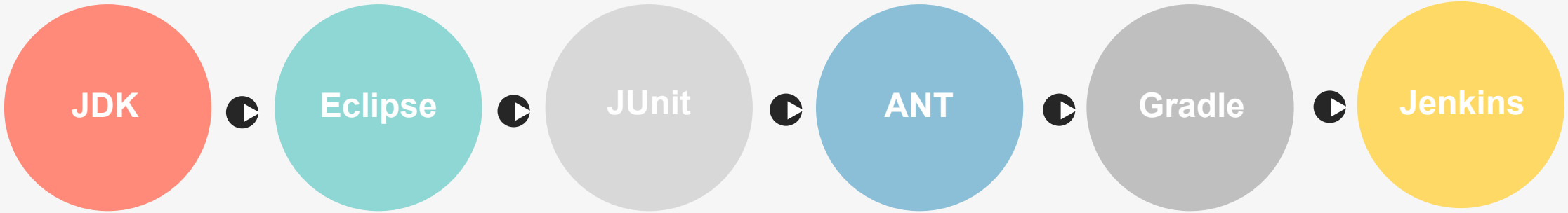
Eclipse, JUnit & Build Environment

팀명	**T3**
팀원	송지연, 윤상혁, 장서연
강의명	Software Verification, 유준범 교수님

Contents

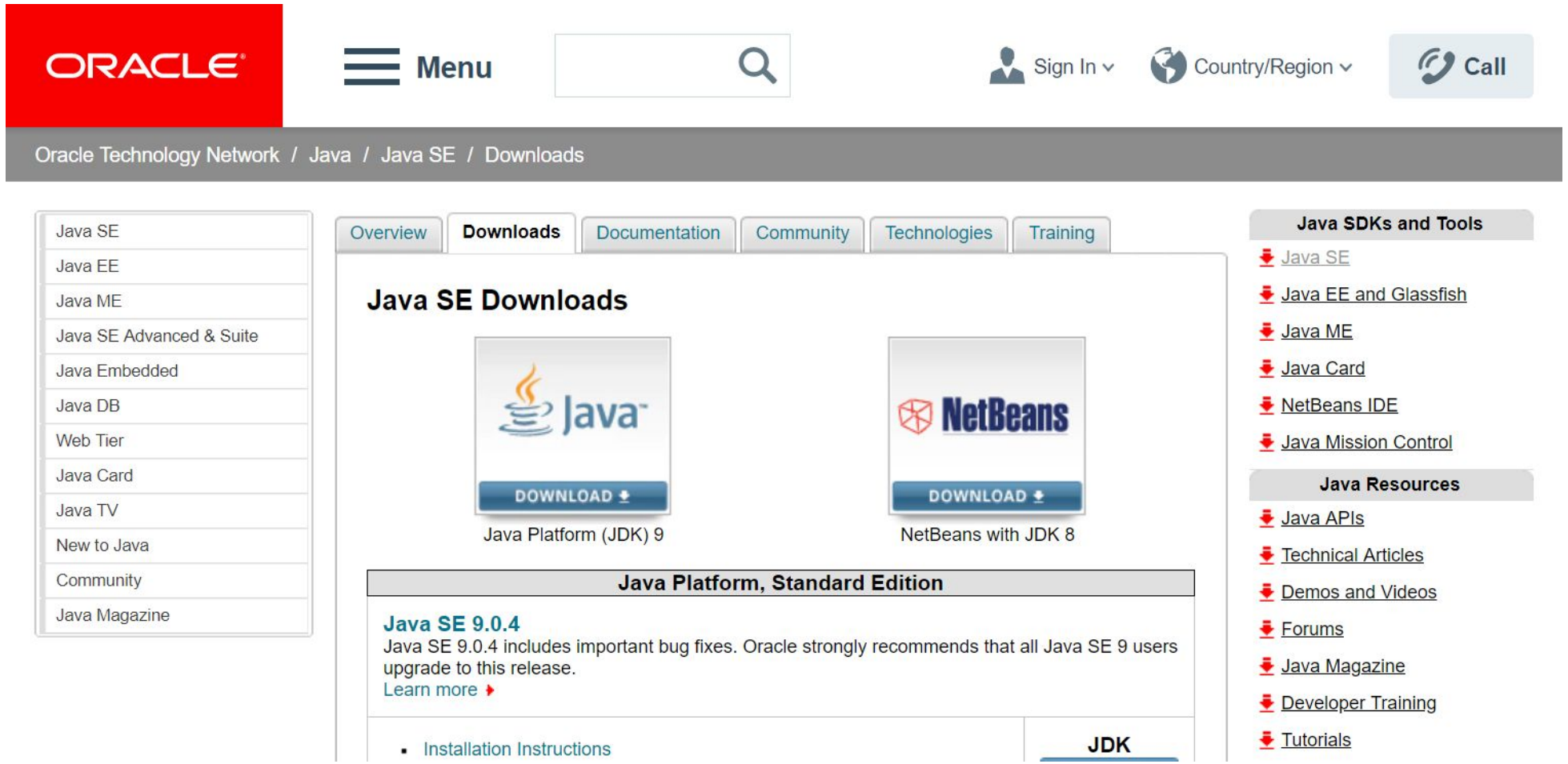


JDK

JDK

다운로드 링크 :

https://www.oracle.com/index.html



JDK

다운로드 링크 :

https://www.oracle.com/index.html

Java SE Development Kit 8u161

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

Thank you for accepting the Oracle Binary Code License Agreement for Java SE; you may now download this software.

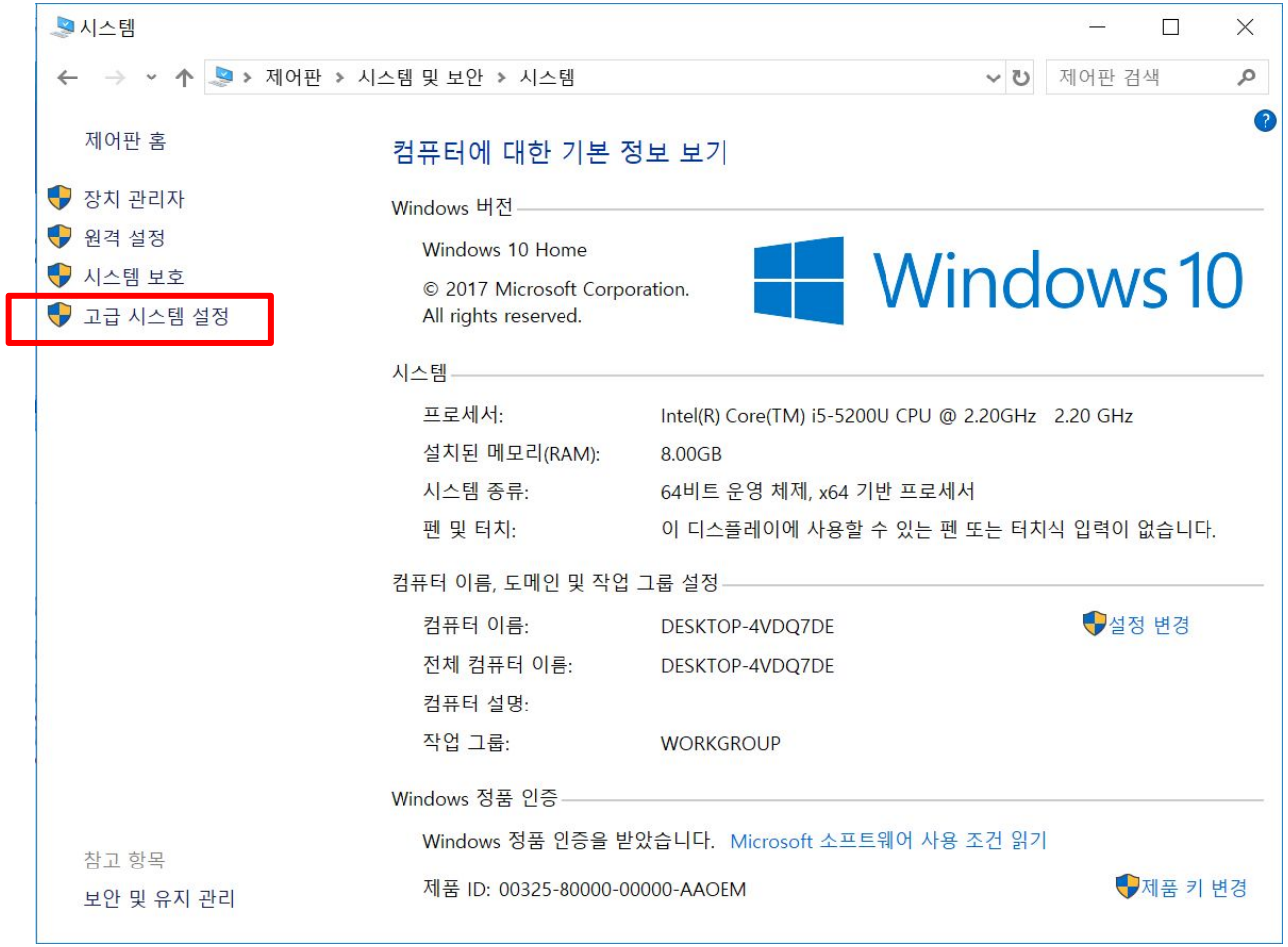
Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.92 MB	jdk-8u161-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.88 MB	jdk-8u161-linux-arm64-vfp-hflt.tar.gz
Linux x86	168.96 MB	jdk-8u161-linux-i586.rpm
Linux x86	183.76 MB	jdk-8u161-linux-i586.tar.gz
Linux x64	166.09 MB	jdk-8u161-linux-x64.rpm
Linux x64	180.97 MB	jdk-8u161-linux-x64.tar.gz
macOS	247.12 MB	jdk-8u161-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	139.99 MB	jdk-8u161-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.29 MB	jdk-8u161-solaris-sparcv9.tar.gz
Solaris x64	140.57 MB	jdk-8u161-solaris-x64.tar.Z
Solaris x64	97.02 MB	jdk-8u161-solaris-x64.tar.gz
Windows x86	198.54 MB	jdk-8u161-windows-i586.exe
Windows x64	206.51 MB	jdk-8u161-windows-x64.exe

JDK

JDK

다운로드 링크 :

https://www.oracle.com/index.html

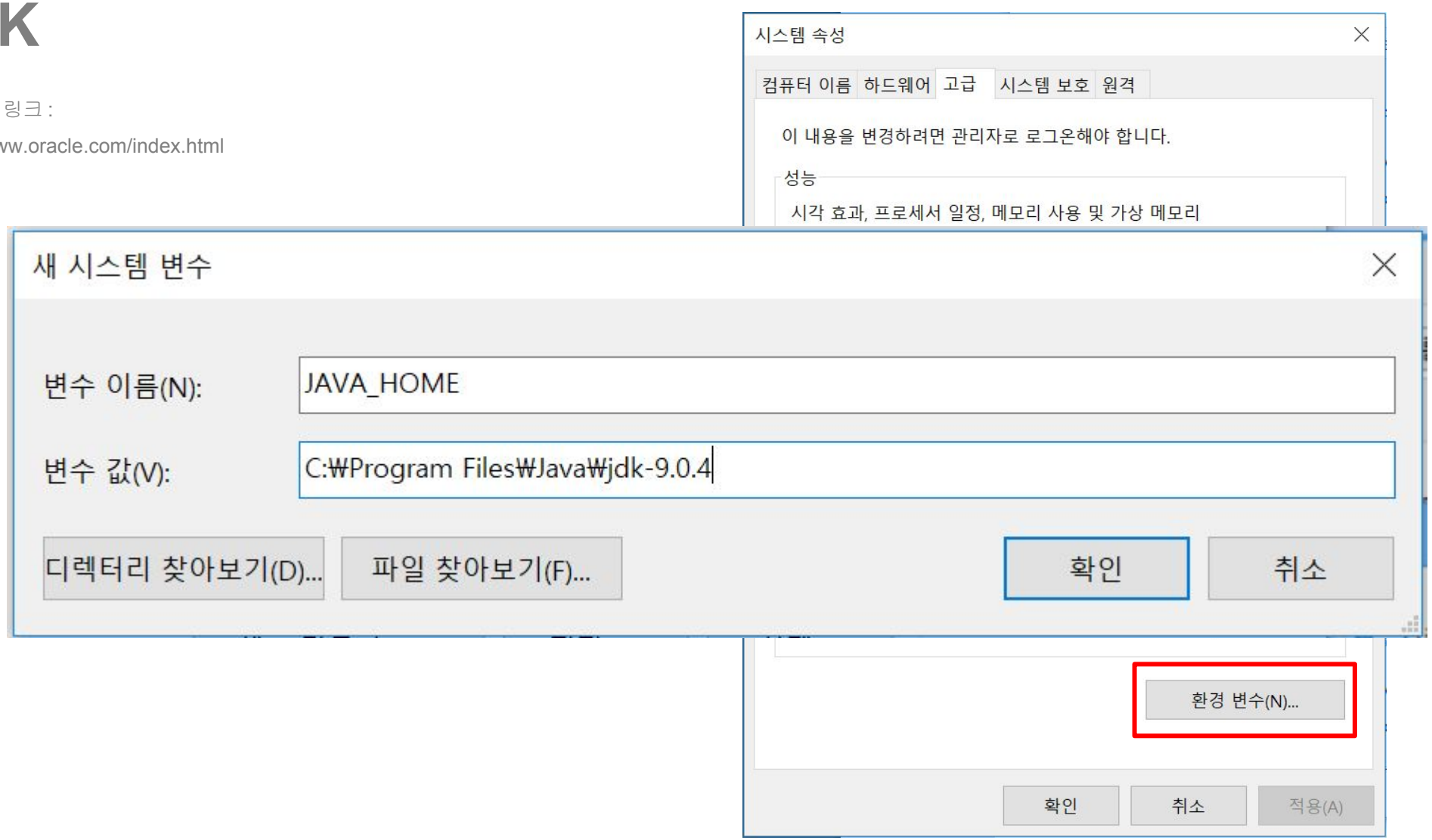


JDK

JDK

다운로드 링크 :

https://www.oracle.com/index.html



Eclipse이클립스

:자바 기반 통합 개발 환경(IDE)

