-Lift" is open, showing the following code:

```
provided.  
Readme  
0 stars  
1 watching  
0 forks
```

Branch Selection Dialog:

Switch branches/tags

Find or create a branch...

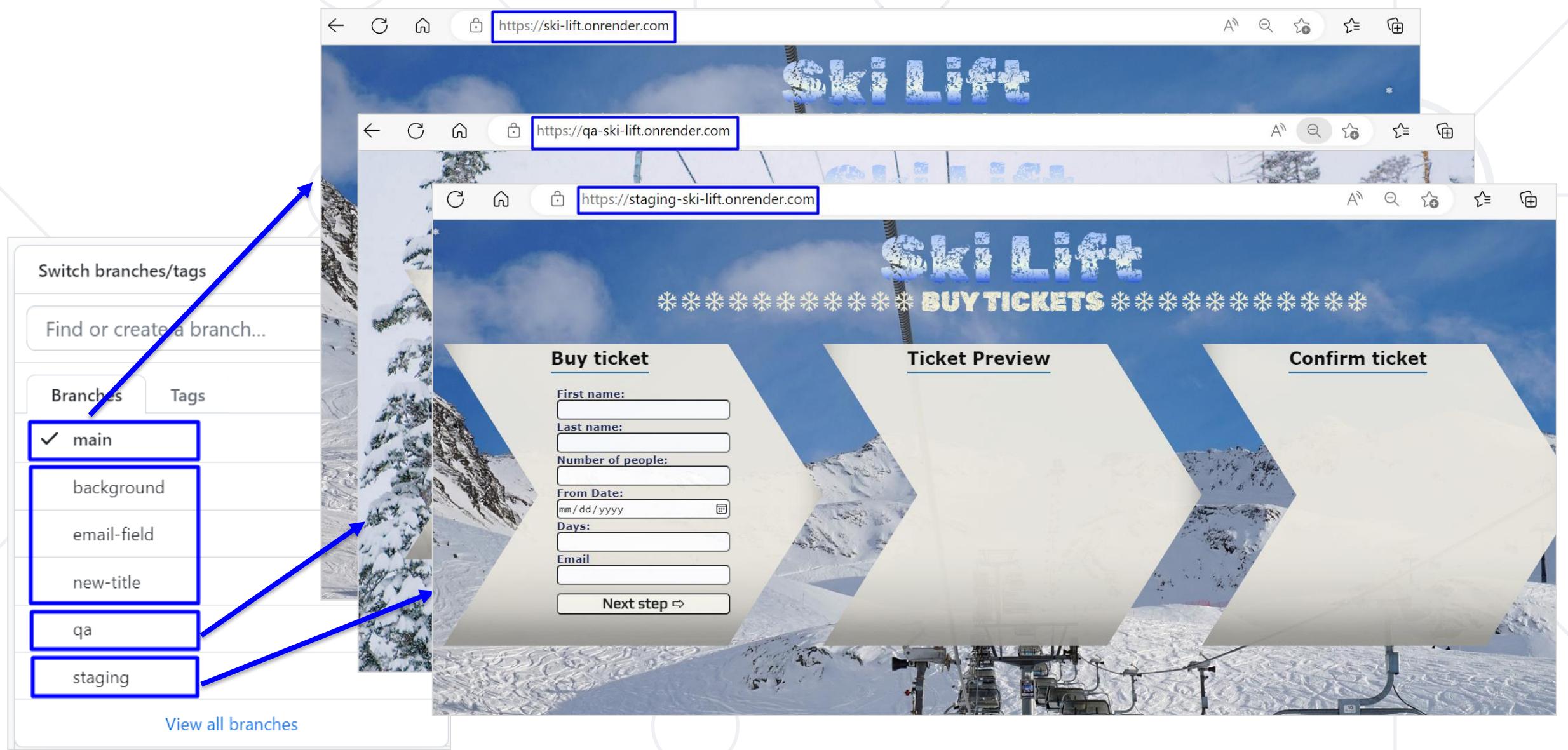
Branches Tags default

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

[View all branches](#)

Languages: CSS 46.5% JavaScript 31.7%

Development Workflow in Action



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 TICKETS

Buy ticket

Ticket Preview

Confirm ticket

First name:

Last name:

Number of people:

From Date: mm/dd/yyyy

Days:

Email:

