

Software Verification

Introduction to Software Testing & Static Analysis

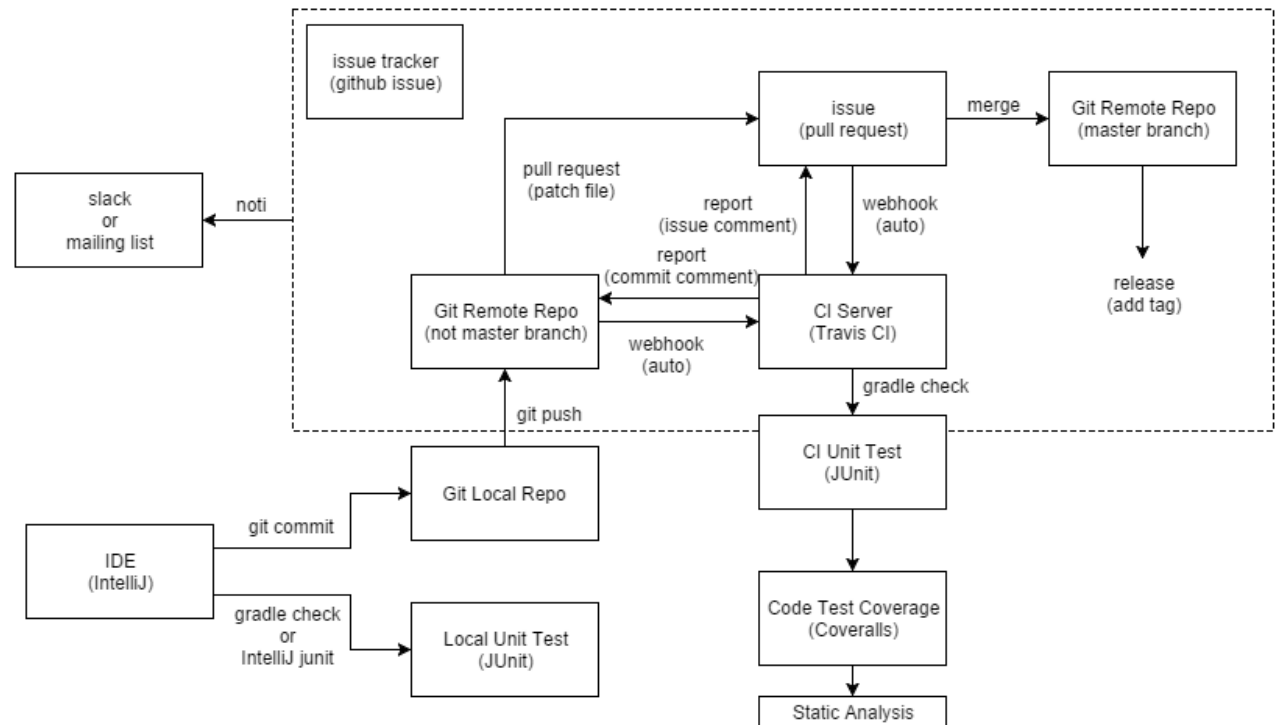
2조

이상혁

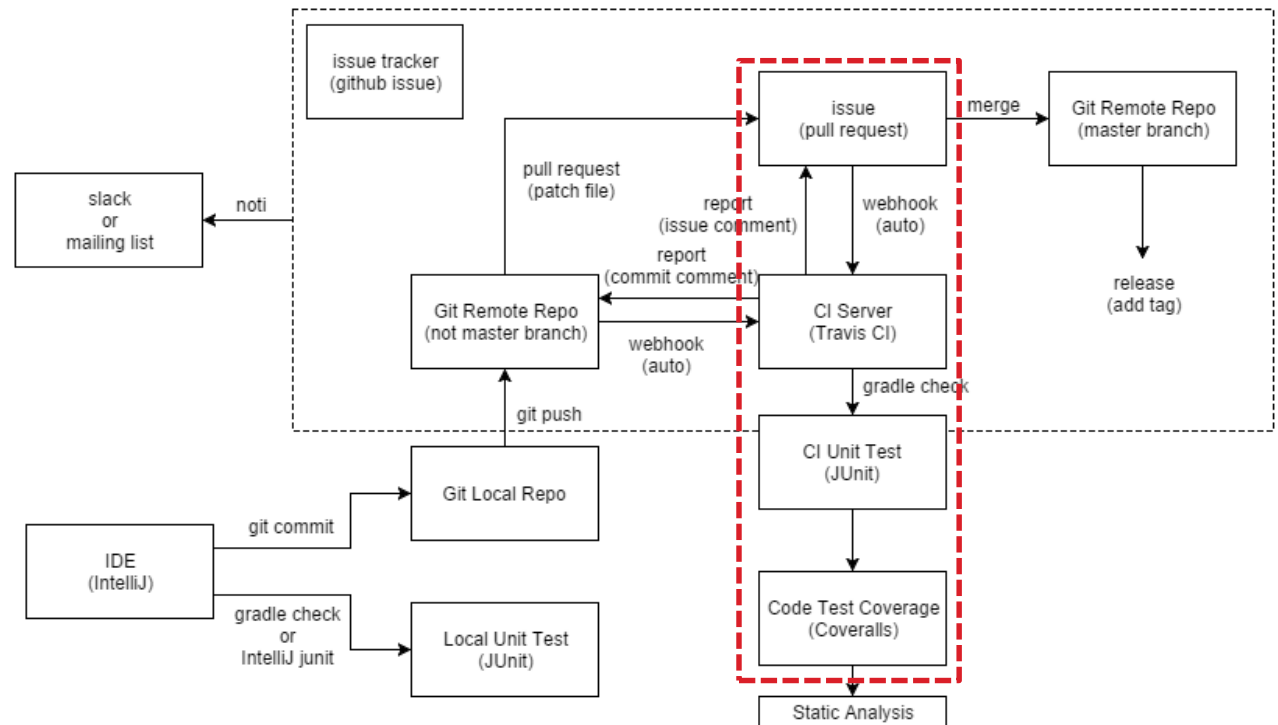
왕홍강

김태영

Overview



Overview

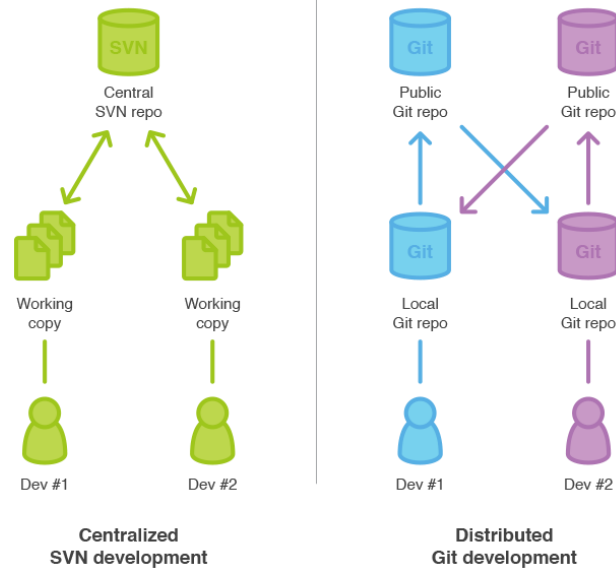


저번 발표에서 이번 내용까지 함께 발표하여 생략된 부분이 많습니다.



Git?

Git - 분산 버전 관리 시스템



