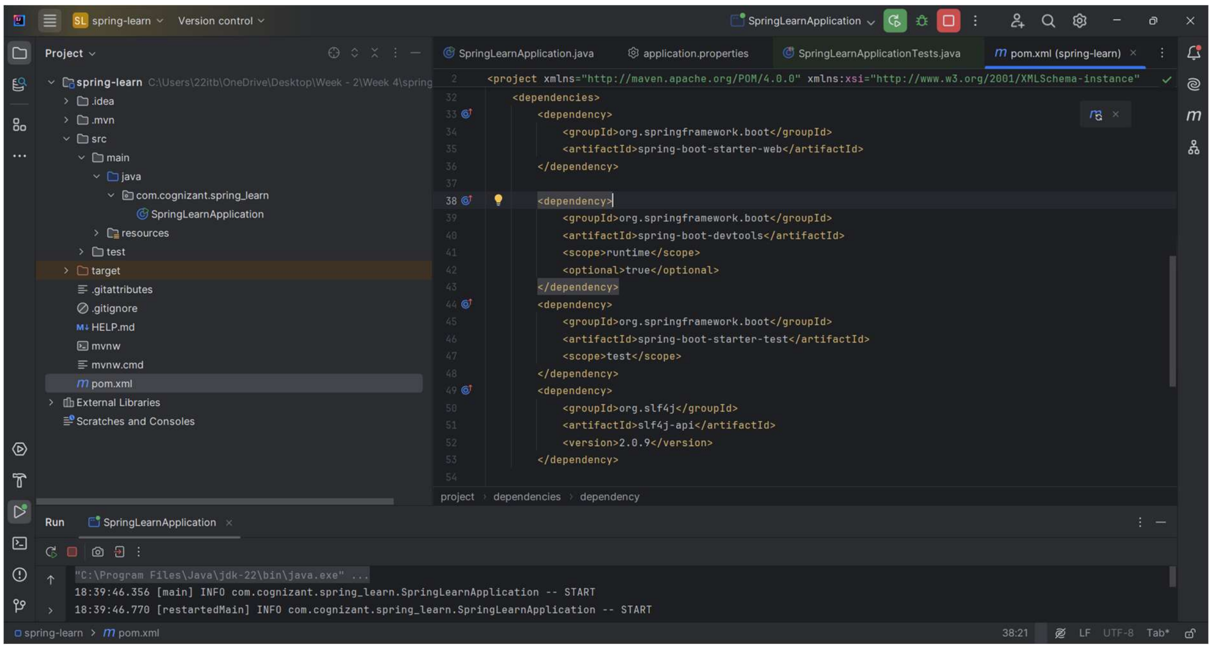
Week - 4

Hands on 1

Create a Spring Web Project using Maven

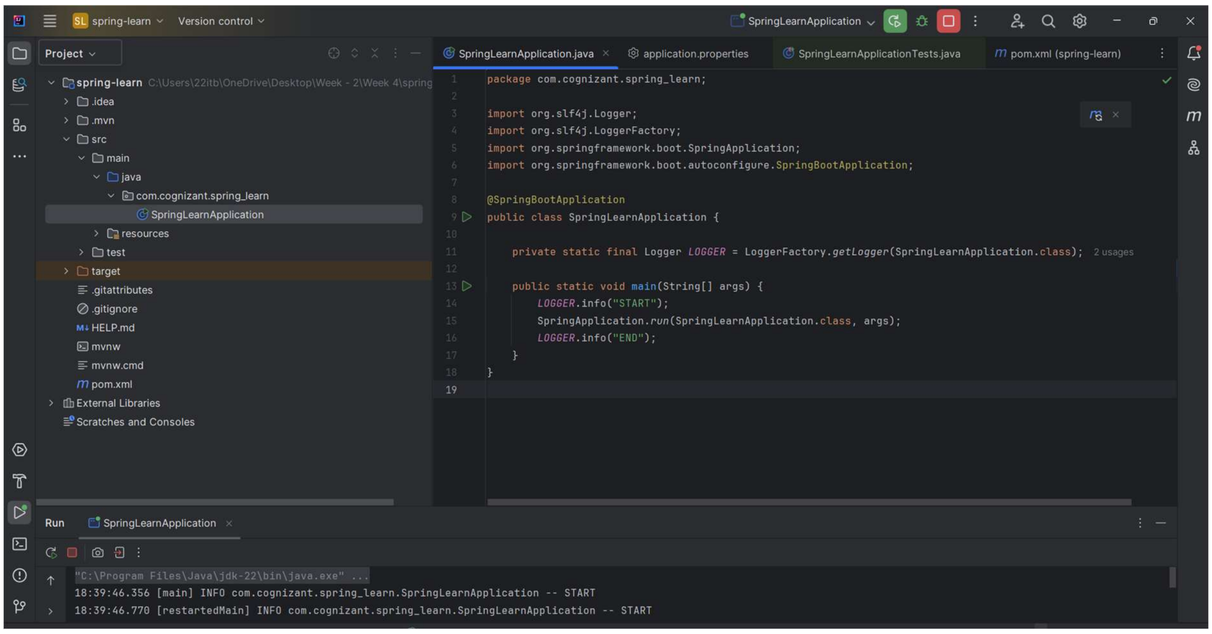
Pom.xml



```xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    <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.slf4j</groupId>
            <artifactId>slf4j-api</artifactId>
            <version>2.0.9</version>
        </dependency>

