**Deep Skilling - Week 4 Mandatory Hands-on Exercises**

**Skill : Spring Rest using Spring Boot3**

**Exercise - 1: Create a SpringWeb Project using Maven**

**Code:**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>spring-learn</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>spring-learn</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

**SpringLearnApplication.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

**//import org.springframework.context.ApplicationContext;**

**//import org.springframework.context.support.ClassPathXmlApplicationContext;**

***@SpringBootApplication***

**public class SpringLearnApplication {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(SpringLearnApplication.class);**

**public static void main(String[] args) {**

**SpringApplication.*run*(SpringLearnApplication.class, args);**

***LOGGER*.info("Inside main");**

**}**

**}**

**Application.properties**

**spring.application.name=spring-learn**

**# Spring Framework and application log**

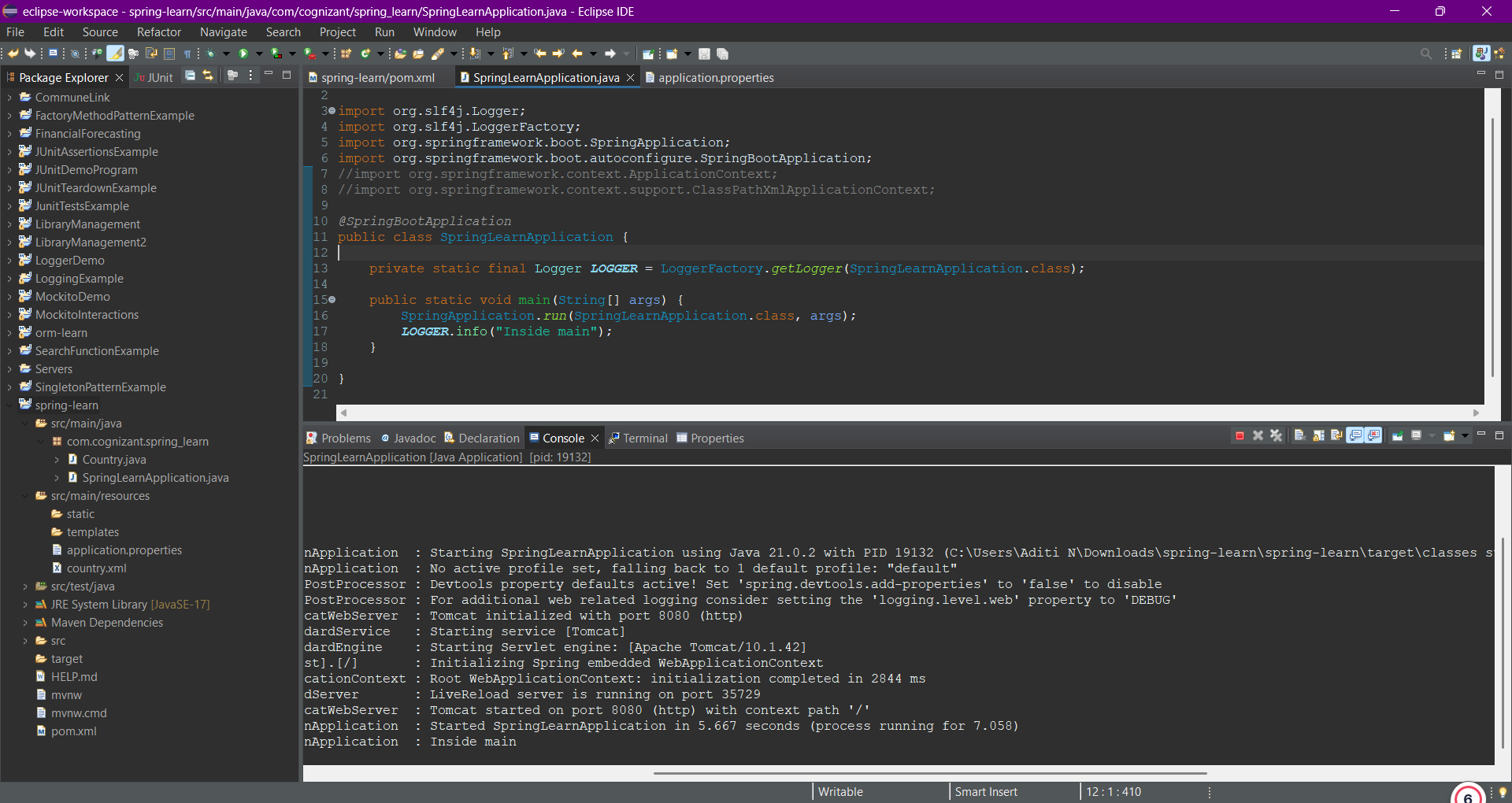
**logging.level.org.springframework=info**

**logging.level.com.cognizant=debug**

**# Log pattern**

**logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n**

**Output:**

****

**Exercise - 2: Spring Core – Load Country from Spring Configuration XML**

**Code:**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>spring-learn</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>spring-learn</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework</groupId>**

**<artifactId>spring-context</artifactId>**

**<version>5.3.34</version>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

**Application.properties**

**spring.application.name=spring-learn**

**# Spring Framework and application log**

**logging.level.org.springframework=info**

**logging.level.com.cognizant=debug**

**# Log pattern**

**logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n**

**Country.xml**

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

**<beans xmlns=*"http://www.springframework.org/schema/beans"***

**xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"***

**xsi:schemaLocation=*"***

***http://www.springframework.org/schema/beans***

***http://www.springframework.org/schema/beans/spring-beans.xsd"*>**

**<bean id=*"country"* class=*"com.cognizant.spring\_learn.Country"*>**

**<property name=*"code"* value=*"IN"* />**

**<property name=*"name"* value=*"India"* />**

**</bean>**

**</beans>**

**SpringLearnApplication.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

**import org.springframework.context.ApplicationContext;**

**import org.springframework.context.support.ClassPathXmlApplicationContext;**

***@SpringBootApplication***

**public class SpringLearnApplication {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(SpringLearnApplication.class);**

**public static void main(String[] args) {**

***LOGGER*.info("Start Main");**

***displayCountry*();**

***LOGGER*.info("End Main");**

**}**

**public static void displayCountry() {**

**ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");**

**Country country = (Country) context.getBean("country");**

**System.*out*.println(country.toString());**

**}**

**}**

**Country.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**public class Country {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(Country.class);**

