

Software V&V  
CTIP 환경



Team 8

김하림  
신윤섭  
이승민  
정인욱

# Contents

1. Selection Criteria
2. Code Configuration Management
3. CI
4. Requirements Management & Bug Tracking
5. Team Communication
6. Unit Testing
7. Automatic Build
8. IDE
9. Overview

# Selection Criteria

1. 사용해 본 팀원이 있는가?
2. 진입장벽이 낮은가?
3. 레퍼런스가 많은가?
4. 다른 도구들과 연동이 쉬운가?
5. 무료로 사용할 수 있는가?

# Code Configuration Management

- Git, GitHub



## Git, Github 선정이유

- 팀원들이 가장 익숙한 도구
- 깃 호스팅 서비스 중 가장 큰 생태계
- 대학생 프로 계정 무료 이용 가능

# CI/CD



# CI/CD

- Github Actions



## Github Actions 선정 이유

- 러닝커브가 낮음
- Github과 연동성/접근성이 매우 좋음
- 팀원 중에 익숙한 사람이 있음
- 간편한 인증으로 Github API에 액세스 가능
- Linux, Windows, macOS 지원

# CI/CD

- Github Actions



## 아쉬운 점

- 시각화 관련 플러그인 미숙
- 컨테이너 기반이어서 로그 확인이 어려움
- CI 과정에서 만들어지는 리포트를 바로 확인하기가 까다로움

# CI/CD

- Github Actions



## 해결방법

- 시각화 관련 플러그인 미숙
- 컨테이너 기반이어서 로그 확인이 어려움
- CI 과정에서 만들어지는 리포트를 바로 확인하기가 까다로움
  
- Github Pages 연동



# CI/CD

- Usage: Pull Request Open

The screenshot shows a GitHub Pull Request (PR) interface for 'PR Test #16'. The PR is open and shows a merge of 2 commits from the 'dev' branch into the 'main' branch by user 'sys09270883'. The interface includes a sidebar with repository navigation, a main content area with deployment status, check runs, and merge instructions, and a right sidebar with settings for labels, projects, milestones, linked issues, and notifications. The bottom of the screen shows a Windows taskbar with various application icons and a system tray with the date and time (2021-04-02, 2:16 PM).

**PR Test #16**  
sys09270883 wants to merge 2 commits into `main` from `dev`

Open

✓ f983297  
● fcd465f

Add more commits by pushing to the `dev` branch on `sys09270883/ctip`.

**This branch has not been deployed**  
No deployments

**Some checks haven't completed yet**  
2 in progress checks

- Java CI/CD with Gradle / Build & Test (pull\_request) In progress — This check has started... **Required** [Details](#)
- Java CI/CD with Gradle / Static Analysis (pull\_request) In progress — This check has started... [Details](#)

**Required statuses must pass before merging**  
All required [statuses](#) and check runs on this pull request must run successfully to enable automatic merging.

As an administrator, you may still merge this pull request.

**Merge pull request** You can also open this in [GitHub Desktop](#) or view [command line instructions](#).

Labels: None yet

Projects: None yet

Milestone: No milestone

Linked issues: Successfully merging this pull request may close these issues. None yet

Notifications: [Unsubscribe](#) [Customize](#)

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

1 participant

Write Preview H B I `≡` `<>` `🔗` `☰` `☰` `☑` `@` `🔗` `↶`

Lock conversation

오후 2:16  
2021-04-02

# CI/CD

- Usage: Pull Request Open

The screenshot displays a GitHub Pull Request (PR) titled "PR Test #16" which is currently "Open". The PR is intended to merge 2 commits from the "dev" branch into the "main" branch. A comment from the "sonarcloud" bot, posted 28 seconds ago, reports that the "Kudos, SonarCloud Quality Gate passed!". The quality gate results are as follows:

- 0 Bugs
- 0 Vulnerabilities
- 0 Security Hotspots
- 0 Code Smells
- 0.0% Coverage
- 0.0% Duplication