Git Command

간단 사용법

<https://rogerdudler.github.io/git-guide/index.ko.html>

<https://marklodato.github.io/visual-git-guide/index-ko.html>

설치법 / 사용 예는 저번 시간에 간략히 진행하여 생략

init

commit

pull

push

merge

diff

checkout

branch

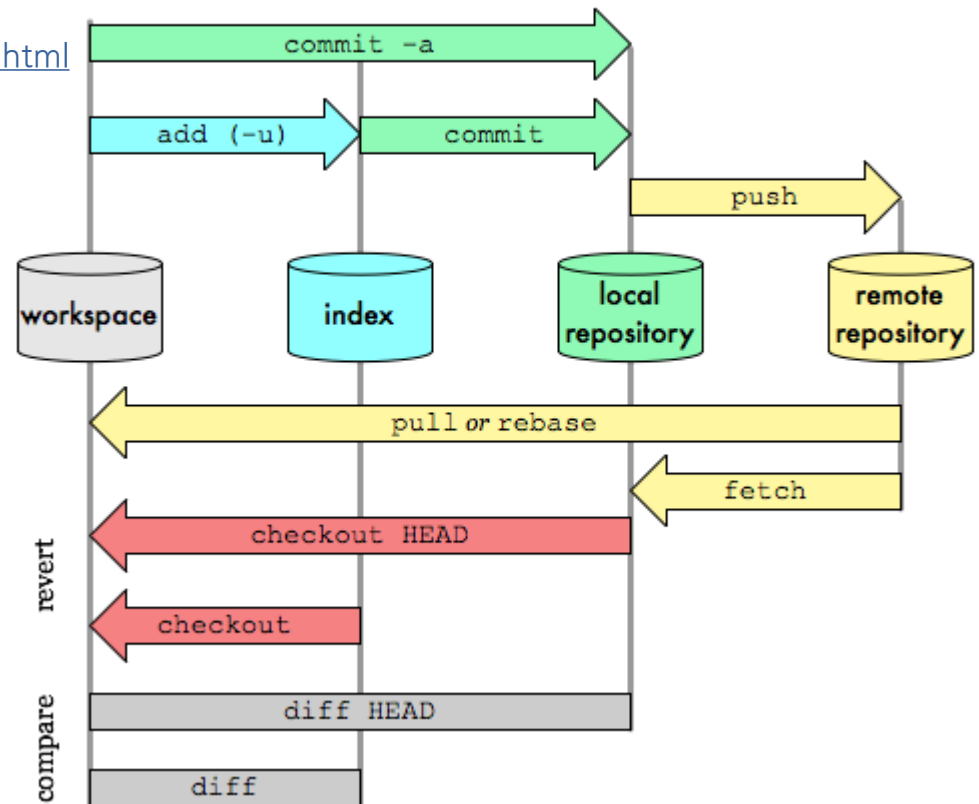
add / rm

reset

...