**private String code;**

**private String name;**

**public Country() {**

***LOGGER*.info("Inside Country Constructor.");**

**}**

**public String getCode() {**

***LOGGER*.info("Inside getCode()");**

**return code;**

**}**

**public void setCode(String code) {**

***LOGGER*.info("Inside setCode()");**

**this.code = code;**

**}**

**public String getName() {**

***LOGGER*.info("Inside getName()");**

**return name;**

**}**

**public void setName(String name) {**

***LOGGER*.info("Inside setName()");**

**this.name = name;**

**}**

***@Override***

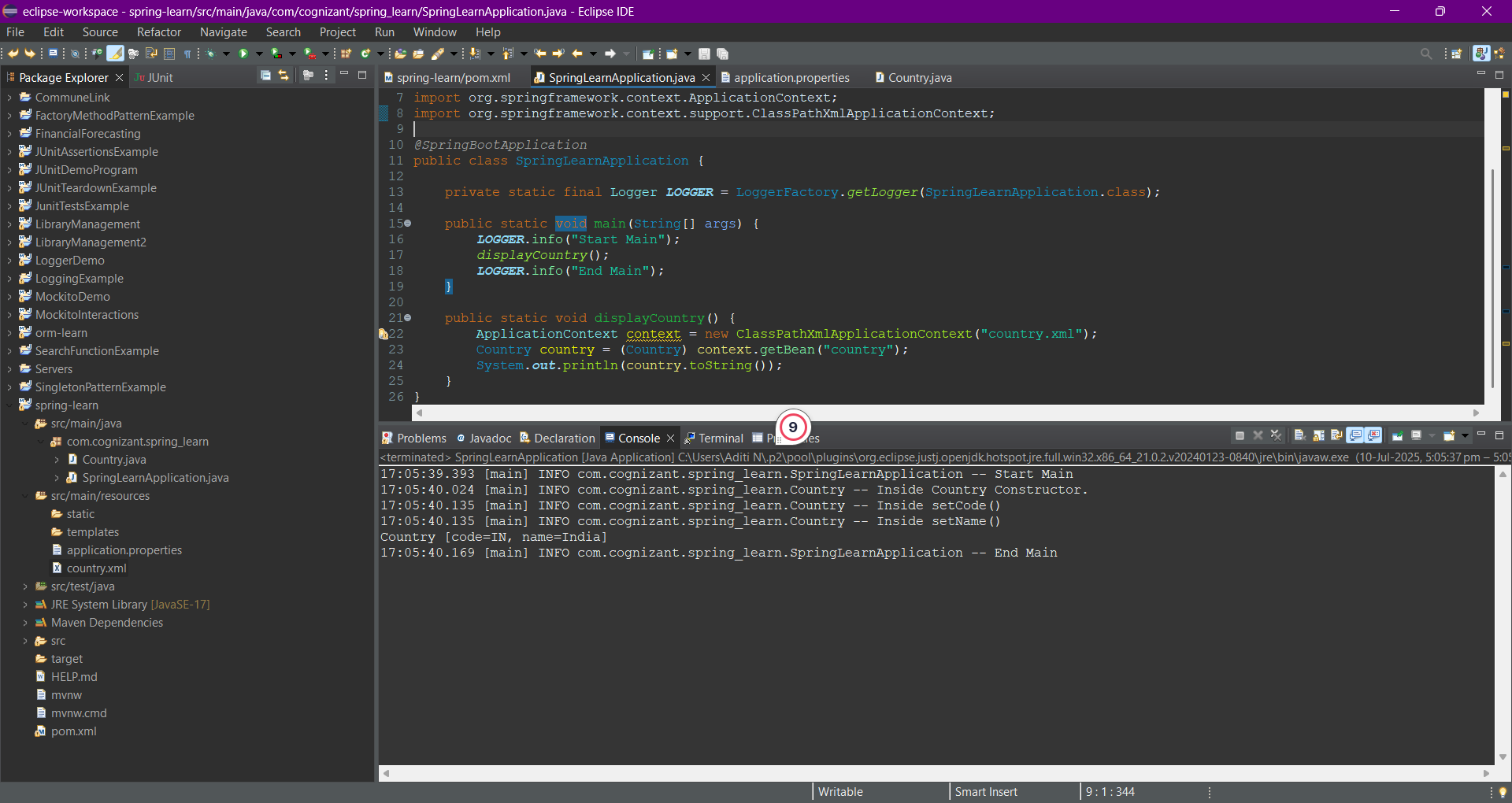
**public String toString() {**

**return "Country [code=" + code + ", name=" + name + "]";**

**}**

**}**

**Output:**

****

**Exercise - 3: Hello World RESTful Web Service**

**Code:**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>spring-learn</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>spring-learn</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

**SpringLearnApplication.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

**//import org.springframework.context.ApplicationContext;**

**//import org.springframework.context.support.ClassPathXmlApplicationContext;**

***@SpringBootApplication***

**public class SpringLearnApplication {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(SpringLearnApplication.class);**

**public static void main(String[] args) {**

***LOGGER*.info("Start Main");**

**SpringApplication.*run*(SpringLearnApplication.class, args);**

***LOGGER*.info("End Main");**

**}**

**}**

**HelloController.java**

**package com.cognizant.spring\_learn.controller;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.web.bind.annotation.GetMapping;**

**import org.springframework.web.bind.annotation.RestController;**

***@RestController***

**public class HelloController {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(HelloController.class);**

***@GetMapping*("/hello")**

**public String sayHello() {**

***LOGGER*.info("Start sayHello()");**

***LOGGER*.info("End sayHello()");**

**return "Hello World!! This is Aditiii!!";**

**}**

**}**

**Application.properties**

**spring.application.name=spring-learn**

**server.port=8090**

**# Spring Framework and application log**

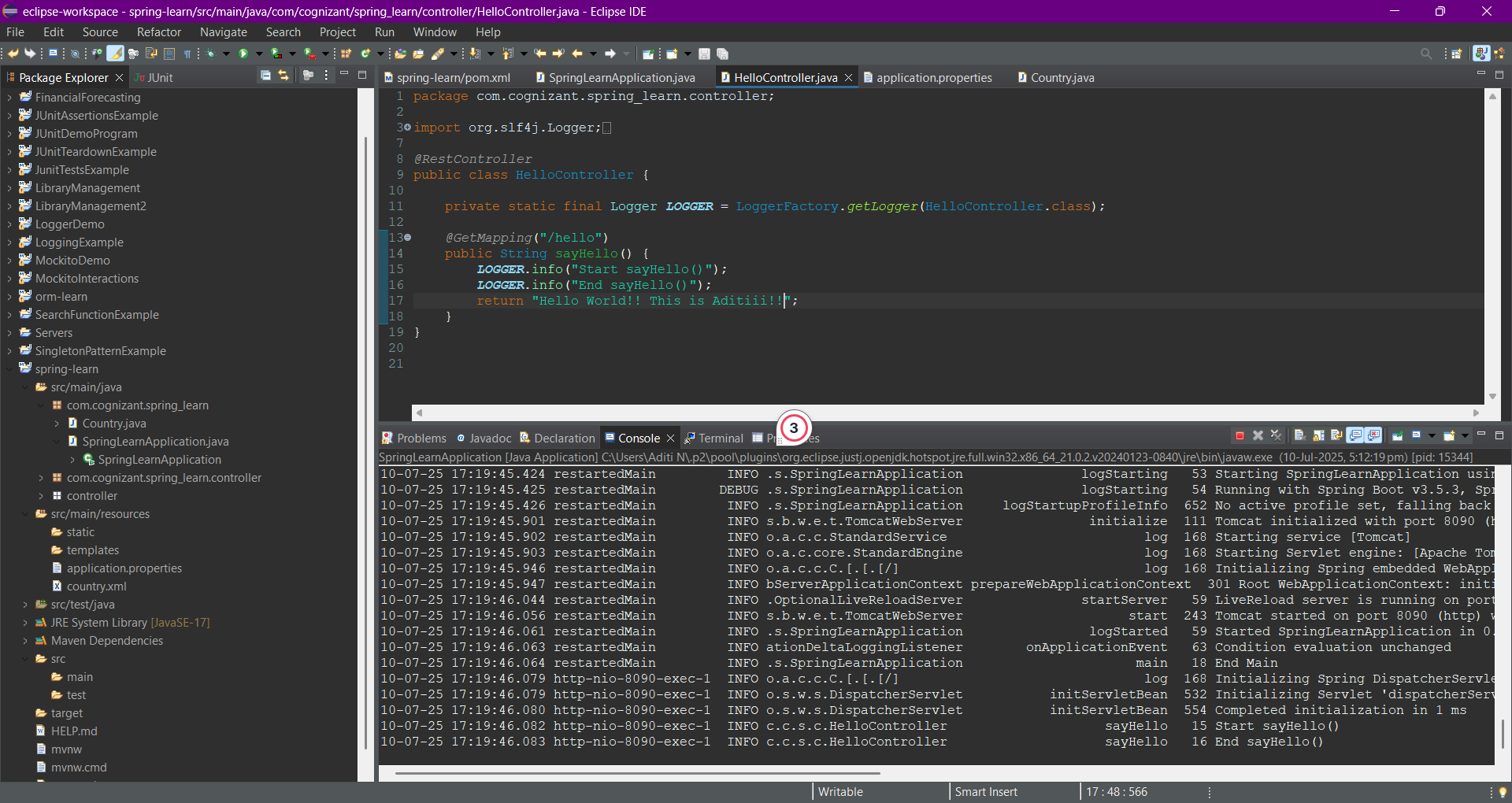
**logging.level.org.springframework=info**

