

# 웹 개발자 부트캠프 과정

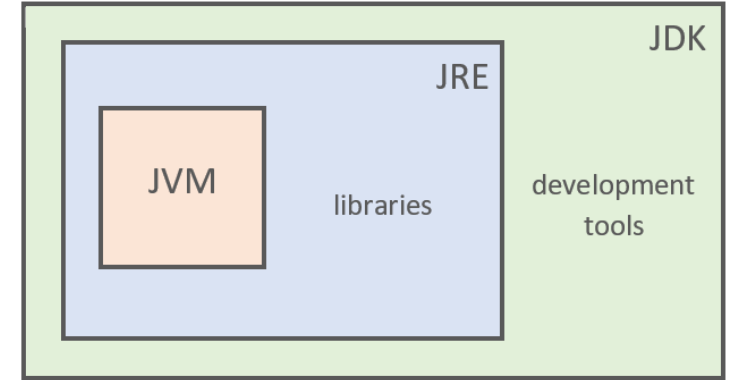
CodingOn

# Java

# 개발환경 구축

# 용어 정리

- **JDK** (Java Development Kit)
  - 자바로 개발하는데 사용되는 SDK(소프트웨어 개발 키트)
- **JRE** (Java Runtime Environment)
  - 자바 실행 환경으로 자바 프로그램을 시킬 때 필요한 라이브러리 API를 묶어 배포되는 패키지
  - JDK 11 부터 JDK에 기본적으로 포함됨
- **JVM** (Java Virtual Machine)
  - 자바 가상 머신으로 자바를 돌리는 프로그램
  - 자바로 작성된 모든 프로그램은 JVM 에서만 실행 가능!
  - JRE에 포함됨. 따라서 컴퓨터 운영체제에 맞는 JRE가 설치되어 있다면 JVM 도 설치된 것
  - JVM은 모든 플랫폼에서 제약 없이 동작함. 즉, OS에 종속적이지 않다!



# JVM



- OS에 종속적이지 않음
  - 즉, OS에 종속적이지 않기 위해 **Java를 실행시킬 무언가가 필요 -> JVM**
  - 즉, Java 언어로 작성된 프로그램이 JVM 을 거쳐서 운영체제와 상호작용을 함
  - 컴파일된 코드와 하드웨어/OS 사이에서 JVM이 Byte Code로 변환해줌!
1. Java 언어를 실행하면, 컴파일러에 의해 Byte Code로 변환되며 .class 파일에 저장됨
  2. Java 프로그램이 여러 환경에서 동일하게 동작하도록 JVM이 실행
  3. JVM은 .class 파일에 저장된 Byte Code 해석하고 실행 (특정 플랫폼의 기계어 (Binary Code, 0과 1로 이루어진 코드) 로 컴파일)
  4. JVM 에 의해 컴파일 된 기계어는 CPU에서 실행

# JDK 설치

- <https://www.oracle.com/java/technologies/downloads/#java17>

## Java 19 and Java 17 available now

Java 17 LTS is the latest long-term support release for the Java SE platform. JDK 19 and JDK 17 binaries are free to use in production and free to redistribute, at no cost, under the [Oracle No-Fee Terms and Conditions](#).

[Learn about Java SE Subscription](#)

JDK 19 will receive updates under these terms, until March 2023 when it will be superseded by JDK 20.

JDK 17 will receive updates under these terms, until at least September 2024.

Java 19    **Java 17**

## Java SE Development Kit 17.0.5 downloads

Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications and components using the Java programming language.

The JDK includes tools for developing and testing programs written in the Java programming language and running on the Java platform.

Linux    macOS    **Windows**

각자 운영체제에 맞는 Tab 선택

Product/file description	File size	Download
x64 Compressed Archive	171.88 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.zip">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.zip</a> ( sha256)
x64 Installer	152.85 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe</a> ( sha256)
x64 MSI Installer	151.73 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.msi">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.msi</a> ( sha256)

# 설치 확인

설치 확인 명령어 `java -version`

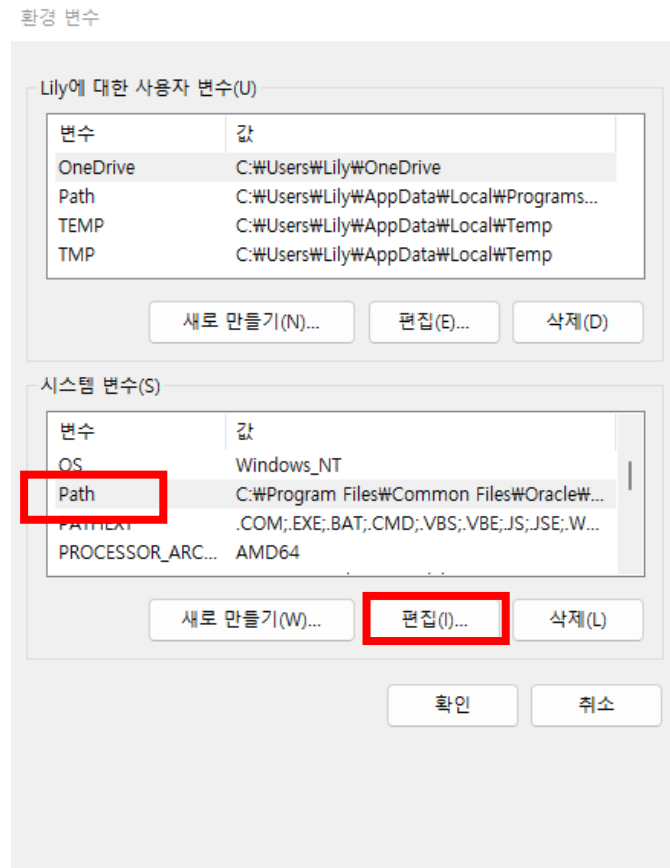
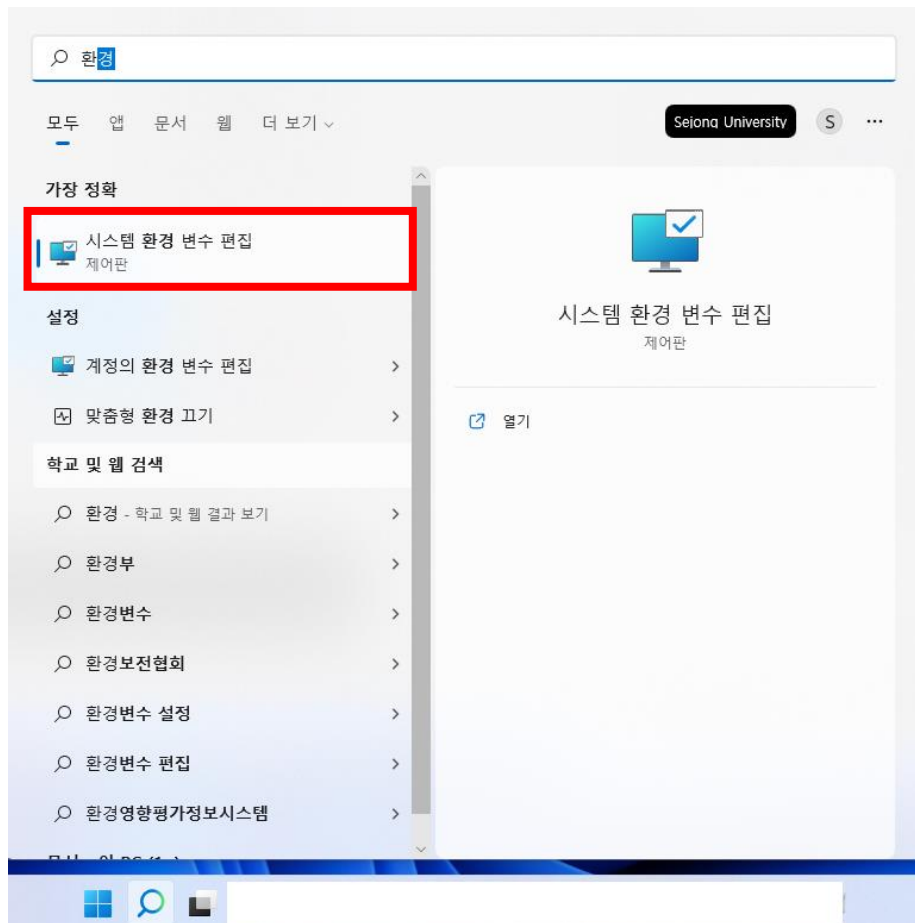
Windows - CMD에서

```
C:\Users\Lily>java -version
java version "17.0.5" 2022-10-18 LTS
Java(TM) SE Runtime Environment (build 17.0.5+9-LTS-191)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.5+9-LTS-191, mixed mode, sharing)
```