```

```
"C:\Program Files\Java\jdk-22\bin\java.exe" ...
18:39:46.356 [main] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
18:39:46.770 [restartedMain] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
```

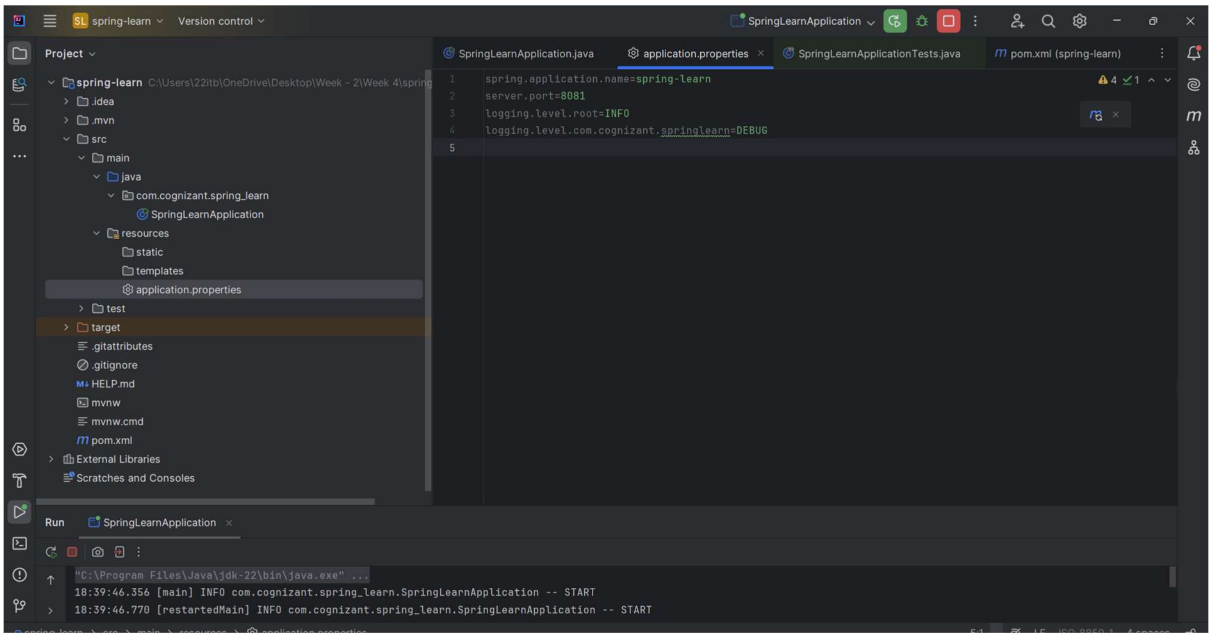
SpringApplication.java



```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");
        SpringApplication.run(SpringLearnApplication.class, args);
        LOGGER.info("END");
    }
}

```

```
"C:\Program Files\Java\jdk-22\bin\java.exe" ...
18:39:46.356 [main] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
18:39:46.770 [restartedMain] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
```

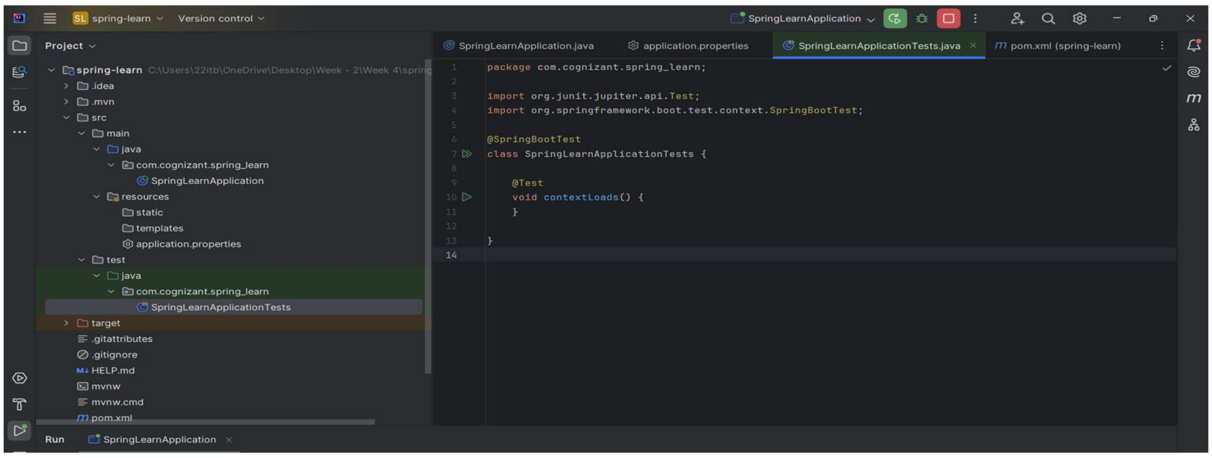
Application.property



```
spring.application.name=spring-learn
server.port=8081
logging.level.root=INFO
logging.level.com.cognizant.springlearn=DEBUG
```