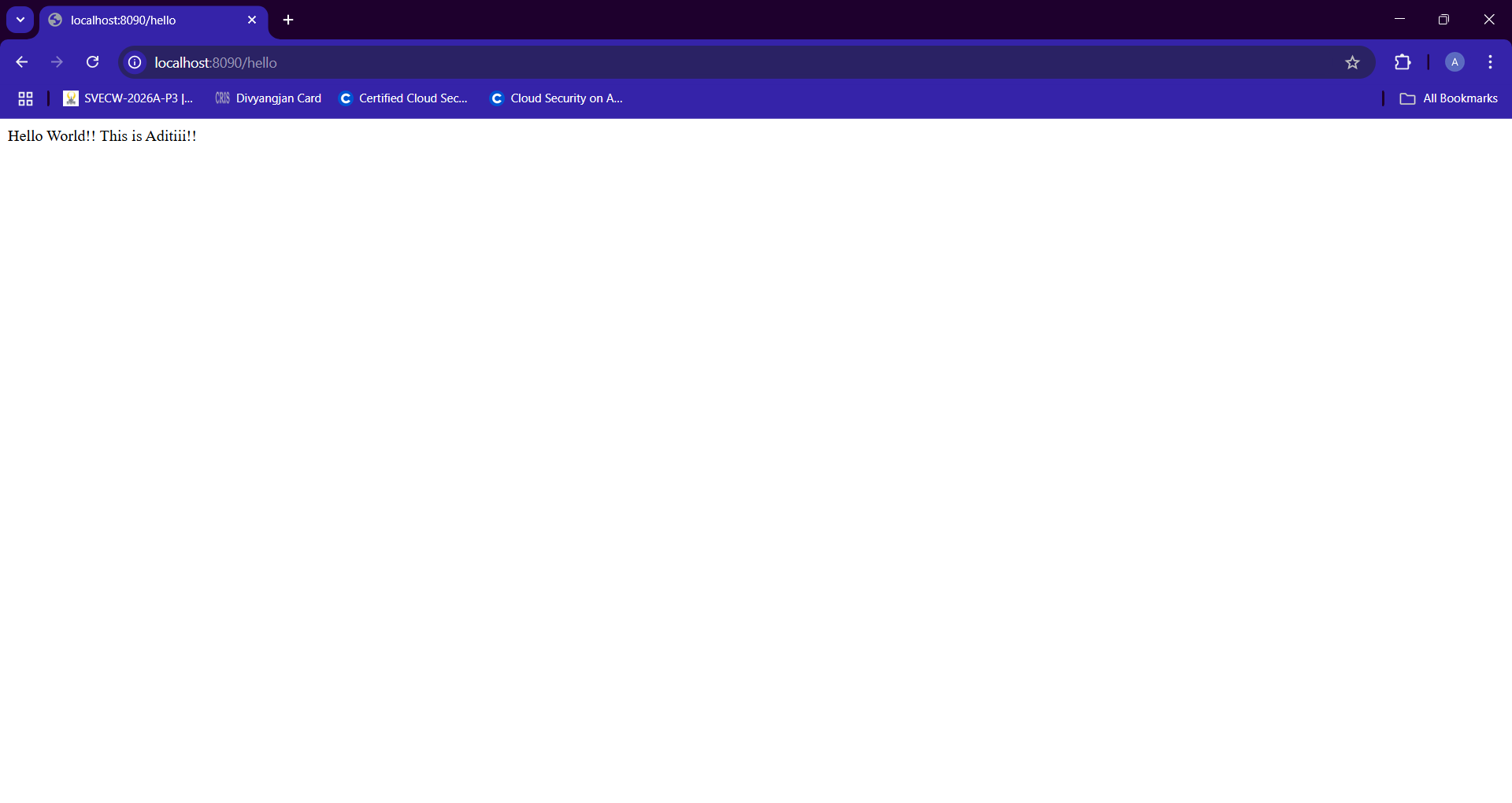
**logging.level.com.cognizant=debug**

**# Log pattern**

**logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n**

**Output:**

****

****

**Exercise - 4: REST - Country Web Service**

**Code:**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>spring-learn</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>spring-learn</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

**Country.xml**

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

**<beans xmlns=*"http://www.springframework.org/schema/beans"***

**xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"***

**xsi:schemaLocation=*"***

***http://www.springframework.org/schema/beans***

***http://www.springframework.org/schema/beans/spring-beans.xsd"*>**

**<bean id=*"country"* class=*"com.cognizant.spring\_learn.model.Country"*>**

**<property name=*"code"* value=*"IN"* />**

**<property name=*"name"* value=*"India"* />**

**</bean>**

**</beans>**

**Application.properties**

**spring.application.name=spring-learn**

**server.port=8090**

**# Spring Framework and application log**

**logging.level.org.springframework=info**

**logging.level.com.cognizant=debug**

**# Log pattern**

**logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n**

**CountryController.java**

**package com.cognizant.spring\_learn.controller;**

**import com.cognizant.spring\_learn.model.Country;**

**import org.springframework.context.ApplicationContext;**

**import org.springframework.context.support.ClassPathXmlApplicationContext;**

**import org.springframework.web.bind.annotation.RequestMapping;**

**import org.springframework.web.bind.annotation.RestController;**

***@RestController***

**public class CountryController {**

***@RequestMapping*("/country")**

**public Country getCountryIndia() {**

**ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");**

**Country country = (Country) context.getBean("country", Country.class);**

**return country;**

**}**

**}**

**SpringLearnApplication.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

**//import org.springframework.context.ApplicationContext;**

**//import org.springframework.context.support.ClassPathXmlApplicationContext;**

***@SpringBootApplication***

**public class SpringLearnApplication {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(SpringLearnApplication.class);**

**public static void main(String[] args) {**

***LOGGER*.info("Start Main");**

**SpringApplication.*run*(SpringLearnApplication.class, args);**

***LOGGER*.info("End Main");**

**}**

**}**

**Country.java**

**package com.cognizant.spring\_learn.model;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**public class Country {**