Mac OS - Terminal에서

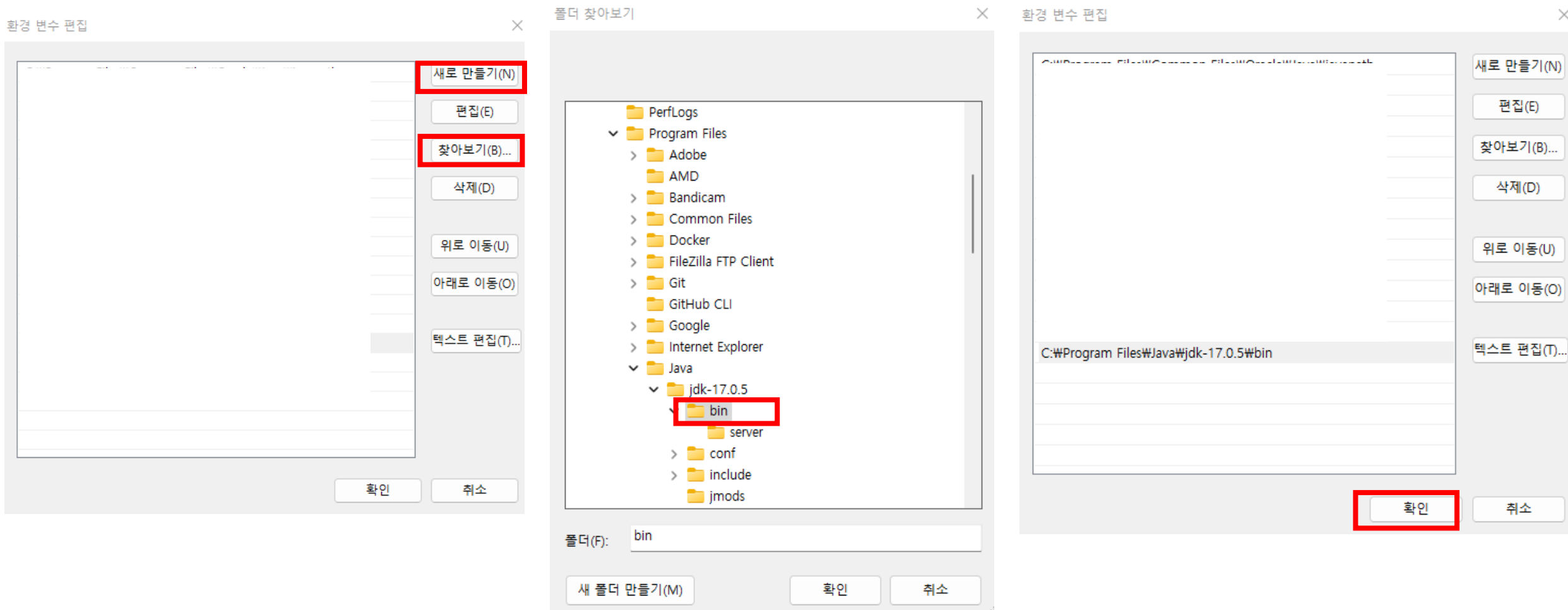
```
-MacBookPro ~ % java -version
```

# (참고) Windows 환경변수 설정





# (참고) Windows 환경변수 설정



# Eclipse 설치

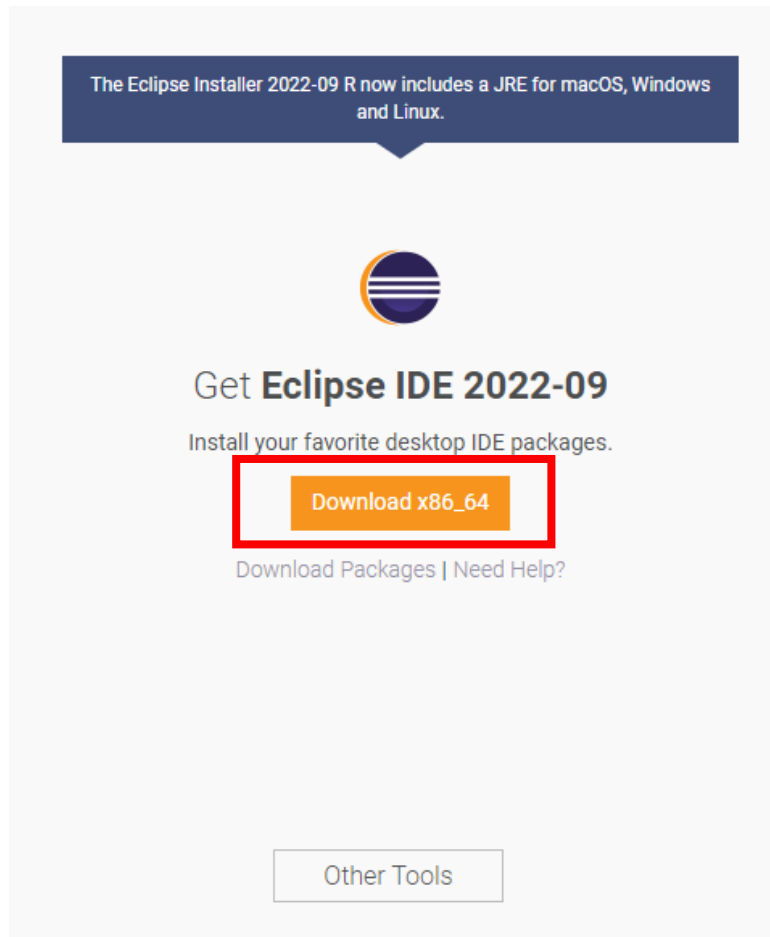
# Eclipse 이클립스

- 현업에서 많이 사용하는  
통합 개발 환경 (IDE, Integrated Development Environment)
- 무료!
- 여러 프로젝트 동시 관리 가능



# eclipse 설치


- <https://www.eclipse.org/downloads/>





e terms and conditions of the Eclipse Foundation Software Use



# eclipse 설치


 by Oomph ★ DONATE

type filter text 




### Eclipse IDE for Java Developers

The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration




### Eclipse IDE for Enterprise Java and Web Developers

Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer Pages and Faces, Yaml, Markdown, Web Services, JPA and Data Tools, Maven and...




### Eclipse IDE for C/C++ Developers

An IDE for C/C++ developers.




### Eclipse IDE for Embedded C/C++ Developers


An IDE for Embedded C/C++ developers. It includes managed cross build plug-ins (Arm and RISC-V) and debug plug-ins (SEGGER J-Link, OpenOCD, pyocd, and QEMU), plus a number of templates to create ready...



### Eclipse IDE for PHP Developers

The essential tools for any PHP developer, including PHP language support, Git client and editors for JavaScript, TypeScript, HTML, CSS and XML.  
[Click here to raise an issue with Eclipse PHP Development Tools.](#)


 by Oomph ★ DONATE




### Eclipse IDE for Enterprise Java and Web Developers

[details](#)


Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer Pages and Faces, Yaml, Markdown, Web Services, JPA and Data Tools, Maven and Gradle, Git, and more.

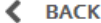
Java 17+ VM C:\Program Files\Java\jdk-17.0.5 

Installation Folder C:\Users\Lily\eclipse\jee-2022-09 


☒ create start menu entry


☒ create desktop shortcut





# eclipse 설치

 by Oomph

 **Eclipse IDE for Enterprise Java and Web Developers** [details](#)  
Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer Pages and Faces, Yaml, Markdown, Web Services, JPA and Data Tools, Maven and Gradle, Git, and more.