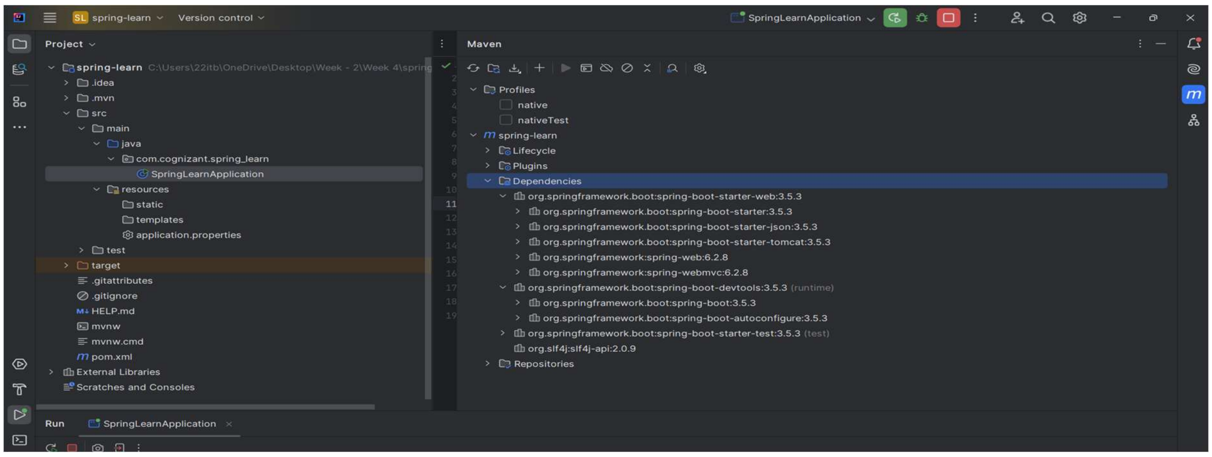
```
"C:\Program Files\Java\jdk-22\bin\java.exe" ...
18:39:46.356 [main] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
18:39:46.770 [restartedMain] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
```

SpringApplicationTest.java



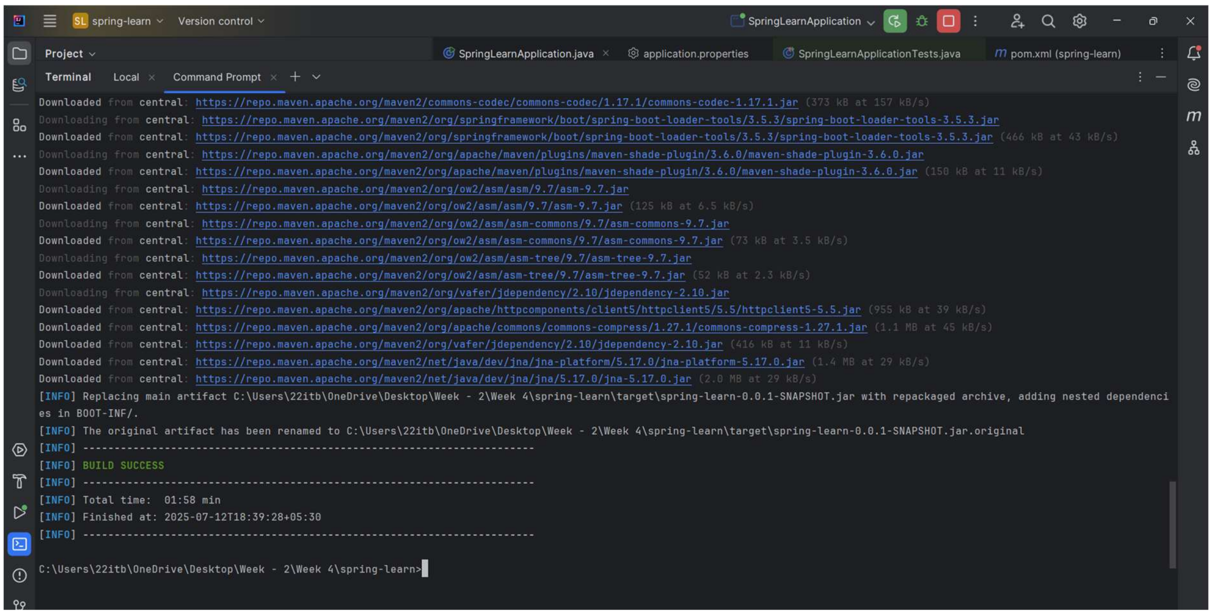
```java
package com.cognizant.spring_learn;

import org.junit.jupiter.api.Test;
import org.springframework.boot.test.context.SpringBootTest;

@SpringBootTest
class SpringLearnApplicationTests {

    @Test
    void contextLoads() {
    }

}
```