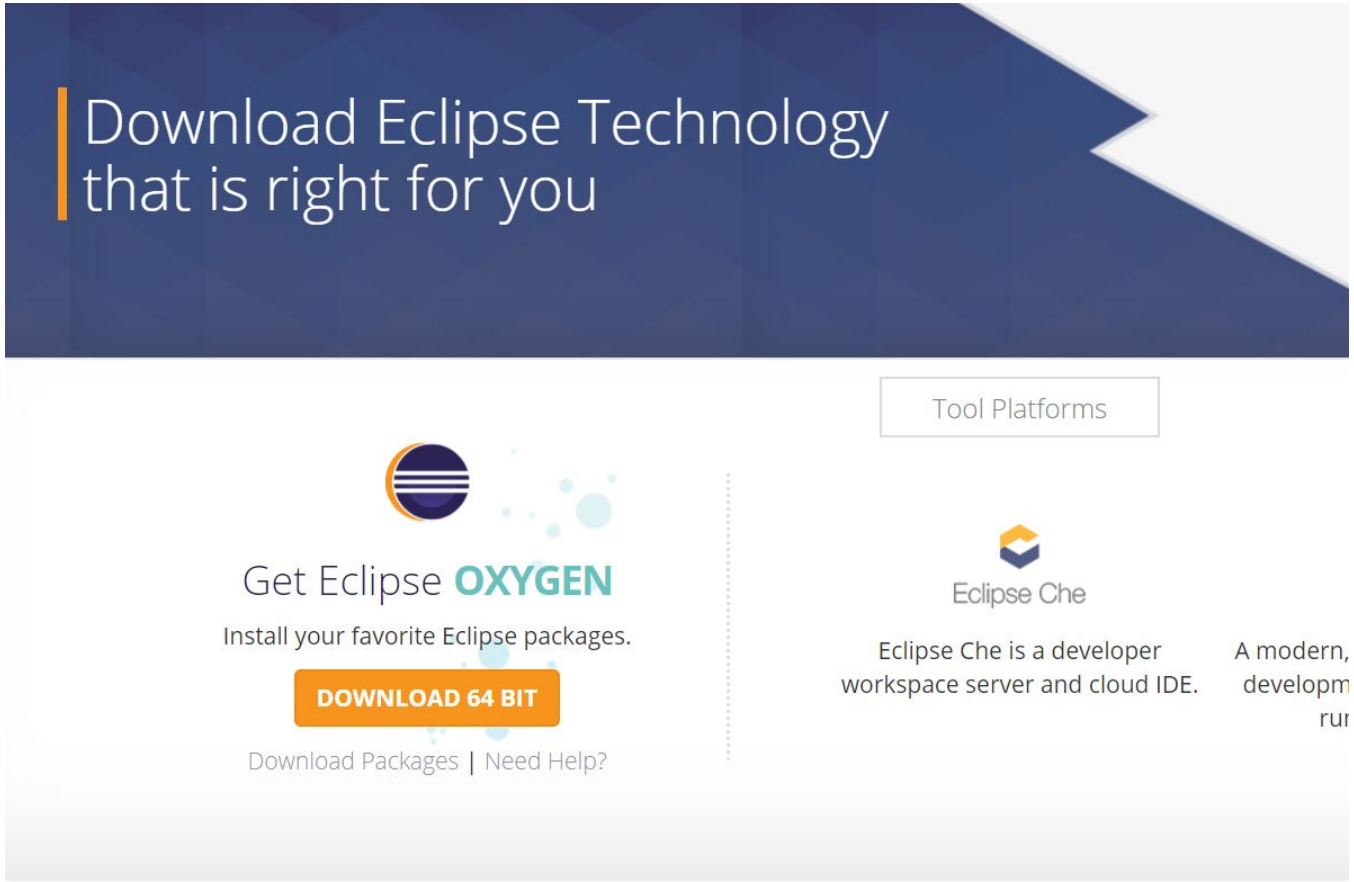
Windows, macOS, Linux 중 어디서든 자유롭게 이용 및 수정, 재배포가 가능.

소스 편집기, 컴파일러, 디버거 등을 지원하고, 여러 프로젝트를 동시에 관리할 수 있다.

Eclipse이클립스

다운로드링크 :

https://www.eclipse.org/downlloads/



Eclipse이클립스

다운로드링크 :

https://www.eclipse.org/downlloads/

All downloads are provided under the terms and conditions of the Eclipse Foundation Software User Agreement unless otherwise specified.

DOWNLOAD

Download from: Japan - Japan Advanced Institute of Science and Technology (http)

File: eclipse-inst-win64.exe SHA-512

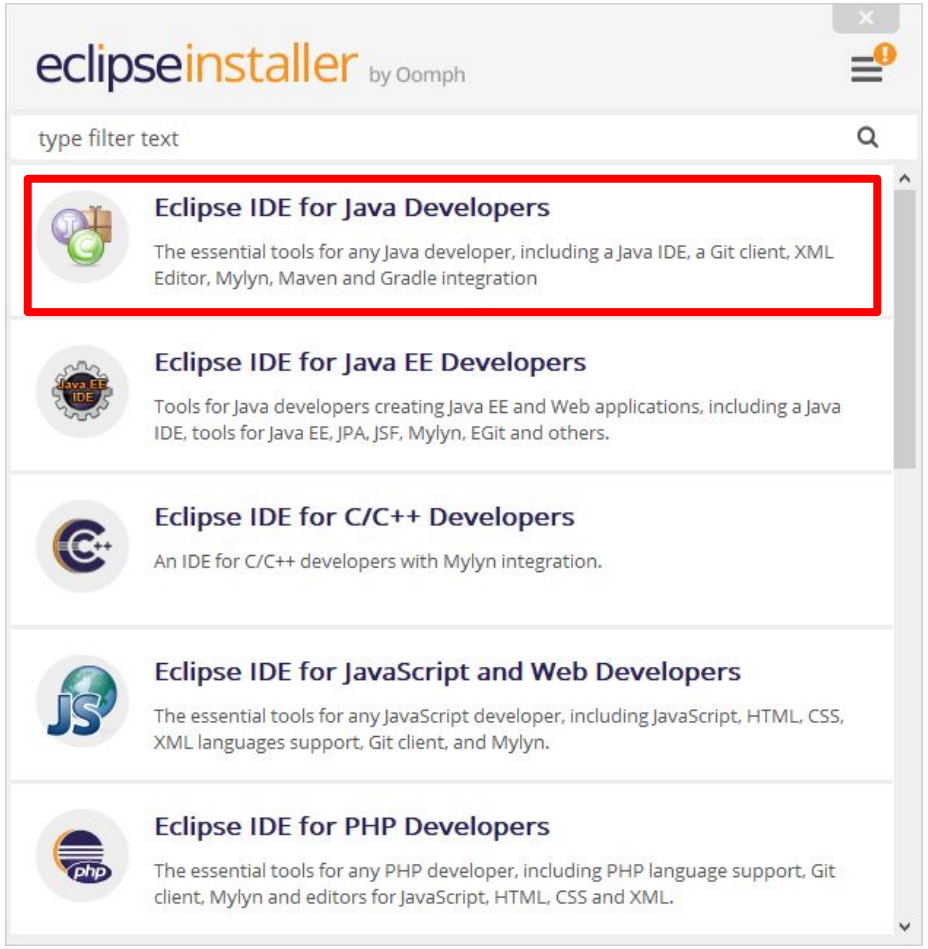
>> Select Another Mirror

OR Get It Faster from our Members

Eclipse이클립스

다운로드링크 :

