KB금융그룹 | 국민의 평생 금융파트너

2025년 상반기 K-디지털 트레이닝

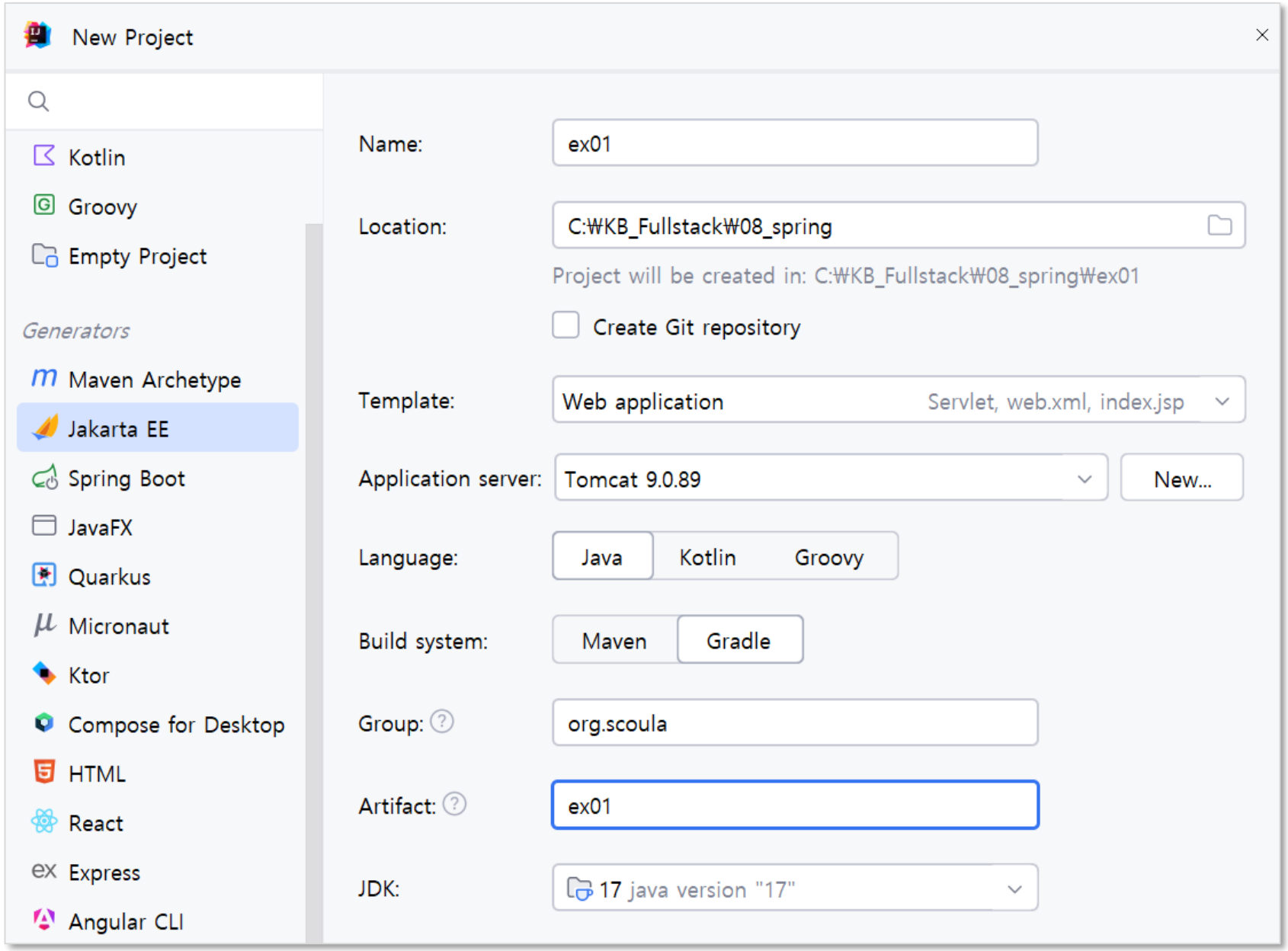
개발을 위한 준비

[KB] IT's Your Life

KB 국민은행

workspace 준비

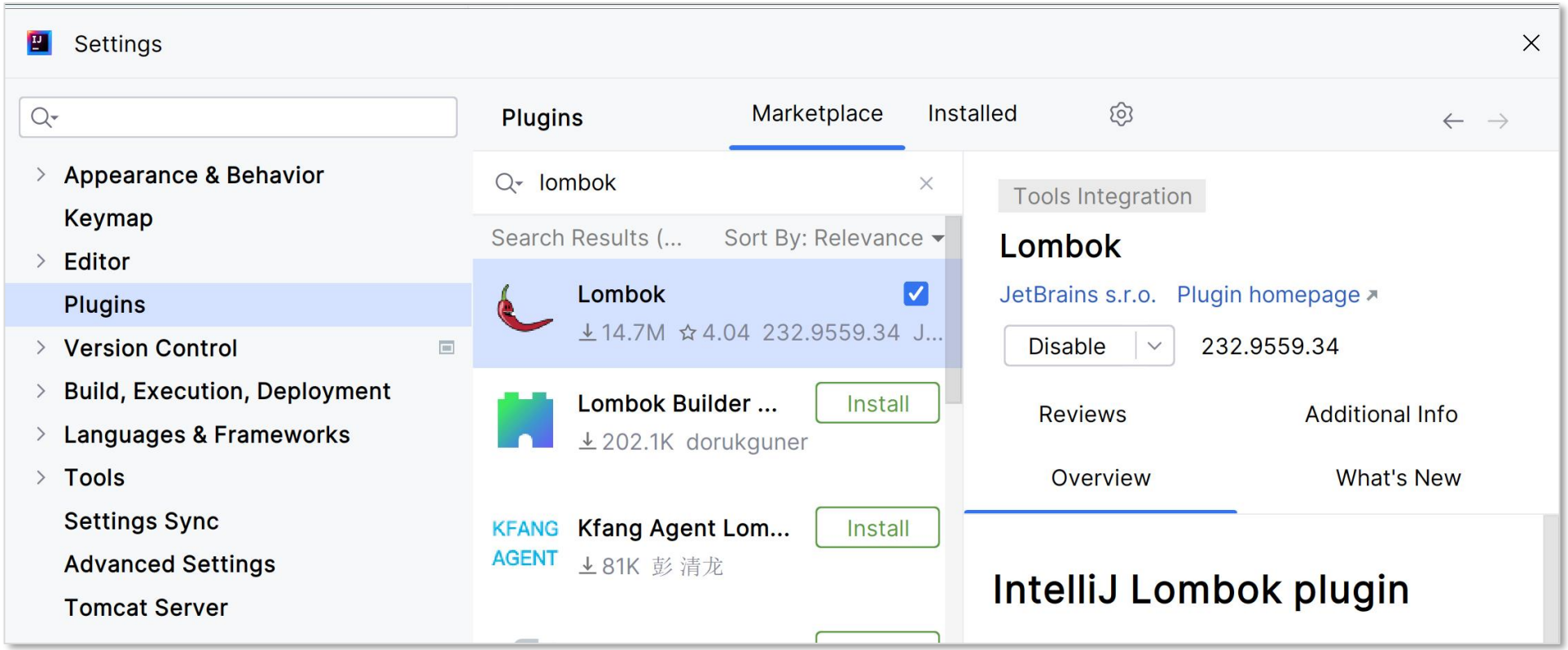
- C:₩KB_Fullstack₩08_Spring


New Project
Kotlin
Groovy
Empty Project
Generators
Maven Archetype
Jakarta EE
Spring Boot
JavaFX
Quarkus
Micronaut
Ktor
Compose for Desktop
HTML
React
Express
Angular CLI
Name:
ex01
Location:
C:₩KB_Fullstack₩08_spring
Project will be created in: C:₩KB_Fullstack₩08_spring₩ex01
Create Git repository
Template:
Web application
Servlet, web.xml, index.jsp
Application server:
Tomcat 9.0.89
New...
Language:
Java
Kotlin
Groovy
Build system:
Maven
Gradle
Group:
org.scoula
Artifact:
ex01
JDK:
17 java version "17"