Dependency Hierarchy Tree Structure



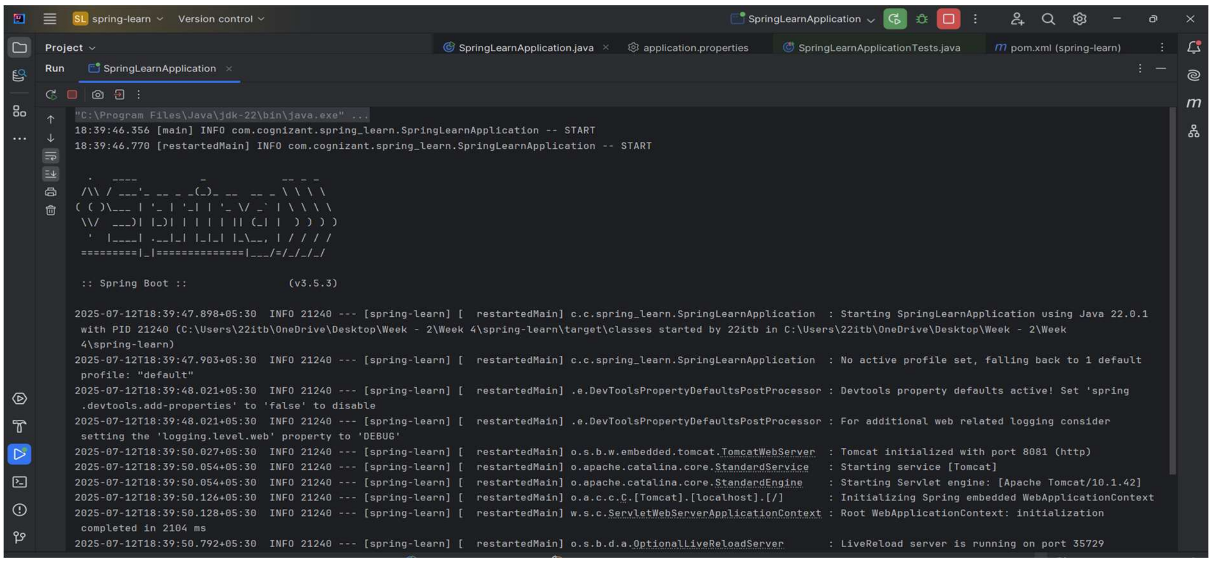
```
Maven
Profiles
    native
    nativeTest
spring-learn
    Lifecycle
    Plugins
    Dependencies
        org.springframework.boot:spring-boot-starter-web:3.5.3
            org.springframework.boot:spring-boot-starter:3.5.3
            org.springframework.boot:spring-boot-starter-json:3.5.3
            org.springframework.boot:spring-boot-starter-tomcat:3.5.3
            org.springframework:spring-web:6.2.8
            org.springframework:spring-webmvc:6.2.8
        org.springframework.boot:spring-boot-devtools:3.5.3 (runtime)
            org.springframework.boot:spring-boot:3.5.3
            org.springframework.boot:spring-boot-autoconfigure:3.5.3
        org.springframework.boot:spring-boot-starter-test:3.5.3 (test)
        org.slf4j:slf4j-api:2.0.9
    Repositories
```

Build Project



```
Downloaded from central: https://repo.maven.apache.org/maven2/commons-codec/commons-codec/1.17.1/commons-codec-1.17.1.jar (373 kB at 157 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-loader-tools/3.5.3/spring-boot-loader-tools-3.5.3.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-loader-tools/3.5.3/spring-boot-loader-tools-3.5.3.jar (466 kB at 43 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-shade-plugin/3.6.0/maven-shade-plugin-3.6.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-shade-plugin/3.6.0/maven-shade-plugin-3.6.0.jar (150 kB at 11 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm/9.7/asm-9.7.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm/9.7/asm-9.7.jar (125 kB at 6.5 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-commons/9.7/asm-commons-9.7.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-commons/9.7/asm-commons-9.7.jar (73 kB at 3.5 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-tree/9.7/asm-tree-9.7.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/ow2/asm/asm-tree/9.7/asm-tree-9.7.jar (52 kB at 2.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/vafer/jdependency/2.10/jdependency-2.10.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/httpcomponents/client5/httpclient5/5.5/httpclient5-5.5.jar (955 kB at 39 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-compress/1.27.1/commons-compress-1.27.1.jar (1.1 MB at 45 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/vafer/jdependency/2.10/jdependency-2.10.jar (416 kB at 11 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna-platform/5.17.0/jna-platform-5.17.0.jar (1.4 MB at 29 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna/5.17.0/jna-5.17.0.jar (2.0 MB at 29 kB/s)
[INFO] Replacing main artifact C:\Users\22itb\OneDrive\Desktop\Week - 2\Week 4\spring-learn\target\spring-learn-0.0.1-SNAPSHOT.jar with repackaged archive, adding nested dependenci
es in BOOT-INF/.
[INFO] The original artifact has been renamed to C:\Users\22itb\OneDrive\Desktop\Week - 2\Week 4\spring-learn\target\spring-learn-0.0.1-SNAPSHOT.jar.original
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  01:58 min
[INFO] Finished at: 2025-07-12T18:39:28+05:30
[INFO] ------------------------------------------------------------------------

C:\Users\22itb\OneDrive\Desktop\Week - 2\Week 4\spring-learn>
```

Output



```
"C:\Program Files\Java\jdk-22\bin\java.exe" ...
18:39:46.356 [main] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
18:39:46.770 [restartedMain] INFO com.cognizant.spring_learn.SpringLearnApplication -- START

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 :: Spring Boot ::                (v3.5.3)

2025-07-12T18:39:47.898+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : Starting SpringLearnApplication using Java 22.0.1
 with PID 21240 (C:\Users\22itb\OneDrive\Desktop\Week - 2\Week 4\spring-learn\target\classes started by 22itb in C:\Users\22itb\OneDrive\Desktop\Week - 2\Week
 4\spring-learn)
2025-07-12T18:39:47.903+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : No active profile set, falling back to 1 default
 profile: "default"
2025-07-12T18:39:48.021+05:30  INFO 21240 --- [spring-learn] [  restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : Devtools property defaults active! Set 'spring
 .devtools.add-properties' to 'false' to disable
2025-07-12T18:39:48.021+05:30  INFO 21240 --- [spring-learn] [  restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : For additional web related logging consider
 setting the 'logging.level.web' property to 'DEBUG'
2025-07-12T18:39:50.027+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat initialized with port 8081 (http)
2025-07-12T18:39:50.054+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.apache.catalina.core.StandardService   : Starting service [Tomcat]
2025-07-12T18:39:50.054+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.apache.catalina.core.StandardEngine    : Starting Servlet engine: [Apache Tomcat/10.1.42]
2025-07-12T18:39:50.126+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring embedded WebApplicationContext
2025-07-12T18:39:50.128+05:30  INFO 21240 --- [spring-learn] [  restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization
 completed in 2104 ms
2025-07-12T18:39:50.792+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.s.b.d.a.OptionalLiveReloadServer       : LiveReload server is running on port 35729
```