https://www.eclipse.org/downlloads/



JUnit

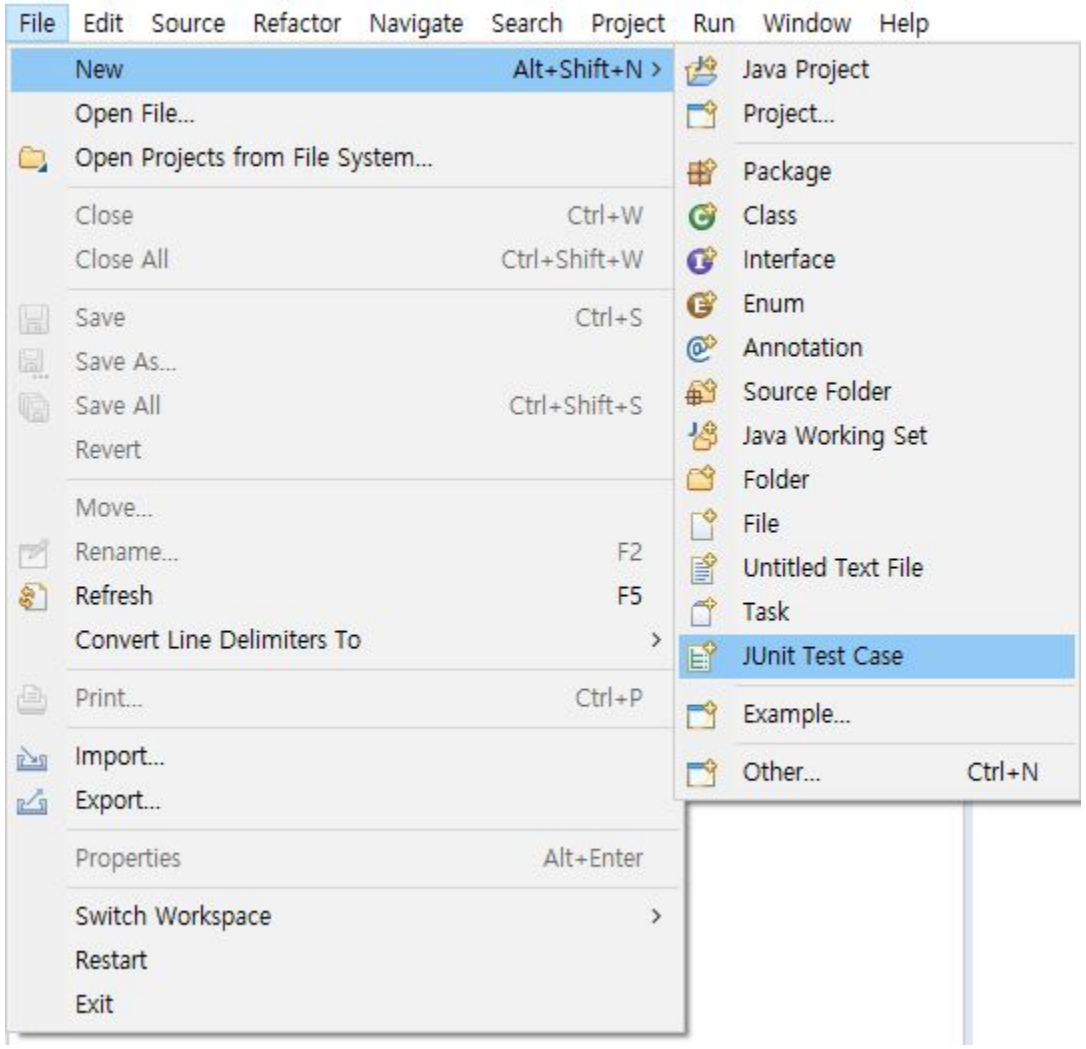
단위 코드 테스팅 java 기반 프레임워크

jdk, java 기반 도구 IDE 등이 필요

test case 생성 및 실행, 오류 추적

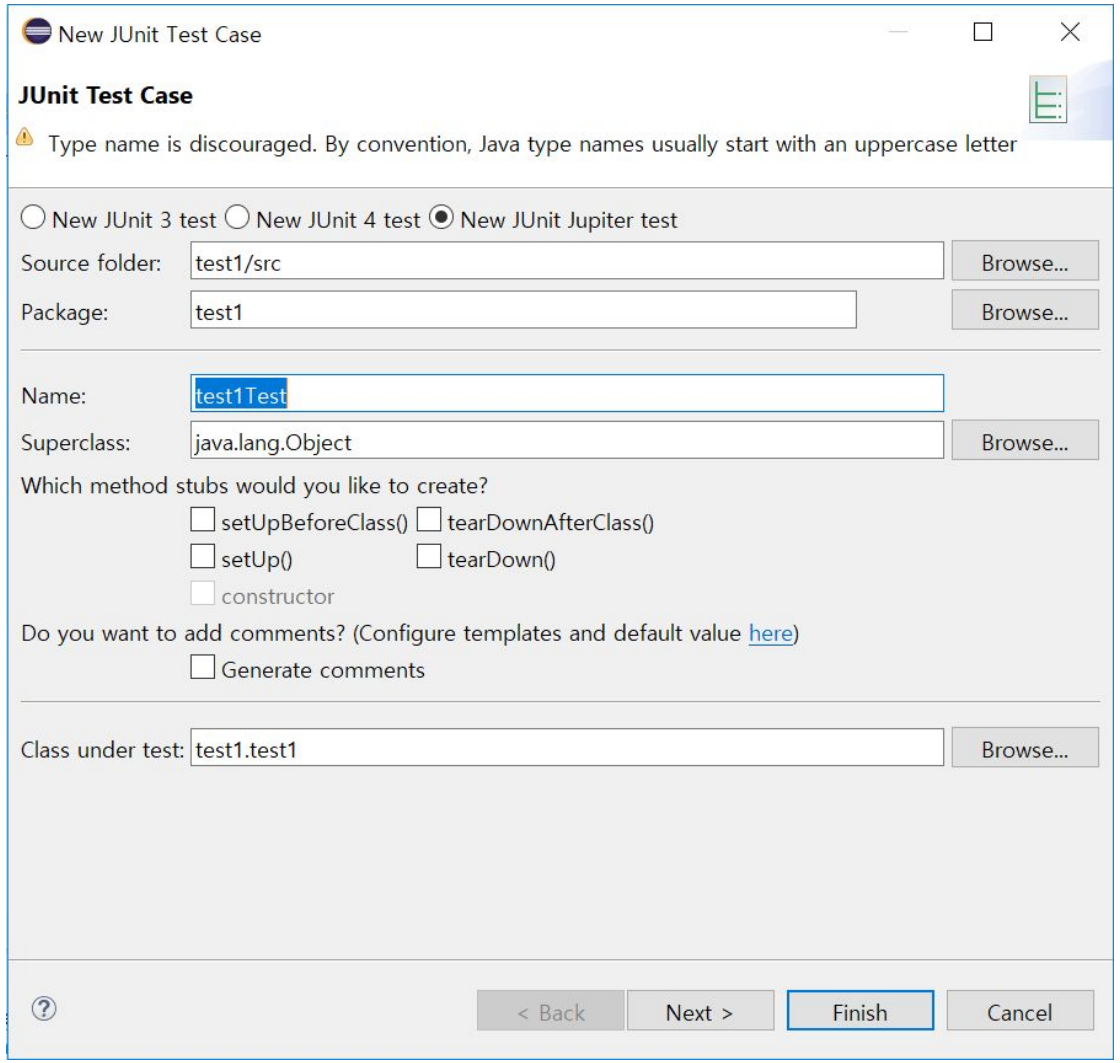
JUnit

테스트를 위한 Test Case 생성



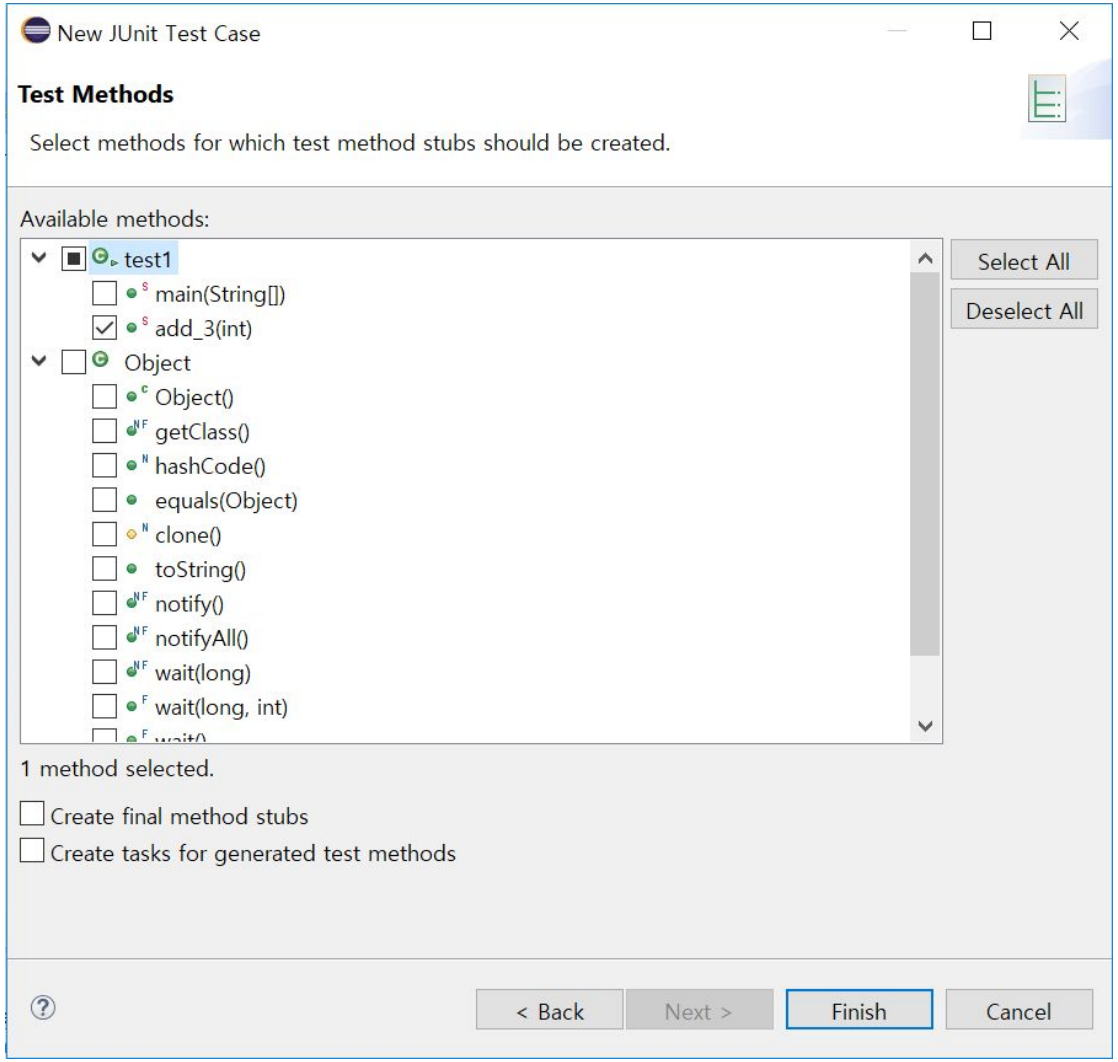
JUnit

테스트를 위한 Test Case 생성



JUnit

Test할 대상 선택



JUnit

Test 대상(Adder)와 Test 코드 작성(AdderTest)

*Adder.java AdderTest.java

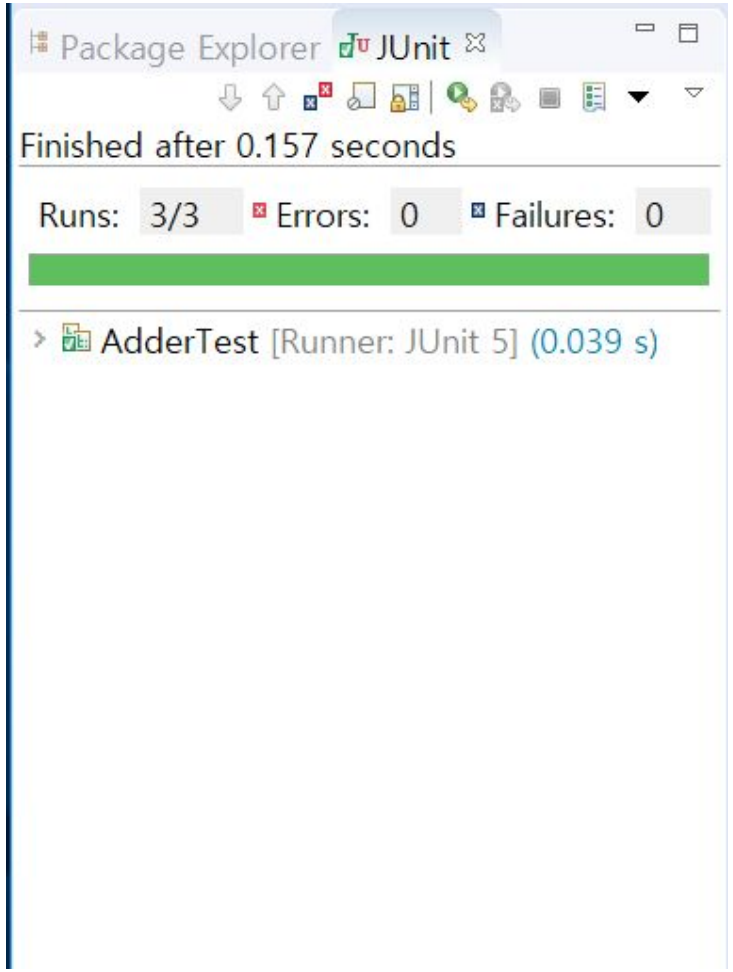
```java
package Adder;

public class Adder {

    public int Add_3(int num) {
        int result = 0;

        result = num + 3;

        return result;
    }

    public int Add_5(int num) {
        int result = 0;

        result = num + 5;

        return result;
    }

    public int Add_10(int num) {
        int result = 0;

        result = num + 10;

        return result;
    }
}
```

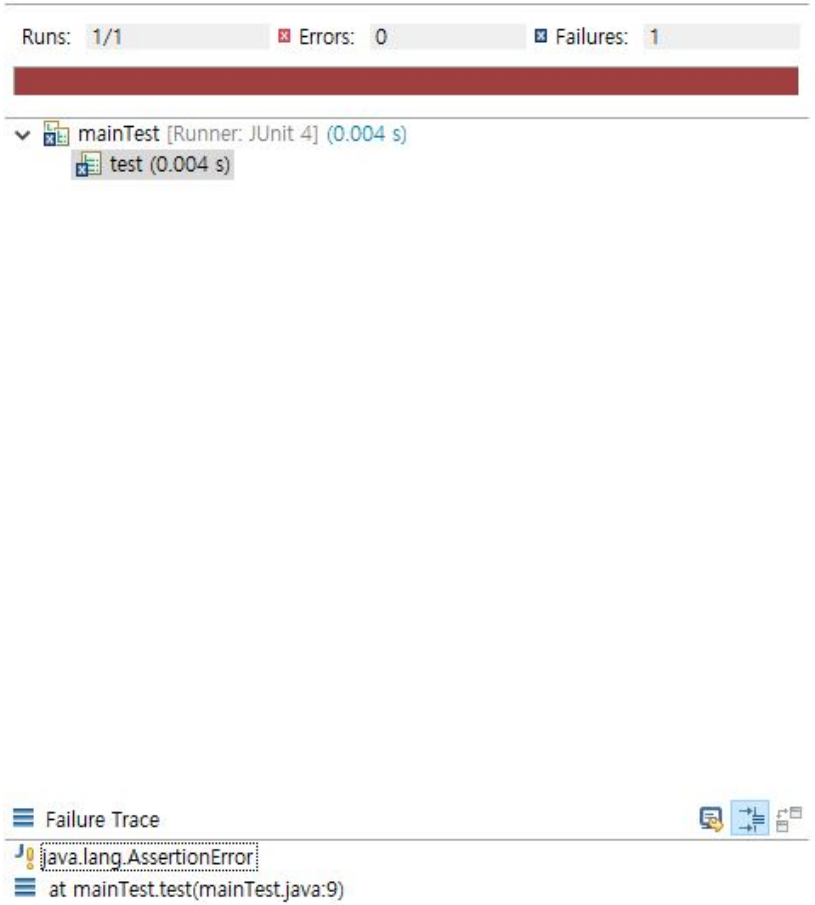
*Adder.java *AdderTest.java

```java
package Adder;

import static org.junit.jupiter.api.Assertions.*;

class AdderTest {

    @Test
    void testAdd_3() {
        Adder a = new Adder();
        int result = a.Add_3(7);
        assertEquals(10, result);
    }

    @Test
    void testAdd_5() {
        Adder a = new Adder();
        int result = a.Add_5(5);
        assertEquals(10, result);
    }

    @Test
    void testAdd_10() {
        Adder a = new Adder();
        int result = a.Add_10(0);
        assertEquals(10, result);
    }

}
```

JUnit

테스트 결과 확인





JUnit

assertArrayEquals(a,b)	배열의 값이 같은지 확인
assertEquals(a,b)	값이 같은지 확인
assertSame(a,b)	같은 객체인지 확인
assertTrue(a)	참인지 확인
assertNotNull(a)	null이 아닌지 확인

JUnit

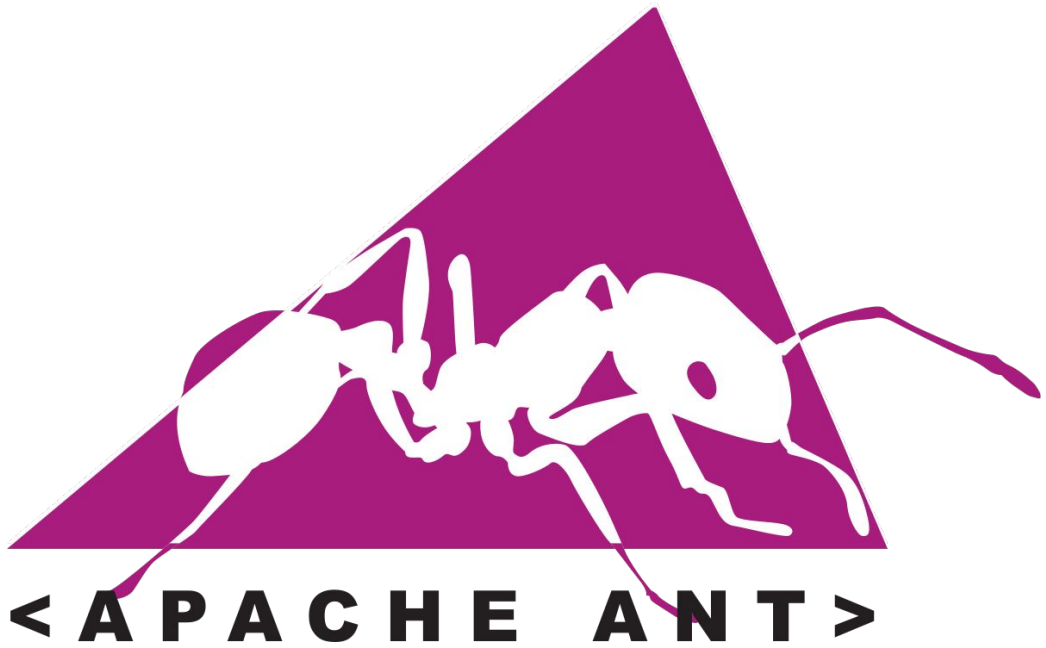
```
@Before
public void SetUp() throws Exception {

}

@After
public void tearDown() throws Exception {

}
```

ANT

자바 언어에서 사용하는 자동화된 소프트웨어 빌드 도구

패키지 빌드 자동화, 배포

XML 문서(build.xml)로 빌드 규칙을 작성



ANT

다운로드 링크 :

https://ant.apache.org/bindownloads.cgi

Current Release of Ant

The Apache Ant team currently maintains two lines of development. The 1.9.x releases require Java5 at rur
runtime. Both lines are based off of Ant 1.9.7 and the 1.9.x releases are mostly bug fix releases while addit
1.10.x. We recommend using 1.10.x unless you are required to use versions of Java prior to Java8 during tl

Currently, Apache Ant 1.9.10 and 1.10.2 are the best available versions, see the release notes.