- Version: Jakarta EE 8
  - Servlet 4.0.1

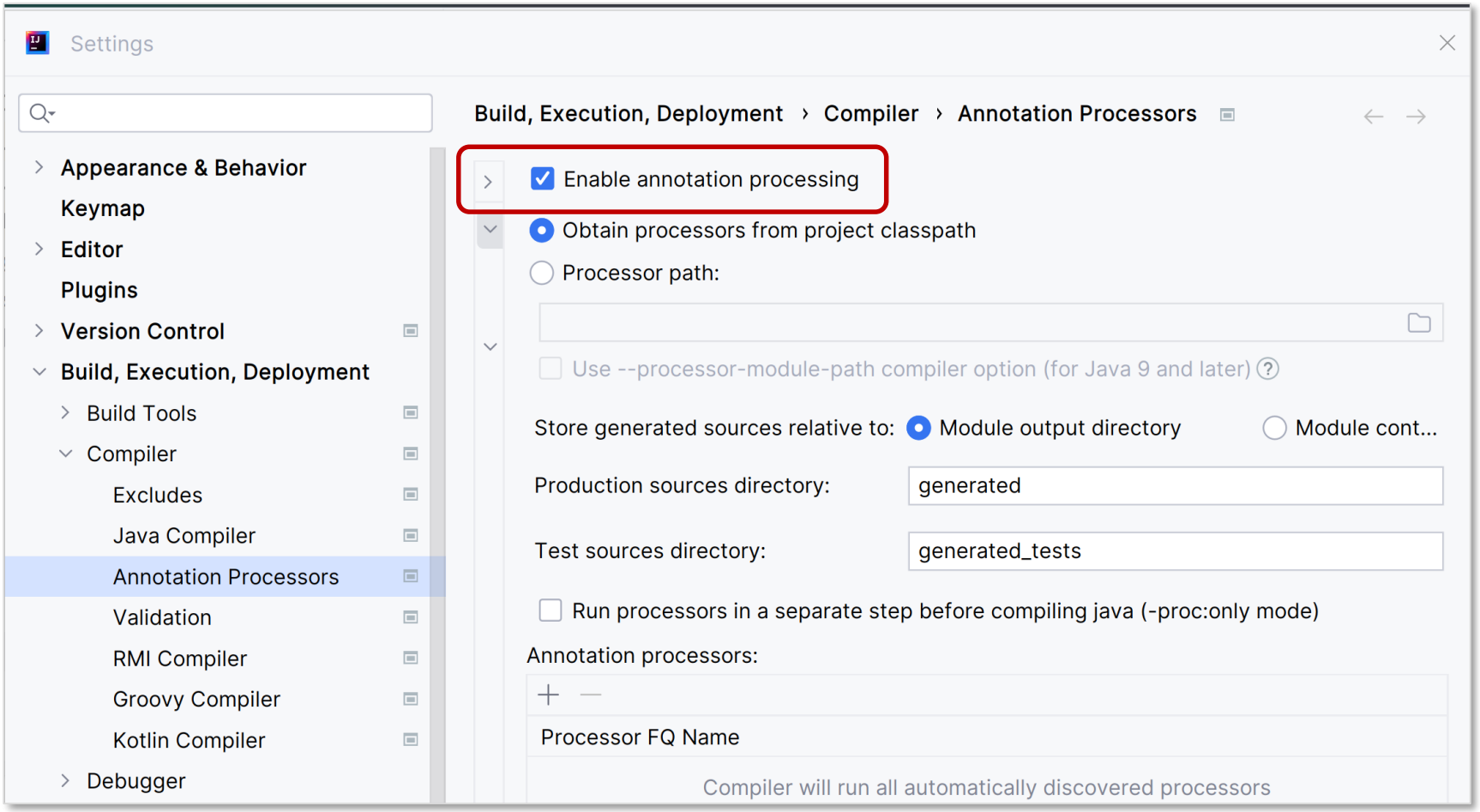
Lombok Plugin 설치

- File > Settings... > Plugins
  - Marketplace에서 Lombok 검색 후 설치



Lombok 설정

- File > Setting... > Build, Exeuction, Deployment > Compiler > Annotation Processors
  - Enable annotation processing 체크 → **프로젝트 생성시 마다 해줘야 함**



build.gradle

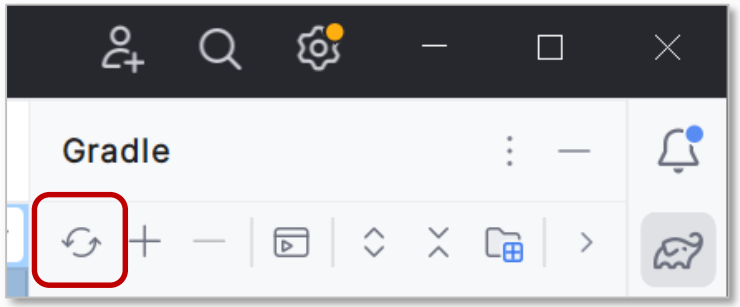
```
plugins {
  id 'java'
  id 'war'
}

group 'org.scoula'
version '1.0-SNAPSHOT'

repositories {
  mavenCentral()
}

ext {
  junitVersion = '5.9.2'
  springVersion = '5.3.37'
  lombokVersion = '1.18.30'
}

sourceCompatibility = '1.17'
targetCompatibility = '1.17'

tasks.withType(JavaCompile) {
  options.encoding = 'UTF-8'
}
```

build.gradle

```
dependencies {
  // 스프링
  implementation ("org.springframework:spring-context:${springVersion}")
          { exclude group: 'commons-logging', module: 'commons-logging' }
  implementation "org.springframework:spring-webmvc:${springVersion}"
  implementation 'javax.inject:javax.inject:1'

  // AOP
  implementation 'org.aspectj:aspectjrt:1.9.20'
  implementation 'org.aspectj:aspectjweaver:1.9.20'

  // JSP, SERVLET, JSTL