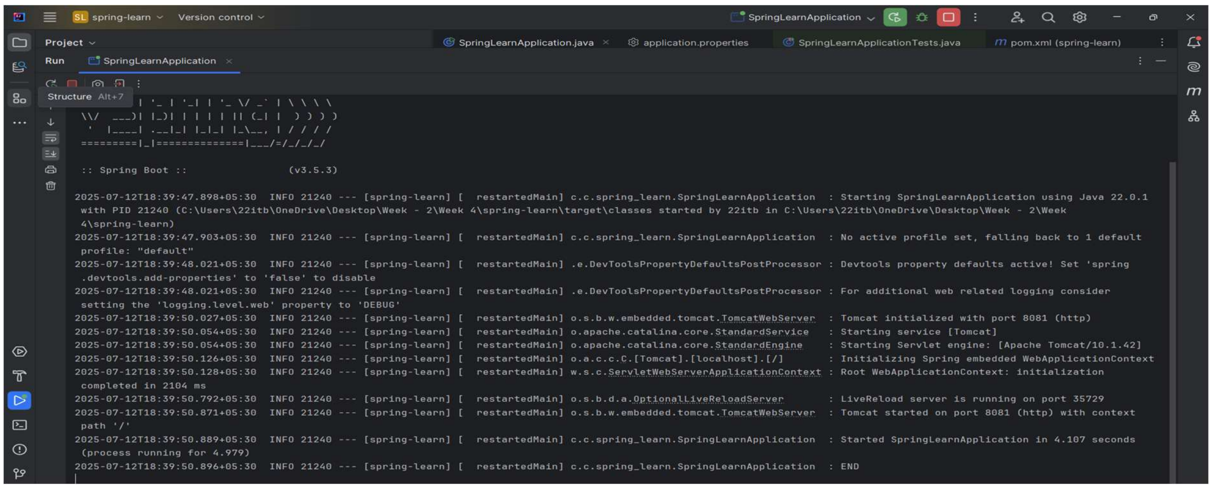

```
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 :: Spring Boot ::                (v3.5.3)

2025-07-12T18:39:47.898+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : Starting SpringLearnApplication using Java 22.0.1
 with PID 21240 (C:\Users\22itb\OneDrive\Desktop\Week - 2\Week 4\spring-learn\target\classes started by 22itb in C:\Users\22itb\OneDrive\Desktop\Week - 2\Week
 4\spring-learn)
2025-07-12T18:39:47.903+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : No active profile set, falling back to 1 default
 profile: "default"
2025-07-12T18:39:48.021+05:30  INFO 21240 --- [spring-learn] [  restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : Devtools property defaults active! Set 'spring
 .devtools.add-properties' to 'false' to disable
2025-07-12T18:39:48.021+05:30  INFO 21240 --- [spring-learn] [  restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : For additional web related logging consider
 setting the 'logging.level.web' property to 'DEBUG'
2025-07-12T18:39:50.027+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat initialized with port 8081 (http)
2025-07-12T18:39:50.054+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.apache.catalina.core.StandardService   : Starting service [Tomcat]
2025-07-12T18:39:50.054+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.apache.catalina.core.StandardEngine    : Starting Servlet engine: [Apache Tomcat/10.1.42]
2025-07-12T18:39:50.126+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring embedded WebApplicationContext
2025-07-12T18:39:50.128+05:30  INFO 21240 --- [spring-learn] [  restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization
 completed in 2104 ms
2025-07-12T18:39:50.792+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.s.b.d.a.OptionalLiveReloadServer       : LiveReload server is running on port 35729
2025-07-12T18:39:50.871+05:30  INFO 21240 --- [spring-learn] [  restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat started on port 8081 (http) with context
 path '/'
2025-07-12T18:39:50.889+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : Started SpringLearnApplication in 4.107 seconds
 (process running for 4.979)
2025-07-12T18:39:50.896+05:30  INFO 21240 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : END
```
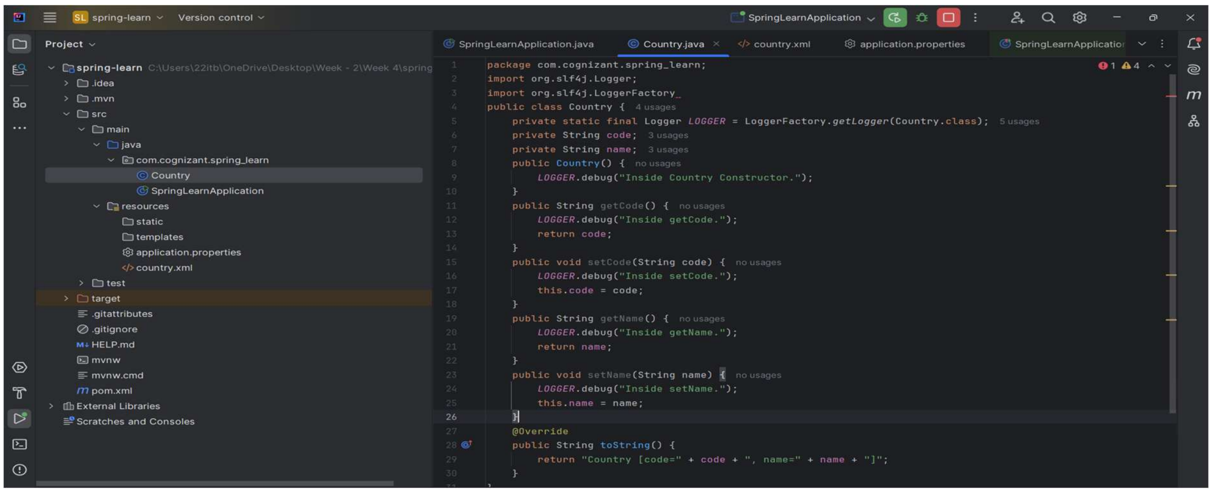
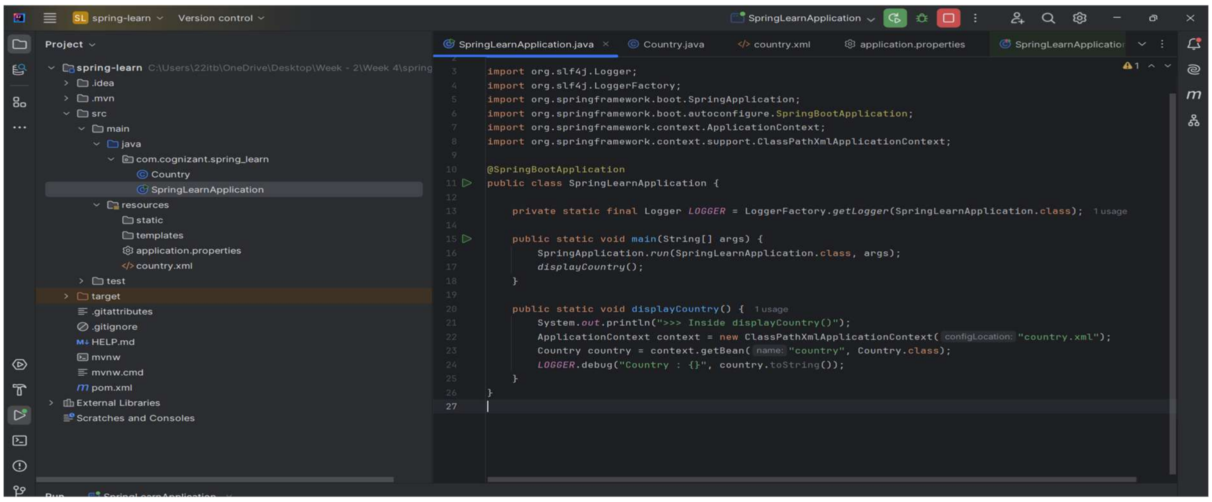

