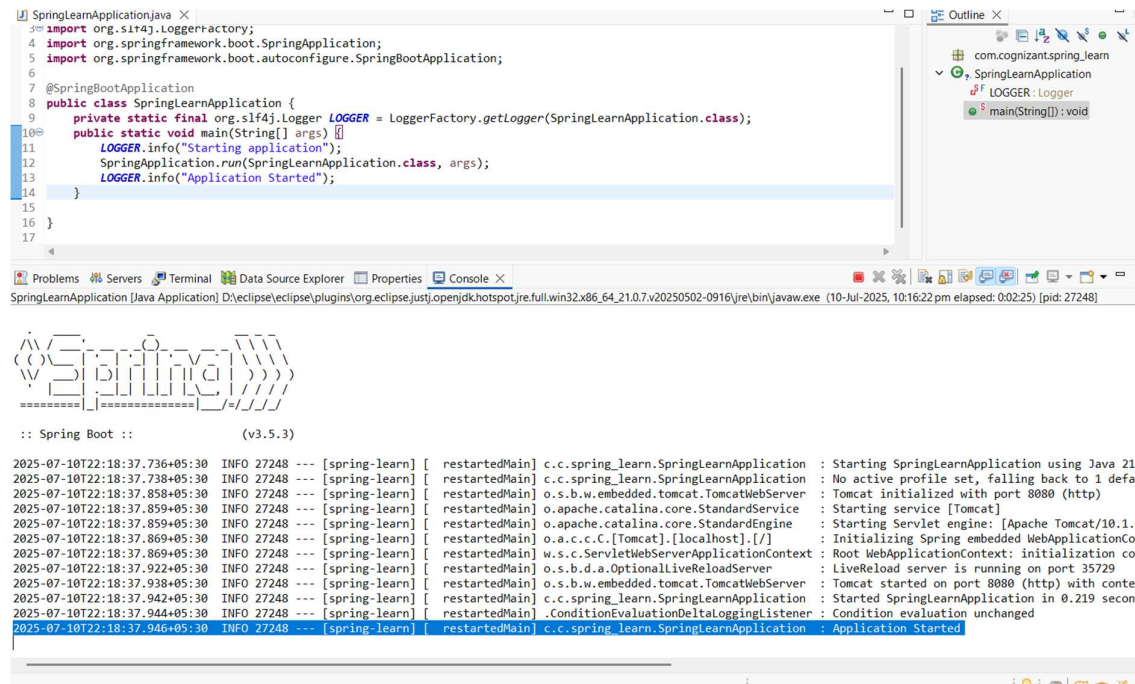


Exercise 1 Create a Spring Web Project using Maven



The screenshot shows an IDE with the file `SpringLearnApplication.java` open. The code is a Spring Boot application that uses a logger to log the start and end of the application. The console output shows the application starting and logging the start and end of the application.

```
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 org.slf4j.Logger LOGGER = LoggerFactory.getLogger(SpringLearnApplication.class);

    public static void main(String[] args) {
        LOGGER.info("Starting application");
        SpringApplication.run(SpringLearnApplication.class, args);
        LOGGER.info("Application Started");
    }
}
```