  implementation('javax.servlet:javax.servlet-api:4.0.1')
  // compileOnly 'javax.servlet.jsp:jsp-api:2.1'
  compileOnly 'javax.servlet.jsp:javax.servlet.jsp-api:2.3.3'
  implementation 'javax.servlet:jstl:1.2'

  // Log4j2 Logging
  implementation 'org.apache.logging.log4j:log4j-api:2.18.0'
  implementation 'org.apache.logging.log4j:log4j-core:2.18.0'
  implementation 'org.apache.logging.log4j:log4j-slf4j-impl:2.18.0'

  // xml내 한글 처리
  implementation 'xerces:xercesImpl:2.12.2'
```

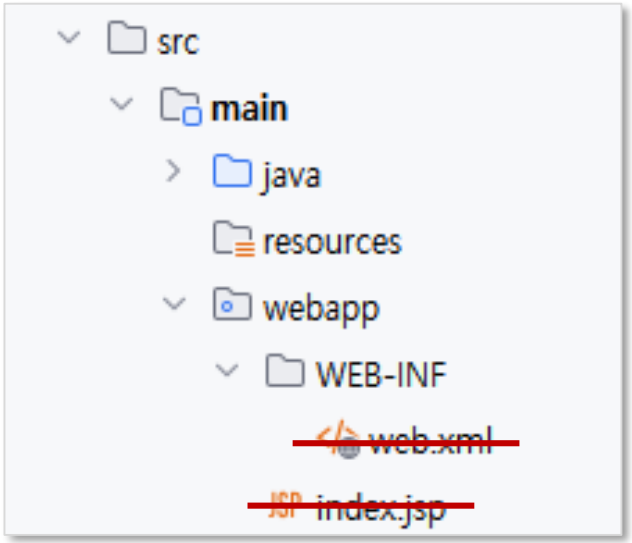
build.gradle

```
  // Lombok
  compileOnly "org.projectlombok:lombok:${lombokVersion}"
  annotationProcessor "org.projectlombok:lombok:${lombokVersion}"

  // Jackson - Json 처리
  implementation 'com.fasterxml.jackson.core:jackson-databind:2.9.4'

  // 테스트
  testImplementation "org.springframework:spring-test:${springVersion}"
  testCompileOnly"org.projectlombok:lombok:${lombokVersion}"
  testAnnotationProcessor "org.projectlombok:lombok:${lombokVersion}"

  testImplementation("org.junit.jupiter:junit-jupiter-api:${junitVersion}")
  testRuntimeOnly("org.junit.jupiter:junit-jupiter-engine:${junitVersion}")
}


test {
  useJUnitPlatform()
}
```