Spring Core – Load Country from Spring Configuration XML

Country.java



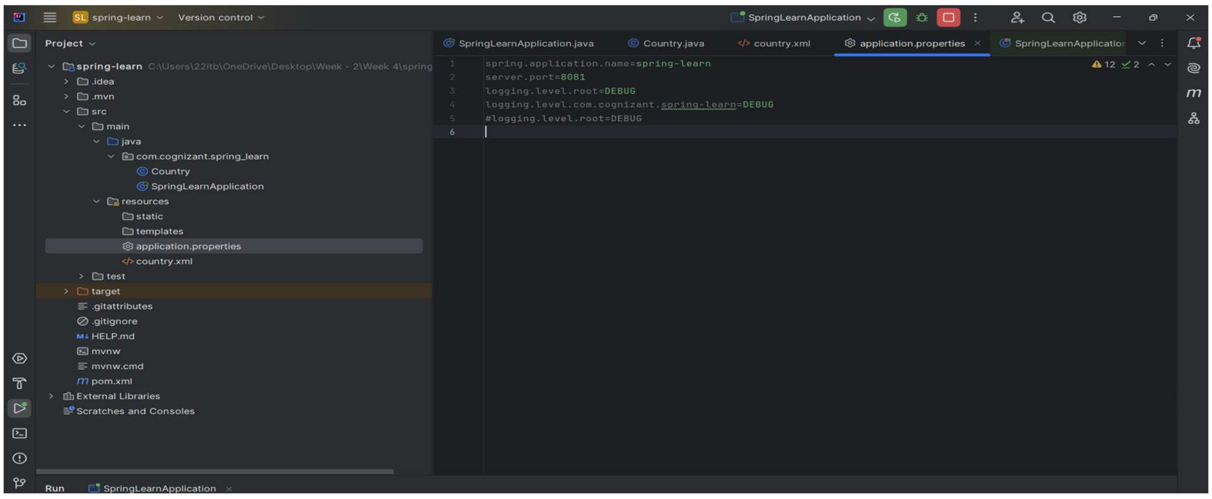
```java
package com.cognizant.spring_learn;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory
public class Country {
    private static final Logger LOGGER = LoggerFactory.getLogger(Country.class);
    private String code;
    private String name;
    public Country() {
        LOGGER.debug("Inside Country Constructor.");
    }
    public String getCode() {
        LOGGER.debug("Inside getCode.");
        return code;
    }
    public void setCode(String code) {
        LOGGER.debug("Inside setCode.");
        this.code = code;
    }
    public String getName() {
        LOGGER.debug("Inside getName.");
        return name;
    }
    public void setName(String name) {
        LOGGER.debug("Inside setName.");
        this.name = name;
    }
    @Override
    public String toString() {
        return "Country [code=" + code + ", name=" + name + "]";
    }
```