Note

Ant 1.9.10 and 1.10.2 have been released on 06-Feb-2018 and may not be available on all mirrors for a few days.

Tar files may require gnu tar to extract

Tar files in the distribution contain long file names, and may require gnu tar to do the extraction.

- 1.10.2 .zip archive: apache-ant-1.10.2-bin.zip [PGP] [SHA1] [SHA512] [MD5]
- 1.9.10 .zip archive: apache-ant-1.9.10-bin.zip [PGP] [SHA1] [SHA512] [MD5]
- 1.10.2 .tar.gz archive: apache-ant-1.10.2-bin.tar.gz [PGP] [SHA1] [SHA512] [MD5]
- 1.9.10 .tar.gz archive: apache-ant-1.9.10-bin.tar.gz [PGP] [SHA1] [SHA512] [MD5]
- 1.10.2 .tar.bz2 archive: apache-ant-1.10.2-bin.tar.bz2 [PGP] [SHA1] [SHA512] [MD5]
- 1.9.10 .tar.bz2 archive: apache-ant-1.9.10-bin.tar.bz2 [PGP] [SHA1] [SHA512] [MD5]
- 1.10.2 .tar.xz archive: apache-ant-1.10.2-bin.tar.xz [PGP] [SHA1] [SHA512] [MD5]

ANT

Build Test를 위한 Code 작성

build.xml | OpenApp.java | PrintOut.java

```
1 package test2;
2
3 public class PrintOut {
4     public void printMSG(String MSG) {
5         System.out.println("Hello" + MSG + "!");
6     }
7 }
8
```

build.xml | OpenApp.java | PrintOut.java

```
1  package test2;
2
3  public class OpenApp {
4
5      public static void main(String[] args) {
6          // TODO Auto-generated method stub
7          PrintOut Pout = new PrintOut();
8
9          Pout.printMSG("Spring");
10     }
11
12 }
13
```

ANT

Build Test를 위한 XML 작성

build.xml | OpenApp.java | PrintOut.java

```
1  <project name = "test" basedir = ".">
2      <description>
3          Ant test
4      </description>
5  <property name = "src" location = "src"/>
6  <property name = "build" location = "build"/>
7
8  <target name = "init" description = "초기화 영역입니다.">
9      <delete dir = "${build}"/>
10     <mkdir dir = "${build}"/>
11 </target>
12
13 <target name = "compile" depends = "init" description = "컴파일하는 영역입니다.">
14     <javac destdir = "${build}" debug = "on">
15     <src path = "${src}"/>
16     </javac>
17 </target>
18 </project>
```

ANT

Build Test

명령어 > ant compile

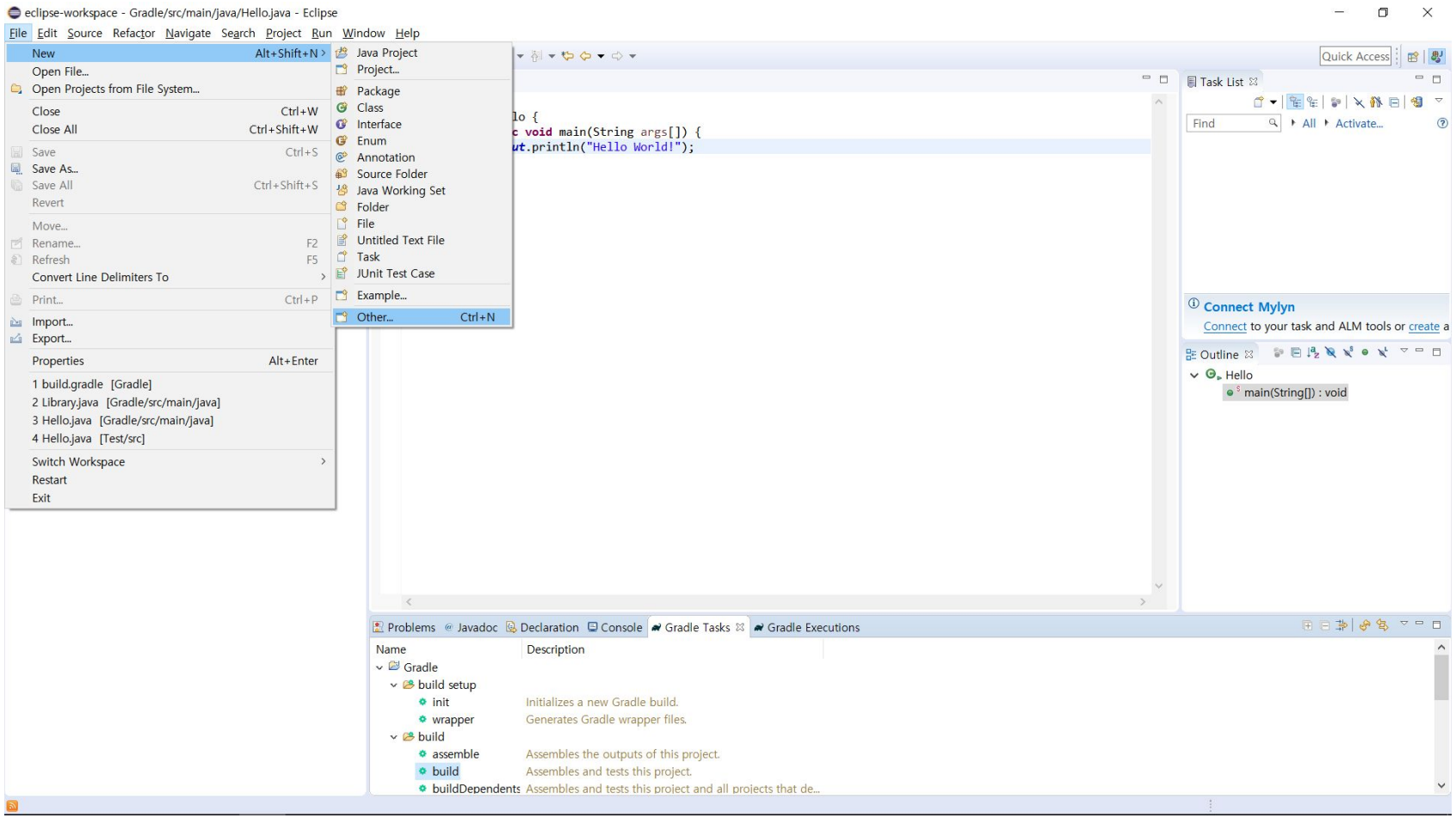
```
C:₩Users₩LG₩eclipse-workspace₩test1>ant compile
Buildfile: C:₩Users₩LG₩eclipse-workspace₩test1₩build.xml

init:
    [mkdir] Created dir: C:₩Users₩LG₩eclipse-workspace₩test1₩build

compile:
    [javac] C:₩Users₩LG₩eclipse-workspace₩test1₩build.xml:14: warning: 'includeantruntime' was not se
ild.sysclasspath=last; set to false for repeatable builds
    [javac] Compiling 2 source files to C:₩Users₩LG₩eclipse-workspace₩test1₩build

BUILD SUCCESSFUL
Total time: 1 second
```