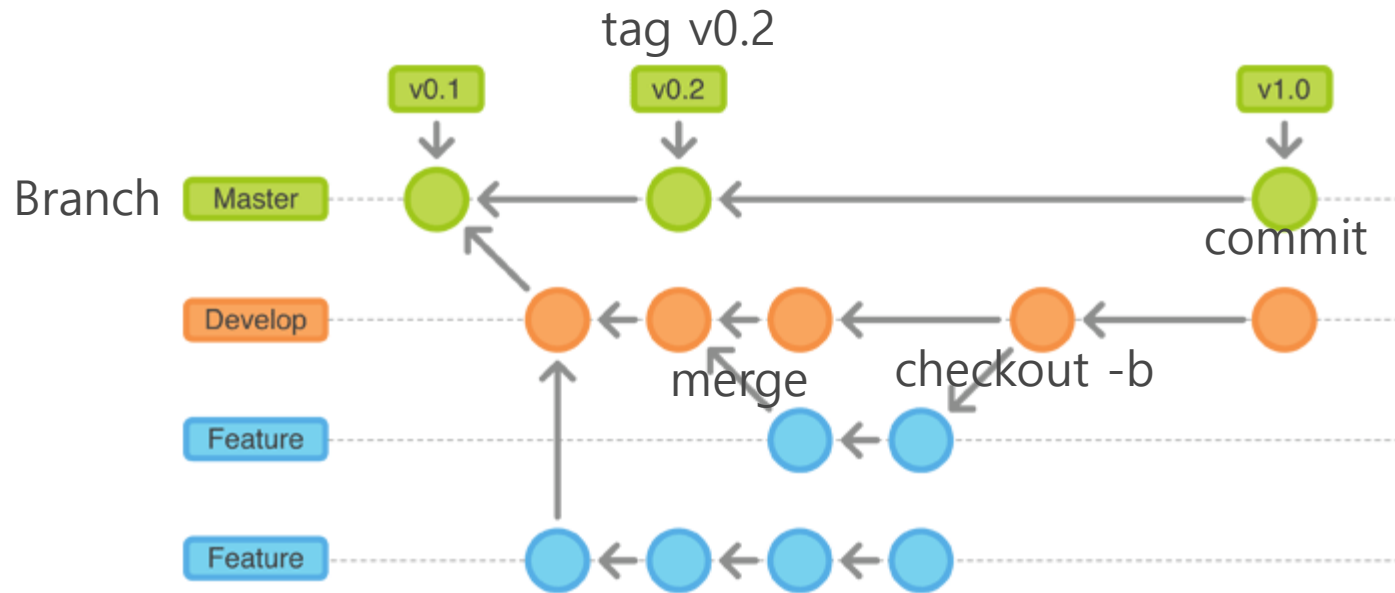
Git Data Transport Commands

<http://osteele.com>



Git Branch / Tag

SVN은 디렉토리로 branch, tag 등을 관리하였지만 git은 이를 시스템적으로 지원



Github?

Git을 호스팅 해주는 서비스로 수 많은 기업들과 오픈소스 개발자들에게 사랑을 받고 있음

shlee322 / **konkuk-dslab**

 Unwatch 1
 Star 0
 Fork 0

Code
Issues 0
Pull requests 0
Wiki
Pulse
Graphs
Settings

No description or website provided. — Edit

2 commits
1 branch
0 releases
1 contributor

Branch: future/...
New pull request
New file
Upload files
Find file
SSH
git@github.com:shlee322/konkuk-dslab
Download ZIP

shlee322 openjdk8 제거 Latest commit f96ff52 5 hours ago
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> build </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> gradle/wrapper </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> src </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> .travis.yml </div> <div style="text-align: center;">openjdk8 제거</div> <div style="text-align: right;">5 hours ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> build.gradle </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> gradlew </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> gradlew.bat </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="display: flex; align-items: center;"> settings.gradle </div> <div style="text-align: center;">dev echo system</div> <div style="text-align: right;">14 days ago</div> </div>

Github

Collaborator 추가

Settings 클릭

shlee322 / konkuk-dslab

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

No description or website provided. — Edit

2 commits 1 branch 0 releases 1 contributor

Branch: future/... New pull request New file Upload files Find file SSH git@github.com:shlee322/konl Download ZIP

shlee322	openjdk8 제거	Latest commit f96ff52 5 hours ago
build	dev.csh system	14 days ago

Github

Collaborator 추가

Settings 클릭 > Collaborators 클릭

The screenshot shows the GitHub repository settings page for 'shlee322 / konkuk-dslab'. At the top, there are buttons for 'Unwatch' (1), 'Star' (0), and 'Fork' (0). Below these are navigation tabs for 'Code', 'Issues' (0), 'Pull requests' (0), 'Wiki', 'Pulse', 'Graphs', and 'Settings' (which is highlighted with an orange border). On the left, a sidebar menu under 'Options' includes 'Collaborators' (with a red arrow pointing to it), 'Branches', 'Webhooks & services', and 'Deploy keys'. The main content area is divided into two sections: 'Settings' and 'Features'. The 'Settings' section contains a 'Repository name' field with the value 'konkuk-dslab' and a 'Rename' button. The 'Features' section is currently empty.

Github

Collaborator 추가

Settings 클릭 > Collaborators 클릭 > 사용자 아이디 입력 후 Add collaborator 클릭

The screenshot shows the GitHub repository settings page for 'shlee322 / konkuk-dslab'. The 'Collaborators' tab is selected, and the 'Add collaborator' button is highlighted with a red arrow. The search field contains the text 'thinktyk'.

shlee322 / konkuk-dslab

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

Options

Collaborators

Branches

Webhooks & services

Deploy keys

Collaborators Push access to the repository

This repository doesn't have any collaborators yet. Use the form below to add a collaborator.

Search by username, full name or email address

thinktyk Add collaborator

Github

Collaborator 추가

Settings 클릭 > Collaborators 클릭 > 사용자 아이디 입력 후 Add collaborator 클릭 > 확인

The screenshot shows the GitHub repository settings page for 'shlee322 / konkuk-dslab'. The page is divided into a top navigation bar, a left sidebar, and a main content area.

Top Navigation Bar: Displays the repository name 'shlee322 / konkuk-dslab' on the left. On the right, there are buttons for 'Unwatch' (1), 'Star' (0), and 'Fork' (0).

Left Sidebar: Contains a list of settings options: 'Options', 'Collaborators' (highlighted with an orange bar), 'Branches', 'Webhooks & services', and 'Deploy keys'.