SpringLearnApplication.java



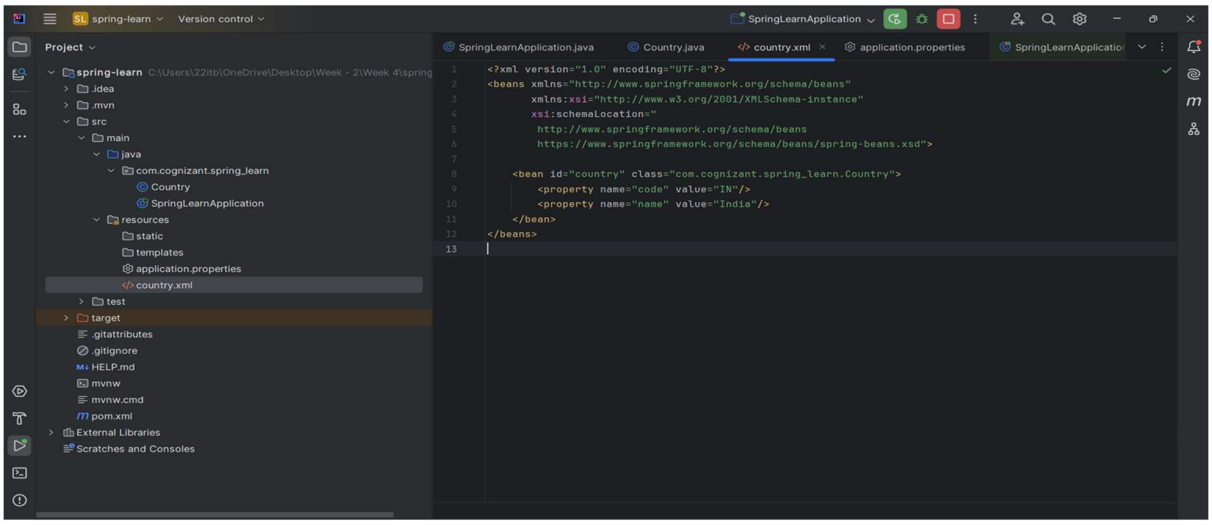
```java
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;

@SpringBootApplication
public class SpringLearnApplication {

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

    public static void main(String[] args) {
        SpringApplication.run(SpringLearnApplication.class, args);
        displayCountry();
    }

    public static void displayCountry() {
        System.out.println(">>> Inside displayCountry()");
        ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");
        Country country = context.getBean("country", Country.class);
        LOGGER.debug("Country : {}", country.toString());
    }
}
```

Application.property



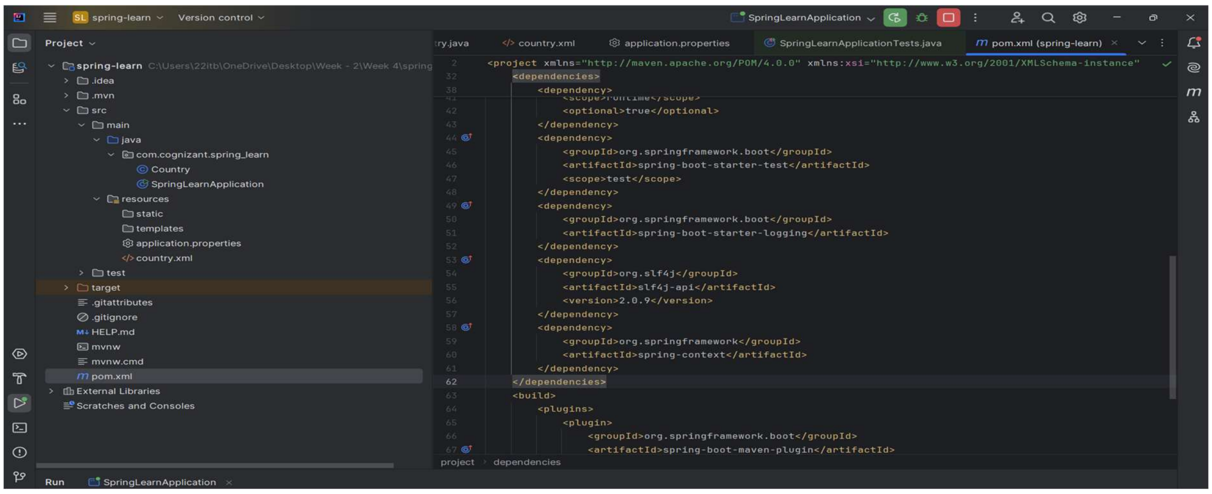
```properties
spring.application.name=spring-learn
server.port=8081
logging.level.root=DEBUG
logging.level.com.cognizant.spring-learn=DEBUG
#logging.level.root=DEBUG
```