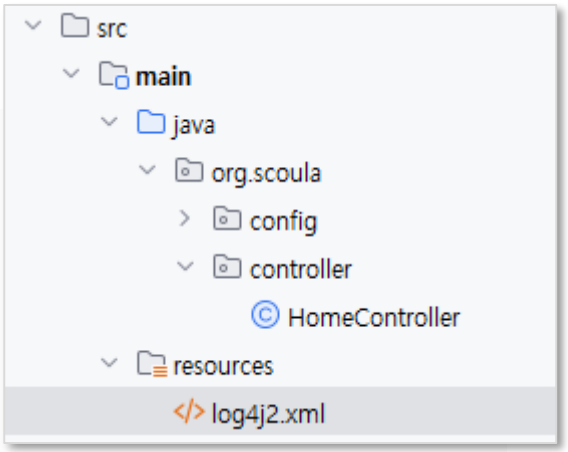


디렉토리 구조

- java
  - Java 클래스 배치
- resources
  - Java 클래스를 제외한 모든 파일(설정, xml 등)
- webapp
  - Web URL로 접근하는 root 디렉토리
  - WEB-INF
    - 웹 설정, 스프링 View 배치 디렉토리
    - index.jsp, web.xml 삭제



resources/log4j2.xml




```
<?xml version="1.0" encoding="UTF-8"?>
<Configuration>

    <!-- Appender, Layout 설정 -->
    <Appenders>
        <Console name="console" target="SYSTEM_OUT">
            <PatternLayout charset="UTF-8" pattern=" %-5level %c(%M:%L) - %m%n"/>
        </Console>
    </Appenders>

    <!-- Logger 설정 -->
    <Loggers>
        <Root level="INFO">
            <AppenderRef ref="console"/>
        </Root>
        <Logger name="org.scoula" level="INFO" additivity="false" >
            <AppenderRef ref="console"/>
        </Logger>
        <Logger name="org.springframework" level="INFO" additivity="false">
            <AppenderRef ref="console"/>
        </Logger>
    </Loggers>

</Configuration>
```

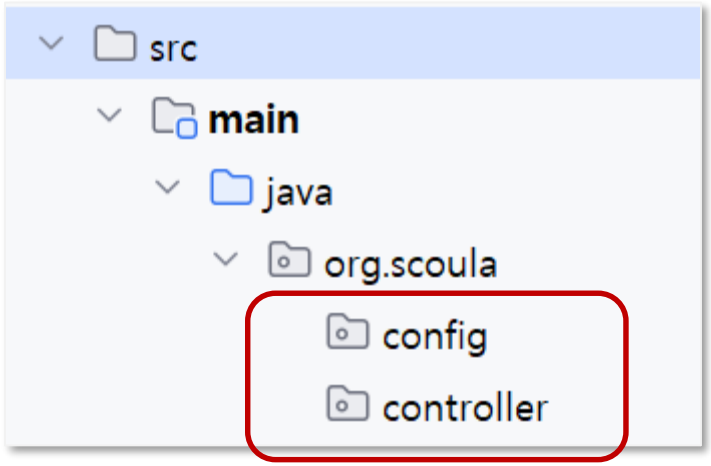
로그의 레벨 설정

- 너무 많은 로그 메시지 출력 → 로그 레벨 이용하여 수정 가능
- 로그레벨
  - FATAL : 가장 크리티컬한 에러가 일어 났을 때만 로깅
  - ERROR : 일반 에러가 일어 났을 때만 로깅
  - WARN : 에러는 아니지만 주의할 필요가 있을 때만 로깅
  - INFO : 일반 정보를 나타낼 때 로깅 (INFO + ERROR)
  - DEBUG : 일반 정보를 상세히 나타낼 때 로깅 (디버깅 정보)
  - TRACE : 경로추적을 위해 사용

패키지 생성

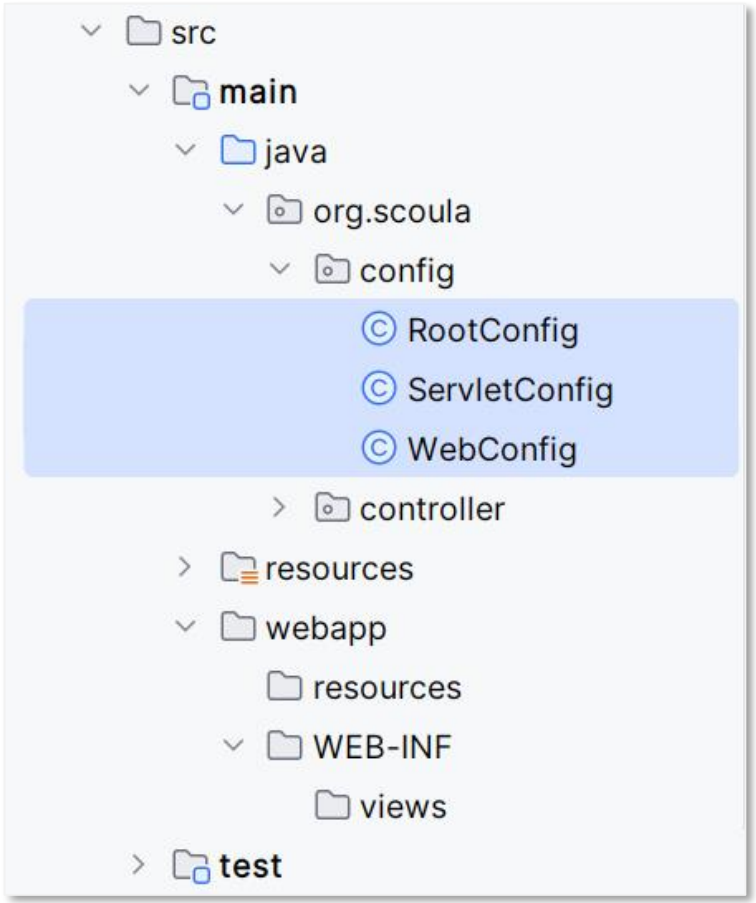
src/main/java에 패키지 생성

- org.scoula
  - config : 스프링 설정 패키지
  - controller : 기본 컨트롤러 패키지



설정 파일 만들기

- org.scoula.config
  - RootConfig.java
  - ServletConfig.java
  - WebConfig.java