Next step ➡

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](#)

Sprint TODO 1

Ski-Lift #4
Added new color

In Progress 0

This is actively being worked on

Ski-Lift #5
Price Field
[duplicate](#) [new field](#)

For Testing 1

Ski-Lift #3
New Title
[new](#)

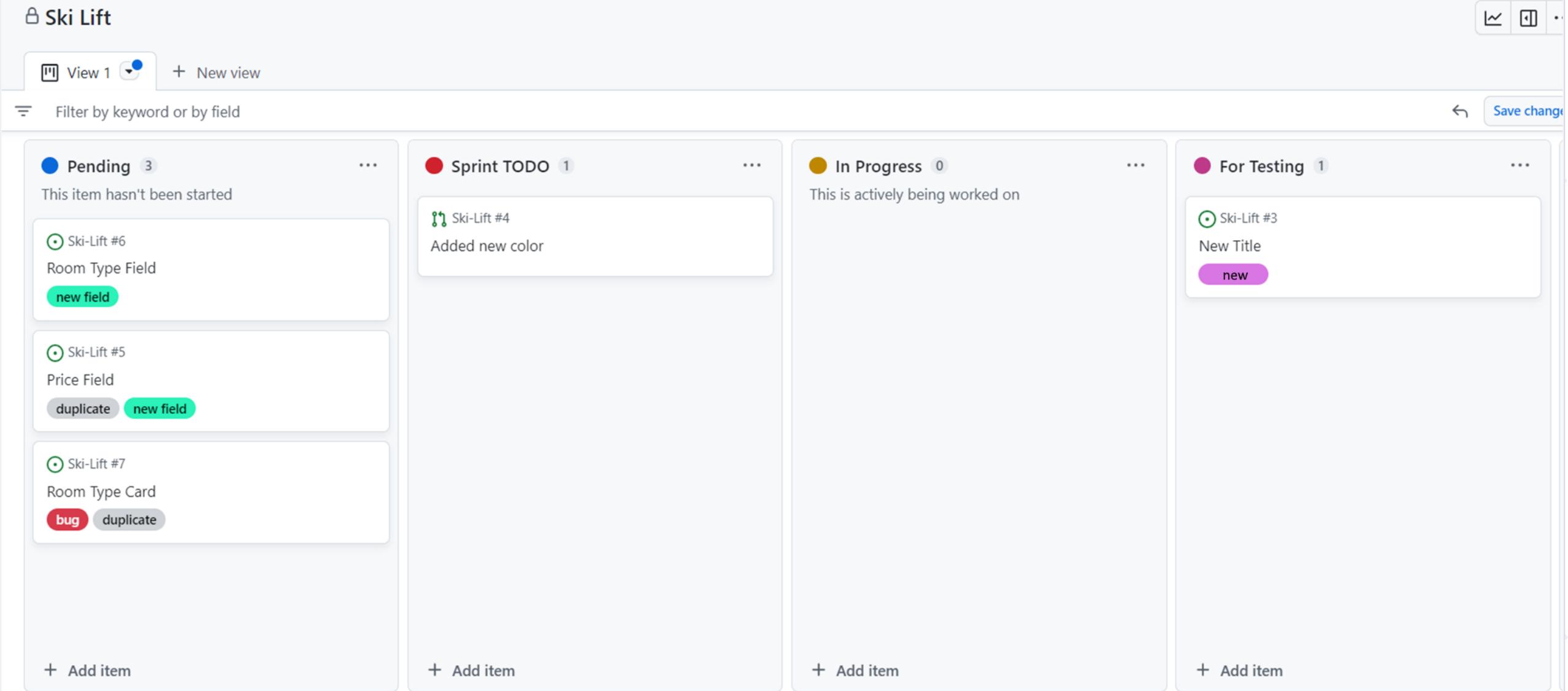
Ski-Lift #7
Room Type Card
[bug](#) [duplicate](#)

+ Add item

+ Add item

+ Add item

+ Add item



We have GitHub Projects Board with Issues:



Ski Lift

View 1 + New view

Filter by keyword or by field

Save changes

For Testing 1

Verified 0

For Deploy 1

Done 1

This has been completed

Ski-Lift #3
New Title
new

Ski-Lift #2
New Background
background QA Verified

Ski-Lift #1
Email Field
new field QA Verified

"New Title" is on the qa branch, qa env.