Main Content Area: The 'Collaborators' section is active. It has a title 'Collaborators' and a subtitle 'Push access to the repository'. Below the title, there is a list of collaborators:

Avatar	Username	Action
	TaeYoung thinktyk	×
	whgxinsheng	×

Below the list, there is a search bar with the text 'Search by username, full name or email address' and an 'Add collaborator' button.

Github Issue Tracker

Github는 기본적으로 간편하게 사용할 수 있는 Issue Tracker를 제공하고 있음
소규모 프로젝트나 많은 오픈소스들이 사용 중 (ruby on rails 등)

rails / rails

Watch 2,204 Star 30,413 Fork 12,329

Code Issues 422 Pull requests 498 Pulse Graphs

Filters Labels Milestones [New issue](#)

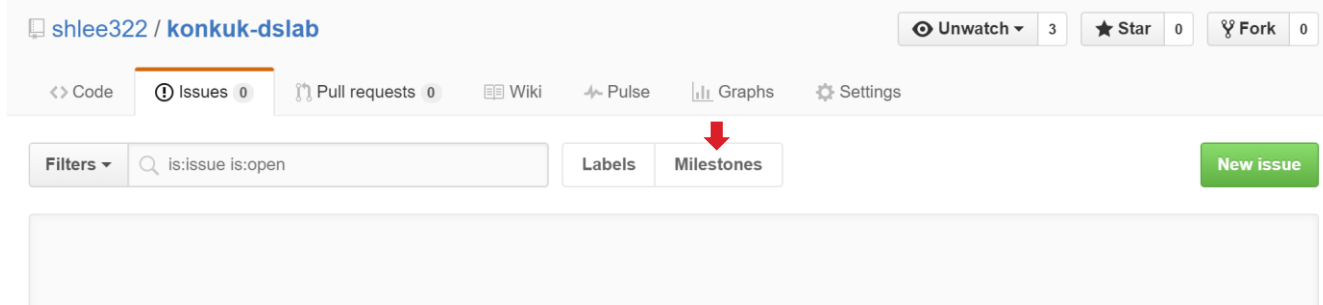
422 Open ✓ 8,079 Closed

Author	Labels	Milestones	Assignee	Sort
#24380 opened 28 minutes ago by justedd				0
#24378 opened 12 hours ago by rplaurindo	actionview			0
#24372 opened 17 hours ago by VladRassokhin	railties With reproduction steps			1
#24367 opened a day ago by francesco-loreti 5.0.0	activerecord needs feedback			8
#24364 opened a day ago by brandonpancost	activerecord			2
#24359 opened 2 days ago by glebm 5.0.0	activerecord			8
#24351 opened 2 days ago by tgxworld	activerecord With reproduction steps			1
#24348 opened 3 days ago by ZeroFries	actioncable docs			0

Github Issue Tracker

Milestones 생성

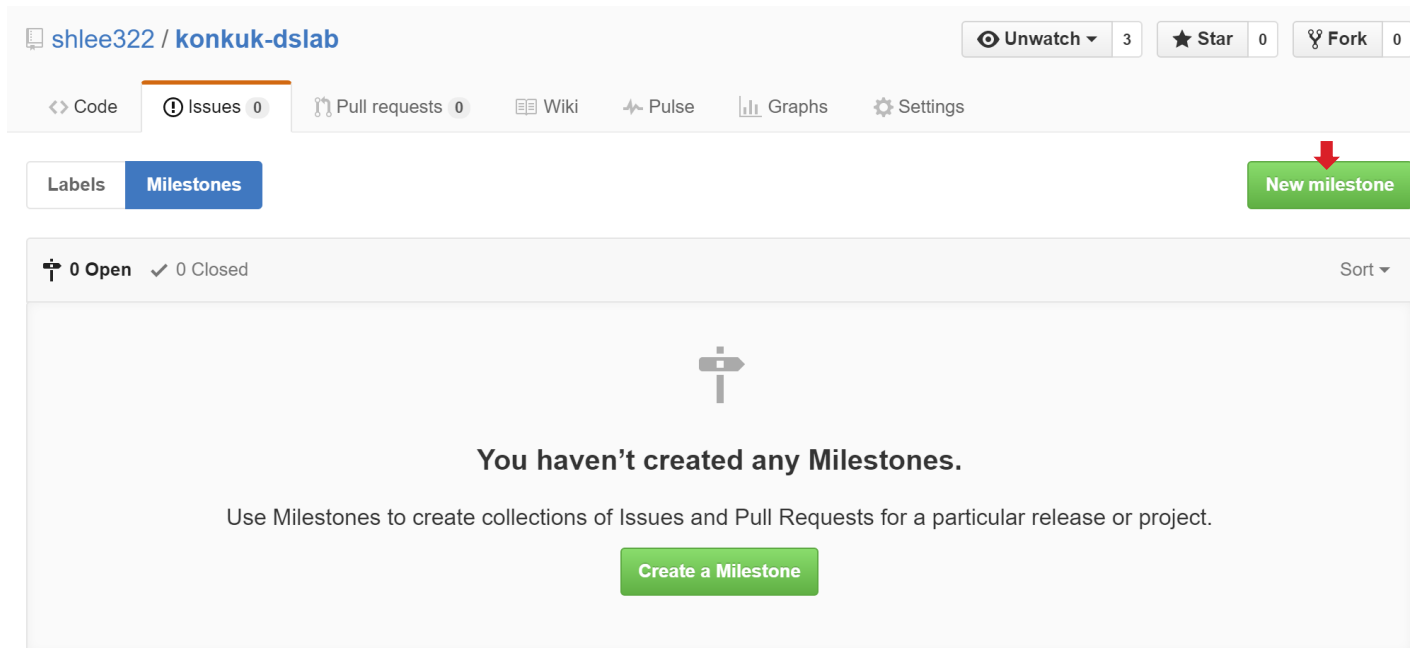
Repo Issues에서 Milestones 클릭 (이 프로젝트에서 Labels의 경우 기본 생성되어 있는 label을 사용함)