RootConfig.java

```
package org.scoula.config;

import org.springframework.context.annotation.Configuration;

@Configuration
public class RootConfig {

}
```

ServletConfig.java

```
package org.scoula.config;

import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.ComponentScan;
import org.springframework.web.servlet.config.annotation.EnableWebMvc;
import org.springframework.web.servlet.config.annotation.ResourceHandlerRegistry;
import org.springframework.web.servlet.config.annotation.ViewResolverRegistry;
import org.springframework.web.servlet.config.annotation.WebMvcConfigurer;
import org.springframework.web.servlet.view.InternalResourceViewResolver;
import org.springframework.web.servlet.view.JstlView;

@EnableWebMvc
@ComponentScan(basePackages = {"org.scoula.controller"})     // Spring MVC용 컴포넌트 등록을 위한 스캔 패키지
public class ServletConfig implements WebMvcConfigurer {

    @Override
    public void addResourceHandlers(ResourceHandlerRegistry registry) {
        registry
            .addResourceHandler("/resources/**")     // url이 /resources/로 시작하는 모든 경로
            .addResourceLocations("/resources/");    // webapp/resources/경로로 매핑
    }
```

ServletConfig.java

```
    // jsp view resolver 설정
    @Override
    public void configureViewResolvers(ViewResolverRegistry registry) {
        InternalResourceViewResolver bean = new InternalResourceViewResolver();

        bean.setViewClass(JstlView.class);
        bean.setPrefix("/WEB-INF/views/");
        bean.setSuffix(".jsp");

        registry.viewResolver(bean);
    }

}
```

WebConfig.java

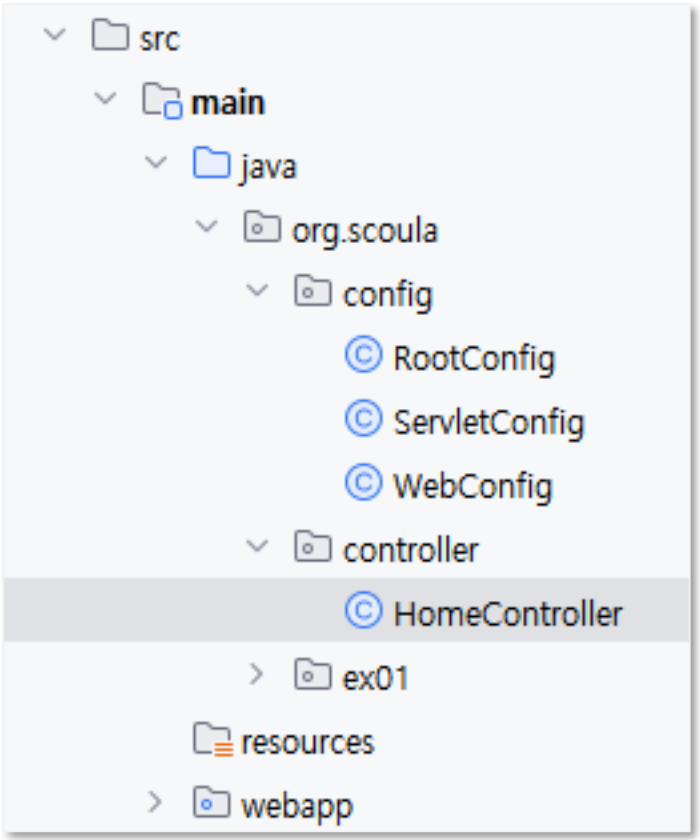
```
package org.scoula.config;

import org.springframework.web.filter.CharacterEncodingFilter;
import org.springframework.web.servlet.support.AbstractAnnotationConfigDispatcherServletInitializer;

import javax.servlet.Filter;

public class WebConfig extends AbstractAnnotationConfigDispatcherServletInitializer {

    @Override
    protected Class<?>[] getRootConfigClasses() {
        return new Class[] { RootConfig.class };
    }

    @Override
    protected Class<?>[] getServletConfigClasses() {
        return new Class[] { ServletConfig.class };
    }

    // 스프링의 FrontController인 DispatcherServlet이 담당할 Url 매핑 패턴, / : 모든 요청에 대해 매핑
    @Override
    protected String[] getServletMappings() {
        return new String[] { "/" };
    }
```

WebConfig.java

```
    // POST body 문자 인코딩 필터 설정 - UTF-8 설정
    protected Filter[] getServletFilters() {
        CharacterEncodingFilter characterEncodingFilter = new CharacterEncodingFilter();

        characterEncodingFilter.setEncoding("UTF-8");
        characterEncodingFilter.setForceEncoding(true);

        return new Filter[] {characterEncodingFilter};
    }

}
```

