

CTIP 환경 구축 (1)

T6

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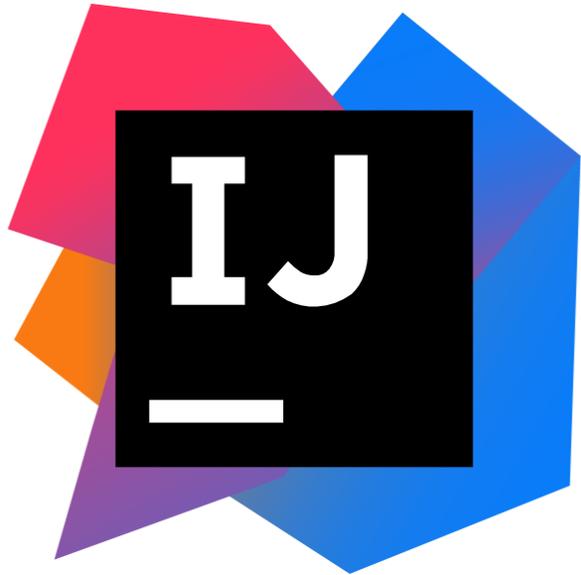
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01 IDE IntelliJ



 eclipse 보다 안정적인 플러그인 제공



코드의 자동완성 기능

02 Automatic Build Gradle



Update된 Task를 체크해 Incremental Build
→ Build 시간 단축



플러그인 추가와 같은 Customizing이 간편

03 Unit Testing JUnit5



다양한 검증 함수 지원

→ Test 메소드를 통한 독립적인 테스트

→ Assert 메소드를 통한 간결한 결과 판단



테스팅 결과가 설정한 커버리지를 만족하는지
확인 가능

OOADProject > src > test > MainTest

Coverage: test.exec

0% classes, 0% lines covered in 'all classes in scope'

Element	Class, %	Method, %	Line, %	Branch, %
Main	0% (0/1)	0% (0/11)	0% (0/27)	100% (0...

```
class MainTest {  
    @Test  
    void getName()  
    }  
  
    @Test  
    void getAge()  
    }  
  
    @Test  
    void getTall()  
    }  
}
```

Run: MainTest

Tests passed: 7 of 7 tests – 33 ms

Test Results

- MainTest (33 ms)
 - printlnInfo() (24 ms)
 - getAge() (2 ms)
 - setAge() (2 ms)
 - getName() (1 ms)
 - getTall() (1 ms)
 - setName() (1 ms)
 - setTall() (2 ms)

Process finished with exit code 0

IntelliJ Gradle Build
JUnit Testing
Jacoco Coverage

04 Configuration Management **Git**

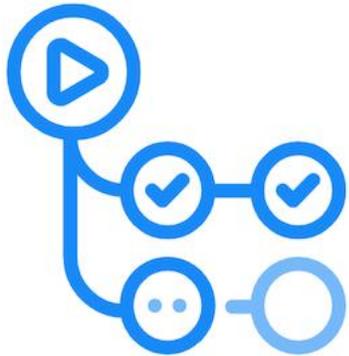


개발자와 서버 저장소의 독립성

→ Git을 통해 각 개발자의 버전관리 용이

→ GitHub를 통한 코드 공유로 공동 작업 용이

05 CI GitHub Actions



GitHub Actions



Jenkins 에 비해 느린 Build



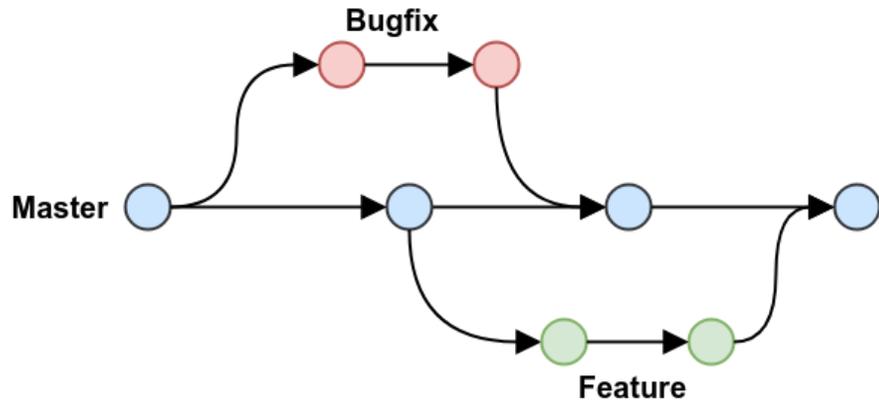
GitHub에서 바로 확인 가능



Marketplace에 배포된

Junit, Sonarqube, Jira 등의 Actions를 통해
간편한 workflow(자동화 도구) 구축 가능

GitHub의 효과적 사용을 위해 Master[main]를 통해 push되는 작업에 대해서만 Build



workflow/_.yml 파일

```
on:  
  push:  
    branches: [main]  
  pull_request:  
    branches: [main]
```