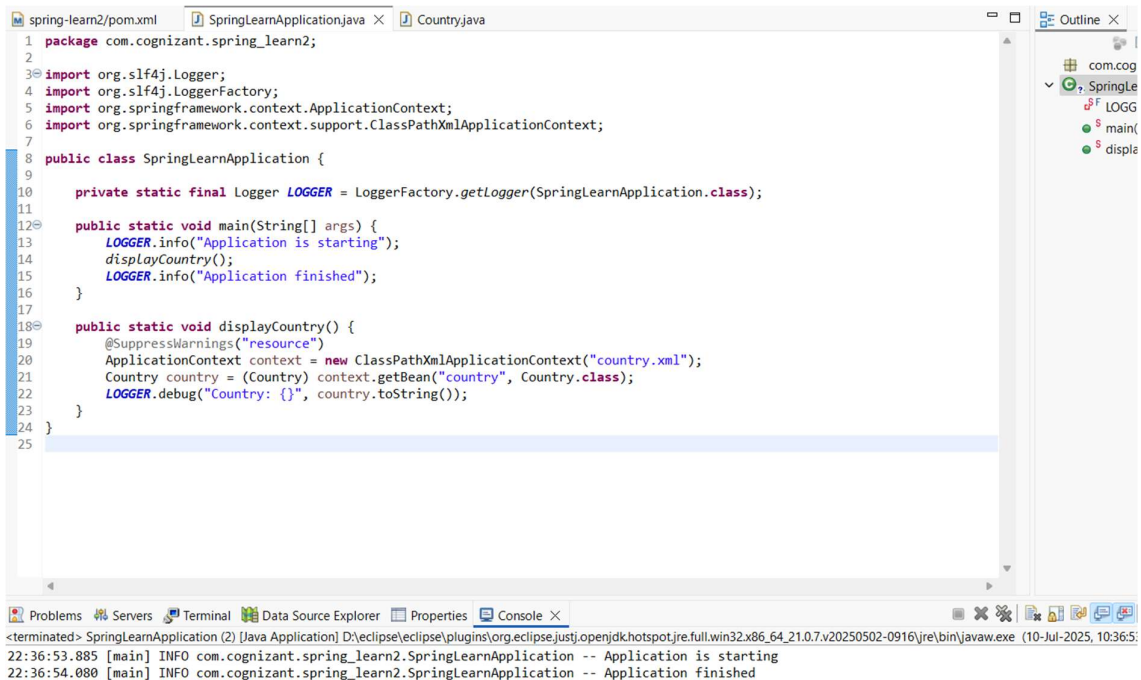
Console Output:

```
SpringLearnApplication [Java Application] D:\eclipse\workspace\spring_learn\spring_learn\src\main\java\com\cognizant\spring_learn\SpringLearnApplication.java (10-Jul-2025, 10:16:22 pm elapsed: 0:02:25) [pid: 27248]

:: Spring Boot :: (v3.5.3)

2025-07-10T22:18:37.736+05:30 INFO 27248 --- [spring-learn] [ restartedMain] c.c.spring_learn.SpringLearnApplication : Starting SpringLearnApplication using Java 21
2025-07-10T22:18:37.738+05:30 INFO 27248 --- [spring-learn] [ restartedMain] c.c.spring_learn.SpringLearnApplication : No active profile set, falling back to 1 default profile: 'default'
2025-07-10T22:18:37.858+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port 8080 (http)
2025-07-10T22:18:37.859+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.apache.catalina.core.StandardEngine : Starting service [Tomcat]
2025-07-10T22:18:37.859+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/10.1.28]
2025-07-10T22:18:37.869+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2025-07-10T22:18:37.869+05:30 INFO 27248 --- [spring-learn] [ restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed
2025-07-10T22:18:37.922+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : LiveReload server is running on port 35729
2025-07-10T22:18:37.938+05:30 INFO 27248 --- [spring-learn] [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port 8080 (http) with context path = '/'
2025-07-10T22:18:37.942+05:30 INFO 27248 --- [spring-learn] [ restartedMain] c.c.spring_learn.SpringLearnApplication : Started SpringLearnApplication in 0.219 seconds
2025-07-10T22:18:37.944+05:30 INFO 27248 --- [spring-learn] [ restartedMain] .ConditionEvaluationDeltaLoggingListener : Condition evaluation unchanged
2025-07-10T22:18:37.946+05:30 INFO 27248 --- [spring-learn] [ restartedMain] c.c.spring_learn.SpringLearnApplication : Application Started
```

Exercise 2 Spring Core – Load Country from Spring Configuration XML



The screenshot shows an IDE with the file `SpringLearnApplication.java` open. The code is a Spring Core application that loads a country from a Spring configuration XML file. The console output shows the application starting and logging the start and end of the application.

```
package com.cognizant.spring_learn2;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;

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

    public static void main(String[] args) {
        LOGGER.info("Application is starting");
        displayCountry();
        LOGGER.info("Application finished");
    }

    public static void displayCountry() {
        @SuppressWarnings("resource")
        ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");
        Country country = (Country) context.getBean("country", Country.class);
        LOGGER.debug("Country: {}", country.toString());
    }
}
```

Console Output:

```
<terminated> SpringLearnApplication (2) [Java Application] D:\eclipse\workspace\spring_learn2\spring_learn2\src\main\java\com\cognizant\spring_learn2\SpringLearnApplication.java (10-Jul-2025, 10:36:53)
22:36:53.885 [main] INFO com.cognizant.spring_learn2.SpringLearnApplication -- Application is starting
22:36:54.080 [main] INFO com.cognizant.spring_learn2.SpringLearnApplication -- Application finished
```