컨트롤러 만들기

- org.scoula.controller
  - HomeController.java



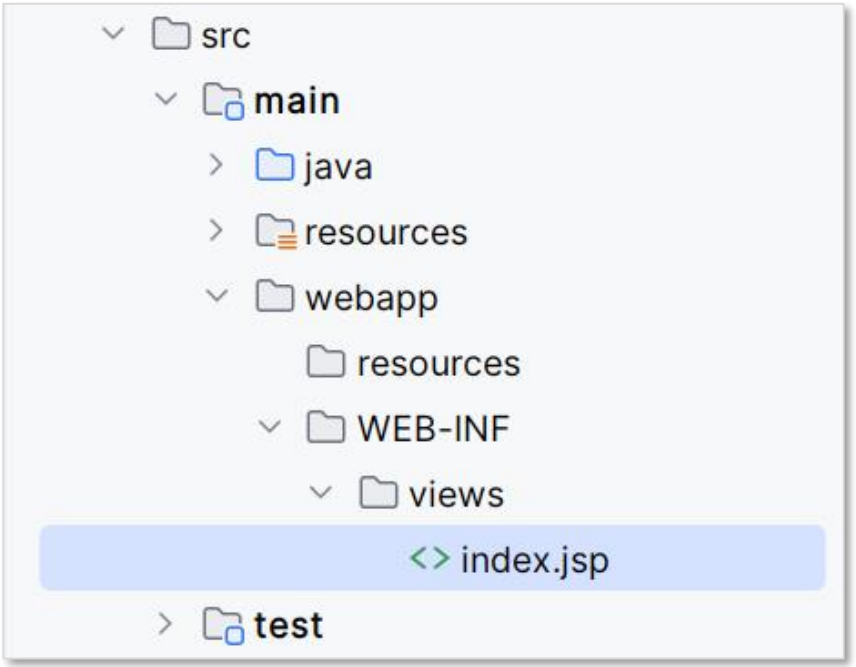
HomeController.java

```
package org.scoula.controller;

import lombok.extern.log4j.Log4j2;
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.GetMapping;

@Controller
@Log4j2
public class HomeController {

    @GetMapping("/")
    public String home() {
        log.info("================> HomController /");
        return "index";    // View의 이름
    }

}
```

Jsp 파일 만들기

- src/main/webapp
  - WEB-INF/views/index.jsp

```
@Override
public void configureViewResolvers(ViewResolverRegistry registry) {
  InternalResourceViewResolver bean = new InternalResourceViewResolver();

  bean.setViewClass(JstlView.class);
  bean.setPrefix("/WEB-INF/views/");
  bean.setSuffix(".jsp");

  registry.viewResolver(bean);
}
```

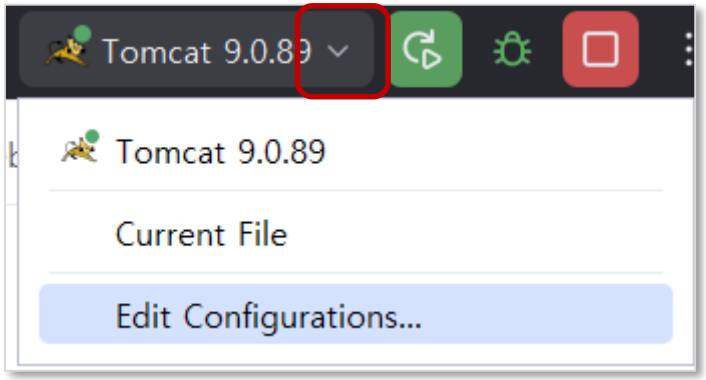


- controller에서 index라는 view 이름을 리턴한 경우
  /WEB-INF/views/ + view 이름 + .jsp
  → /WEB-INF/views/index.jsp

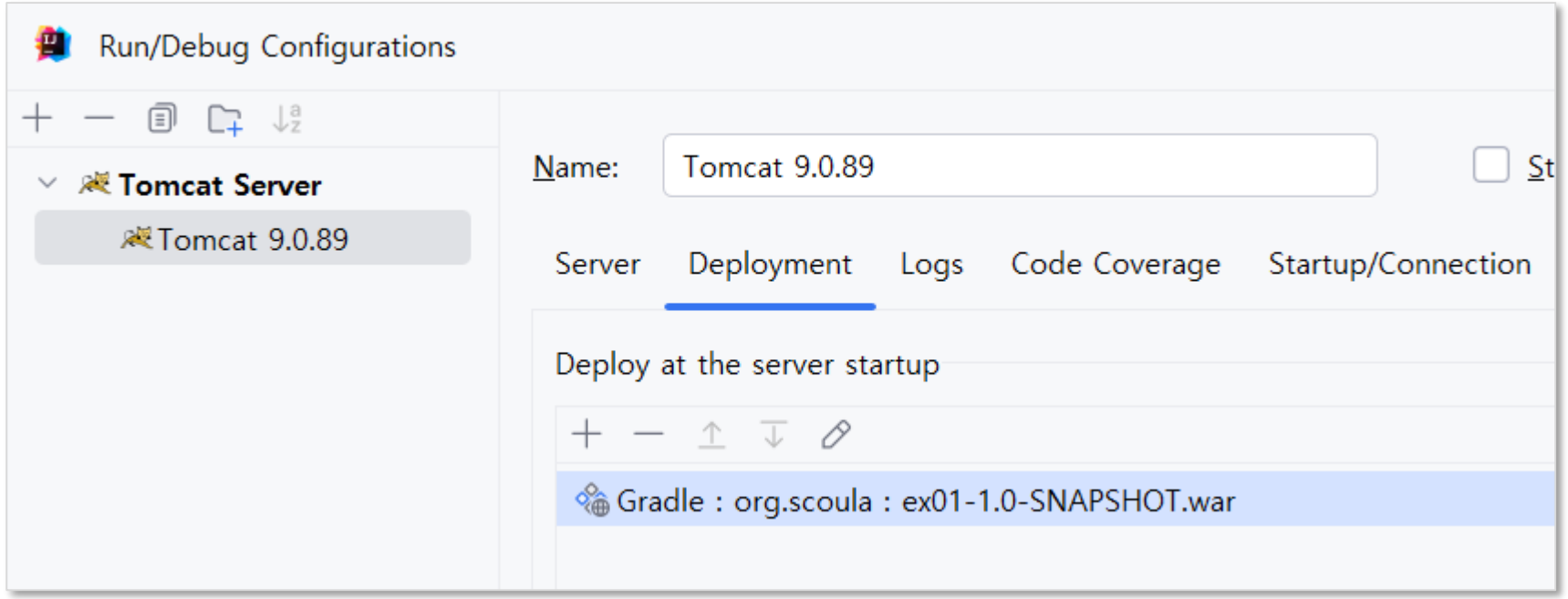
views/index.jsp

```
<!DOCTYPE html>
<%@ page contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
<html lang="ko">
<head>
    <meta charset="UTF-8">
    <title>Title</title>
</head>
<body>
  <h1>환영합니다.</h1>
</body>
</html>
```