**private String code;**

**private String name;**

**public Country() {**

**System.*out*.println("Inside Country Constructor.");**

**}**

**public String getCode() {**

**System.*out*.println("Getting code.");**

**return code;**

**}**

**public void setCode(String code) {**

**System.*out*.println("Setting code.");**

**this.code = code;**

**}**

**public String getName() {**

**System.*out*.println("Getting name.");**

**return name;**

**}**

**public void setName(String name) {**

**System.*out*.println("Setting name.");**

**this.name = name;**

**}**

***@Override***

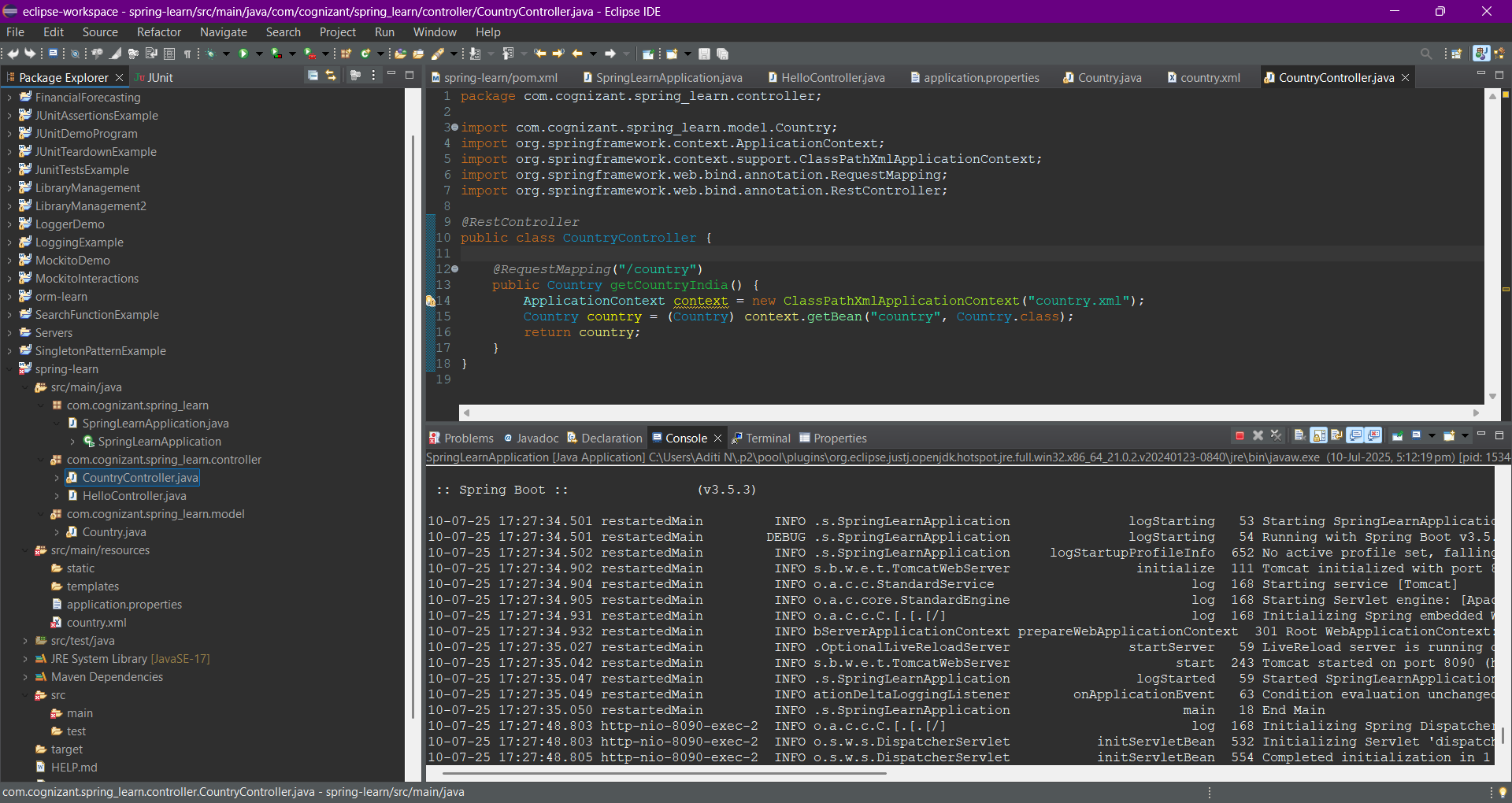
**public String toString() {**

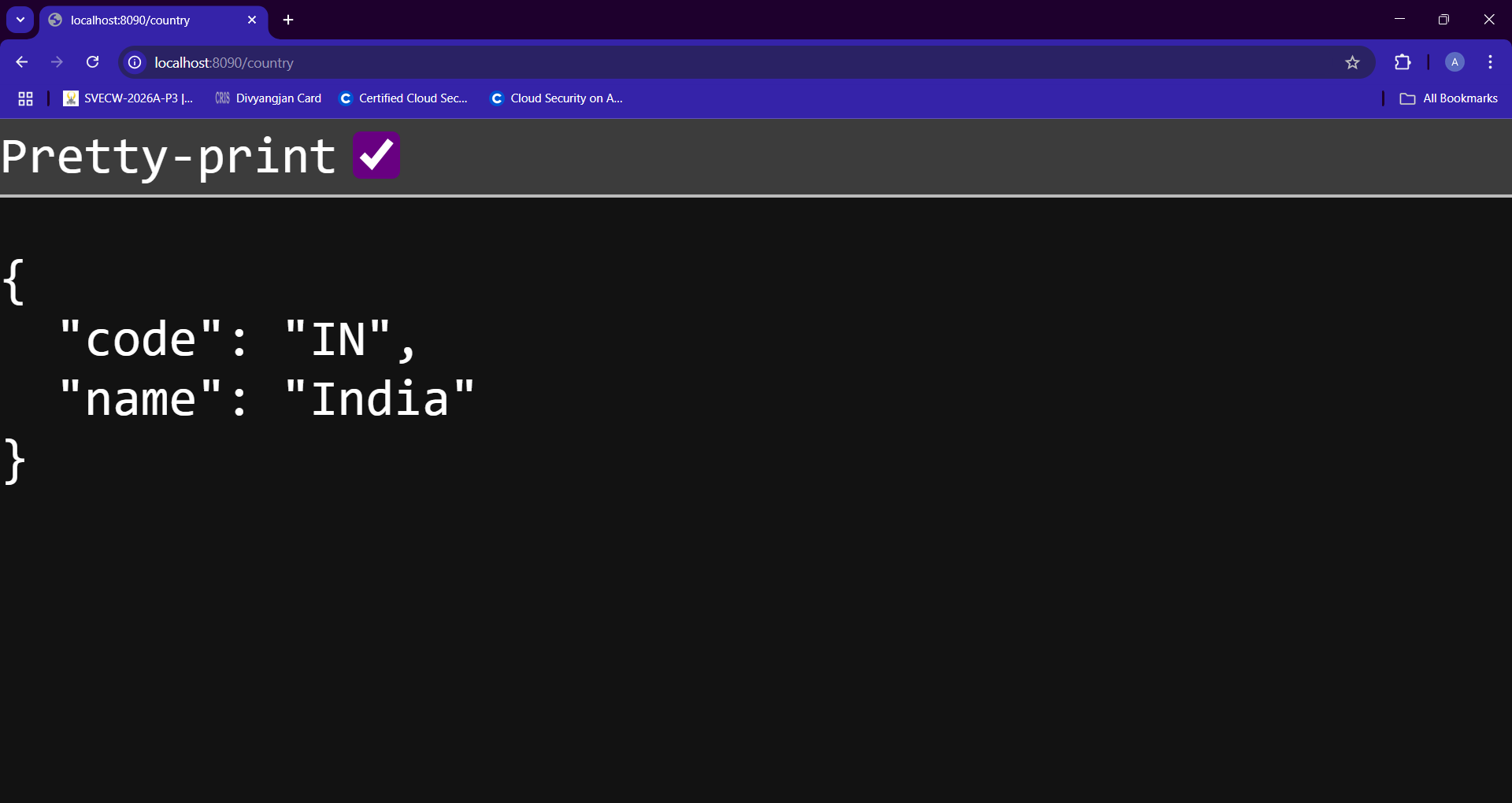
**return "Country [code=" + code + ", name=" + name + "]";**