"New Background" is on the staging branch, staging env.

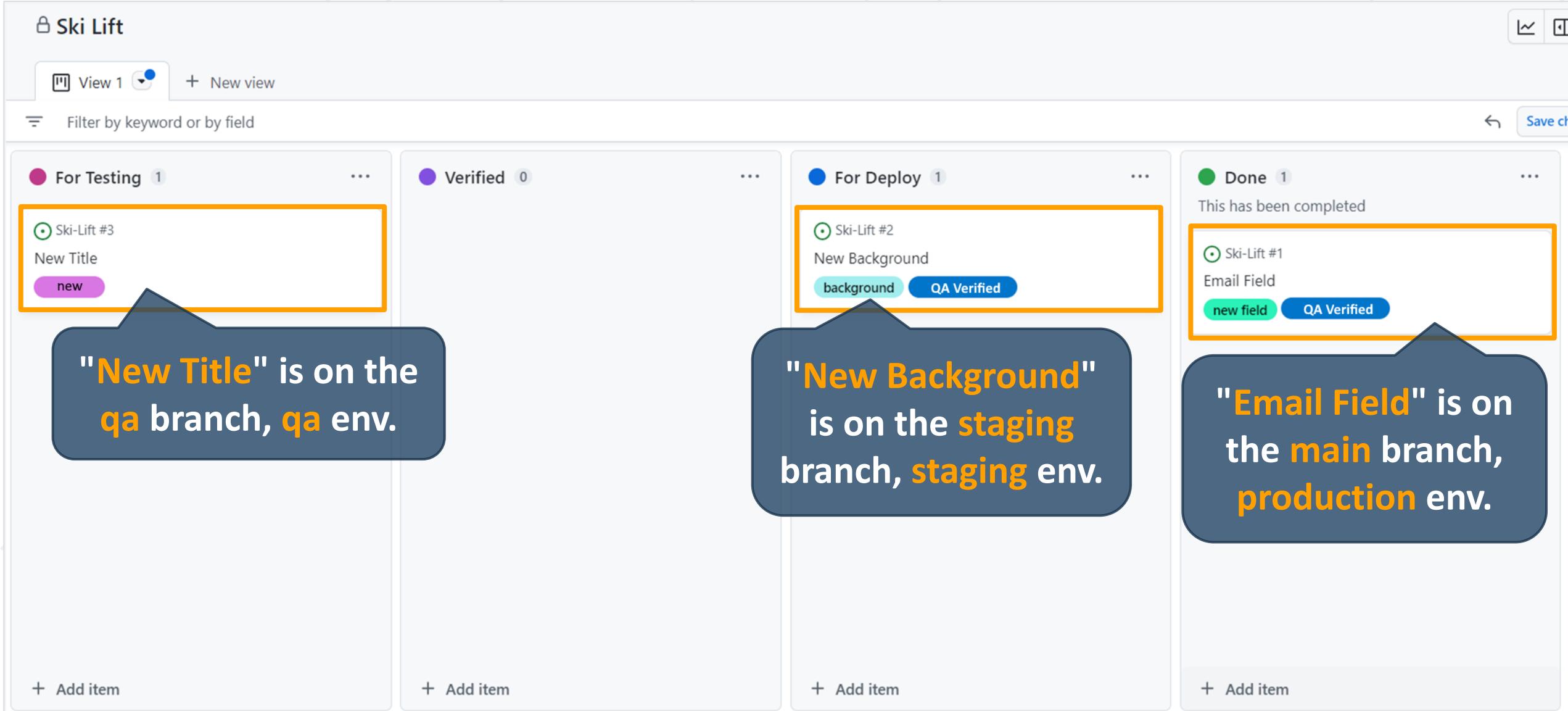
"Email Field" is on the main branch, production env.

+ Add item

+ Add item

+ Add item

+ Add item



A screenshot of a GitHub Projects board titled "Ski Lift". The board is divided into four columns based on status: "For Testing" (1 item), "Verified" (0 items), "For Deploy" (1 item), and "Done" (1 item). The "For Testing" column contains an issue titled "Ski-Lift #3" with the note "New Title" and a "new" button. The "For Deploy" column contains an issue titled "Ski-Lift #2" with the note "New Background", a "background" button, and a "QA Verified" button. The "Done" column contains an issue titled "Ski-Lift #1" with the note "Email Field", a "new field" button, and a "QA Verified" button. Three callout boxes with blue borders highlight specific items: one for "New Title" in the testing column, one for "New Background" in the deploy column, and one for "Email Field" in the done column. Each callout box contains text explaining its status: "New Title" is on the qa branch, qa env.; "New Background" is on the staging branch, staging env.; and "Email Field" is on the main branch, production env.