Gradle

빌드 자동화 툴
xml대신 **groovy** 사용으로 더 간단한 **build setup**
Maven, Ant 연동

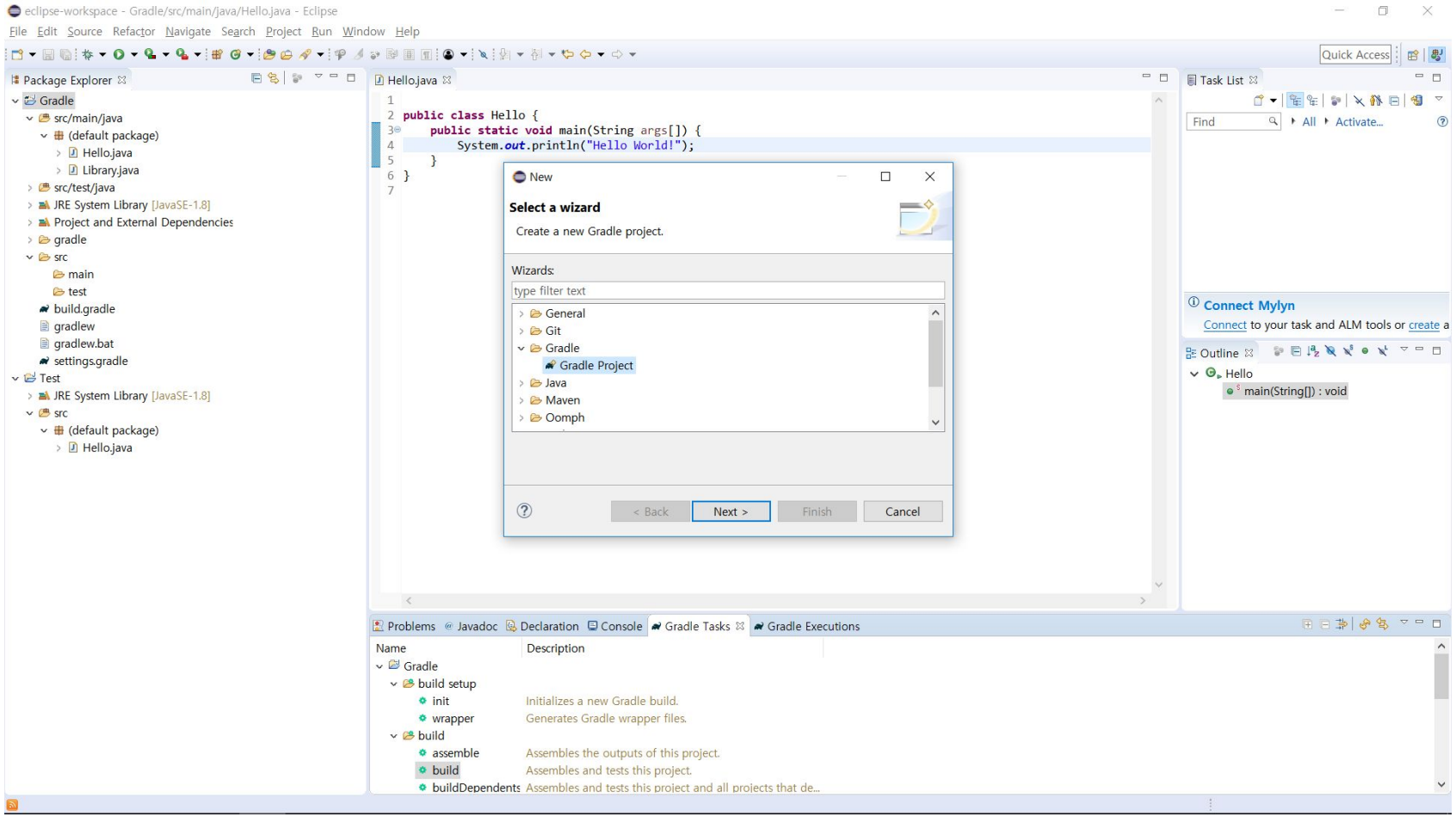
Gradle

빌드 환경 설정



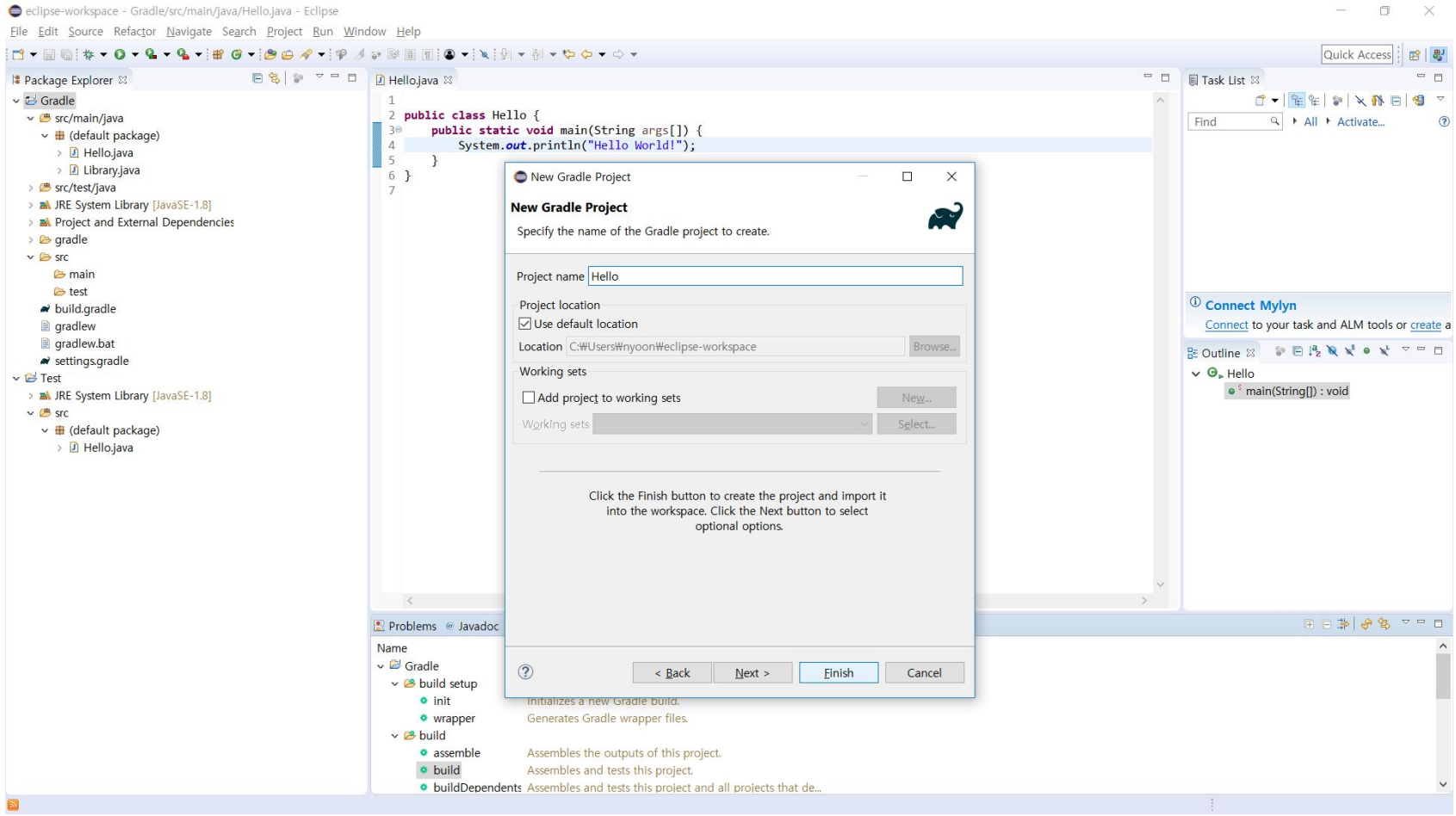
Gradle

빌드 환경 설정



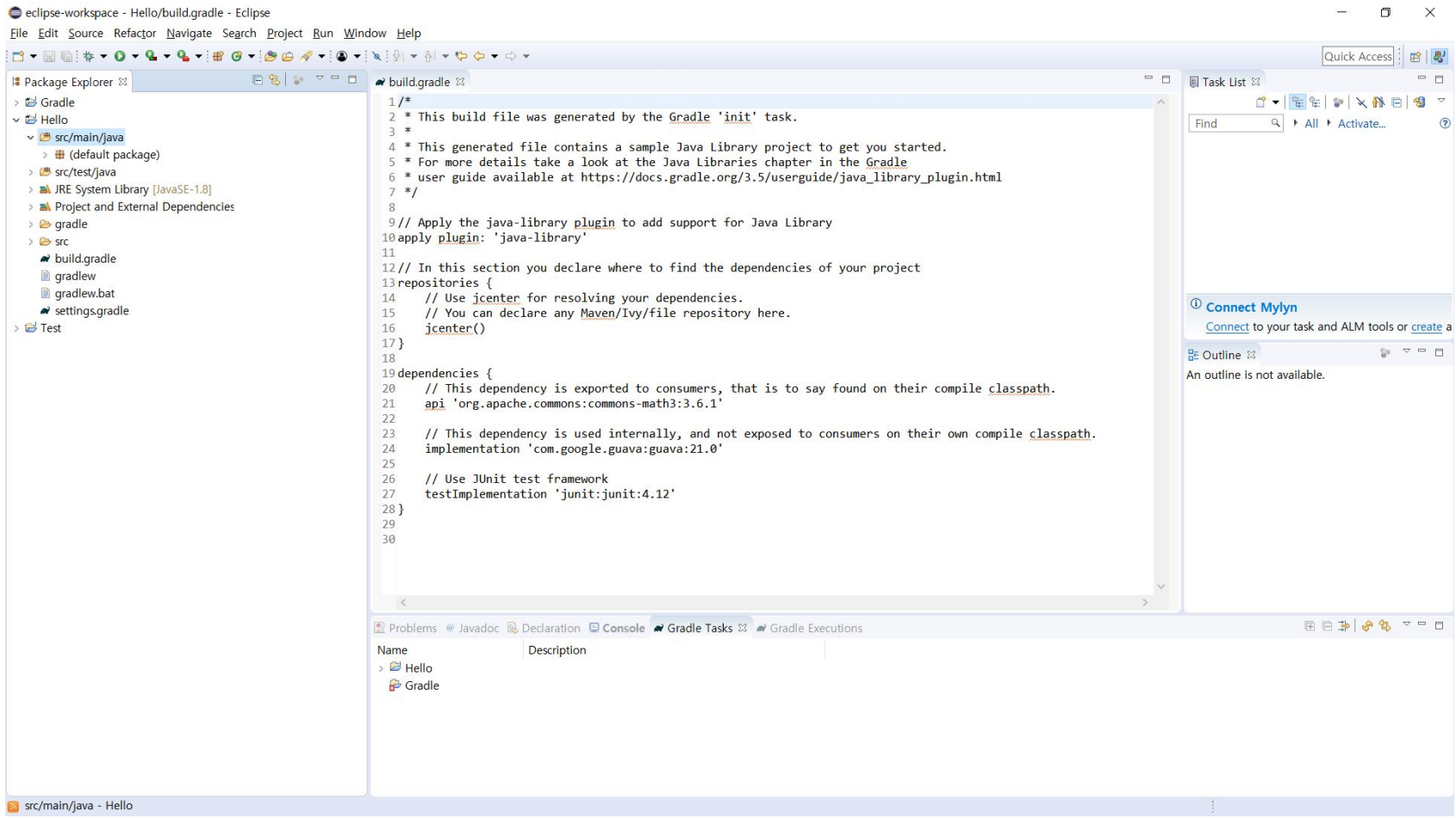
Gradle

빌드 환경 설정



Gradle

빌드 환경 설정



Gradle - 구조

gradle/wrapper
gradlew
gradlew.bat
build.gradle
settings.gradle

Gradle wrapper

작업 환경 혹은 gradle 설치 여부와 상관없이 빌드가능

ex : ./gradlew
gradlew.bat

Gradle - build.gradle

```
version '1.0-SNAPSHOT'
apply plugin: 'java-library'
sourceCompatibility = 1.8

repositories {
        jcenter()
}

dependencies {
        testCompile group: 'junit', name: 'junit', version: '4.12'
}
```

Gradle - build.gradle

```
task hello {
        doLast {
                println ‘task Hello’
        }
}
```

```
task copyFile (type: Copy) {
        from ‘src/main/java’
        into ‘testfile/java’
}

defaultTasks ‘hello’, ‘copyFile’
```

Gradle - task

Name	Description
GradleTest	
build setup	
build	
assemble	Assembles the outputs of this project.
build	Assembles and tests this project.
buildDependents	Assembles and tests this project and all projects that depend on it.
buildNeeded	Assembles and tests this project and all projects it depends on.
classes	Assembles main classes.
clean	Deletes the build directory.
jar	Assembles a jar archive containing the main classes.
testClasses	Assembles test classes.
documentation	
help	
verification	

Jenkins

CI(연속적 통합) 도구, 빌드, 배포 등 반복되는 작업을 모니터링하는 도구

쉬운 설치와 웹 기반의 UI, 여러 프로젝트 동시 빌드가 특징

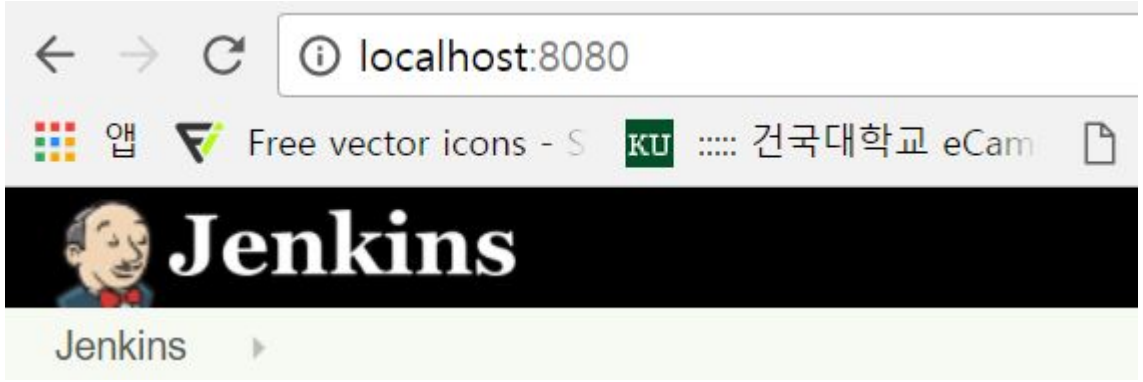
주요 기능 : 지속적인 자동화 빌드/테스트, 자동화 배포 관리

Jenkins

Jenkins

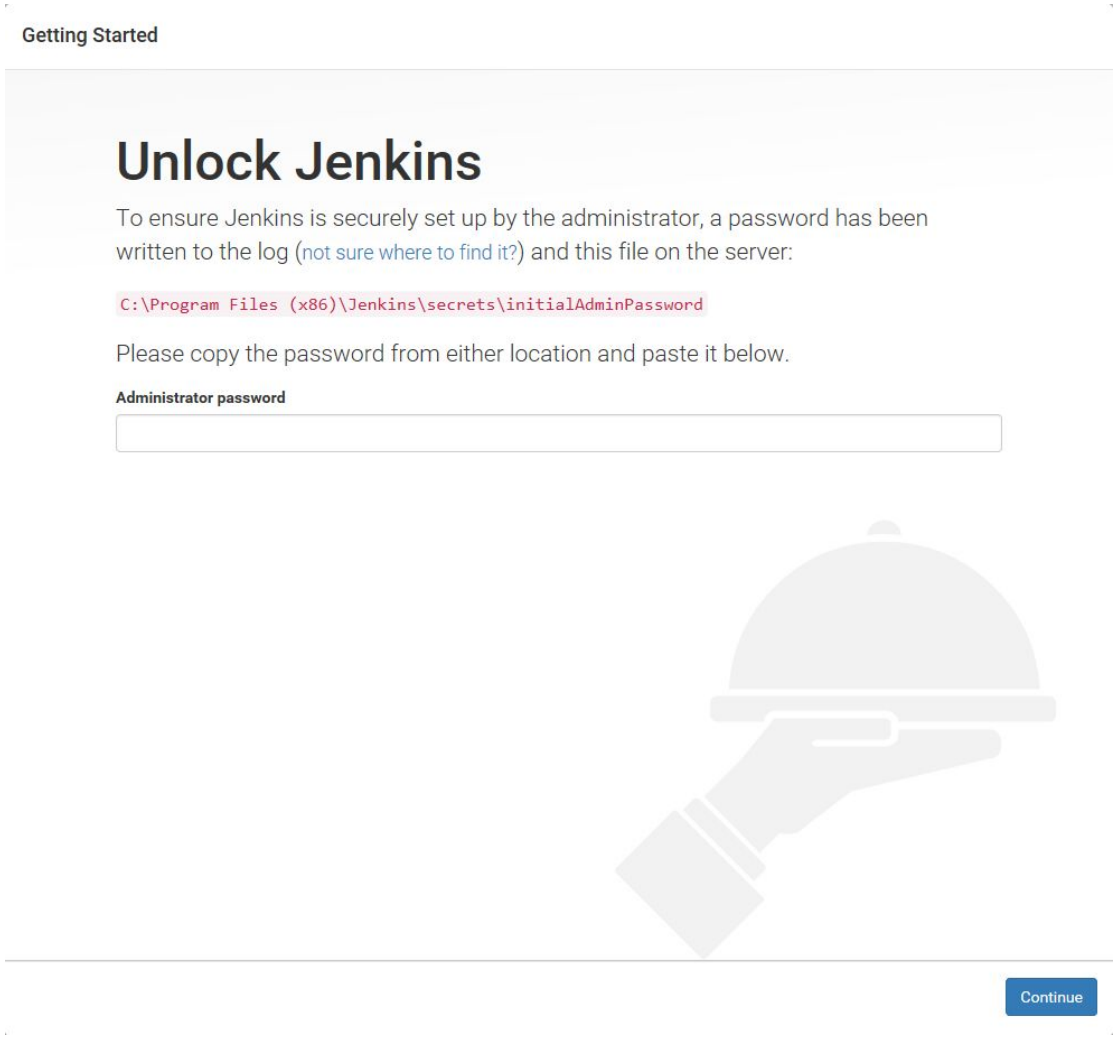
다운로드 링크 :