**}**

**}**

**Output:**

****

****

**Exercise - 5: REST - Get country based on country code**

**Code:**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>spring-learn</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>spring-learn</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

**Application.properties**

**spring.application.name=spring-learn**

**server.port=8090**

**# Spring Framework and application log**

**logging.level.org.springframework=info**

**logging.level.com.cognizant=debug**

**# Log pattern**

**logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n**

**Country.java**

**package com.cognizant.spring\_learn.model;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**public class Country {**

**private String code;**

**private String name;**

**public String getCode() {**

**return code;**

**}**

**public void setCode(String code) {**

**this.code = code;**

**}**

**public String getName() {**

**return name;**

**}**

**public void setName(String name) {**

**this.name = name;**

**}**

***@Override***

**public String toString() {**

**return "Country [code=" + code + ", name=" + name + "]";**

**}**

**}**

**CountryController.java**

**package com.cognizant.spring\_learn.controller;**

**import com.cognizant.spring\_learn.model.Country;**

**import com.cognizant.spring\_learn.service.CountryService;**

**import org.springframework.web.bind.annotation.\*;**

**import org.springframework.beans.factory.annotation.Autowired;**

***@RestController***

**public class CountryController {**

***@Autowired***

**private CountryService countryService;**

***@GetMapping*("/country/{code}")**

**public Country getCountry(*@PathVariable* String code) throws Exception {**

**return countryService.getCountry(code);**

**}**

**}**

**Country.xml**

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

**<beans xmlns=*"http://www.springframework.org/schema/beans"***

**xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"***

**xsi:schemaLocation=*"***

***http://www.springframework.org/schema/beans***

***http://www.springframework.org/schema/beans/spring-beans.xsd"*>**

**<bean id=*"countryList"* class=*"java.util.ArrayList"*>**

**<constructor-arg>**

**<list>**

**<bean class=*"com.cognizant.spring\_learn.model.Country"*>**

**<property name=*"code"* value=*"IN"* />**

**<property name=*"name"* value=*"India"* />**

**</bean>**

**<bean class=*"com.cognizant.spring\_learn.model.Country"*>**

**<property name=*"code"* value=*"US"* />**

**<property name=*"name"* value=*"United States"* />**

**</bean>**

**<bean class=*"com.cognizant.spring\_learn.model.Country"*>**

**<property name=*"code"* value=*"DE"* />**

**<property name=*"name"* value=*"Germany"* />**

**</bean>**

**<bean class=*"com.cognizant.spring\_learn.model.Country"*>**

**<property name=*"code"* value=*"JP"* />**

**<property name=*"name"* value=*"Japan"* />**

**</bean>**

**</list>**

**</constructor-arg>**

**</bean>**

**</beans>**

**CountryService.java**

**package com.cognizant.spring\_learn.service;**

**import com.cognizant.spring\_learn.model.Country;**

**import org.springframework.context.ApplicationContext;**

**import org.springframework.context.support.ClassPathXmlApplicationContext;**

**import org.springframework.stereotype.Service;**

**import java.util.List;**

***@Service***

**public class CountryService {**

**public Country getCountry(String code) throws Exception {**

**ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");**

**List<Country> countries = (List<Country>) context.getBean("countryList");**

**return countries.stream()**

**.filter(c -> c.getCode().equalsIgnoreCase(code))**

**.findFirst()**

**.orElseThrow(() -> new Exception("Country not found with code: " + code));**

**}**

**}**

**SpringLearnApplication.java**

**package com.cognizant.spring\_learn;**

**import org.slf4j.Logger;**

**import org.slf4j.LoggerFactory;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

***@SpringBootApplication***

**public class SpringLearnApplication {**

**private static final Logger *LOGGER* = LoggerFactory.*getLogger*(SpringLearnApplication.class);**

**public static void main(String[] args) {**

***LOGGER*.info("Start Main");**

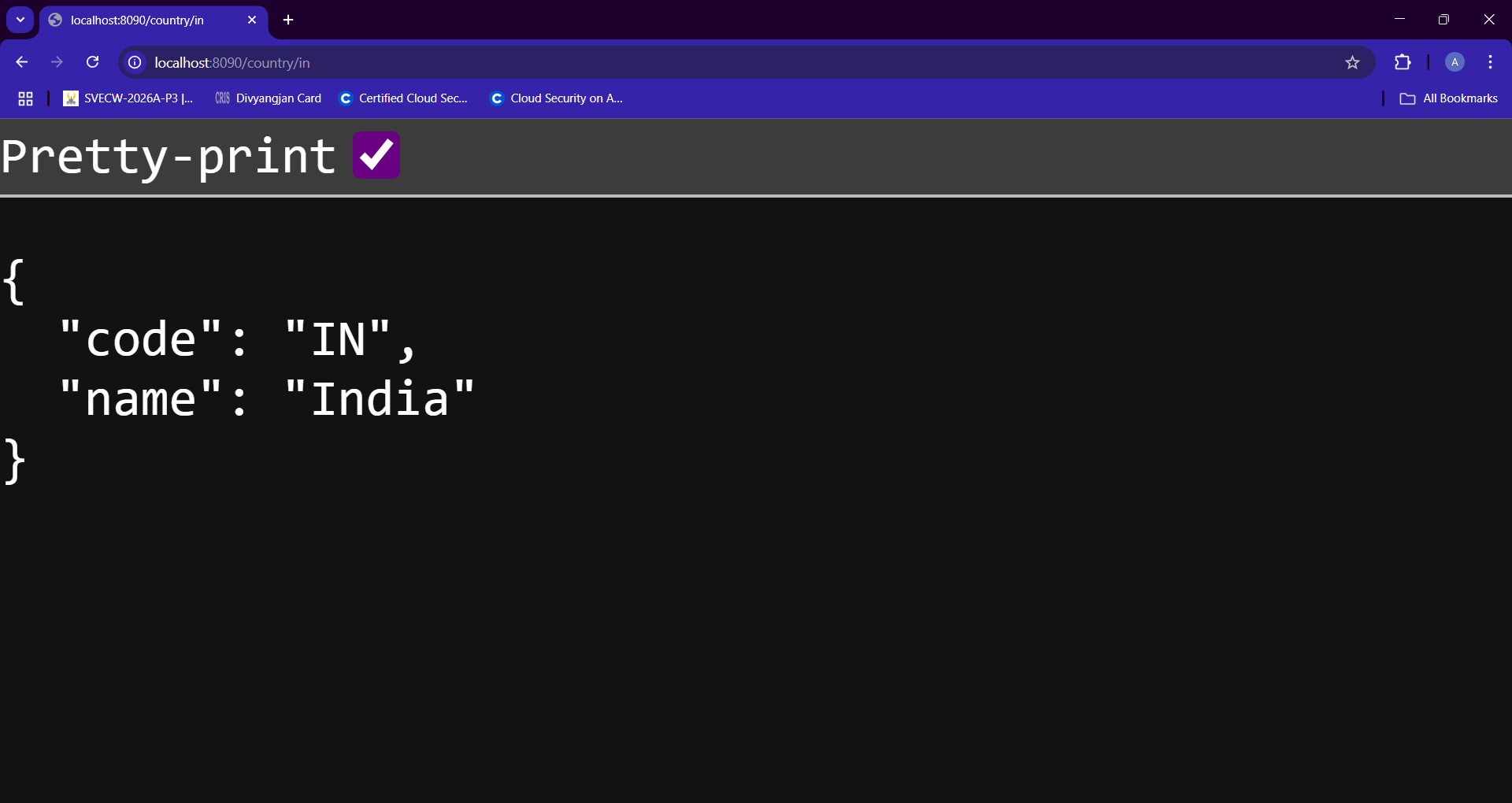
**SpringApplication.*run*(SpringLearnApplication.class, args);**