The screenshot shows a GitHub repository interface. At the top, there are navigation links for Issues, Pull requests, Actions, Projects, Wiki, Security, and Insights. Below the repository name, there are buttons for 'Go to file', 'Add file', and 'Code'. The commit history shows a merge of the remote-tracking branch 'origin/main' with commit 73bd2d0, 9 minutes ago, and 46 commits in total. Below the commit history, there is a table listing files and their commit times:

File	Commit	Time
.github/workflows	try jacoco	13 minutes ago
.gradle	"Junit_set"	9 minutes ago
.idea	"Junit_set"	10 minutes ago
build	"Junit_set"	9 minutes ago
gradle/wrapper	edit gitignore	5 hours ago
src	"Junit_set"	10 minutes ago
.gitattributes	First Commit	7 hours ago
.gitignore	delete gitignore	5 hours ago
README.md	Create README.md	5 hours ago
build.gradle	"Junit_set"	10 minutes ago
gradlew	First Commit	7 hours ago
gradlew.bat	First Commit	7 hours ago
settings.gradle	First Commit	7 hours ago

Below the file list, there is a section for the README.md file, which contains the text "OOADProiect".

✔ Merge remote-tracking branch 'origin/main' Java Testing #34

🏠 Summary

Jobs

✔ build_testing

✔ JUnit Test Report

build_testing

succeeded 3 minutes ago in 2m 42s

- > ✔ Set up job
- > ✔ Run actions/checkout@v2
- > ✔ Set up openJDK 11
- > ✔ Grant execute permission for gradlew
- > ✔ Build with Gradle
- > ✔ Unit Test
- > ✔ Publish Test Report
- > ✔ Slack Alarm
- > ✔ Post Set up openJDK 11
- > ✔ Post Run actions/checkout@v2
- > ✔ Complete job

Build with Gradle
Succeed

JUnit Test Report

Test All Pass

✓ Merge remote-tracking branch 'origin/main' Java Testing #34

Summary

GitHub Actions / JUnit Test Report
succeeded 4 minutes ago in 0s

Jobs

✓ build_testing

✓ JUnit Test Report

7 tests run, 0 skipped, 0 failed.

View more details on GitHub Actions

5 tests run, 0 skipped, 2 failed.

ANNOTATIONS

✗ Check failure on line 19 in src/test/java/IntCalculatorTest.java

github-actions / JUnit Test Report

IntCalculatorTest.testSum

java.lang.AssertionError: expected:<4> but was:<8>

Raw output

✗ Check failure on line 37 in src/test/java/IntCalculatorTest.java

github-actions / JUnit Test Report

IntCalculatorTest.testDivision

java.lang.AssertionError: expected:<4> but was:<3>

Raw output

View more details on GitHub Actions

Test Fail

```
21 21      }
22 22      @Test
23 23      @@ -34,7 +34,7 @@ public void testProduct() {
34 34      @Test
35 35      public void testDivision() {
36 36          int result = calculator.divide(9, 3);
37 37      - Assert.assertEquals(3, result);
37 37      + Assert.assertEquals(4, result);

```

✗ Check failure on line 37 in src/test/java/IntCalculatorTest.java

GitHub Actions / JUnit Test Report

IntCalculatorTest.testDivision

java.lang.AssertionError: expected:<4> but was:<3>

Raw output

06 Team Communication Slack



채널 분리를 통한 개발팀과의 의사소통 구분 가능



검증팀이 많이 사용해본 도구



원하는 정보만 알림으로 받아볼 수 있음



@ 멘션 및 반응

더 보기

채널

개발팀

검증팀

일반

builds

+ 채널 추가

▶ 다이렉트 메시지

▶ 앱

incoming-webhook 오후 11:57
Failed GitHub Actions

어제

8398a7@action-slack

repo
plat67/OOADProject

commit
683e09cb

action
action

took
26 sec

ref
refs/heads/main

message
add unit test, slack
author
thanos73k<59728699+thanos73k@users.noreply.github.com>