Email Field Issue

Email Field #1

[Edit](#)[New issue](#)

✓ Closed Email Field #1

✓ 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 [Revert](#)

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

 Senior merged commit `8c246af` into `main` 15 minutes ago [Revert](#)

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

 Senior closed this as completed 12 minutes ago

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

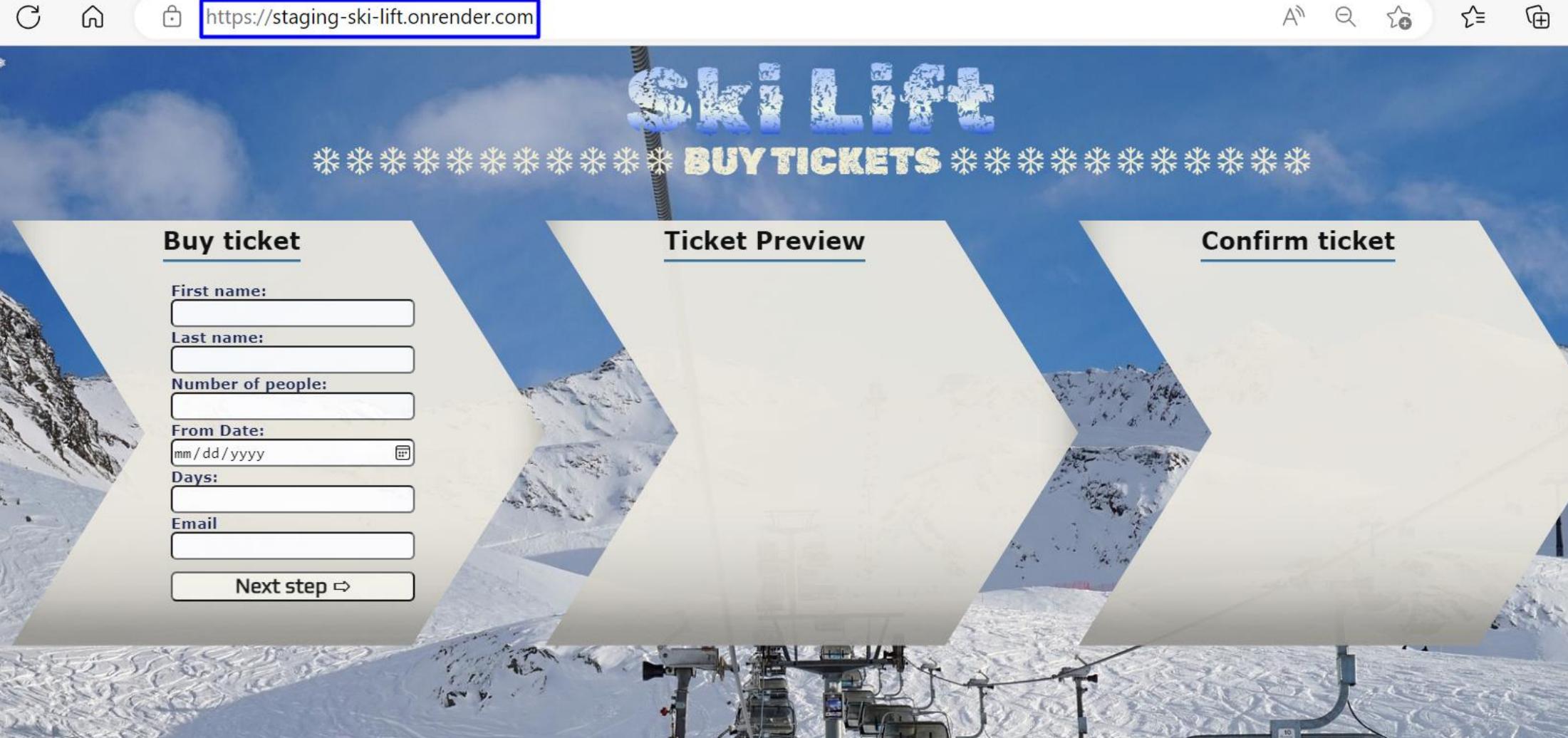
nssubscribe
ons because you're watching

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

Email Field Issue (2)