Github Issue Tracker

Milestones 생성

Repo Issues에서 Milestones 클릭 (이 프로젝트에서 Labels의 경우 기본 생성되어 있는 label을 사용함) > New milestone 클릭



shlee322 / konkuk-dslab

Unwatch 3 Star 0 Fork 0

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

Labels Milestones

New milestone

0 Open 0 Closed Sort

You haven't created any Milestones.

Use Milestones to create collections of Issues and Pull Requests for a particular release or project.

Create a Milestone

Github Issue Tracker

Milestones 생성

Repo Issues에서 Milestones 클릭 (이 프로젝트에서 Labels의 경우 기본 생성되어 있는 label을 사용함) > New milestone 클릭 > Title, Description, Due Date 설정 후 Create milestone 클릭

shlee322 / **konkuk-dslab** Unwatch 3 Star 0 Fork 0

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

New milestone

Create a new milestone to help organize your issues and pull requests. Learn more about [milestones and issues](#).

Title

Description

- 사칙연산 기능 구현

Due Date (optional) clear

May 2016

Mon	Tue	Wed	Thu	Fri	Sat	Sun
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

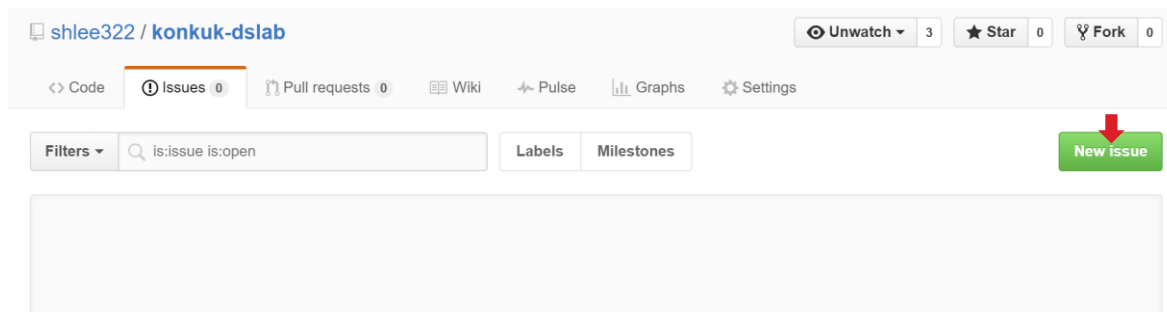
↓

Create milestone

Github Issue Tracker

Issue 생성

Repo Issues에서 New issue 클릭



Github Issue Tracker

Issue 생성

Repo Issues에서 New issue 클릭 > 각종 정보 입력 후 Submit new issue 클릭

shlee322 / konkuk-dslab

Unwatch 3 Star 0 Fork 0

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

사칙 연산 구현

Write Preview

덧셈, 뺄셈, 곱셈, 나눗셈을 구현하여야 합니다.

Attach files by dragging & dropping, selecting them, or pasting from the clipboard.

Styling with Markdown is supported

Submit new issue

Labels

Apply labels to this issue

Filter labels

- bug
- duplicate
- enhancement
- help wanted
- invalid
- question
- wontfix

Github Issue Tracker

Issue 생성

Repo Issues에서 New issue 클릭 > 각종 정보 입력 후 Submit new issue 클릭

The screenshot shows the GitHub interface for creating a new issue. At the top, the repository name is 'shlee322 / konkuk-dslab'. Below this are navigation tabs for Code, Issues (0), Pull requests (0), Wiki, Pulse, Graphs, and Settings. The 'Issues' tab is active. The issue title is '사칙 연산 구현'. The description is '덧셈, 뺄셈, 곱셈, 나눗셈을 구현하여야 합니다.' The 'Labels' section shows 'enhancement' selected. The 'Milestone' is 'v1.0.0'. The 'Assignee' is 'shlee322'. A red arrow points to the 'Submit new issue' button.

Github Issue Tracker

Issue 생성

Repo Issues에서 New issue 클릭 > 각종 정보 입력 후 Submit new issue 클릭 > 확인

The screenshot displays a GitHub repository page for 'shlee322 / konkuk-dslab'. The repository has 3 Unwatch, 0 Stars, and 0 Forks. The 'Issues' tab is active, showing a new issue titled '사칙 연산 구현 #1' (Arithmetic Implementation #1) created by shlee322. The issue is labeled 'enhancement' and assigned to shlee322. The issue description in Korean reads: '덧셈, 뺄셈, 곱셈, 나눗셈을 구현하여야 합니다.' (Implement addition, subtraction, multiplication, and division). The issue has 0 comments. The right sidebar shows the issue's metadata, including the 'enhancement' label, 'v1.0.0' milestone, and 'shlee322' as the assignee. The bottom section shows a comment input area with a 'Comment' button.

Github Issue Tracker

Issue Ref

아래와 같이 이슈들 사이에 레퍼런스를 걸 수 있음 (커밋 메시지에 #이슈번호를 입력하여 커밋 레퍼런스도 가능)

The screenshot shows a GitHub issue titled "덧셈 구현 #2" (Addition Implementation #2). The issue is in the "Open" state, opened by user "shlee322" a minute ago, with 0 comments. The issue content is "#1 중 덧셈 구현".