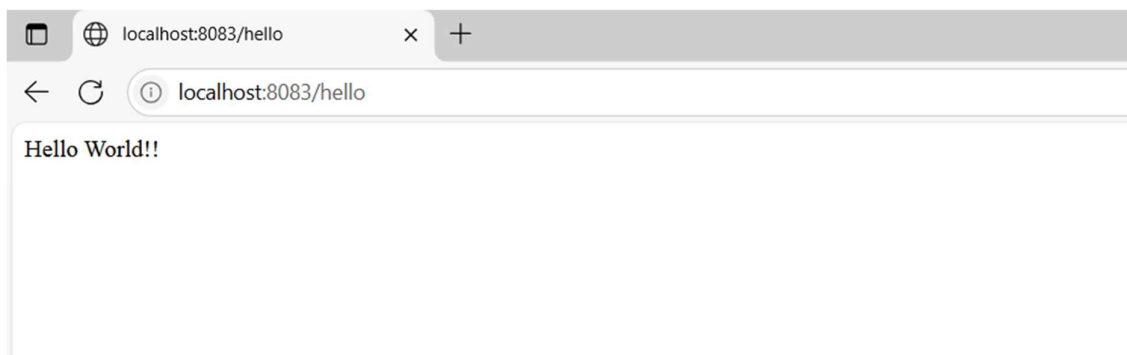
Exercise 3 Hello World RESTful Web Service

The screenshot displays the Eclipse IDE interface. The top editor shows the source code of `SpringLearnApplication`. The code includes imports for `@SpringBootApplication`, `LoggerFactory`, and `Logger`. It defines a `main` method that logs "Starting application" and "Application Started". The bottom pane shows the Console view with the following log output:

```

SpringLearnApplication (3) [Java Application] D:\eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_21.0.7.v20250502-0916\jre\bin\javaw.exe (10-Jul-2025, 10:48:54 pm elapsed: 0:01:05) [pid: 2025-07-10T22:48:55.424+05:30 INFO 20840 --- [spring-learn] [ restartedMain] c.c.s.SpringLearnApplication : Starting SpringLearnApplication using...
2025-07-10T22:48:55.427+05:30 INFO 20840 --- [spring-learn] [ restartedMain] c.c.s.SpringLearnApplication : No active profile set, falling back to...
2025-07-10T22:48:55.499+05:30 INFO 20840 --- [spring-learn] [ restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : Devtools property defaults active! Set...
2025-07-10T22:48:55.500+05:30 INFO 20840 --- [spring-learn] [ restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : For additional web related logging con...
2025-07-10T22:48:56.571+05:30 INFO 20840 --- [spring-learn] [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port 8083 (http)...
2025-07-10T22:48:56.587+05:30 INFO 20840 --- [spring-learn] [ restartedMain] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2025-07-10T22:48:56.590+05:30 INFO 20840 --- [spring-learn] [ restartedMain] o.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomca...
2025-07-10T22:48:56.624+05:30 INFO 20840 --- [spring-learn] [ restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplic...
2025-07-10T22:48:56.626+05:30 INFO 20840 --- [spring-learn] [ restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initializa...
2025-07-10T22:48:57.075+05:30 WARN 20840 --- [spring-learn] [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : Unable to start LiveReload server
2025-07-10T22:48:57.122+05:30 INFO 20840 --- [spring-learn] [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port 8083 (http) wit...
2025-07-10T22:48:57.132+05:30 INFO 20840 --- [spring-learn] [ restartedMain] c.c.s.SpringLearnApplication : Started SpringLearnApplication in 2.23...
2025-07-10T22:48:57.136+05:30 INFO 20840 --- [spring-learn] [ restartedMain] c.c.s.SpringLearnApplication : Application Started
2025-07-10T22:49:11.044+05:30 INFO 20840 --- [nio-8083-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet
2025-07-10T22:49:11.045+05:30 INFO 20840 --- [spring-learn] [ nio-8083-exec-1] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
2025-07-10T22:49:11.046+05:30 INFO 20840 --- [spring-learn] [ nio-8083-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 1 ms
2025-07-10T22:49:11.083+05:30 INFO 20840 --- [spring-learn] [ nio-8083-exec-1] c.c.s.controller.HelloController : Start - sayHello()
2025-07-10T22:49:11.084+05:30 INFO 20840 --- [spring-learn] [ nio-8083-exec-1] c.c.s.controller.HelloController : End - sayHello()
2025-07-10T22:49:22.078+05:30 INFO 20840 --- [spring-learn] [ nio-8083-exec-1] c.c.s.controller.HelloController : Start - sayHello()