Below the comment, a message states: "Add more commits by pushing to the dev branch on sys09270883/ctip." A warning box indicates "This branch has not been deployed" with "No deployments". A green checkmark icon is followed by the message "All checks have passed" (5 successful checks) and a link to "Show all checks". Another green checkmark icon is followed by "This branch has no conflicts with the base branch" (Merging can be performed automatically). At the bottom, there is a "Merge pull request" button and a note: "You can also open this in GitHub Desktop or view command line instructions." The right sidebar contains sections for "Projects" (None yet), "Milestone" (No milestone), "Linked issues" (Successfully merging this pull request may close these issues), "Notifications" (Unsubscribe button), and "1 participant". The system tray at the bottom shows the date and time as "2021-04-02 2:18".

# CI/CD

- Usage: Pull Request Open

The screenshot displays a GitHub Pull Request (PR) interface. At the top, it indicates the PR is 'Open' and titled 'PR Test #16'. A message states 'sys09270883 wants to merge 2 commits into main from dev'. Below this, a note suggests 'Add more commits by pushing to the dev branch on sys09270883/cip'. The main content area shows a status bar with a green checkmark and the text 'All checks have passed' (5 successful checks). Below this, a list of CI/CD checks is shown, all with green checkmarks: 'Java CI/CD with Gradle / Build & Test (pull\_request)' (Successful in 32s, Required), 'Java CI/CD with Gradle / Static Analysis (pull\_request)' (Successful in 1m), 'Java CI/CD with Gradle / JUnit Test Report (pull\_request)' (5 tests run, 0 skipped, 0 failed), 'Java CI/CD with Gradle / Lint (pull\_request)' (reviewdog [Lint] report), and 'SonarCloud Code Analysis' (Successful in 10s — Quality Gate passed). A final green checkmark indicates 'This branch has no conflicts with the base branch'. A 'Merge pull request' button is visible. The right sidebar contains 'Notifications' (Unsubscribe), '1 participant', and 'Lock conversation'. The bottom of the screen shows a comment input area with a 'Write' button and a rich text editor toolbar. The Windows taskbar is visible at the very bottom.

# CI/CD

- Usage: Pull Request Open

The screenshot displays a GitHub Actions workflow run for a pull request. The workflow is titled "PR Test Java CI/CD with Gradle #108" and is in a "Success" state. It was triggered by a pull request from user "sys09270883" on the "dev" branch, opened 4 minutes ago. The total duration of the run is 1m 37s, and it produced 1 artifact.

The workflow file, `workflow.yml`, is shown with the following configuration:

```
on: pull_request
```

The workflow consists of two jobs:

- Build & Test**: Duration 32s
- Static Analysis**: Duration 1m 23s

The **Artifacts** section shows a single artifact named `ctip-app` with a size of 1.97 KB.

At the bottom of the interface, there is a "Re-run jobs" button and a menu icon. The Windows taskbar at the bottom shows the system time as 2:19 PM on 2021-04-02.

# CI/CD

- Usage: Pull Request Open

The screenshot shows the GitHub Actions interface for a Pull Request. The repository is `sys09270883 / ctip`. The workflow is `PR Test Java CI/CD with Gradle #108`, which has succeeded 5 minutes ago. The workflow consists of several jobs: `Build & Test`, `Static Analysis`, `JUnit Test Report`, and `Lint`. The `Lint` job is currently selected, showing a `reviewdog [Lint] report` with 1 filtered finding: `src/main/java/core/Main.java[9] Missing a Javadoc comment.`

Search or jump to... [7] Pull requests Issues Marketplace Explore

sys09270883 / ctip Unwatch 1 Star 4 Fork 0

<> Code Issues Pull requests 1 Actions Projects Wiki Security Insights Settings

PR Test Java CI/CD with Gradle #108 Re-run jobs ...

Summary

GitHub Actions / Lint  
succeeded 5 minutes ago in 0s

Jobs

- Build & Test
- Static Analysis
- JUnit Test Report
- Lint

reviewdog [Lint] report

reported by reviewdog

Findings (0)

Filtered Findings (1)

src/main/java/core/Main.java[9] Missing a Javadoc comment.