Activity log:

- shlee322 commented a minute ago: #1 중 덧셈 구현
- shlee322 added the **enhancement** label a minute ago
- shlee322 added this to the **v1.0.0** milestone a minute ago
- shlee322 referenced this issue just now
- openjdk8 제거 (commented by openjdk8)

Issue details on the right:

- Labels:** enhancement
- Milestone:** v1.0.0
- Assignee:** No one—assign yourself
- Notifications:** Unsubscribe (You're receiving notifications)

Github Issue Tracker

Issue Ref

아래와 같이 이슈들 사이에 레퍼런스를 걸 수 있음 (커밋 메시지에 #이슈번호를 입력하여 커밋 레퍼런스도 가능)

사칙 연산 구현 #1

Edit New issue

🔔 Open shlee322 opened this issue 5 minutes ago · 0 comments

shlee322 commented 5 minutes ago

Owner +😊 ✎

덧셈, 뺄셈, 곱셈, 나눗셈을 구현하여야 합니다.

shlee322 self-assigned this 5 minutes ago

shlee322 added the enhancement label 5 minutes ago

shlee322 added this to the v1.0.0 milestone 5 minutes ago

This was referenced 3 minutes ago

🔔 Open 덧셈 구현 #2
🔔 Open 뺄셈 구현 #3

Labels

enhancement

Milestone

v1.0.0

Assignee

shlee322

Notifications

🔔 Unsubscribe

You're receiving notifications because you authored the thread.

1 participant

Lock conversation

Write Preview

AA B i “ < > ↻ ☰ ☰ ☰ ↶ @ 🔖

Travis CI

CI Server

첫번째 발표에 모든 설정 방법을 설명하여 생략

shlee322 / konkuk-dslab  build passing

Current Branches Build History Pull Requests

More options 

✓ **future/echo** openjdk8 제거

 Commit f96ff52

 Compare 3811dac..f96ff52

 Sanghyuck Lee authored and committed







🟢 #2 passed 

🕒 Elapsed time 52 sec

🕒 Total time 2 min 8 sec

📅 about 5 hours ago

Build Jobs

✓ # 2.1	 </> JDK: oraclejdk7	 no environment variables set	🕒 36 sec
✓ # 2.2	 </> JDK: openjdk7	 no environment variables set	🕒 40 sec
✓ # 2.3	 </> JDK: oraclejdk8	 no environment variables set	🕒 52 sec

Coveralls

Coveralls?

테스팅 결과를 토대로 테스트 된 Testing Coverage등을 확인할 수 있는 서비스

FACEBOOK / REACT 89%

BRANCH: MASTER GITHUB REPO

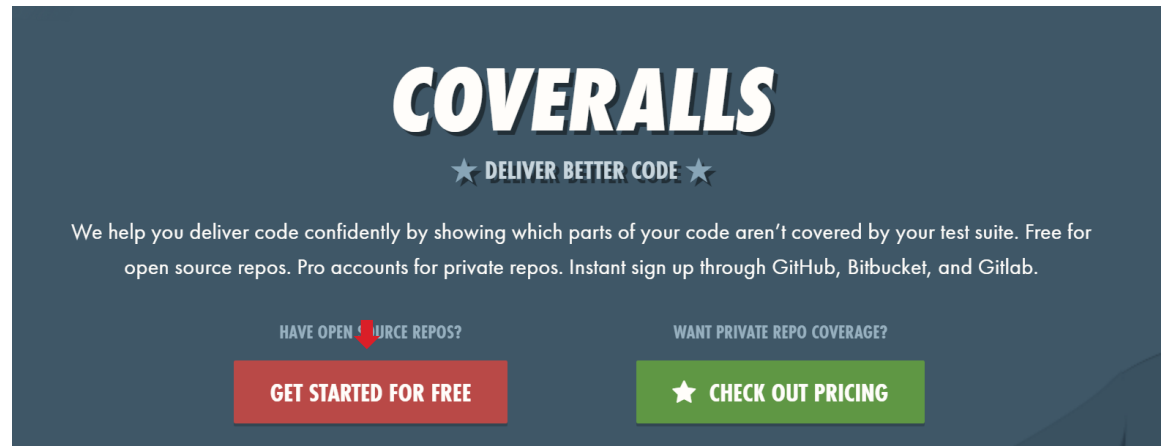
LATEST BUILDS

BUILD	BRANCH	COVERAGE	COMMIT	COMMITTER	TYPE	TIME	VIA
#10224	master	+ 89.05	Merge pull request #6276 from gaearon/fix-custom-components Skip all special props when setting attributes on web components	gaearon	push	17 Mar 2016	travis-ci
#10212	master	+ 89.06	Merge pull request #6270 from rofrischmann/unitless-css-property added several new unitless properties	jimfb	push	16 Mar 2016	travis-ci
#10004	master	↑ 95.01	Merge pull request #6129 from gaearon/syranide-lessvpm Disable ViewportMetrics unless MouseEvent lacks support for pageX/pageY	gaearon	push	26 Feb 2016	travis-ci
#10000	master	↓ 95.01	Merge pull request #6127 from jimfb/LinkedImageInput from addons to packages.	jimfb	push	26 Feb 2016	travis-ci
#9998	master	↓ 95.02	Merge pull request #6068 from gaearon/react-instrumentation Add ReactInstrumentation	gaearon	push	26 Feb 2016	travis-ci
#9997	master	↑ 95.06	Merge pull request #6082 from snicvi/no-set-props Remove unused enqueue	snicvi	push	26 Feb 2016	travis-ci

Coveralls

Coveralls

<https://coveralls.io> 접속 후 GET STARTED FOR FREE를 클릭 하여 회원가입/로그인



COVERALLS
★ DELIVER BETTER CODE ★

We help you deliver code confidently by showing which parts of your code aren't covered by your test suite. Free for open source repos. Pro accounts for private repos. Instant sign up through GitHub, Bitbucket, and Gitlab.