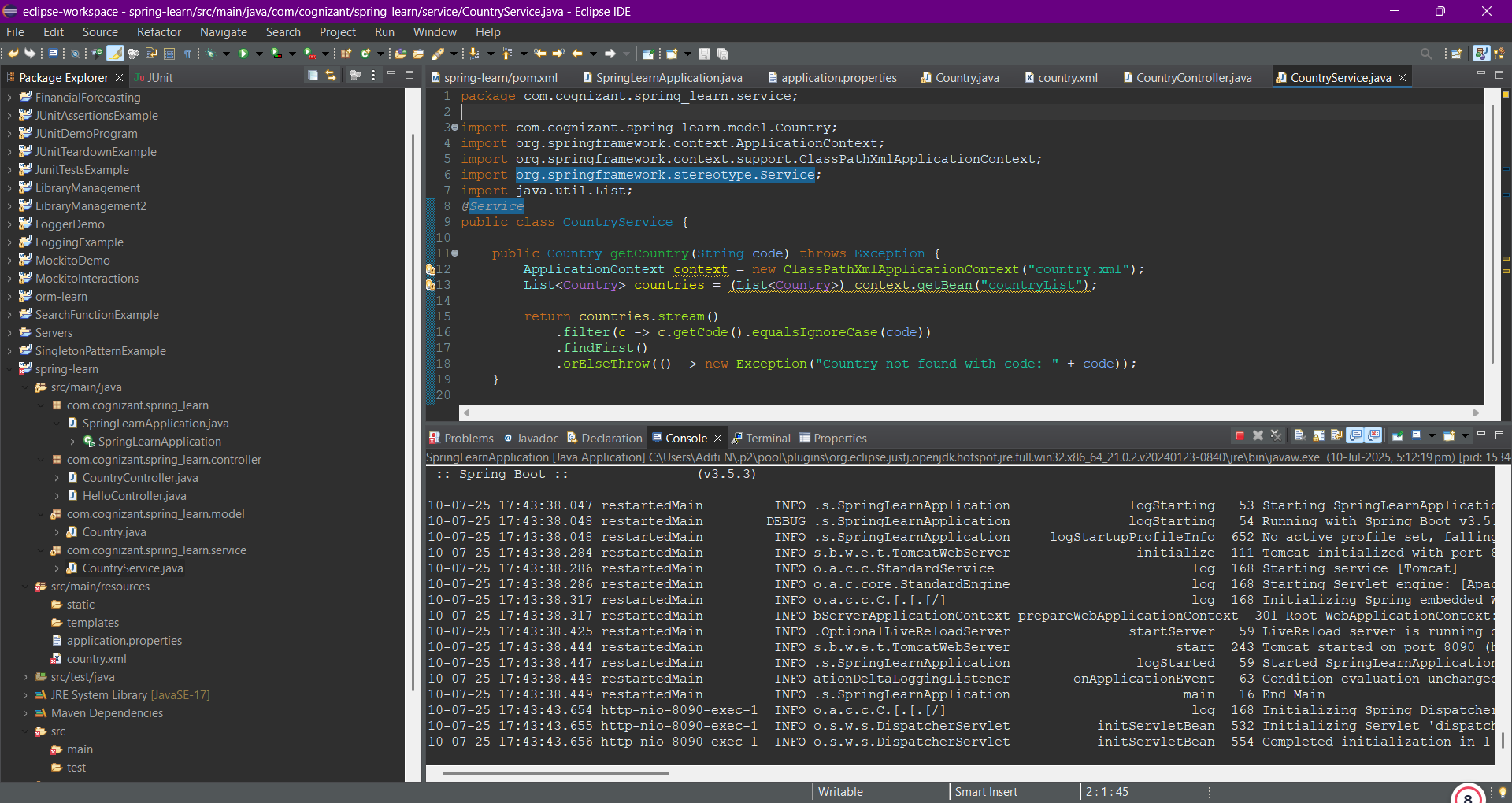
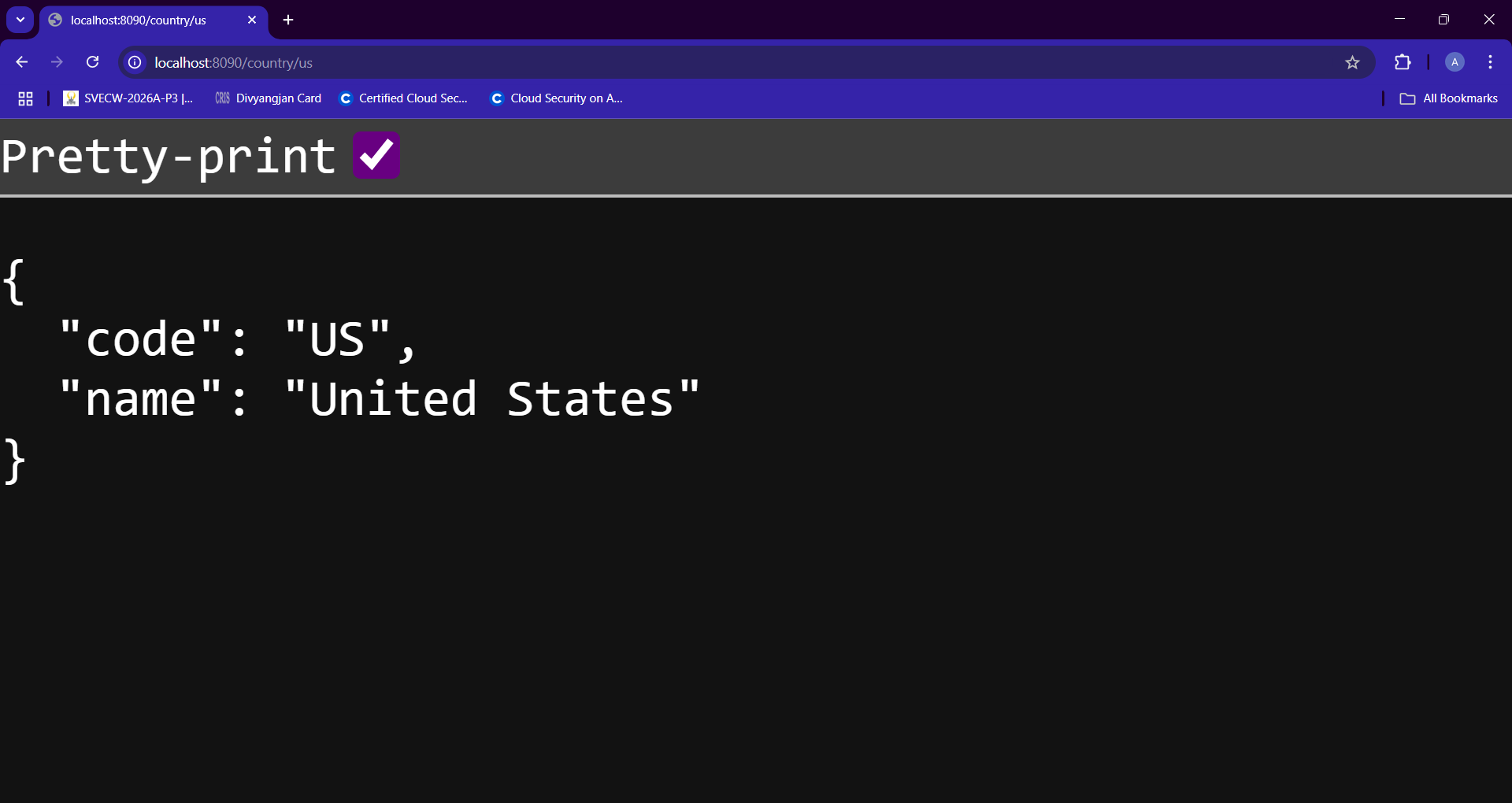
***LOGGER*.info("End Main");**