Country.xml



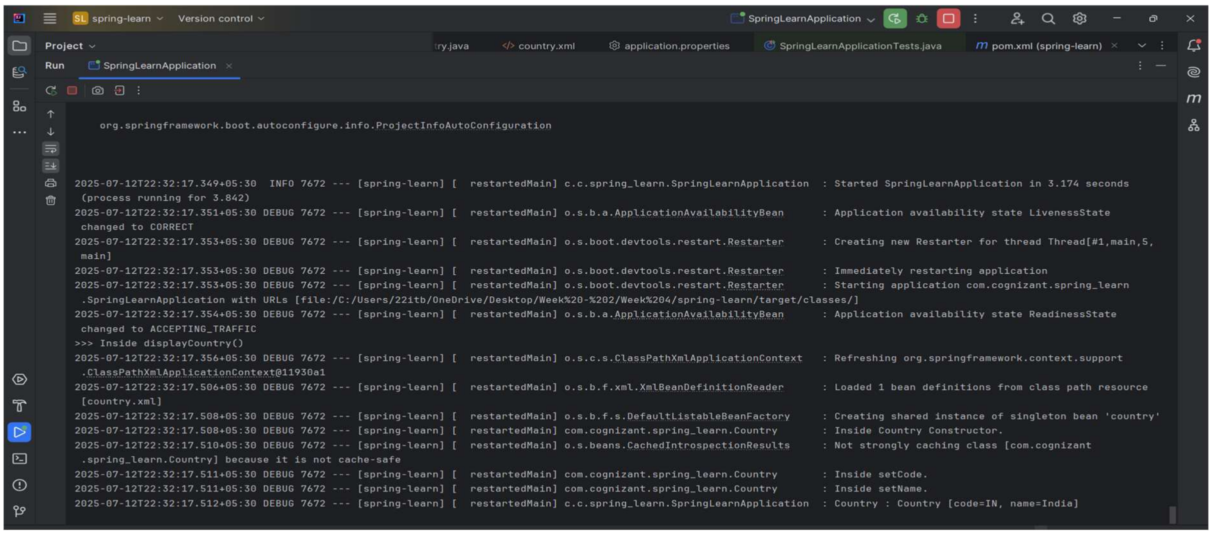
```xml
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:schemaLocation="
        http://www.springframework.org/schema/beans
        https://www.springframework.org/schema/beans/spring-beans.xsd">

    <bean id="country" class="com.cognizant.spring_learn.Country">
        <property name="code" value="IN"/>
        <property name="name" value="India"/>
    </bean>
</beans>
```

Pom.xml



```xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    <dependencies>
        <dependency>
            <optional>true</optional>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-test</artifactId>
            <scope>test</scope>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-logging</artifactId>
        </dependency>
        <dependency>
            <groupId>org.slf4j</groupId>
            <artifactId>slf4j-api</artifactId>
            <version>2.0.9</version>
        </dependency>
        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-context</artifactId>
        </dependency>
    </dependencies>
    <build>
        <plugins>
            <plugin>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-maven-plugin</artifactId>
```

Output



```
    org.springframework.boot.autoconfigure.info.ProjectInfoAutoConfiguration


2025-07-12T22:32:17.349+05:30  INFO 7672 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : Started SpringLearnApplication in 3.174 seconds
 (process running for 3.842)
2025-07-12T22:32:17.351+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.b.a.ApplicationAvailabilityBean      : Application availability state LivenessState
 changed to CORRECT
2025-07-12T22:32:17.353+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.boot.devtools.restart.Restarter      : Creating new Restarter for thread Thread[#1,main,5,
 main]
2025-07-12T22:32:17.353+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.boot.devtools.restart.Restarter      : Immediately restarting application
2025-07-12T22:32:17.353+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.boot.devtools.restart.Restarter      : Starting application com.cognizant.spring_learn
 .SpringLearnApplication with URLs [file:/C:/Users/22itb/OneDrive/Desktop/Week%20-%202/Week%204/spring-learn/target/classes/]
2025-07-12T22:32:17.354+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.b.a.ApplicationAvailabilityBean      : Application availability state ReadinessState
 changed to ACCEPTING_TRAFFIC
>>> Inside displayCountry()
2025-07-12T22:32:17.356+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.c.s.ClassPathXmlApplicationContext   : Refreshing org.springframework.context.support
 .ClassPathXmlApplicationContext@11930a1
2025-07-12T22:32:17.506+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.b.f.xml.XmlBeanDefinitionReader      : Loaded 1 bean definitions from class path resource
 [country.xml]
2025-07-12T22:32:17.508+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.b.f.s.DefaultListableBeanFactory     : Creating shared instance of singleton bean 'country'
2025-07-12T22:32:17.508+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] com.cognizant.spring_learn.Country       : Inside Country Constructor.
2025-07-12T22:32:17.510+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] o.s.beans.CachedIntrospectionResults     : Not strongly caching class [com.cognizant
 .spring_learn.Country] because it is not cache-safe
2025-07-12T22:32:17.511+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] com.cognizant.spring_learn.Country       : Inside setCode.
2025-07-12T22:32:17.511+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] com.cognizant.spring_learn.Country       : Inside setName.
2025-07-12T22:32:17.512+05:30 DEBUG 7672 --- [spring-learn] [  restartedMain] c.c.spring_learn.SpringLearnApplication  : Country : Country [code=IN, name=India]
```