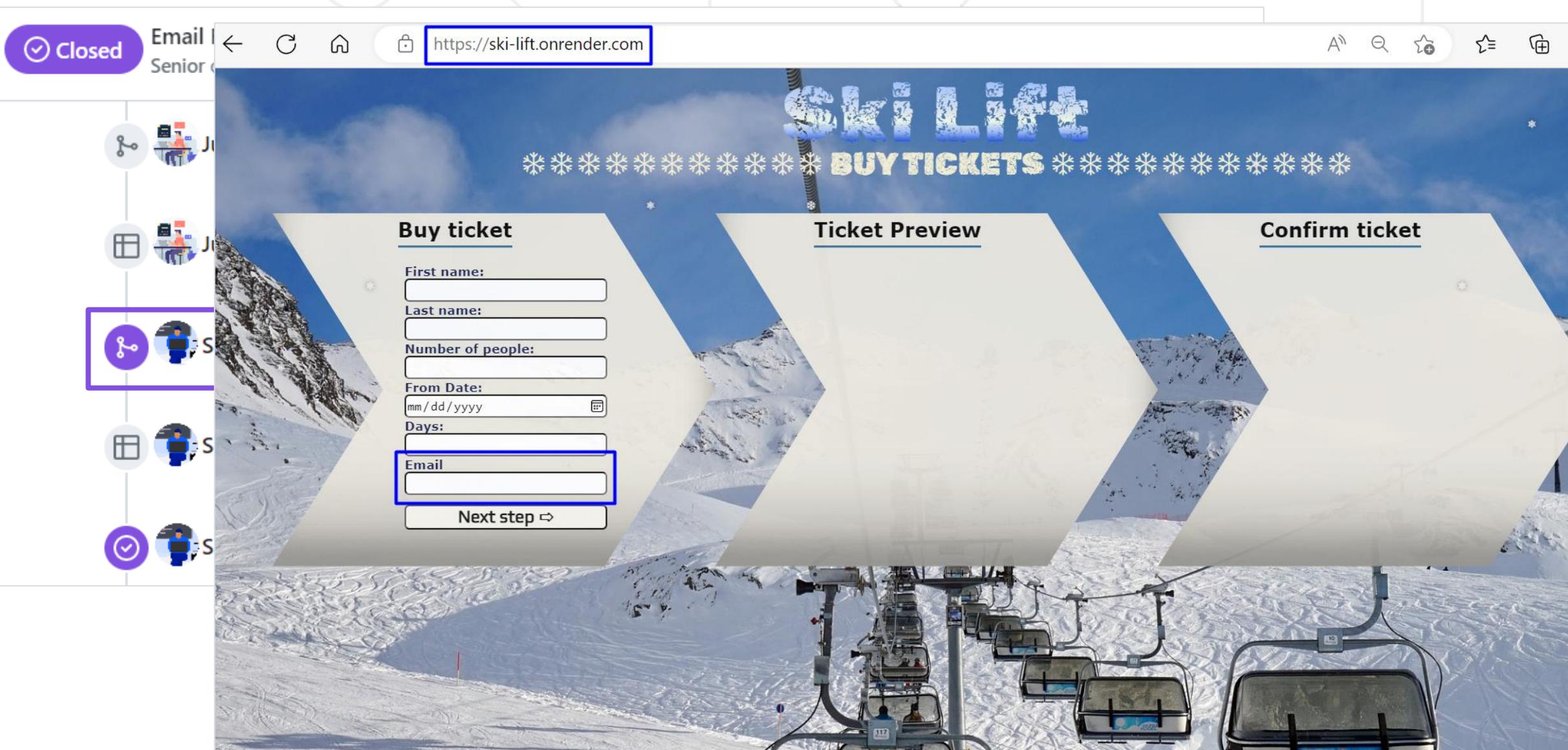
Email Field #1
Senior opened this issue 1 hours ago · 0 comments · Fixed by #2

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



The screenshot shows a user interface for buying ski lift tickets. The top navigation bar includes icons for refresh, home, and search, along with the URL <https://staging-ski-lift.onrender.com>. The main content area is divided into three large, light-gray chevron-shaped sections against a background of a snowy mountain landscape with a ski lift. The first section, 'Buy ticket', contains several input fields: 'First name:' (empty), 'Last name:' (empty), 'Number of people:' (empty), 'From Date:' (empty), 'Days:' (empty), 'Email' (empty), and a 'Next step ➡' button. The second section, 'Ticket Preview', and the third section, 'Confirm ticket', both have their respective titles at the top but contain no visible content.