Java 17+ VM C:\Program Files\Java\jdk-17.0.5

Installation Folder C:\Users\Lily\eclipse\jee-2022-09

☒ create start menu entry

☒ create desktop shortcut

**▶ LAUNCH**


show readme file

open in system explorer

keep installer

← BACK

## Workspace 가 위치할 곳 설정

 Eclipse IDE Launcher

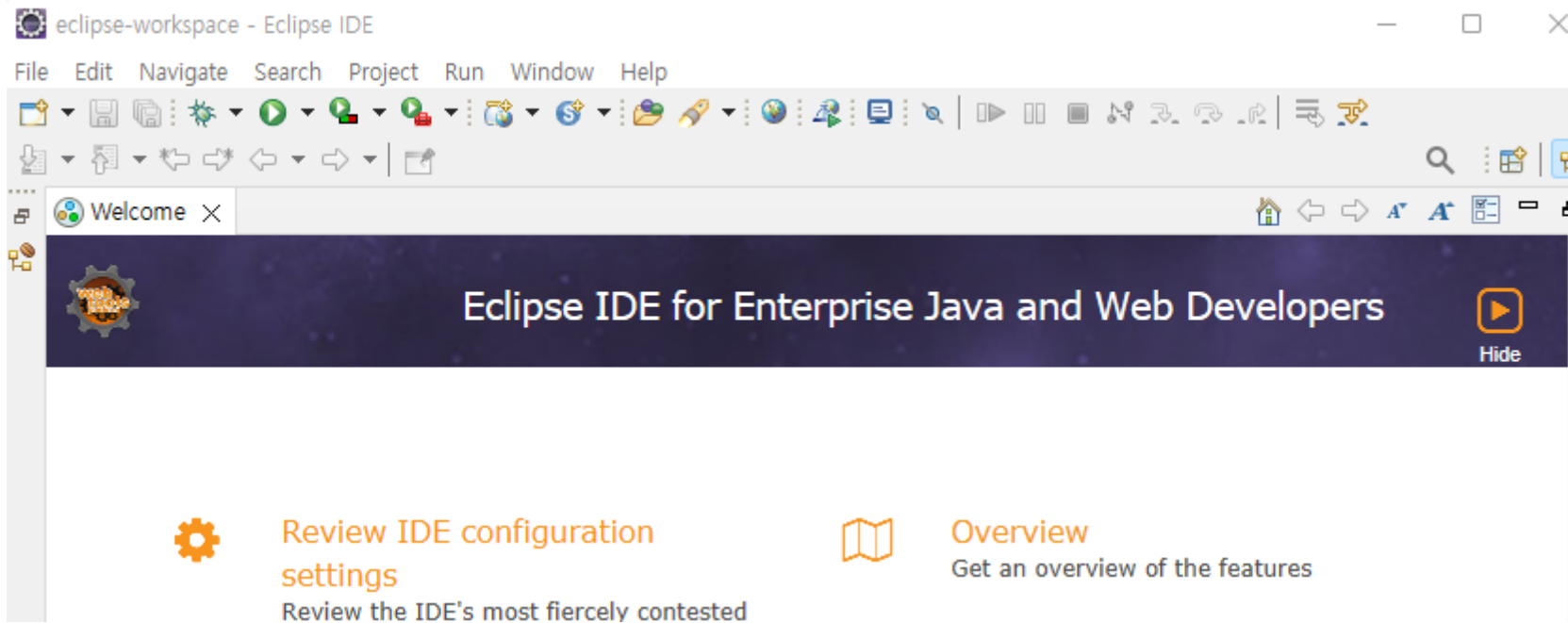
**Select a directory as workspace**  
Eclipse IDE uses the workspace directory to store its preferences and development artifacts.

Workspace: C:\Users\Lily\eclipse-workspace

☐ Use this as the default and do not ask again

# eclipse 설치

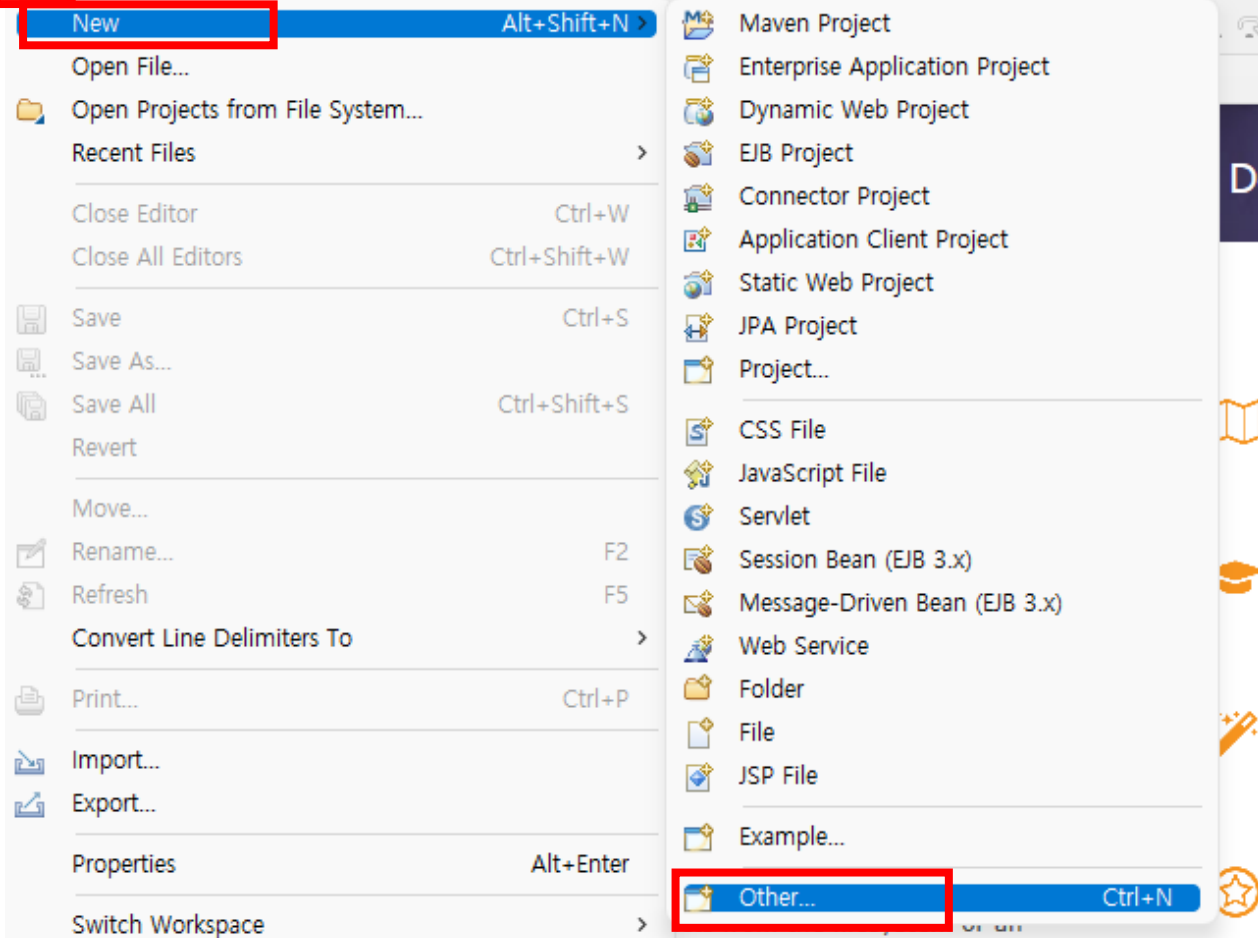
아래와 같이 eclipse IDE가 실행된다면 성공!



# 프로젝트 만들기

eclipse-workspace - Eclipse IDE

File Edit Navigate Search Project Run Window Help



Select a wizard

Select a wizard

Create a Java project

Wizards:

type filter text

- Class
- Interface
- Java Project
- Java Project from Existing Ant Buildfile
- Plug-in Project
- > General
- > Connection Profiles
- > Eclipse Modeling Framework
- > EJB
- > Git
- > Gradle
- > Java



< Back

Next >

Finish

Cancel



## Create a Java Project

Create a Java project in the workspace or in an external location.



Project name: java\_first\_project

원하는 프로젝트 이름(영어로)

☒ Use default location

Location: C:\Users\Lily\workspace\java\_first\_project

Browse...

## JRE

☒ Use an execution environment JRE:

JavaSE-17

☐ Use a project specific JRE:

jdk-17.0.5

☐ Use default JRE 'jdk-17.0.5' and workspace compiler preferences[Configure JREs...](#)

## Project layout

☐ Use project folder as root for sources and class files☒ Create separate folders for sources and class files[Configure default...](#)

## Working sets

☐ Add project to working sets

New...

Working sets:

Select...

## Module

☐ Create module-info.java file

Module name:

☐ Generate comments

&lt; Back

Next &gt;

Finish

Cancel



## Open Associated Perspective?



Open the Java perspective?

This perspective is designed to support Java development. It offers a Package Explorer, a Type Hierarchy, and Java-specific navigation actions.