https://jenkins.io/download/



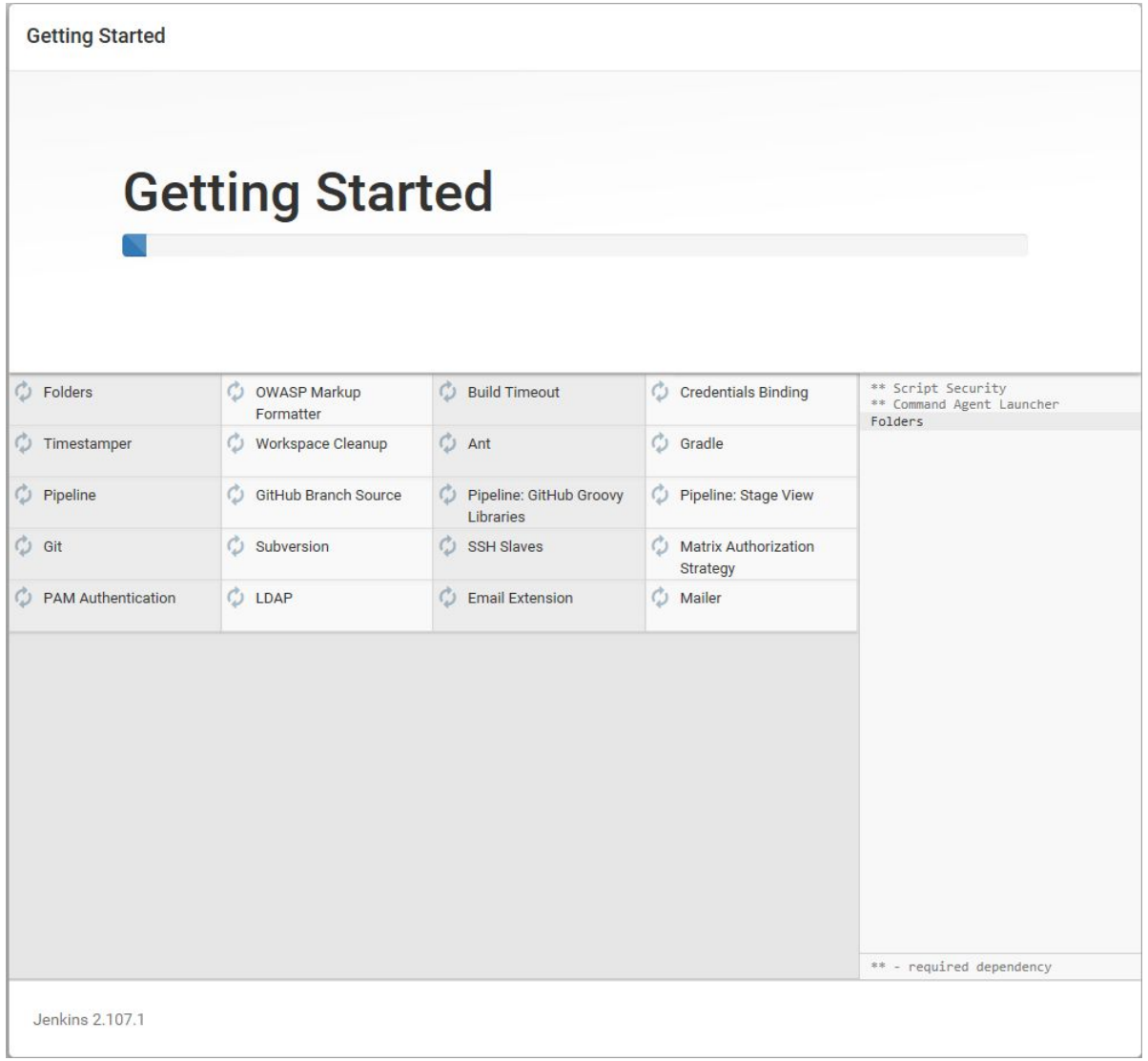
Jenkins

Jenkins

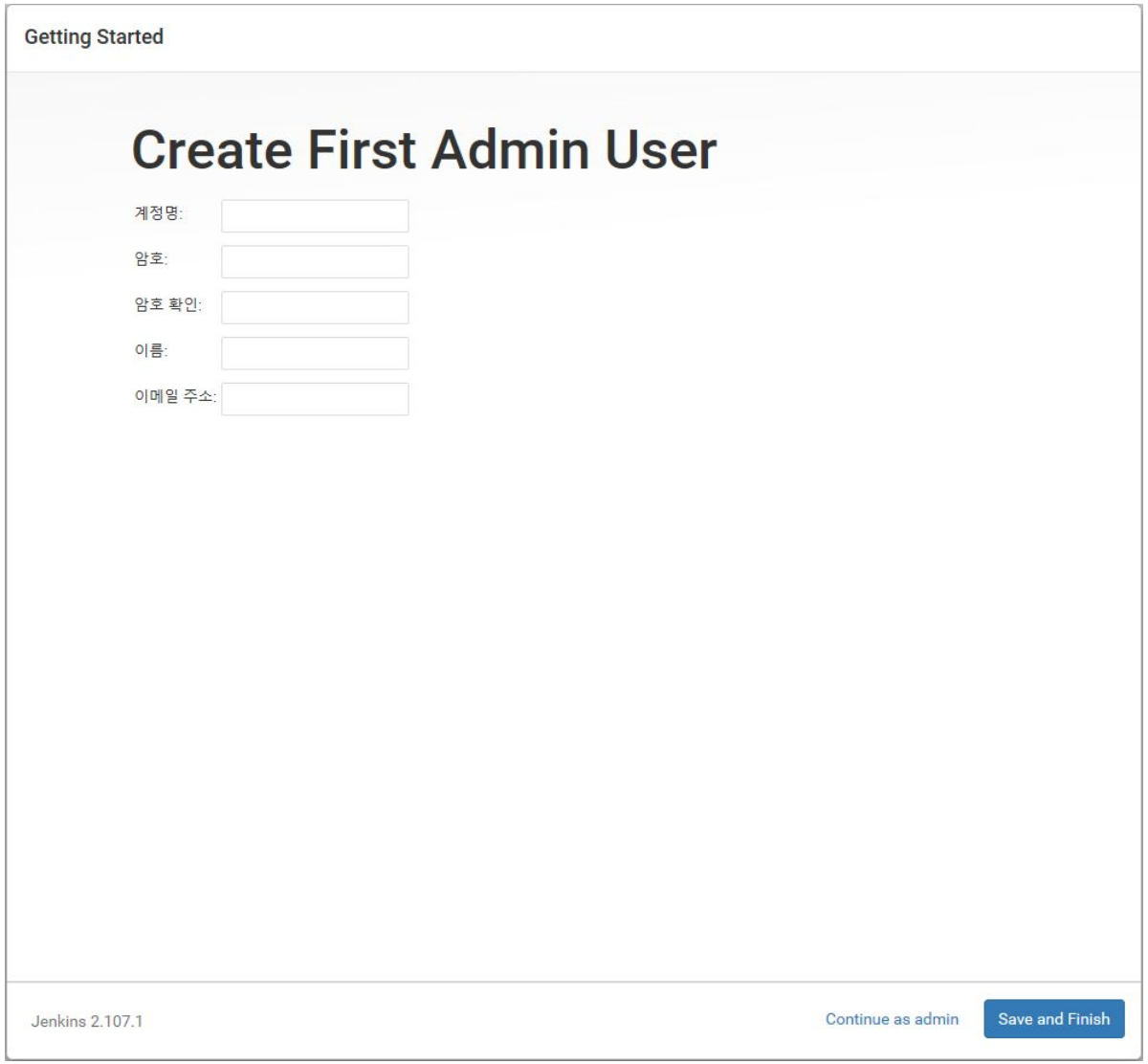

Getting Started
Unlock Jenkins
To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:
C:\Program Files (x86)\Jenkins\secrets\initialAdminPassword
Please copy the password from either location and paste it below.
Administrator password
Continue

Jenkins

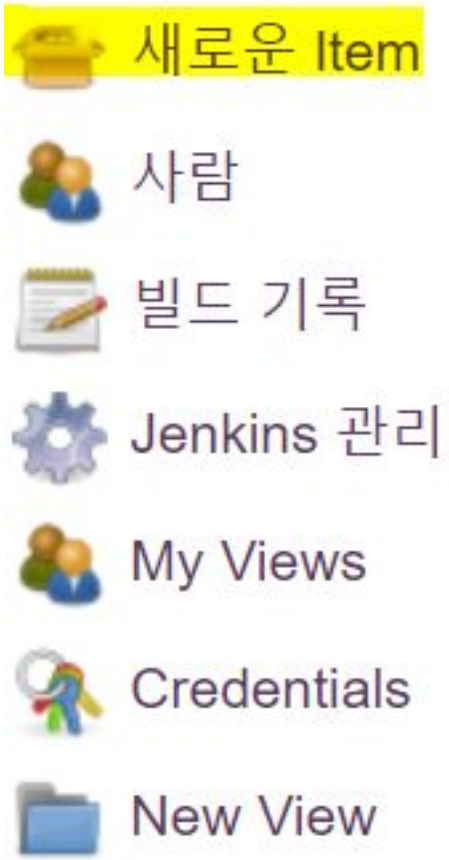
Jenkins


Getting Started
Getting Started
Folders
OWASP Markup Formatter
Build Timeout
Credentials Binding
Timestamper
Workspace Cleanup
Ant
Gradle
Pipeline
GitHub Branch Source
Pipeline: GitHub Groovy Libraries
Pipeline: Stage View
Git
Subversion
SSH Slaves
Matrix Authorization Strategy
PAM Authentication
LDAP
Email Extension
Mailer
** Script Security
** Command Agent Launcher
Folders
** - required dependency
Jenkins 2.107.1

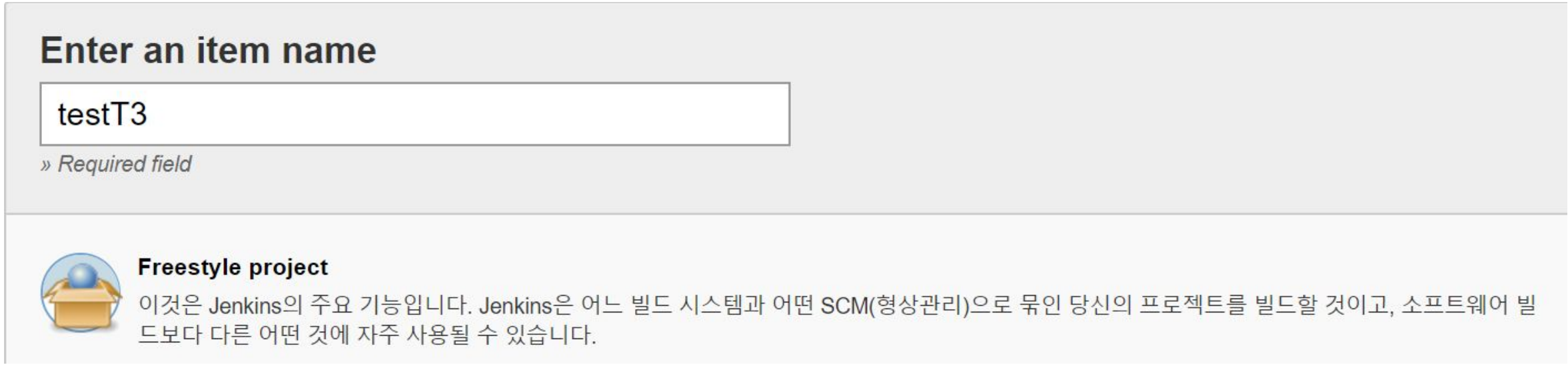
Jenkins


Getting Started
Create First Admin User
계정명:
암호:
암호 확인:
이름:
이메일 주소:
Jenkins 2.107.1
Continue as admin
Save and Finish