Email Field Issue (3)



New Background Issue

New Background #2

 Open 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

 Qa added the [QA Verified](#) label 12 minutes ago

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

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

a1518c2 a5b658f

[Edit](#) [New issue](#)

Notifications [Unsubscribe](#)
You're receiving notifications because you're watching this repository.

Customize

3 participants 

 Lock conversation

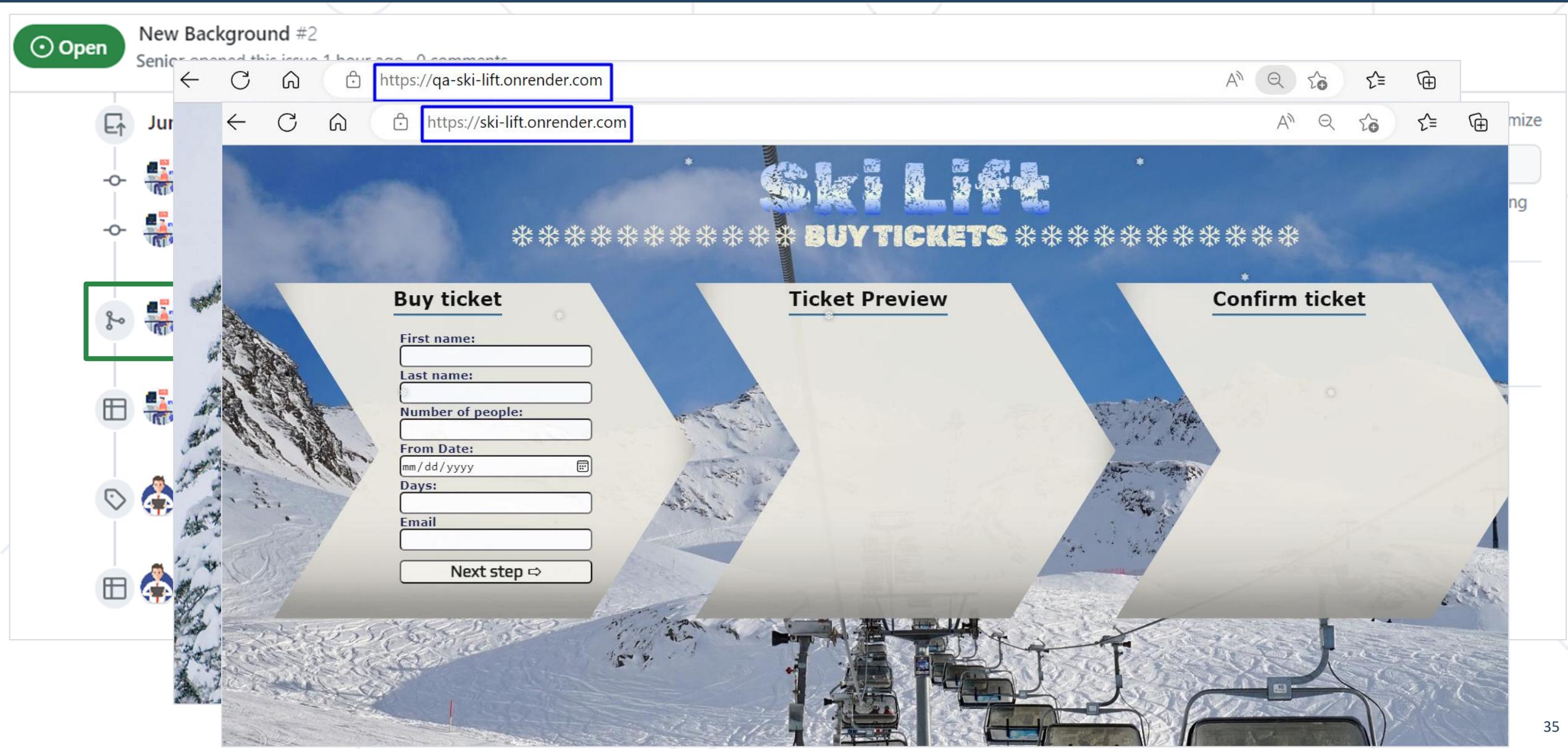
 Pin issue [i](#)