job
build_testing

eventName
push

workflow
Java Testing

오늘

incoming-webhook 오전 12:00
Succeeded GitHub Actions

8398a7@action-slack

repo
plat67/OOADProject

commit
7f09733a

action
action

took
2 min 7 sec

ref
refs/heads/main

message
Update main.yml
author
union93<union93@konkuk.ac.kr>

job
build_testing

eventName
push

workflow
Java Testing

GitHub Actions
Build Succeed/Fail
Slack으로 알림

07 System Testing TestQuality



Test Plan과 Test Case 생성



Test 실행 시기와 결과, 담당자 관리



테스트 결과 모니터링, 보고서 모니터링 가능

08 Static Code Analysis SonarQube



Web Server를 통해 다양한 분석 결과 확인 용이
→Code Smell, Bug 등의 Issue
→Reliability, Security 등의 관점에서의 분석 결과 등



Marketplace를 통한 PMD, Checkstyle 연결 용이

08 Static Code Analysis PMD, Checkstyle, FindBugs



잠재적인 결함(미사용 변수, 중복 코드 등)을 분석



개발팀에게 협업에서의 코딩 스타일에 대한 분석 제공



속도가 빠르고 실제 결함일 수 있는 정확도가 높음

Sonarqube + PMD + Checkstyle

Repository

SonarQube Java	628
FindBugs Java	450
Checkstyle Java	357
FindBugs Contrib Java	307
PMD Java	268
Find Security Bugs Java	115
I18n Issues Analyzer Repository Java	17
PMD Unit Tests Java	17
Common Java Java	6

The screenshot shows the SonarQube interface with the 'Issues' tab selected. The top navigation bar includes 'sonarqube', 'Projects', 'Issues', 'Rules', 'Quality Profiles', 'Quality Gates', and 'Administration'. A search bar is visible in the top right corner. The main content area displays a list of issues for the project 'OOADProject' in the file 'src/main/java/Main.java'. The issues are categorized as 'Code Smell' and include details such as severity (Minor, Major), status (Open), and effort (10min, 5min). The left sidebar shows filters for 'Type' (Bug, Vulnerability, Code Smell) and 'Severity' (Blocker, Critical, Major, Minor, Info). The right sidebar shows filters for 'Scope', 'Resolution', 'Status', 'Security Category', 'Creation Date', 'Language', 'Rule', 'Tag', 'Project', 'Assignee', and 'Author'. The bottom of the page shows a table of repositories, with the first three rows highlighted in red.

My Issues All

Bulk Change

↑ ↓ to select issues ← → to navigate 1 / 17 issues 2h 20min effort

OOADProject / src/main/java/Main.java

- Move this file to a named package. Why is this an issue? 5 hours ago Code Smell Minor Open Not assigned 10min effort convention
- Replace this use of System.out or System.err by a logger. Why is this an issue? 24 minutes ago Code Smell Major Open Not assigned 10min effort bad-practice, cert, owasp-a3
- Directly append the argument of String.valueOf(). Why is this an issue? 24 minutes ago Code Smell Minor Open Not assigned 5min effort clumsy
- Directly append the argument of String.valueOf(). Why is this an issue? 24 minutes ago Code Smell Minor Open Not assigned 5min effort clumsy

OOADProject / src/test/java/MainTest.java

- Add at least one assertion to this test case. Why is this an issue? 25 minutes ago Code Smell Blocker Open Not assigned 10min effort junit, tests
- Add at least one assertion to this test case. Why is this an issue? 25 minutes ago Code Smell Blocker Open Not assigned 10min effort junit, tests
- Add at least one assertion to this test case. Why is this an issue? 25 minutes ago Code Smell Blocker Open Not assigned 10min effort junit, tests
- Add at least one assertion to this test case. Why is this an issue? 25 minutes ago Code Smell Blocker Open Not assigned 10min effort junit, tests
- Add at least one assertion to this test case. Why is this an issue? 25 minutes ago Code Smell Blocker Open Not assigned 10min effort junit, tests

Filters

Type

- Bug 0
- Vulnerability 0
- Code Smell 17

Severity

- Blocker 7
- Critical 0
- Major 5
- Minor 5
- Info 0

Scope

Resolution

Status

Security Category

Creation Date

Language

Rule

Tag

Project

Assignee

Author

09 Plan - Issue Tracking Jira



OOAD에 적합(스프린트, 스크럼 별 이슈 관리)



Issue 관리에 대한 History를 통해 비슷한 Issue 발생 시의 처리 용이



담당자, 레이블 등에 대한 설정이 쉽고, 자동화를 통해 스프린트/스크럼 마다 편리한 Issue관리 가능

09 Overall