☒ Remember my decision

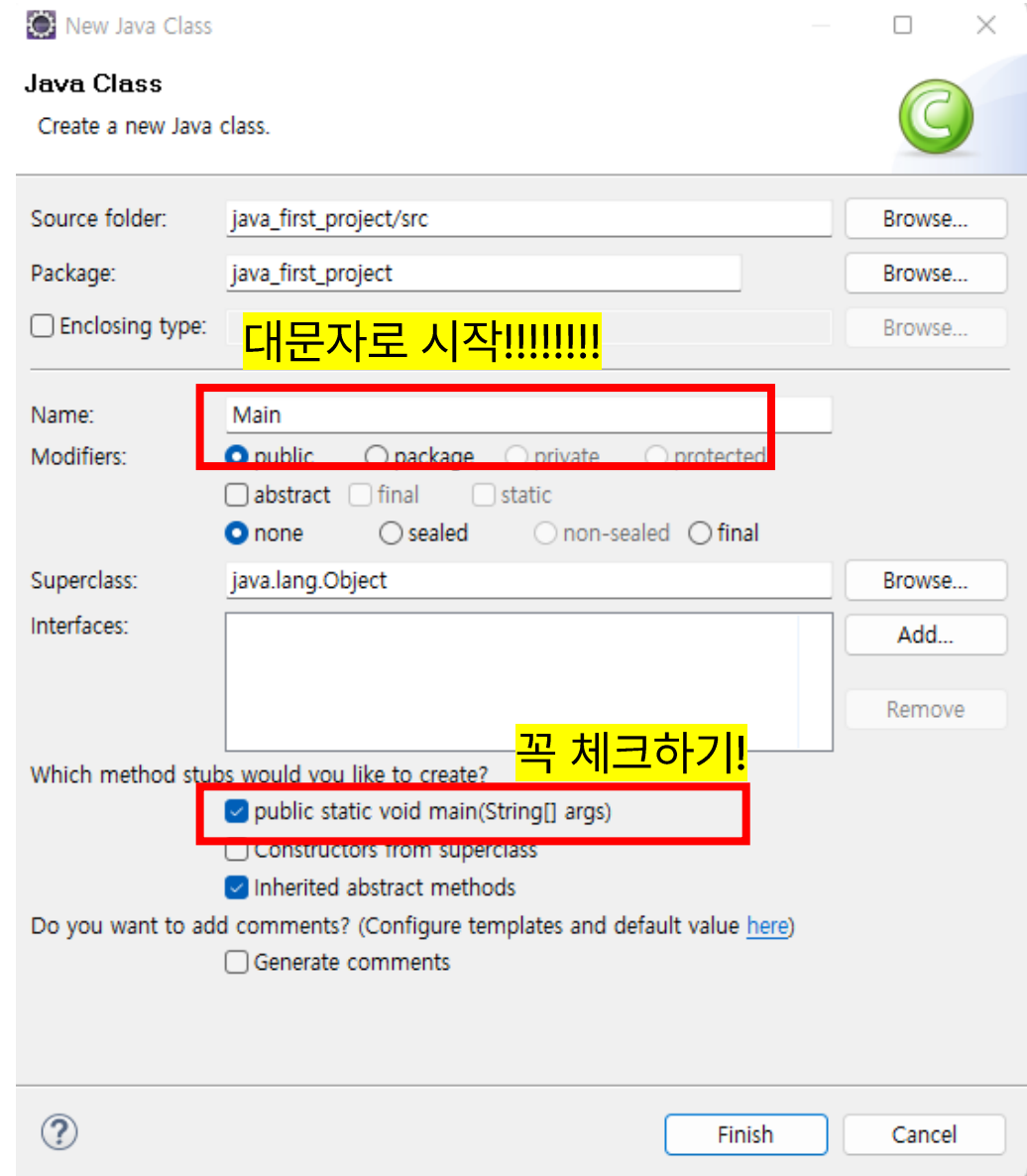
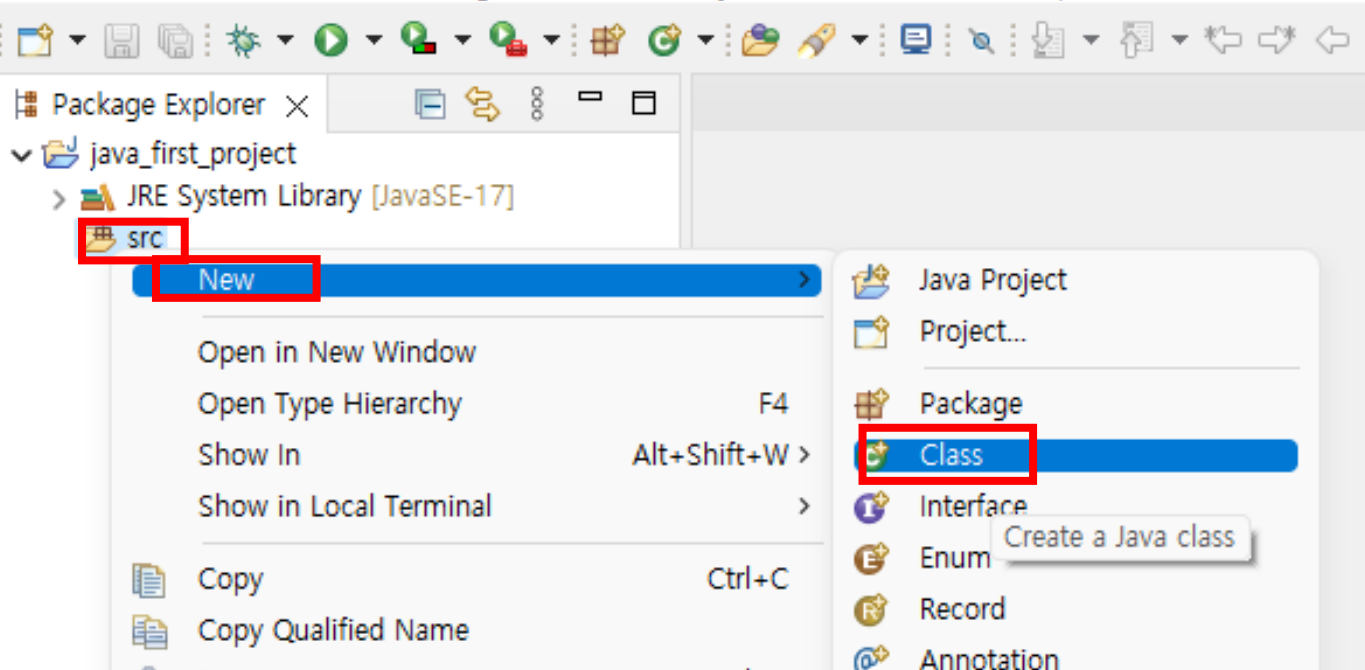
Open Perspective

No

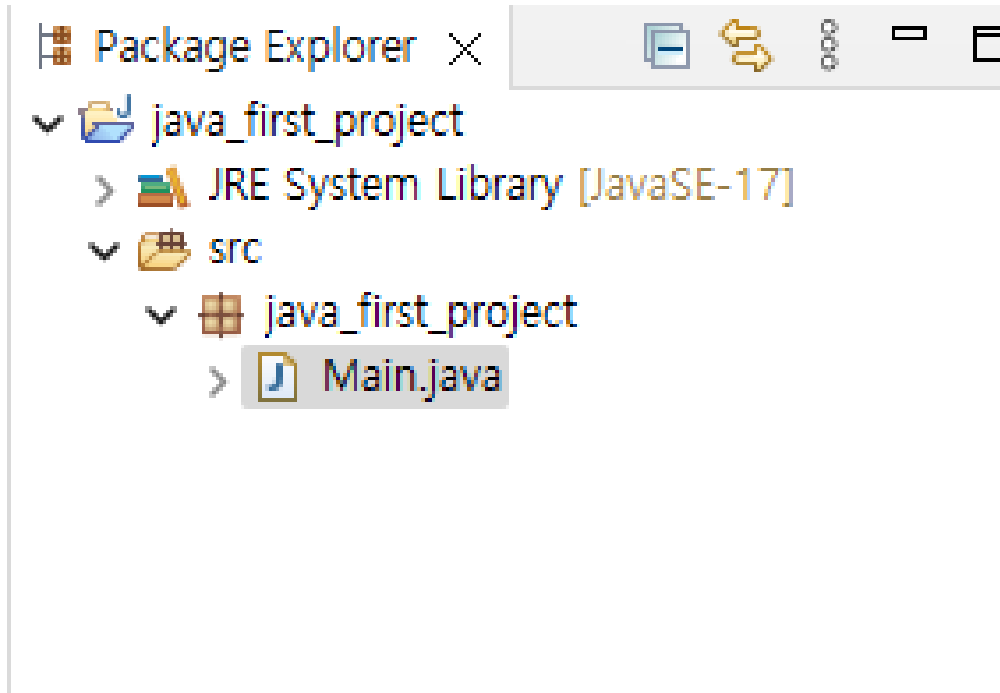
# 프로젝트 만들기

eclipse-workspace - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help



# 프로젝트 만들기



# IntelliJ 설치

# IntelliJ

- Java 개발 툴 중 하나
  - JetBrains사에서 제작한 상용 자바 통합 개발 환경
  - 간편한 플러그인 설치 (VS Code의 확장 프로그램 같은 것)
  - 직관적인 UI
- 
- Eclipse 프로젝트와 구조가 약간 다름
  - 유료