 Transfer issue

 Delete issue

 Background image
[senior/Ski-Lift-Demo-Practice](#)

New Background Issue (2)



New Title Issue



New Title #3



Senior opened this issue 1 hours ago · 0 comments

[Edit](#)[New issue](#)

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



Senior linked a pull request 1 hour ago that will close this issue

New title#4

[Open](#)

Senior moved this from Pending to Sprint TODO in [Ski Lift](#) 1 hours ago

Notifications

Customize

[Unsubscribe](#)

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

3 participants

[Lock conversation](#)

Development



Successfully merging a pull request may close this issue.

[new-title](#)

senior/Ski-Lift-Demo-Practice

[New Title](#)

senior/Ski-Lift-Demo-Practice

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?



SoftUni



Software
University



SoftUni
Creative



SoftUni
Digital



SoftUni
Foundation



SoftUni
Kids



Finance
Academy

SoftUni Diamond Partners



**SUPER
HOSTING
.BG**

INDEAVR
Serving the high achievers

 **SOFTWARE
GROUP**

 **BOSCH**



**Coca-Cola HBC
Bulgaria**

 **AMBITIONED**

createX

 **DXC
TECHNOLOGY**

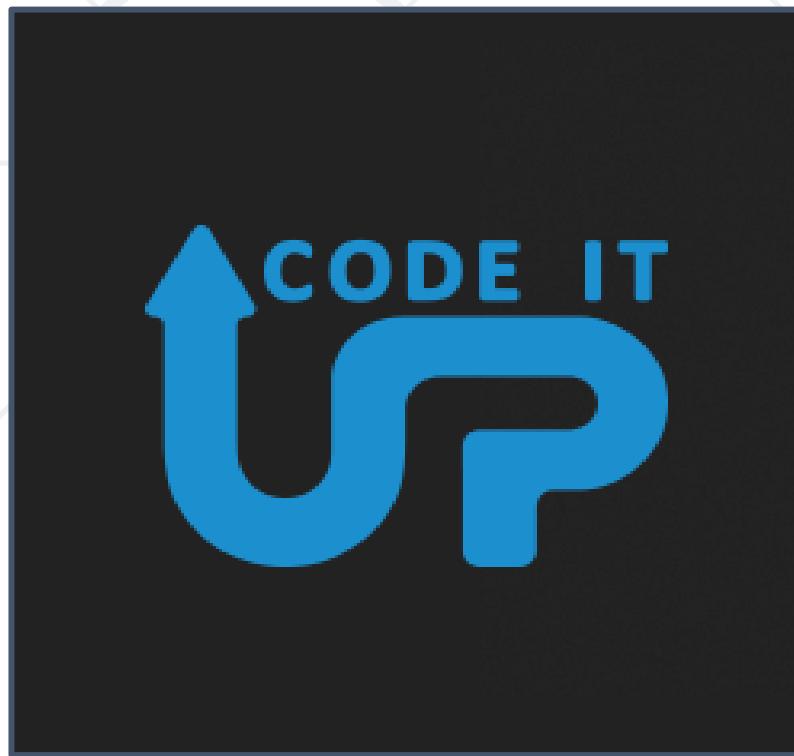
 **POKERSTARS**
POKER | CASINO | SPORTS
a Flutter International brand

 **DRAFT
KINGS**

 **Postbank**
Решения за твоето утре

 **SmartIT**

Educational Partners



- This course (slides, examples, demos, exercises, homework, documents, videos and other assets) is **copyrighted content**
- Unauthorized copy, reproduction or use is illegal
- © SoftUni – <https://about.softuni.bg/>
- © Software University – <https://softuni.bg>



Trainings @ Software University (SoftUni)



- Software University – High-Quality Education, Profession and Job for Software Developers
 - softuni.bg, about.softuni.bg
- Software University Foundation
 - softuni.foundation
- Software University @ Facebook
 - facebook.com/SoftwareUniversity
- Software University Forums
 - forum.softuni.bg



Software
University