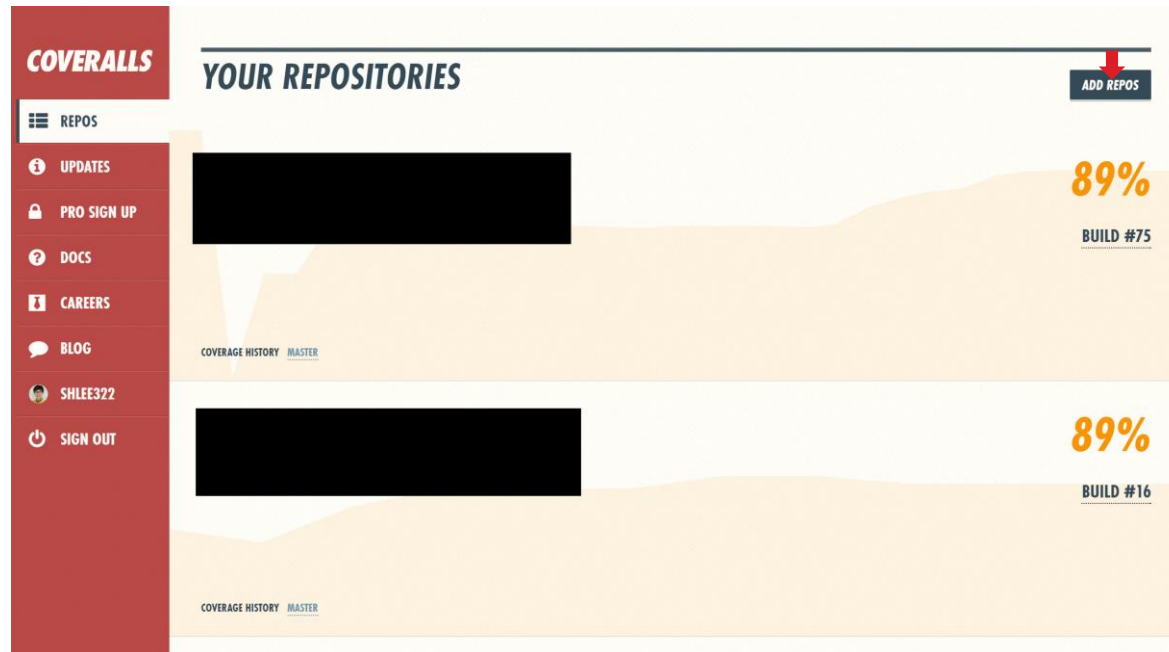
HAVE OPEN SOURCE REPOS? [GET STARTED FOR FREE](#)

WANT PRIVATE REPO COVERAGE? [★ CHECK OUT PRICING](#)

Coveralls

Coveralls

<https://coveralls.io> 접속 후 GET STARTED FOR FREE를 클릭 하여 회원가입/로그인 > ADD REPOS 클릭



Coveralls

Coveralls

<https://coveralls.io> 접속 후 GET STARTED FOR FREE를 클릭 하여 회원가입/로그인 > ADD REPOS 클릭 > 해당 repo의 OFF 클릭

ADD REPO

In order to add repositories that are private on Github or Bitbucket you will need to purchase a Coveralls Pro subscription for the GitHub user / organization or Bitbucket team. Click the 'Add Subscription' button next to the user or organization name to select a plan.

<input type="checkbox"/> OFF	SHLEE322 / <i>konkuk-assignment</i>	<input type="button" value="GITHUB"/>
<input checked="" type="checkbox"/> OFF	SHLEE322 / <i>konkuk-dslab</i>	<input type="button" value="GITHUB"/>

GITHUB

Coveralls

Coveralls

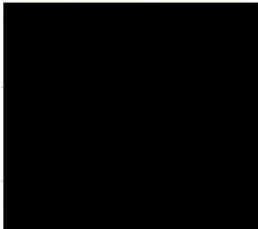
<https://coveralls.io> 접속 후 GET STARTED FOR FREE를 클릭 하여 회원가입/로그인 > ADD REPOS 클릭 > 해당 repo의 OFF 클릭 > DETAILS 클릭

ADD REPO

In order to add repositories that are private on Github or Bitbucket you will need to purchase a Coveralls Pro subscription for the GitHub user / organization or Bitbucket team. Click the 'Add Subscription' button next to the user or organization name to select a plan.

<input type="checkbox"/>	OFF	SHLEE322 / <i>konkuk-assignment</i>	GITHUB
<input checked="" type="checkbox"/>	ON	SHLEE322 / <i>konkuk-dslab</i>	DETAILS GITHUB

GITHUB



ADD PRO	ADD REPOS
ADD PRO	ADD REPOS
ADD PRO	ADD REPOS

Coveralls

Coveralls

<https://coveralls.io> 접속 후 GET STARTED FOR FREE를 클릭 하여 회원가입/로그인 > ADD REPOS 클릭 > 해당 repo의 OFF 클릭 > DETAILS 클릭 > **repo_token** 값을 보관 (유출되지 않도록 주의)

SET UP COVERALLS

Here's some quick setup instructions for Ruby and Travis CI:

First, if you are using [Travis CI](#), make sure it's building correctly. If you're using Travis Pro, add the following lines to a `.coveralls.yml` file in your repository's root:

```
service_name: travis-pro
repo_token: ge207m1xxEkp9s3eEaiL14hFbKYd3bCRd
```

If you intend to submit coverage data via a private CI or command line other than Travis Pro, add the following line to your `.coveralls.yml` :

```
repo_token: ge207m1xxEkp9s3eEaiL14hFbKYd3bCRd
```

Coveralls

coveralls-gradle-plugin

Converalls-gradle-plugin을 사용하여 Gradle, Travis CI 연동
<https://github.com/kt3k/coveralls-gradle-plugin>

Usage

Use with *cobertura* reporter

Add the following lines to build.gradle:

```
plugins {
    id "net.saliman.cobertura" version "2.3.0"
    id "com.github.kt3k.coveralls" version "2.6.3"
}

cobertura.coverageFormats = ['html', 'xml'] // coveralls plugin depends on xml format report
```

And run `coveralls` task after `cobertura` task.

An example `.travis.yml` looks like following:

```
language: java

jdk:
- oraclejdk8

after_success:
- ./gradlew cobertura coveralls
```

Coveralls

coveralls-gradle-plugin

```
plugins {
    id "java"
    id "net.saliman.cobertura" version "2.3.0"
    id "com.github.kt3k.coveralls" version "2.6.3"
}

apply plugin: 'java'
apply plugin: 'cobertura'

group 'kr.ac.konkuk.dslab'
version '1.0-SNAPSHOT'

sourceCompatibility = 1.5

cobertura.coverageFormats = ['xml']
cobertura.coverageSourceDirs = ["${projectDir}/src/main/java/"]

repositories {
    mavenCentral()
}

dependencies {
    testRuntime 'org.slf4j:slf4j-nop:1.7.12'
    testCompile group: 'junit', name: 'junit', version: '4.11'
}
```

변경된 build.gradle

```
language: java
jdk:
  - oraclejdk7
  - openjdk7
  - oraclejdk8

before_install:
  - chmod +x gradlew

after_success:
  - ./gradlew cobertura coveralls
```

변경된 .travis.yml

Coveralls

coveralls-gradle-plugin

```
shlee322@sanghyuck-ubuntu:~/projects/konkuk-dslab$ git add ^C
shlee322@sanghyuck-ubuntu:~/projects/konkuk-dslab$ git add .travis.yml
shlee322@sanghyuck-ubuntu:~/projects/konkuk-dslab$ git add build.gradle
shlee322@sanghyuck-ubuntu:~/projects/konkuk-dslab$ git commit -m "coveralls-gradle-plugin 추가 "
[future/echo 2e13e48] coveralls-gradle-plugin 추가
 2 files changed, 10 insertions(+)
shlee322@sanghyuck-ubuntu:~/projects/konkuk-dslab$ git push
```

Coveralls

확인

Github에 새로운 commit가 등록되면 Travis CI를 거쳐 아래와 같이 Coveralls에 코드 커버리지가 표시됨


SHLEE322 / KONKUK-DSLAB

100%

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BRANCH: FUTURE/ECHO ▾

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NOTIFICATIONS

✎
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GITHUB REPO

LATEST BUILDS

BUILD	BRANCH	COVERAGE	COMMIT	COMMITTER	TYPE	TIME	VIA
#17	future/echo	+ 100.0	echo 테스트	shlee322	push	2 minutes ago	travis-ci
#16	future/echo	+ 100.0	testRuntime 설정	shlee322	push	20 minutes ago	travis-ci

sanghyuck-require-mapper

요구사항 리스트를 정의하고 이를 junit 테스트 코드와 매핑하여
report를 github commit/issue의 코멘트로 받을 수 있는 툴 (jFeature 대체품)

```
REQUIRE = [  
  {  
    'name': '이렇게 루트로도 됨',  
    'test': [('EchoTest', 'EchoTest', 'echoInt'), ('EchoTest', 'EchoTest', 'echoFloat')]  
  },  
  {  
    'name': '테스트그룹1',  
    'require': [  
      {  
        'name': '테스트서브그룹1',  
        'require': [  
          {  
            'name': '덧셈 구현',  
            'test': [('EchoTest', 'EchoTest', 'echoInt')]  
          }  
        ]  
      }  
    ]  
  }  
]
```

config.py

sanghyuck-require-mapper

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```
language: java
jdk:
  - oraclejdk7
  - openjdk7
  - oraclejdk8

before_install:
  - chmod +x gradlew

after_success:
  - ./gradlew cobertura coveralls
  - cat build/reports/tests/index.html
  - sudo apt-get install -y python-setuptools
  - sudo easy_install pip
  - sudo pip install xmltodict
  - cd tools/sanghyuck-require-mapper
  - python run.py
```

.travis.yml

sanghyuck-require-mapper를 위해 추가

sanghyuck-require-mapper

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```

81 + headers={'content-type': 'application/json', 'Authorization': 'Basic %s' % userdata}
82 +)
83 +
84 +urllib2.urlopen(req)
77 85
78 -req = urllib.request.Request('https://api.github.com/repos/shlee322/konkuk-dslab/commits/%s/comments' % commit_id, data=comment_data)
79 -response = urllib.request.urlopen(req)

```

2 comments on commit 676a5eb

Lock conversation



shlee322 commented on 676a5eb 5 minutes ago

Owner + 😊 ✎ ✕

- 이렇게 루트로도 됨 [===== _____] 1/2
- 테스트그룹1 [=====] 1/1
 - 테스트서브그룹1 [=====] 1/1
 - 덧셈 구현 [=====] 1/1