버전: 2022.2.3  
빌드: 222.4345.14  
2022년 10월 5일

[릴리스 노트](#)

[시스템 요구 사항](#)

[설치 안내](#)

[기타 버전](#)

[타사 소프트웨어](#)

## 다운로드 IntelliJ IDEA

[Windows](#) [macOS](#) [Linux](#)

### Ultimate

웹 및 엔터프라이즈 개발용

다운로드

.exe ▼

30일 무료 평가 이용 가능

Java, Kotlin, Groovy, Scala

### Community

JVM 및 Android 개발용

다운로드

.exe ▼

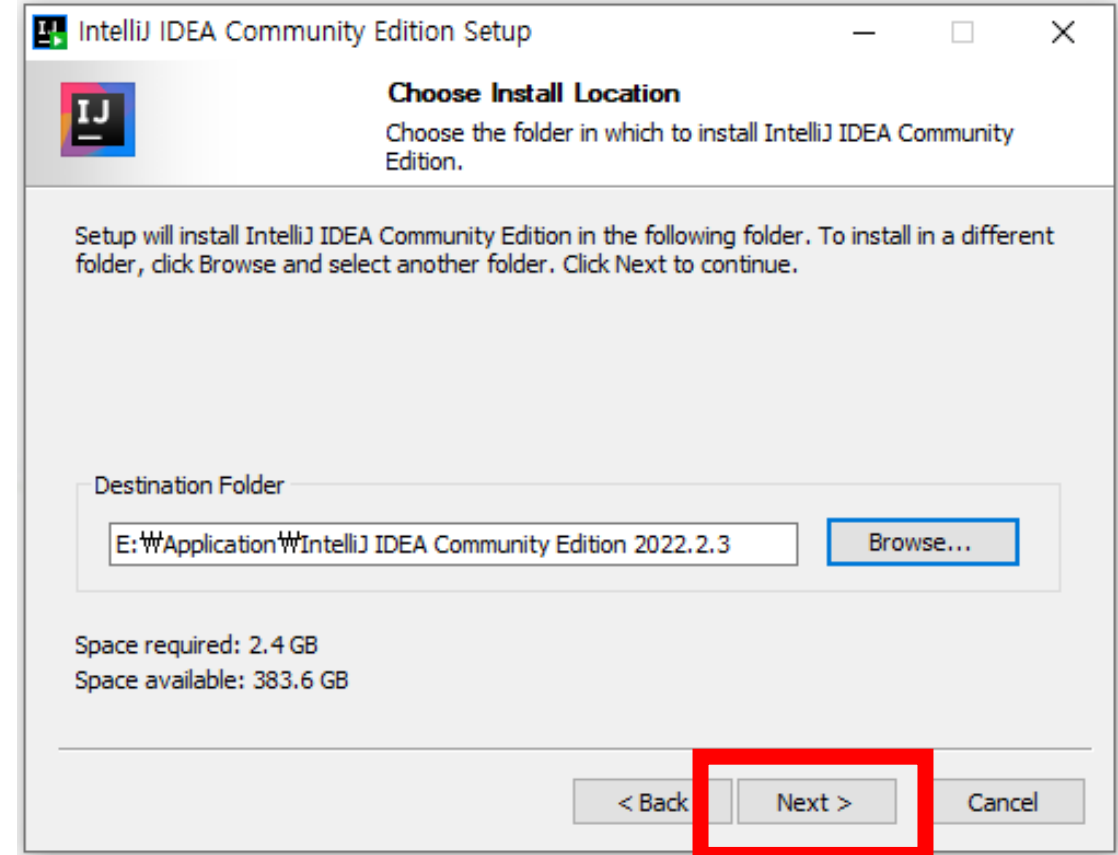
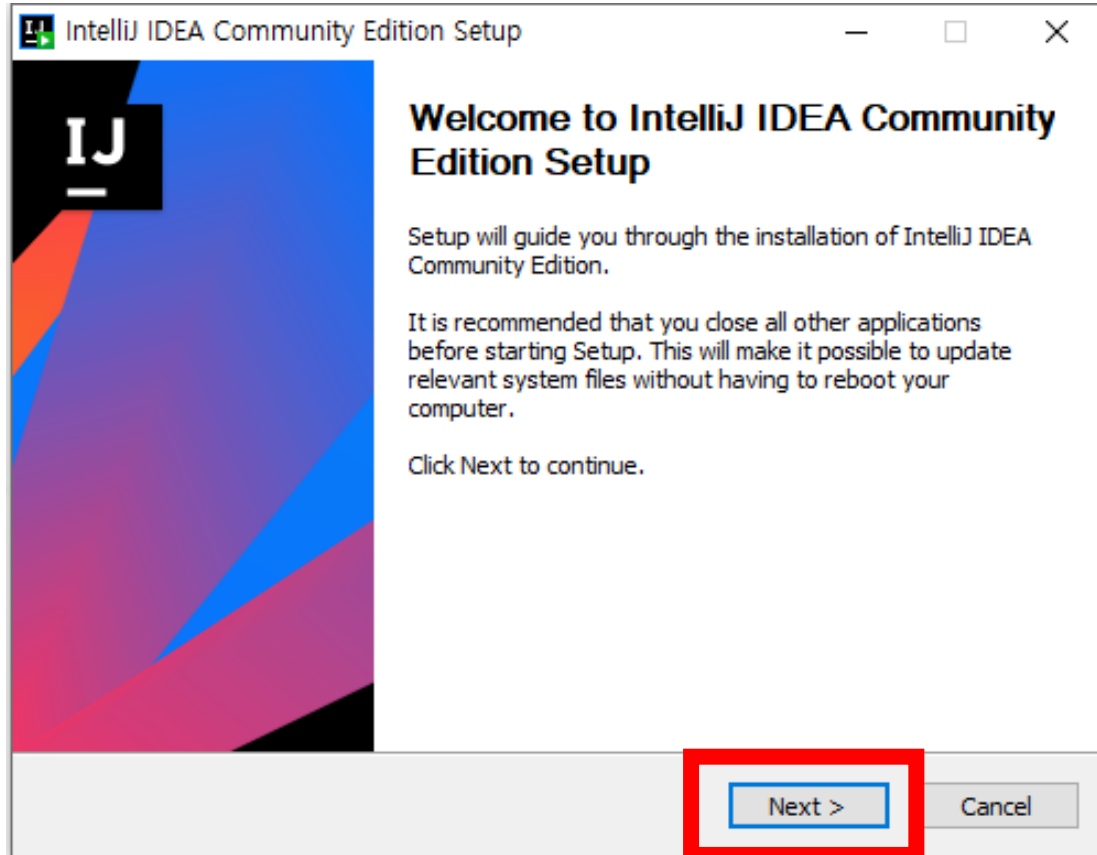
무료, 오픈 소스, 비도판