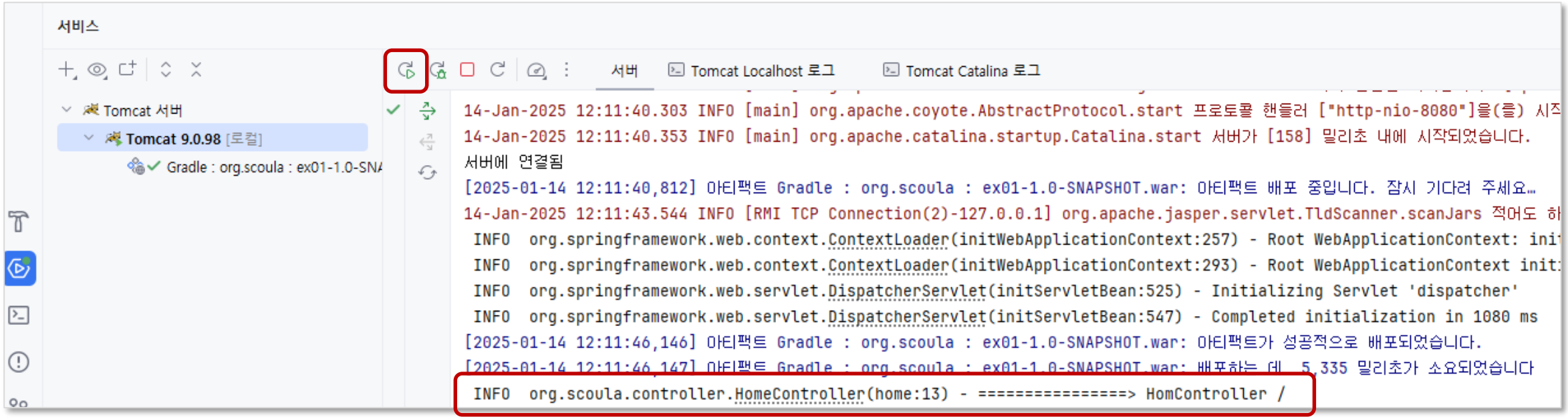
톰캣 설정



- Application context: /

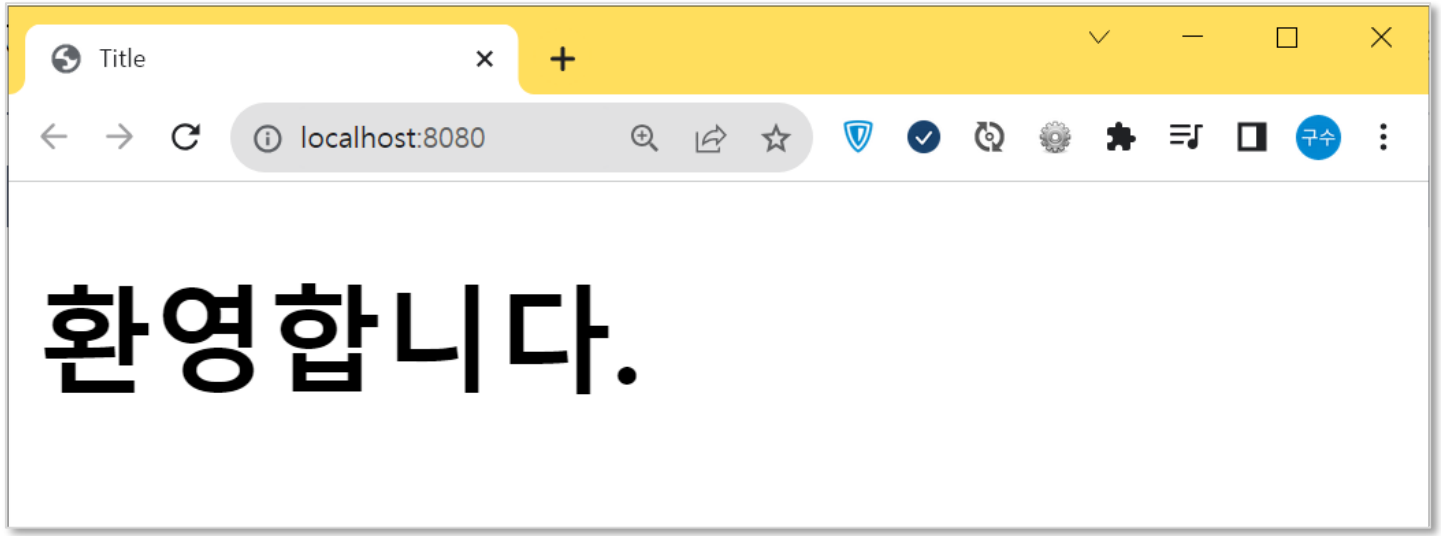


애플리케이션 실행


서비스
서버
Tomcat Localhost 로그
Tomcat Catalina 로그
Tomcat 서버
Tomcat 9.0.98 [로컬]
Gradle : org.scoula : ex01-1.0-SNA
14-Jan-2025 12:11:40.303 INFO [main] org.apache.coyote.AbstractProtocol.start 프로토콜 핸들러 ["http-nio-8080"]을(를) 시작
14-Jan-2025 12:11:40.353 INFO [main] org.apache.catalina.startup.Catalina.start 서버가 [158] 밀리초 내에 시작되었습니다.
서버에 연결됨
[2025-01-14 12:11:40,812] 아티팩트 Gradle : org.scoula : ex01-1.0-SNAPSHOT.war: 아티팩트 배포 중입니다. 잠시 기다려 주세요…
14-Jan-2025 12:11:43.544 INFO [RMI TCP Connection(2)-127.0.0.1] org.apache.jasper.servlet.TldScanner.scanJars 적어도 하
INFO org.springframework.web.context.ContextLoader(initWebApplicationContext:257) - Root WebApplicationContext: ini
INFO org.springframework.web.context.ContextLoader(initWebApplicationContext:293) - Root WebApplicationContext init