```



Exercise 4 REST - Country Web Service

localhost:8084/country

retty-print

"code": "IN", "name": "India"

```
1 package com.cognizant.spring_learn4;
2
3 import org.springframework.boot.SpringApplication;
4 import org.springframework.boot.autoconfigure.SpringBootApplication;
5
6 @SpringBootApplication
7 public class SpringLearnApplication {
8     public static void main(String[] args) {
9         SpringApplication.run(SpringLearnApplication.class, args);
10    }
11 }
12
```

com.cognizant.spring_learn4

SpringLearnApplication

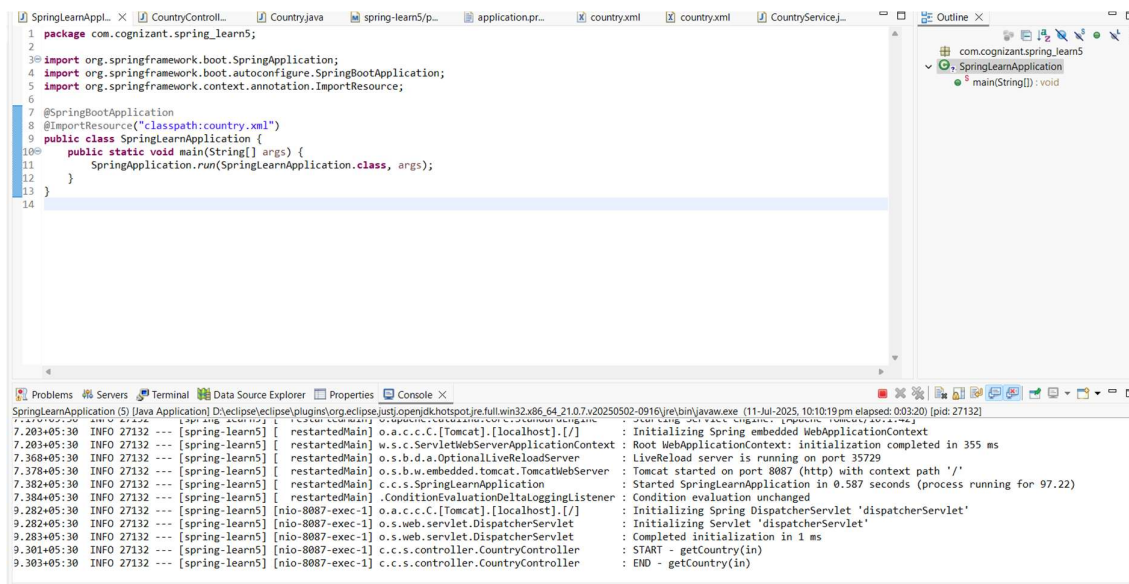
main(String[]): void

Problems Servers Terminal Data Source Explorer Properties Console

SpringLearnApplication (4) [Java Application] D:\eclipse\workspace\spring_learn4\src\main\java\com\cognizant\spring_learn4\SpringLearnApplication.java (10-Jul-2025, 11:35:33 pm elapsed: 0:08:36) [pid: 11688]

```
2025-07-10T23:35:35.254+05:30 INFO 11688 --- [spring-learn4] [ restartedMain] o.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/10.
2025-07-10T23:35:35.281+05:30 INFO 11688 --- [spring-learn4] [ restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplication
2025-07-10T23:35:35.282+05:30 INFO 11688 --- [spring-learn4] [ restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization
2025-07-10T23:35:35.537+05:30 WARN 11688 --- [spring-learn4] [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : Unable to start LiveReload server
2025-07-10T23:35:35.579+05:30 INFO 11688 --- [spring-learn4] [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port 8084 (http) with con
2025-07-10T23:35:35.579+05:30 INFO 11688 --- [spring-learn4] [ restartedMain] c.c.s.SpringLearnApplication : Started SpringLearnApplication in 1.386 sec
2025-07-10T23:35:53.510+05:30 INFO 11688 --- [spring-learn4] [nio-8084-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet 'disp
2025-07-10T23:35:53.510+05:30 INFO 11688 --- [spring-learn4] [nio-8084-exec-1] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
2025-07-10T23:35:53.512+05:30 INFO 11688 --- [spring-learn4] [nio-8084-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 2 ms
2025-07-10T23:35:53.527+05:30 INFO 11688 --- [spring-learn4] [nio-8084-exec-1] c.c.s.controller.CountryController : START - getCountryIndia()
2025-07-10T23:35:53.602+05:30 INFO 11688 --- [spring-learn4] [nio-8084-exec-1] c.c.s.controller.CountryController : END - getCountryIndia()
```

Exercise 5 REST - Get country based on country code



Exercise 6 Create authentication service that returns JWT