IntelliJ IDEA  
Ultimate

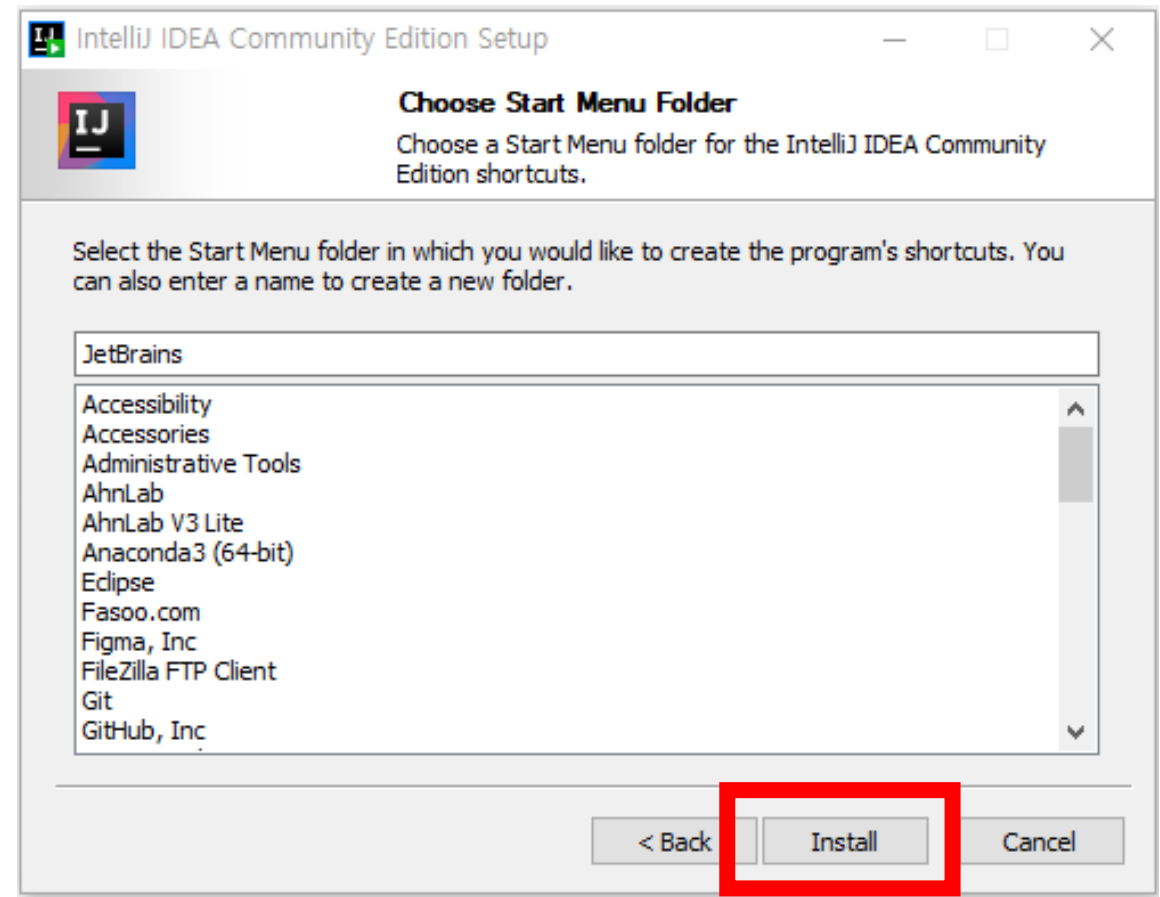
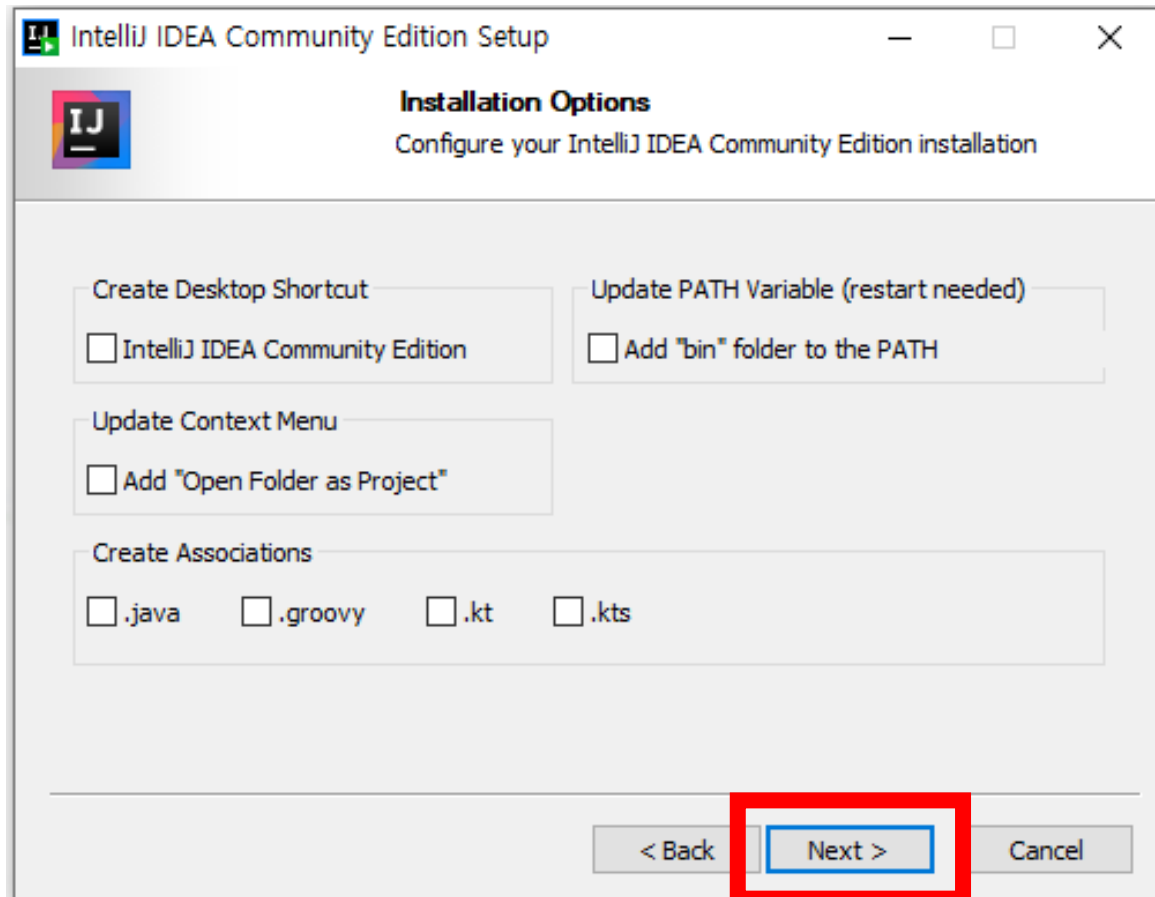


[X]  
Cookies and IP  
web content and  
experience. Our  
address for the  
-----  
| JetBrains may  
| individual st  
| offers and ad

# 와다다 Next 놀러서 설치 완료하기





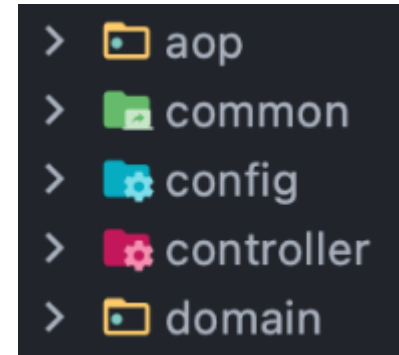
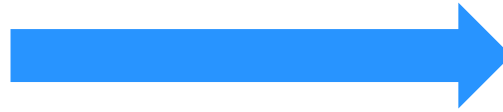
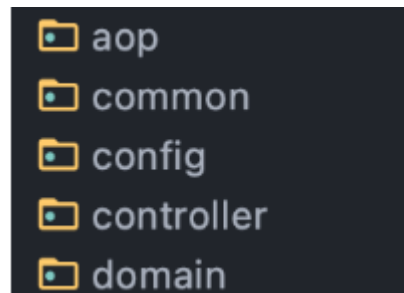


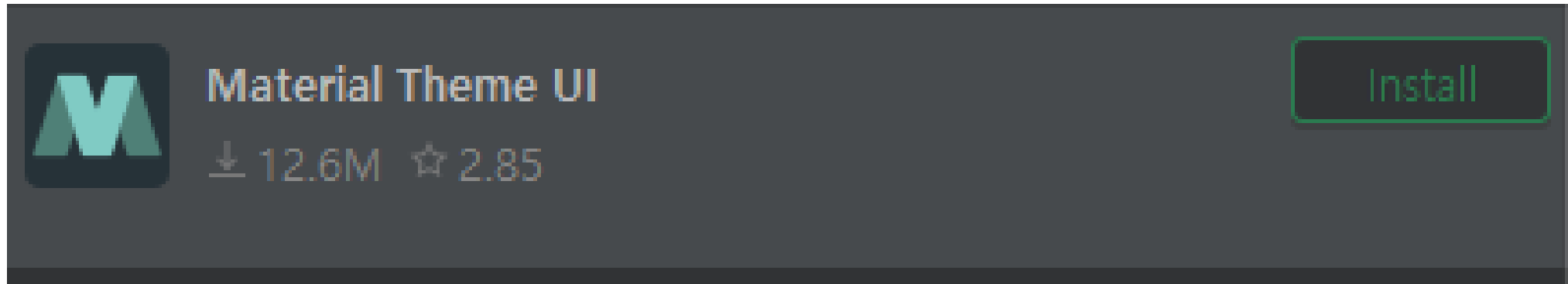
# 플러그인 추천

버전 상관 X




- 프로젝트 구조(패키지, 폴더, 파일)을 Atom ide 디자인을 입혀서 아이콘 모양을 바꿔주는 플러그인





- IntelliJ 가 예뻐진다...;;