INFO org.springframework.web.servlet.DispatcherServlet(initServletBean:525) - Initializing Servlet 'dispatcher'
INFO org.springframework.web.servlet.DispatcherServlet(initServletBean:547) - Completed initialization in 1080 ms
[2025-01-14 12:11:46,146] 아티팩트 Gradle : org.scoula : ex01-1.0-SNAPSHOT.war: 아티팩트가 성공적으로 배포되었습니다.
[2025-01-14 12:11:46,147] 아티팩트 Gradle : org.scoula : ex01-1.0-SNAPSHOT.war: 배포하는 데 5,335 밀리초가 소요되었습니다
INFO org.scoula.controller.HomeController(home:13) - ================> HomController /

확인

- http://localhost:8080/



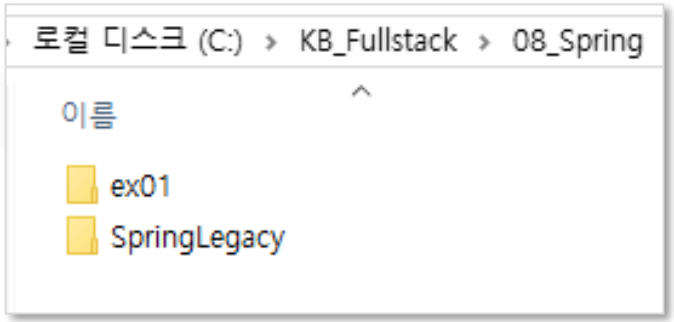
개발을 위한 준비

프로젝트 템플릿 만들기

- 탐색기에서 ex01 프로젝트 폴더를 SpringLegacy이름으로 복사 후 SpringLegacy 프로젝트 열기
- SpringLegacy/settings.gradle

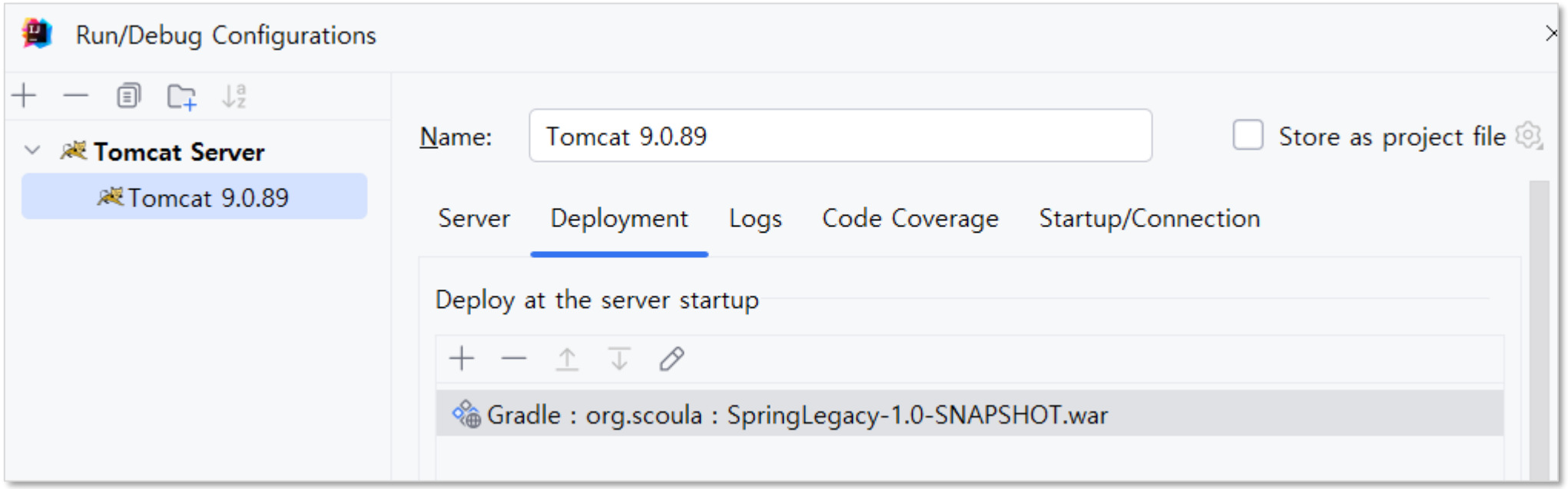
```
rootProject.name = "SpringLegacy"
```

  - 수정 후 Sync



톰캣 설정 수정 → ArtifactId 변경

```
rootProject.name = "SpringLegacy"
```



프로젝트 템플릿 만들기

- File > New Projects Setup > Save Project as Template...