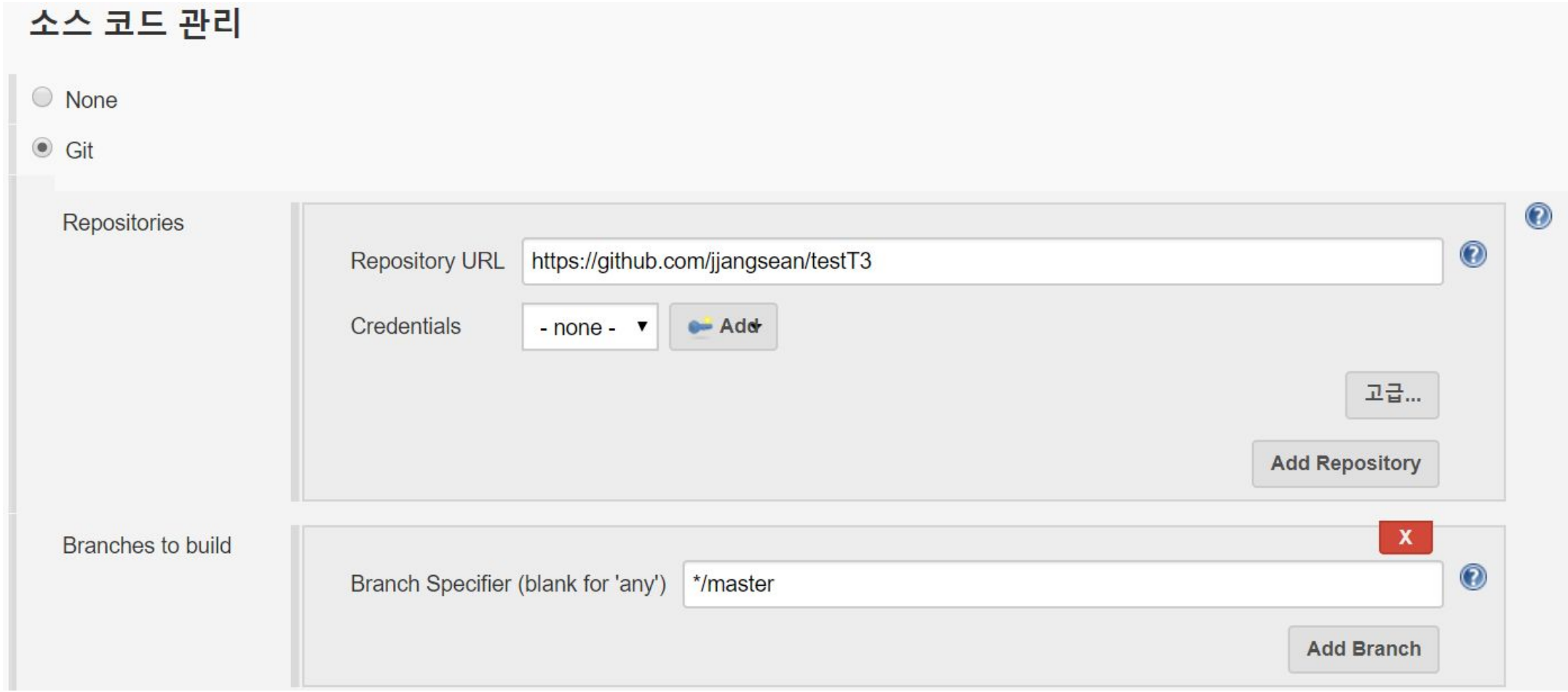
Jenkins



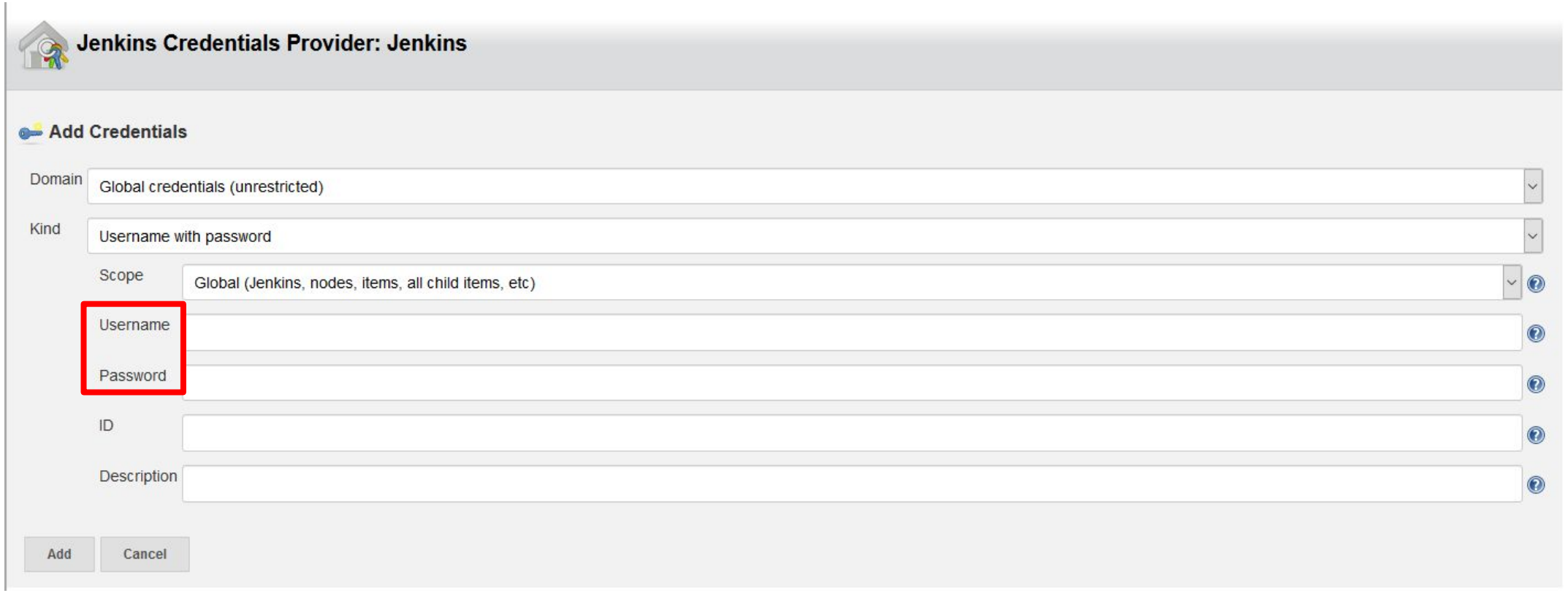
Jenkins


Enter an item name
testT3
» Required field
Freestyle project
이것은 Jenkins의 주요 기능입니다. Jenkins은 어느 빌드 시스템과 어떤 SCM(형상관리)으로 묶인 당신의 프로젝트를 빌드할 것이고, 소프트웨어 빌드보다 다른 어떤 것에 자주 사용될 수 있습니다.

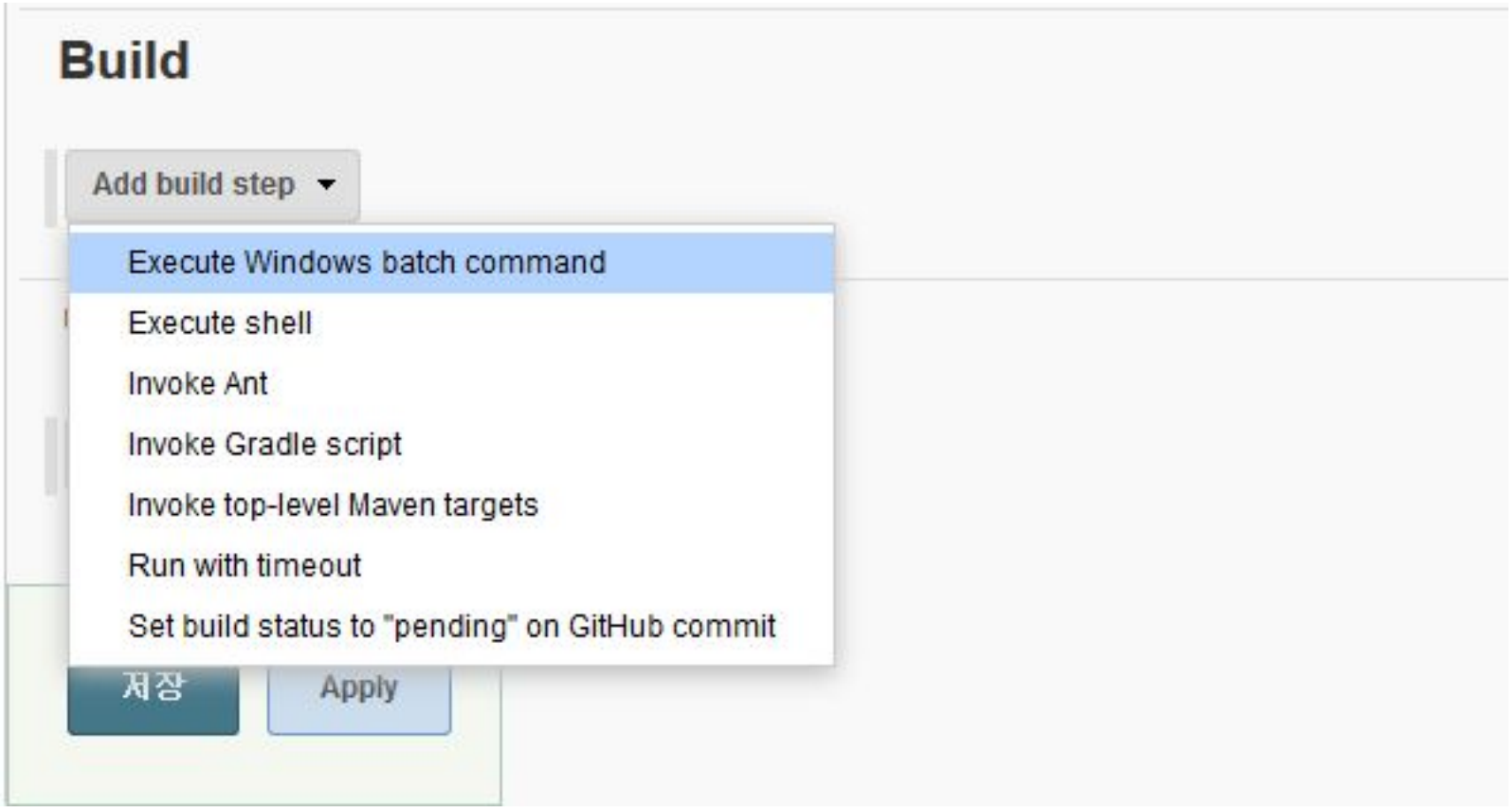
Jenkins


소스 코드 관리
None
Git
Repositories
Repository URL
https://github.com/jjangsean/testT3
Credentials
- none -
Add
고급...
Add Repository
Branches to build
X
Branch Specifier (blank for 'any')
*/master
Add Branch

Jenkins


Jenkins Credentials Provider: Jenkins
Add Credentials
Domain
Global credentials (unrestricted)
Kind
Username with password
Scope
Global (Jenkins, nodes, items, all child items, etc)
Username
Password
ID
Description
Add
Cancel

Jenkins


Build
Add build step
Execute Windows batch command
Execute shell
Invoke Ant
Invoke Gradle script
Invoke top-level Maven targets
Run with timeout
Set build status to "pending" on GitHub commit
저장
Apply

Jenkins


Build
Execute Windows batch command
X
Command
gradlew.bat
See the list of available environment variables
고급...
Add build step

Jenkins

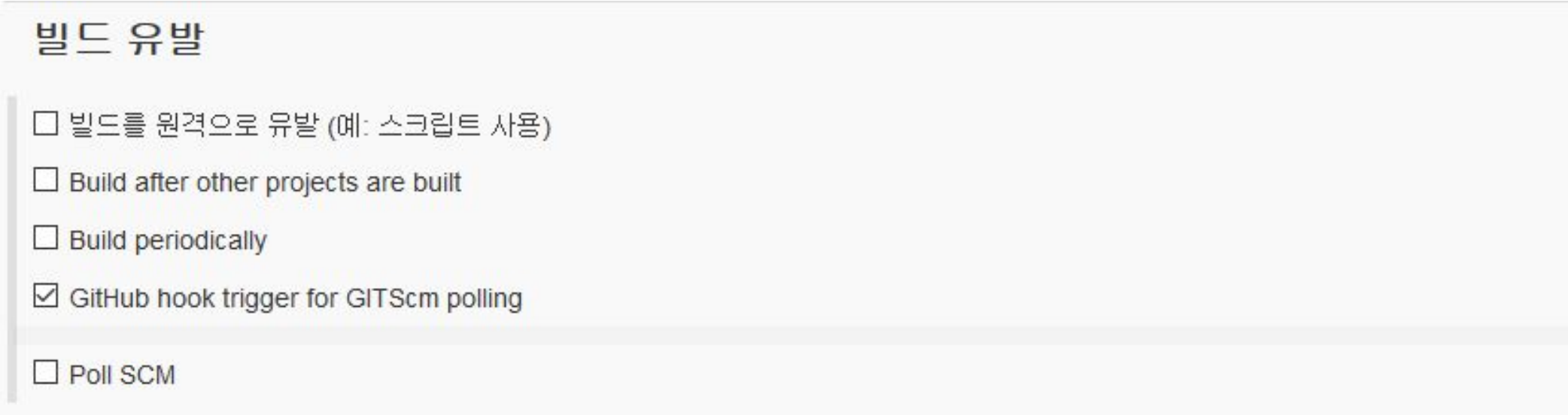
콘솔 출력

```
Started by GitHub push by SangHyeukYoon
Building in workspace C:₩Program Files (x86)₩Jenkins₩workspace₩Test
 > C:₩Program Files₩Git₩cmd₩git.exe rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
 > C:₩Program Files₩Git₩cmd₩git.exe config remote.origin.url https://github.com/SangHyeukYoon/Test2.git # timeout=10
Fetching upstream changes from https://github.com/SangHyeukYoon/Test2.git
 > C:₩Program Files₩Git₩cmd₩git.exe --version # timeout=10
using GIT_ASKPASS to set credentials
 > C:₩Program Files₩Git₩cmd₩git.exe fetch --tags --progress https://github.com/SangHyeukYoon/Test2.git +refs/heads/*:refs/remotes/origin/*
 > C:₩Program Files₩Git₩cmd₩git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
 > C:₩Program Files₩Git₩cmd₩git.exe rev-parse "refs/remotes/origin/origin/master^{commit}" # timeout=10
Checking out Revision da56489c08e5113fc050647286d7f592c4dec4b7 (refs/remotes/origin/master)
 > C:₩Program Files₩Git₩cmd₩git.exe config core.sparsecheckout # timeout=10
 > C:₩Program Files₩Git₩cmd₩git.exe checkout -f da56489c08e5113fc050647286d7f592c4dec4b7
Commit message: "Add Test"
 > C:₩Program Files₩Git₩cmd₩git.exe rev-list --no-walk 758c8ab28da8d19b746d84dfe70d6857825f35ee # timeout=10
[Test] $ cmd /c call C:₩Windows₩TEMP₩jenkins2498276238643978174.bat

C:₩Program Files (x86)₩Jenkins₩workspace₩Test>gradlew.bat
:help

Welcome to Gradle 4.0.

To run a build, run gradlew <task> ...

To see a list of available tasks, run gradlew tasks

To see a list of command-line options, run gradlew --help

To see more detail about a task, run gradlew help --task <task>

BUILD SUCCESSFUL in 1s
1 actionable task: 1 executed
Finished: SUCCESS
```