# CodeGlance Pro

↓ 440.2K ☆ 4.87

Install

CategoryRepository.java x application.yml x

6 1 34

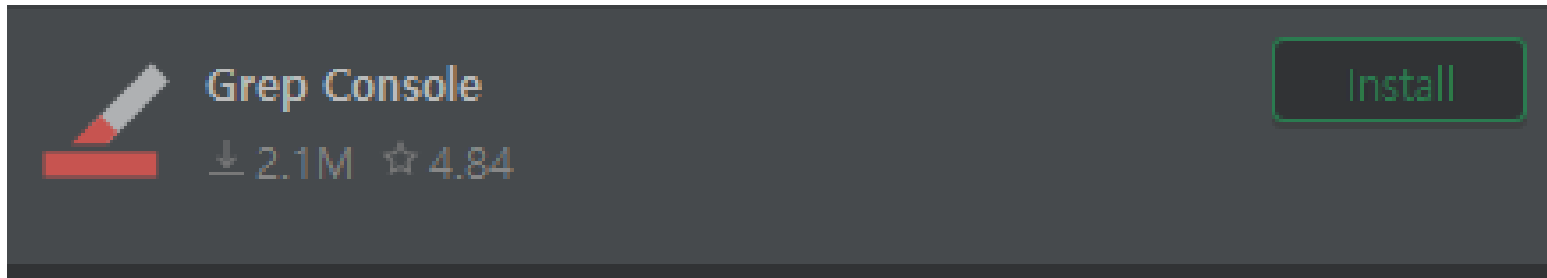
```
categoryDTO(category);

new HashMap<>();
categoryDTO);

ame());

categoryId) {
categoryId);
```

- 대략적인 전체적인 코드의 양을 체크하거나 위에 적어 놓은 메소드를 찾을 때 유용하다.

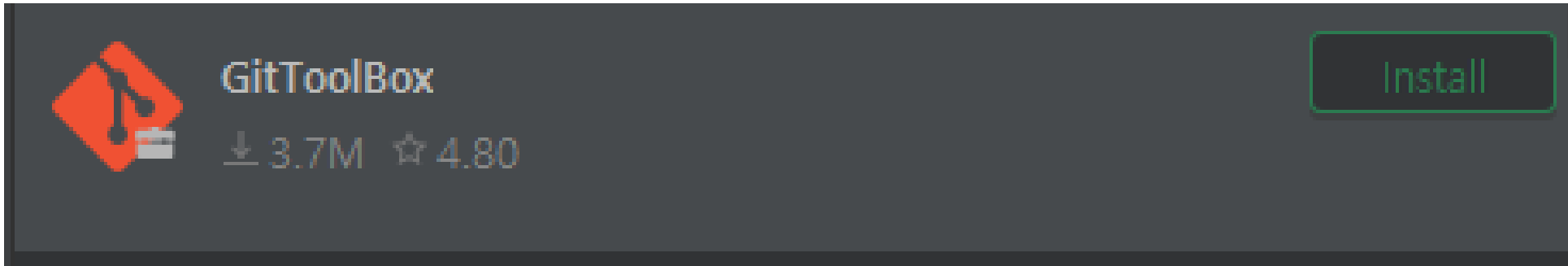


- Console 출력을 상황에 맞게 색상 별로 나눠서 출력해준다.

```
References: none;
2021-07-25 19:48:21.498 INFO 71796 --- [ restartedMain] o.h.e.t.j.p.i.JtaPlatformInitiator : HH000490: Using JtaPlatform implementation: [org.hibernate.engine.trans
2021-07-25 19:48:21.505 TRACE 71796 --- [ restartedMain] o.h.type.spi.TypeConfiguration$Scope : Handling #SessionFactoryCreated from [org.hibernate.internal.SessionFact
2021-07-25 19:48:21.507 INFO 71796 --- [ restartedMain] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2021-07-25 19:48:21.572 INFO 71796 --- [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : LiveReload server is running on port 35729
2021-07-25 19:48:21.893 WARN 71796 --- [ restartedMain] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database quer
2021-07-25 19:48:22.108 INFO 71796 --- [ restartedMain] o.s.s.concurrent.ThreadPoolTaskExecutor : Initializing ExecutorService 'applicationTaskExecutor'
2021-07-25 19:48:22.278 INFO 71796 --- [ restartedMain] o.s.b.a.w.s.WelcomePageHandlerMapping : Adding welcome page: class path resource [static/index.html]
```

# 플러그인 추천

ver. Ultimate

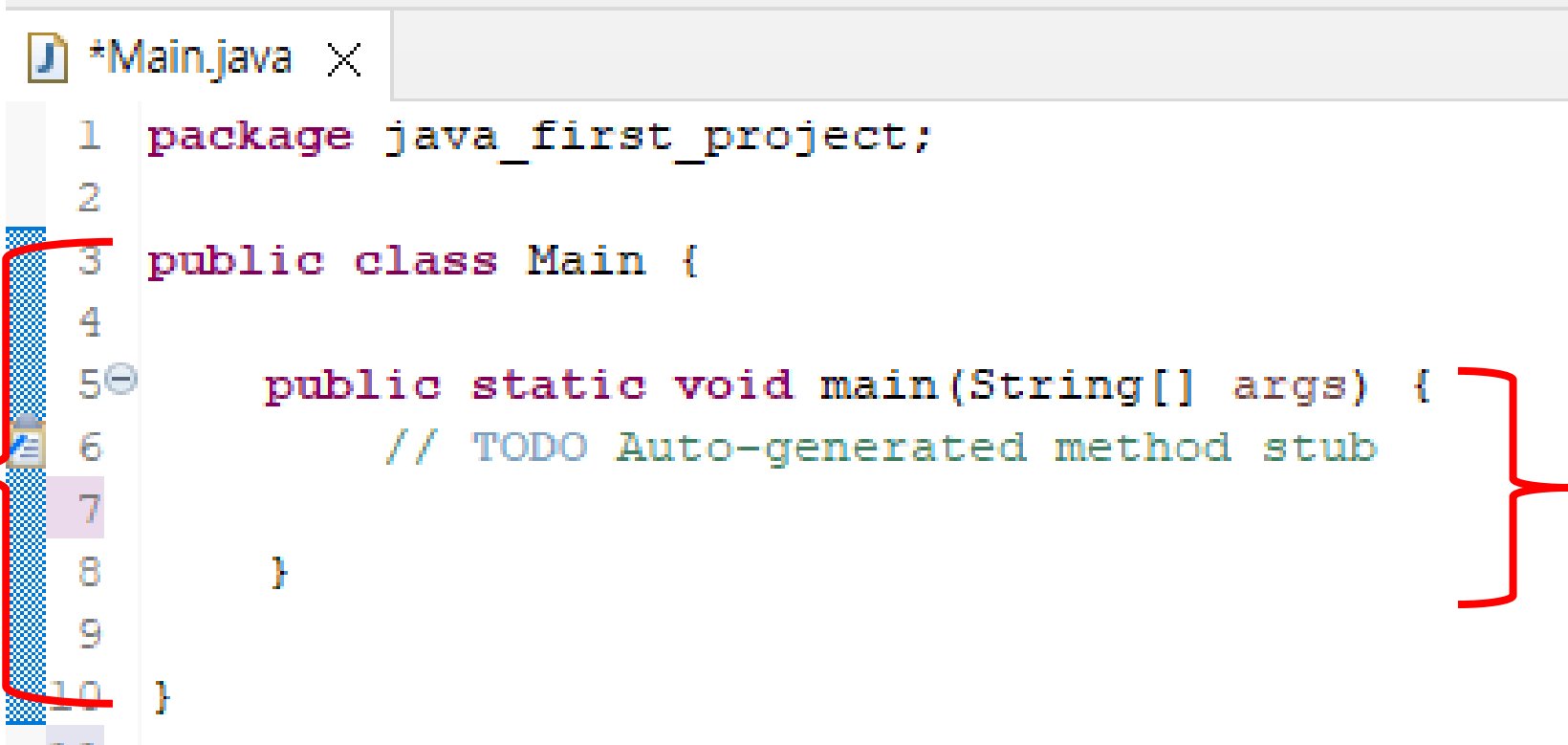


- VSCode에서의 Git Lengs
- 코드별 Git commit 내용 파악이 가능하다.



# 간단한 코드 실행

# 자바 프로그램의 기본 구조



The screenshot shows a code editor window titled `*Main.java` with the following Java code:

```
1 package java_first_project;
2
3 public class Main {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7     }
8 }
9
10
```

Annotations are present in the image:

- A red bracket on the left side, labeled **클래스** (Class), spans from line 3 (`public class Main {`) to line 10 (`}`).
- A red bracket on the right side, labeled **메소드** (Method), spans from line 5 (`public static void main(String[] args) {`) to line 7 (`}`).