View more details on GitHub Actions

오류 2/2  
2021-04-02

# CI/CD

- Usage: Pull Request Open

```
1 package core;
2
3 import javax.swing.JFrame;
4 import javax.swing.JLabel;
5 import javax.swing.SwingConstants;
6
7 public class Main {
8
9     public static void main(String[] args) {
10         JFrame frame = new JFrame("CTIP");
11         frame.setSize(600, 300);
12         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
13         frame.setVisible(true);
14         JLabel label = new JLabel("Hello world!", SwingConstants.CENTER);
15         frame.getContentPane().add(label);
16     }
17
18 }
```

© 2021 GitHub, Inc. Terms Privacy Security Status Docs Contact GitHub Pricing API Training Blog About

2021-04-02 22:22

# CI/CD

- Usage: Pull Request Open

The screenshot displays a GitHub Pull Request (PR) titled "PR Test #16" by user sys09270883. The PR is open and shows 4 commits to be merged from the dev branch into the main branch. The interface includes a summary of CI/CD checks, a list of participants, and a merge button.

**PR Summary:**

- PR Test #16
- sys09270883 wants to merge 4 commits into main from dev
- 0.0% Coverage
- 0.0% Duplication

**Commits:**

- Fix javadoc (80d2729)

**Deployment Status:**

- This branch has not been deployed
- No deployments

**Checks:**

- Some checks haven't completed yet (2 in progress checks)
- Hide all checks
- Java CI/CD with Gradle / Build & Test (pull\_request) In progress — This check has started... (Required) Details
- Java CI/CD with Gradle / Static Analysis (pull\_request) In progress — This check has started... Details

**Required statuses must pass before merging**

All required statuses and check runs on this pull request must run successfully to enable automatic merging.

**As an administrator, you may still merge this pull request.**

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

**Participants:**

- 1 participant

**Notifications:**

- None yet
- Notifications Customize
- Unsubscribe
- You're receiving notifications because you're watching this repository.

**Actions:**

- Lock conversation

The screenshot also shows a Windows taskbar at the bottom with the system clock set to 2:28 on 2021-04-02.

# CI/CD

- Usage: Pull Request Open

The screenshot shows the GitHub Actions interface for a Pull Request. At the top, the repository is identified as 'sys09270883 / ctip'. The 'Actions' tab is selected, showing a workflow run titled 'PR Test Java CI/CD with Gradle #110' which has succeeded. A sidebar on the left lists the workflow jobs: 'Build & Test', 'Static Analysis', 'JUnit Test Report', and 'Lint', with 'Lint' currently selected. The main content area displays the 'reviewdog [Lint] report' from 'GitHub Actions / Lint', which succeeded 28 seconds ago. It reports 0 findings and 0 filtered findings. The Windows taskbar at the bottom shows the system time as 2:29 on 2021-04-02.



# CI/CD

## - Github Pages: Unit Test Result

The screenshot displays a web browser window showing a 'Test Summary' page. The page features a summary card with the following statistics: 5 tests, 0 failures, 0 ignored, and a duration of 0.006s. A large green box indicates a 100% successful test rate. Below the summary, there are two tabs: 'Packages' (selected) and 'Classes'. A table lists the test results for the 'core' package, showing 5 tests, 0 failures, 0 ignored, a duration of 0.006s, and a success rate of 100%. At the bottom, it states 'Generated by Gradle 6.8.3 at Apr 1, 2021 5:37:52 AM'.

### Test Summary

5	0	0	0.006s	100% successful
tests	failures	ignored	duration	

Packages Classes

Package	Tests	Failures	Ignored	Duration	Success rate
<a href="#">core</a>	5	0	0	0.006s	100%

Generated by [Gradle 6.8.3](#) at Apr 1, 2021 5:37:52 AM

# CI/CD

- Github Pages: Code Coverage Results

JavaCTIP

## JavaCTIP

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed Cxty	Missed Lines	Missed Methods	Missed Classes
core	<div style="width: 100%;"></div>	100%	n/a	n/a	0 5	0 5	0 5	0 1
Total	0 of 31	100%	0 of 0	n/a	0 5	0 5	0 5	0 1