Jenkins - git trigger

다운로드 링크 :

https://www.eclipse.org/downlloads/

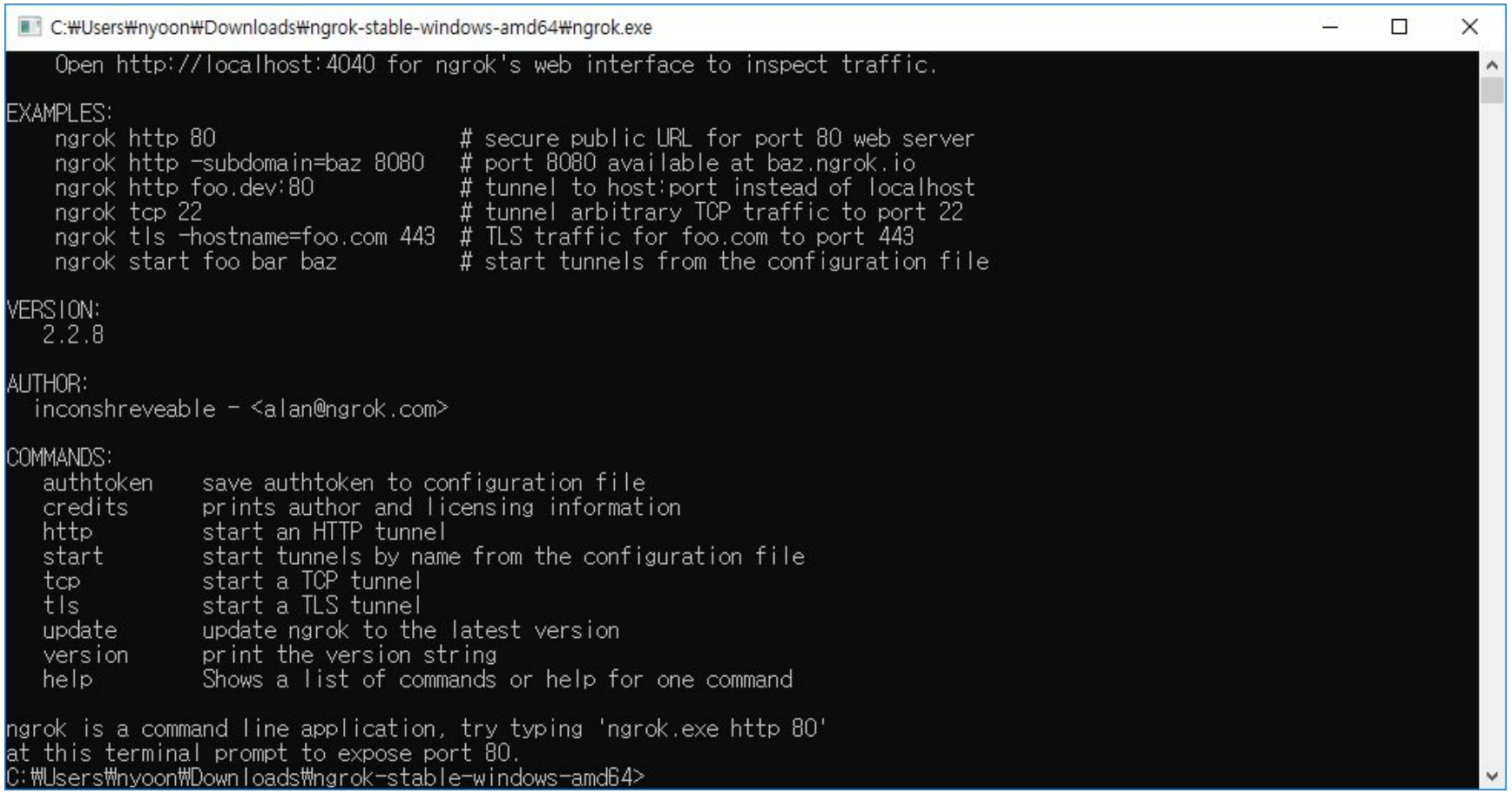


Jenkins - ngrok

다운로드 링크 :

https://ngrok.com/download

외부에서 로컬로 접속

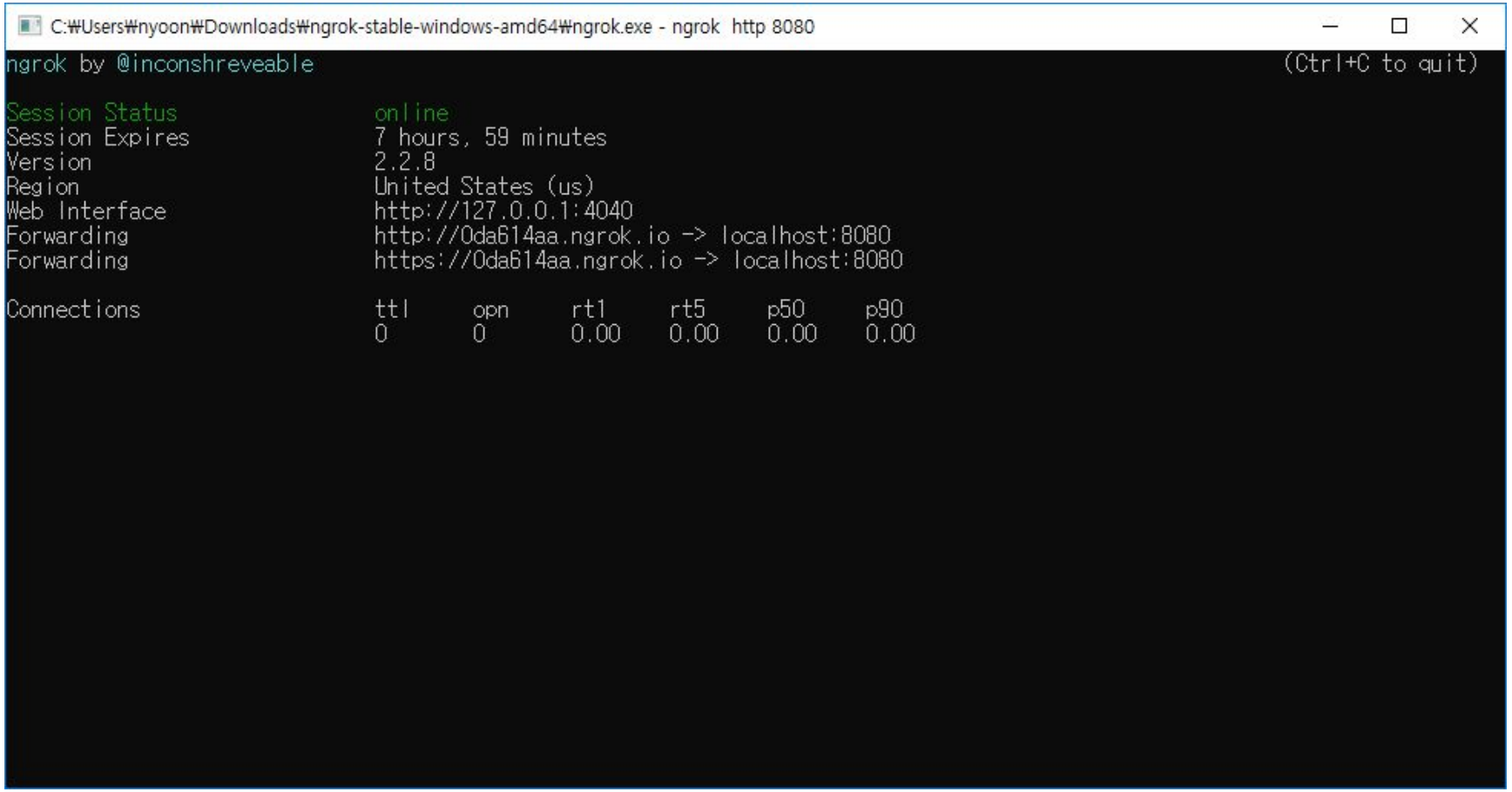


Jenkins - ngrok

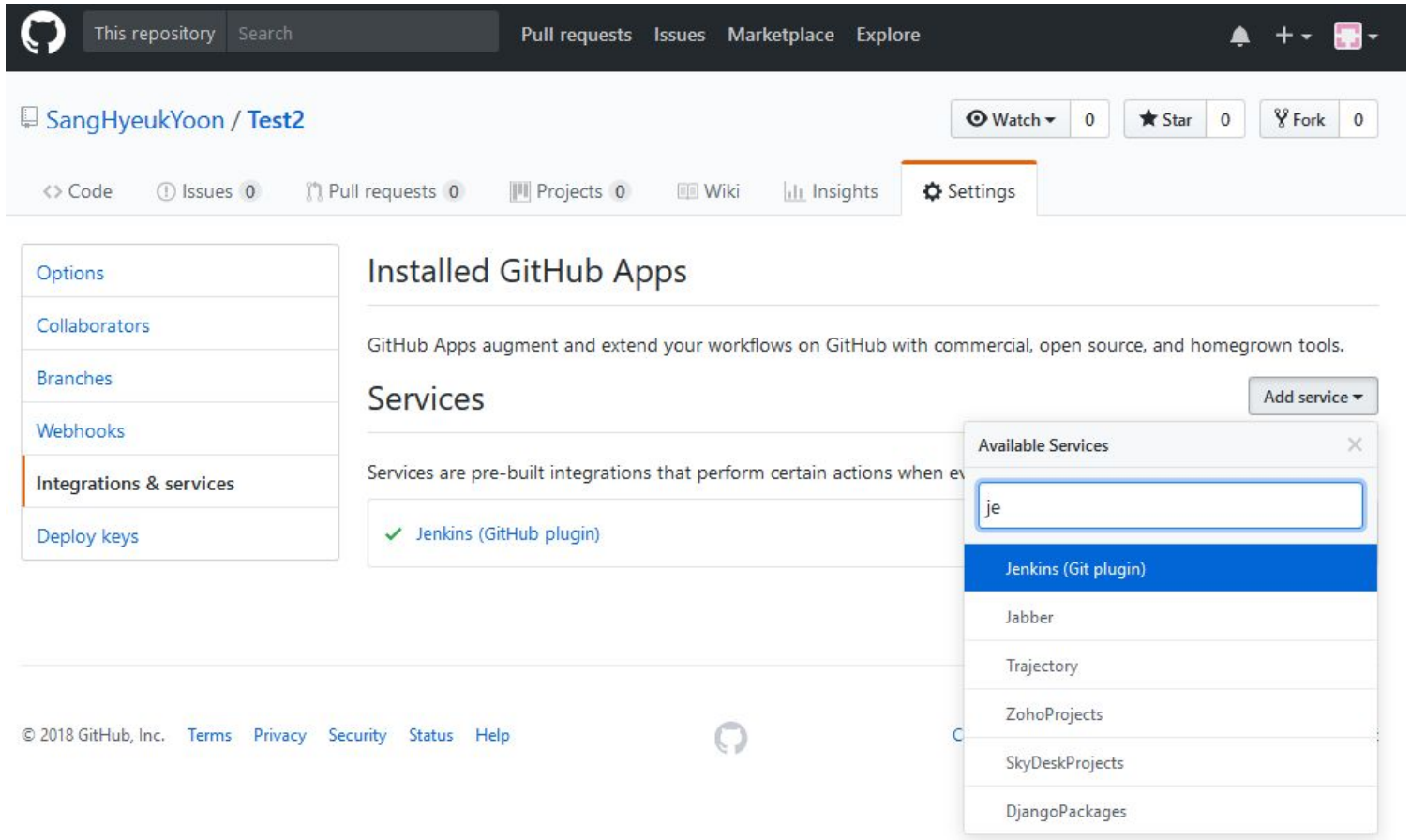
다운로드 링크 :

https://ngrok.com/download

ngrok http 8080



Jenkins - git trigger



Jenkins - git trigger

- Options
- Collaborators
- Branches
- Webhooks
- **Integrations & services**
- Deploy keys

Services / **Add Jenkins (Git plugin)**

Install Notes

- Requires **Git Plugin v1.1.18**, released 2012-04-27, and the "Poll SCM" build trigger needs to be enabled. (Though you can have it poll very infrequently, I recommend something like `0 */3 * * *`)
- "Jenkins Url" is the base URL of your Jenkins server. For example: `http://ci.jenkins-ci.org/`. We will hit `/git/notifyCommit` under this URL. (See the Git plugin wiki page for more details.)

Details

Jenkins is a popular continuous integration server.

If you're using the standard Jenkins Git plugin to poll & check out your repository, you can quickly and easily switch to a push model using this service.

It will send a request to your Jenkins instance telling it about the repositories and branches that changed. Jenkins will then poll the repository and build if needed. See push notification from repository on the Jenkins wiki for information.

Jenkins url

http://ddabbb9c.ngrok.io/github-webhook/

☑ Active

We will run this service when an event is triggered.

Add service