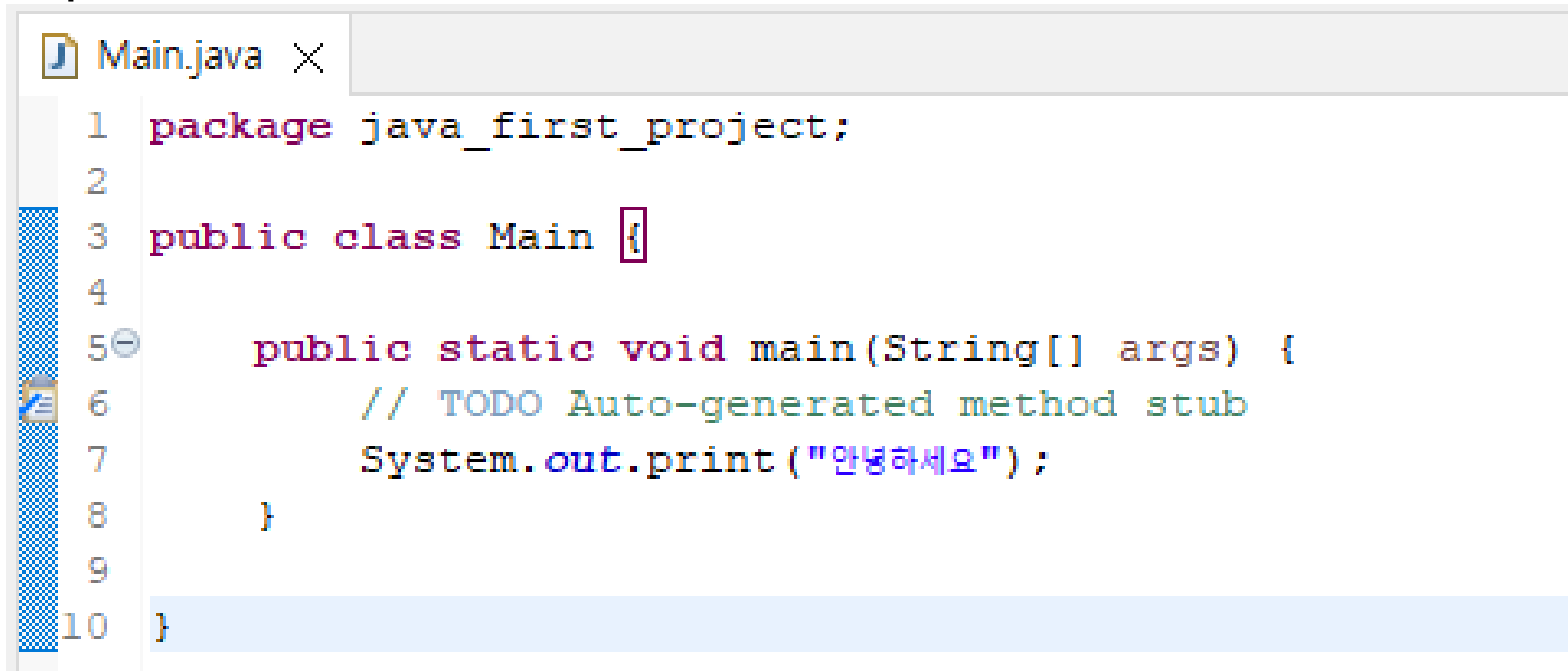
java 프로그램은 main메소드 안에서 실행을 시작함!

# 간단 코드 실행

main 메소드 안에  
기

```
System.out.print("안녕하세요");
```

작성해보

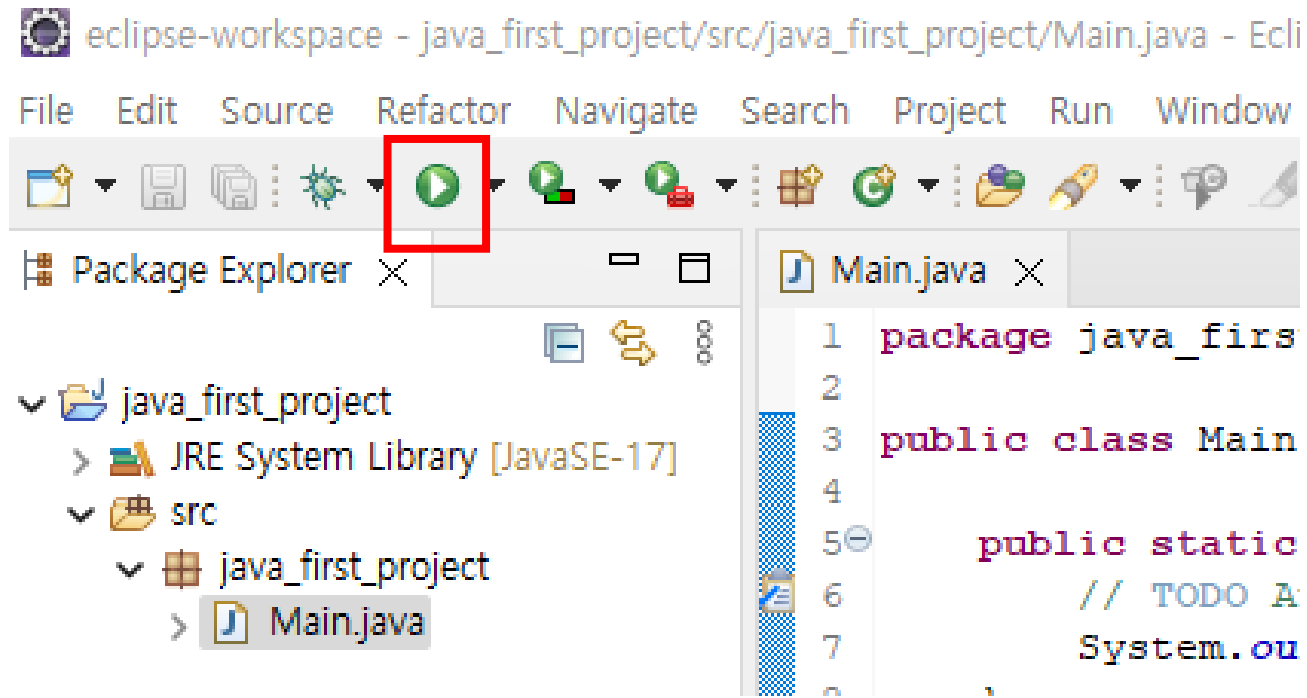


```
Main.java ×
1 package java_first_project;
2
3 public class Main {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         System.out.print("안녕하세요");
8     }
9
10 }
```

javascript 의 console.log와 같이 인자로 넘겨준 값을 출력해주는 기능을 함.

# 간단 코드 실행

다 작성하였다면, 실행시켜 보자!



방법 1.

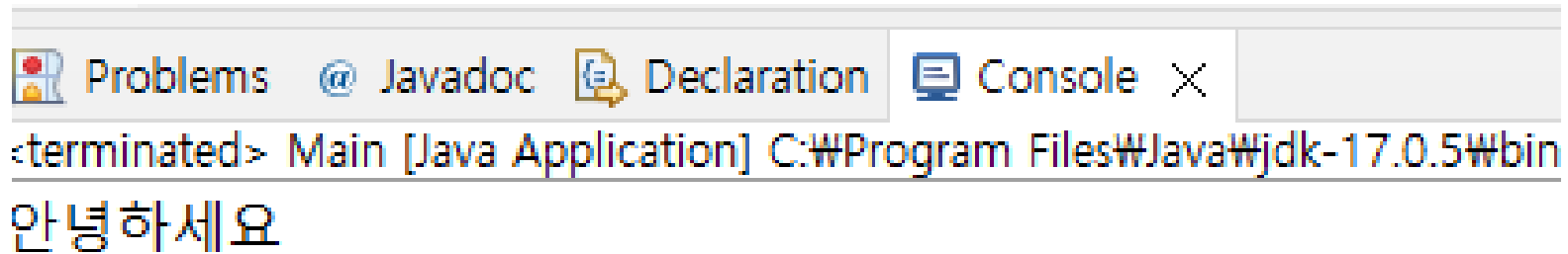
왼쪽 빨간 박스(Run 버튼) 부분 클릭

방법2.

키보드의 ctrl + F11 단축키 사용

# 간단 코드 실행

다 작성하였다면, 실행시켜 보자!



# Git 연동

# 프로젝트에 Git/GitHub 연결하기

- Eclipse 프로젝트에 Git/GitHub 연결하기
  - [Git hub\(깃허브\) :: eclipse\(이클립스\) 연동방법 및 커밋하기](#)
- IntelliJ 프로젝트에 Git/GitHub 연결하기
  - [IntelliJ에서 Git/GitHub 사용하기 - 기존 프로젝트 연동하기](#)