Created with JaCoCo 0.8.6.202009150832

# Requirements Management & Bug Tracking



**REDMINE**

flexible project management

# Requirements Management & Bug Tracking

- Jira



## Jira 선정 이유

- Planning, Tracking, Release, Report 기능
- 스크럼 보드로 스프린트 단위 작업 가능
- 이슈를 생성하고 관리 가능
- 이슈 생성 시 필수 내용을 기입 보장
- 커뮤니케이션 도구(Slack)와 연동 쉬움

# Team Communication



# Team Communication

- Slack



## Slack 선정 이유

- 인터페이스가 직관적
- 다른 앱들과의 편리한 연동
- 용도 별로 채널을 분류하여 사용 가능

# Unit Testing

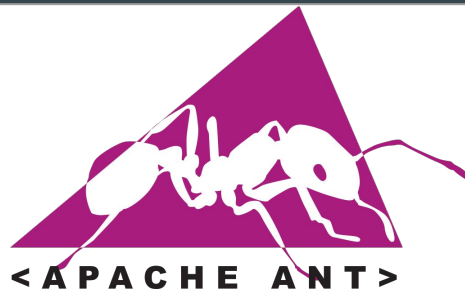
- JUnit

The logo for JUnit, featuring the letter 'J' in green and 'Unit' in red, all in a serif font.

## JUnit 선정 이유

- Gradle과 연동이 쉬움
- 주요 IDE에서 Test 코드를 쉽게 작성 가능함
- Unit Test 결과를 직관적인 UI로 제공함
- 관련 레퍼런스가 많음
- 팀원들이 익숙함

# Automatic Build

The logo for Apache Maven, featuring the word "Maven" in a bold, black, italicized sans-serif font. The letter "v" is replaced by a colorful feather icon with a gradient from purple to orange.



# Automatic Build

- Gradle



## Gradle 선정 이유

- 선택한 IDE(IntelliJ)와의 호환성이 좋음
- Maven, Ant보다 속도가 빠름
- 친절한 레퍼런스
- 코드를 보다 간결하게 작성 가능

# IDE

- IntelliJ



## IntelliJ 선정 이유

- 자동완성, 소스코드 분석, 지능형 리팩토링, 디버거 등의 기능이 우수
- Git 연동 편리
- 상대적으로 가벼움
- 안정적이고 설치하기 쉬운 플러그인

# Overview

## Development & Version Control



git



## CI/CD



GitHub Pages



GitHub Actions

JUnit



Gradle



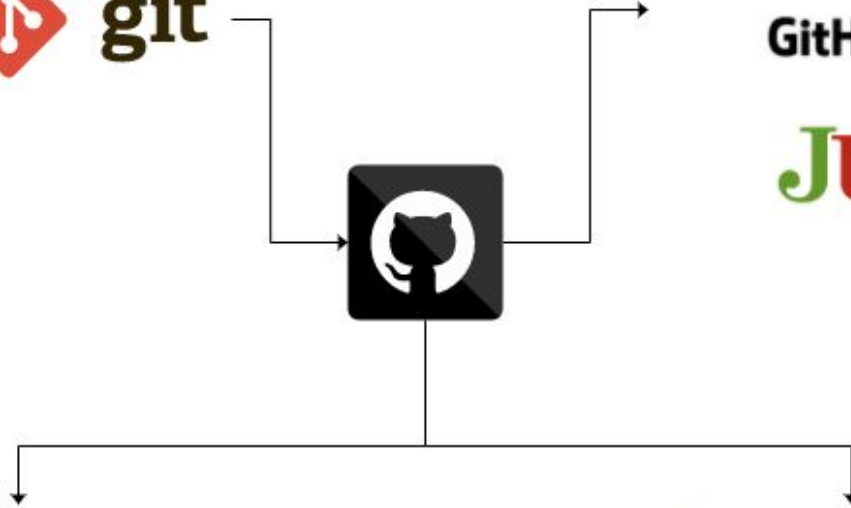
slack

Communication



Jira Software

Requirements Management



THANK YOU