**}**

**}**

**Output:**



****

**Exercise - 6: Create authentication service that returns JWT**

**Code:**

**JwtDemoApplication.java**

**package com.cognizant.jwt\_demo;**

**import org.springframework.boot.SpringApplication;**

**import org.springframework.boot.autoconfigure.SpringBootApplication;**

***@SpringBootApplication***

**public class JwtDemoApplication {**

**public static void main(String[] args) {**

**SpringApplication.*run*(JwtDemoApplication.class, args);**

**}**

**}**

**SecurityConfig.java**

**package com.cognizant.jwt\_demo.config;**

**import org.springframework.context.annotation.\*;**

**import org.springframework.security.config.annotation.web.builders.HttpSecurity;**

**import org.springframework.security.config.annotation.web.configuration.EnableWebSecurity;**

**import org.springframework.security.web.\*;**

**import org.springframework.security.config.Customizer;**

**import org.springframework.security.core.userdetails.UserDetailsService;**

***@Configuration***

***@EnableWebSecurity***

**public class SecurityConfig {**

***@Bean***

**public SecurityFilterChain securityFilterChain(HttpSecurity http) throws Exception {**

**http**

**.csrf(csrf -> csrf.disable())**

**.authorizeHttpRequests(auth -> auth**

**.requestMatchers("/authenticate").hasAnyRole("USER", "ADMIN")**

**.anyRequest().authenticated()**

**)**

**.httpBasic(Customizer.*withDefaults*());**

**return http.build();**

**}**

**}**

**AuthenticationController.java**

**package com.cognizant.jwt\_demo.controller;**

**import io.jsonwebtoken.\*;**

**import org.springframework.web.bind.annotation.\*;**

**import io.jsonwebtoken.security.Keys;**

**import java.security.Key;**

**import java.util.\*;**

***@RestController***

**public class AuthenticationController {**

***@GetMapping*("/authenticate")**

**public Map<String, String> authenticate(*@RequestHeader*("Authorization") String authHeader) {**

**System.*out*.println("Authorization Header: " + authHeader);**

**String user = getUser(authHeader);**

**String token = generateJwt(user);**

**Map<String, String> response = new HashMap<>();**

**response.put("token", token);**

**return response;**

**}**

**private String getUser(String authHeader) {**

**String encodedCredentials = authHeader.substring("Basic ".length());**

**byte[] decodedBytes = Base64.*getDecoder*().decode(encodedCredentials);**

**String decoded = new String(decodedBytes);**

**String username = decoded.split(":")[0];**

**return username;**

**}**

**private String generateJwt(String user) {**

**Key key = Keys.*secretKeyFor*(*SignatureAlgorithm*.*HS256*);**

**JwtBuilder builder = Jwts.*builder*()**

**.setSubject(user)**

**.setIssuedAt(new Date())**

**.setExpiration(new Date(System.*currentTimeMillis*() + 1200000)) // 20 minutes**

**.signWith(key);**

**return builder.compact();**

**}**

**}**

**UserModel.java**

**package com.cognizant.jwt\_demo.model;**

**public class UserModel {**

**private String username;**

**private String password;**

**public UserModel() {}**

**public UserModel(String username, String password) {**

**this.username = username;**

**this.password = password;**

**}**

**// Getters and setters**

**}**

**CustomerUserDetailsService.java**

**package com.cognizant.jwt\_demo.service;**

**import org.springframework.security.core.userdetails.\*;**

**import org.springframework.security.core.authority.SimpleGrantedAuthority;**

**import org.springframework.stereotype.Service;**

**import java.util.List;**

***@Service***

**public class CustomerUserDetailsService implements UserDetailsService {**

***@Override***

**public UserDetails loadUserByUsername(String username) throws UsernameNotFoundException {**

**// For demo, hardcoded user: user / password**

**if (username.equals("user")) {**

**return new User("user", "{noop}password", List.*of*(new SimpleGrantedAuthority("ROLE\_USER")));**

**} else {**

**throw new UsernameNotFoundException("User not found");**

**}**

**}**

**}**

**Pom.xml**

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

**<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"**

**xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">**

**<modelVersion>4.0.0</modelVersion>**

**<parent>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-parent</artifactId>**

**<version>3.5.3</version>**

**<relativePath/> <!-- lookup parent from repository -->**

**</parent>**

**<groupId>com.cognizant</groupId>**

**<artifactId>jwt-demo</artifactId>**

**<version>0.0.1-SNAPSHOT</version>**

**<name>jwt-demo</name>**

**<description>Demo project for Spring Boot</description>**

**<url/>**

**<licenses>**

**<license/>**

**</licenses>**

**<developers>**

**<developer/>**

**</developers>**

**<scm>**

**<connection/>**

**<developerConnection/>**

**<tag/>**

**<url/>**

**</scm>**

**<properties>**

**<java.version>17</java.version>**

**</properties>**

**<dependencies>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-security</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-web</artifactId>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-devtools</artifactId>**

**<scope>runtime</scope>**

**<optional>true</optional>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-starter-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**<dependency>**

**<groupId>io.jsonwebtoken</groupId>**

**<artifactId>jjwt-api</artifactId>**

**<version>0.11.5</version>**

**</dependency>**

**<dependency>**

**<groupId>io.jsonwebtoken</groupId>**

**<artifactId>jjwt-impl</artifactId>**

**<version>0.11.5</version>**

**<scope>runtime</scope>**

**</dependency>**

**<dependency>**

**<groupId>io.jsonwebtoken</groupId>**

**<artifactId>jjwt-jackson</artifactId>**

**<version>0.11.5</version>**

**<scope>runtime</scope>**

**</dependency>**

**<dependency>**

**<groupId>org.springframework.security</groupId>**

**<artifactId>spring-security-test</artifactId>**

**<scope>test</scope>**

**</dependency>**

**<dependency>**

**<groupId>io.jsonwebtoken</groupId>**

**<artifactId>jjwt</artifactId>**

**<version>0.9.0</version>**

**</dependency>**

**</dependencies>**

**<build>**

**<plugins>**

**<plugin>**

**<groupId>org.springframework.boot</groupId>**

**<artifactId>spring-boot-maven-plugin</artifactId>**

**</plugin>**

**</plugins>**

**</build>**

**</project>**

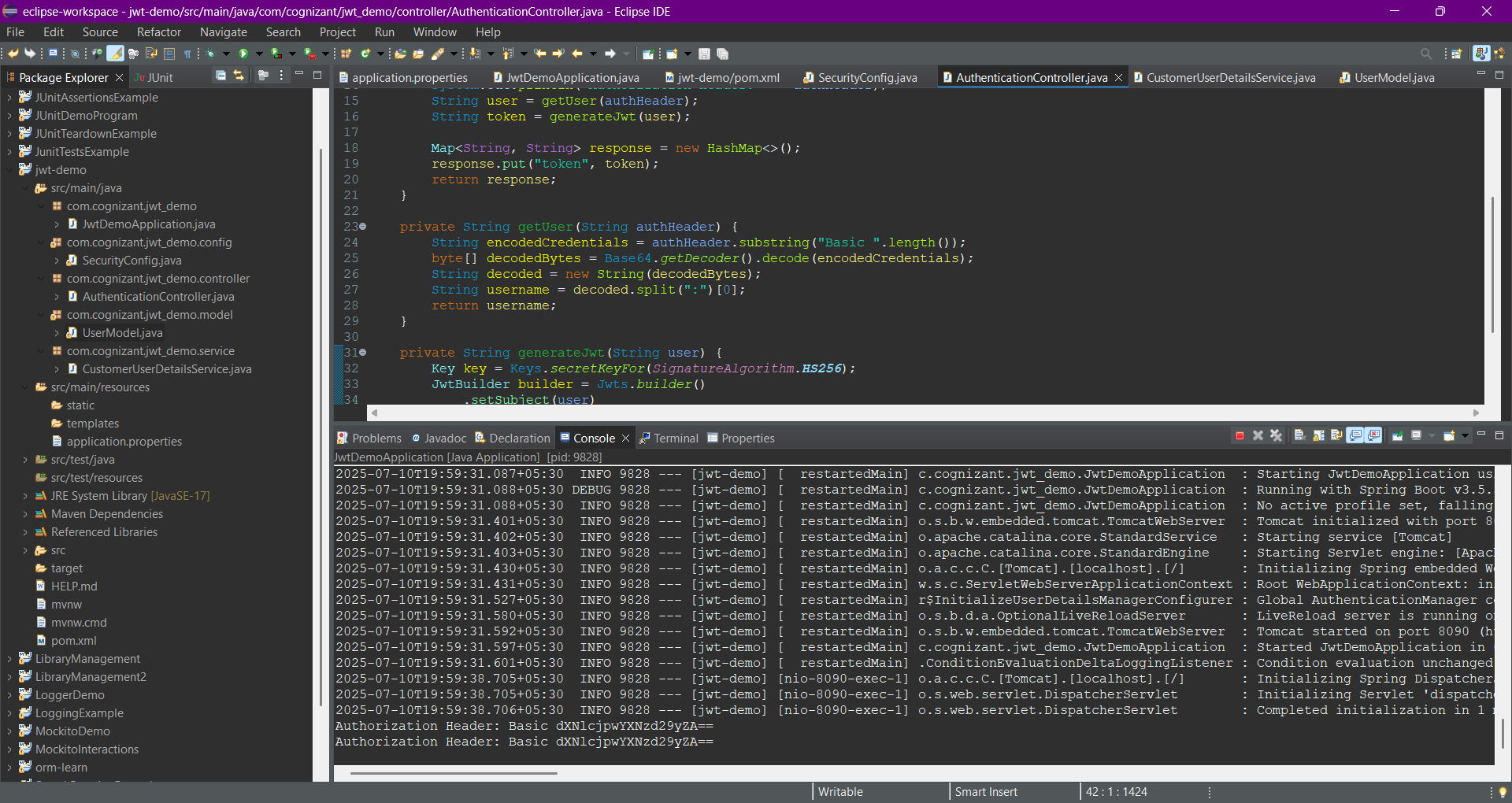
**Application.properties**

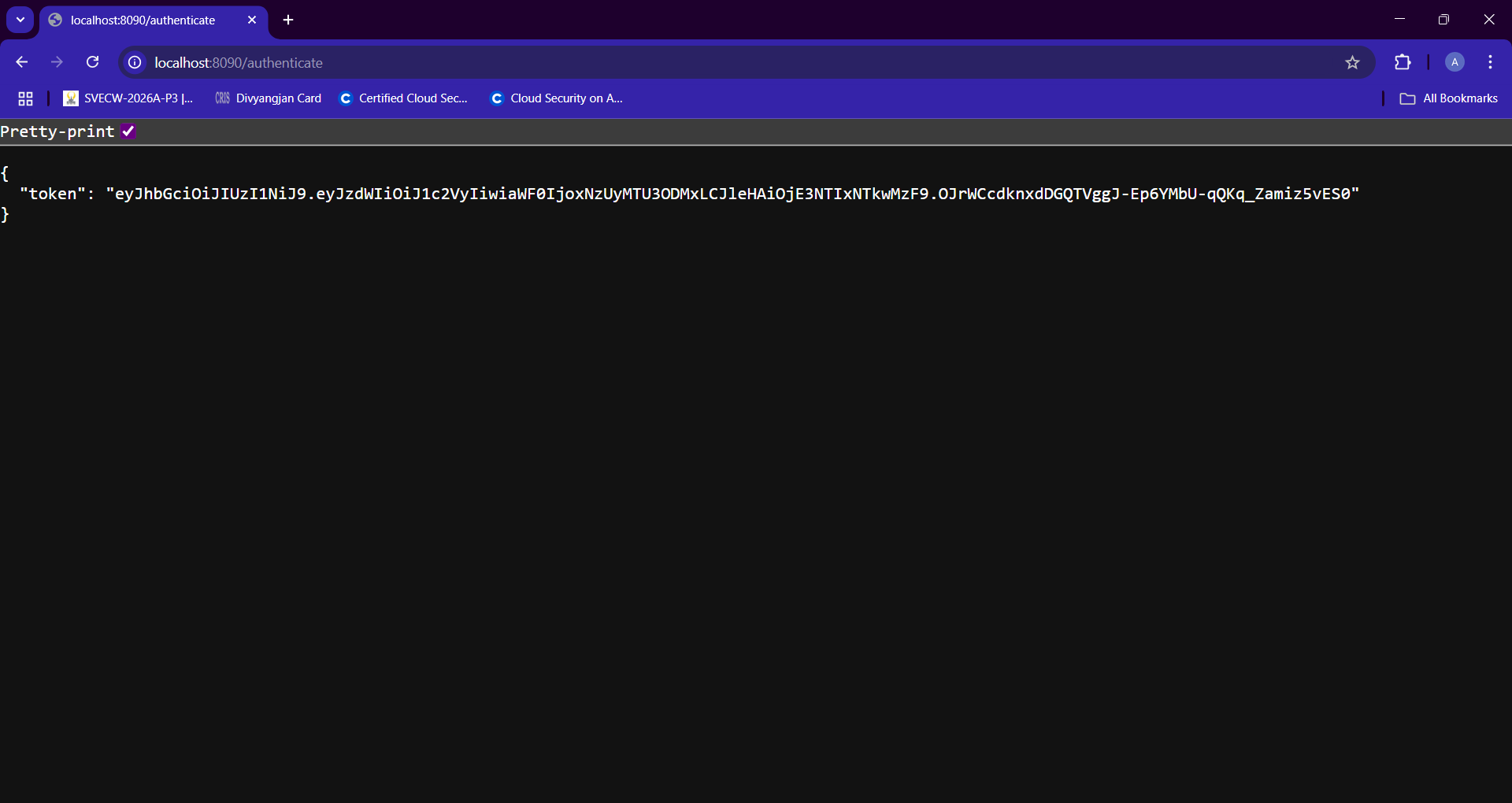
**spring.application.name=jwt-demo**

**server.port=8090**

**logging.level.org.springframework=INFO**

**logging.level.com.cognizant=DEBUG**

**Output:**

****