

WEEK 4

EX: 1 Create a Spring Web Project using Maven

SpringLearningApplication.java:

SpringLearningApplication.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");
```

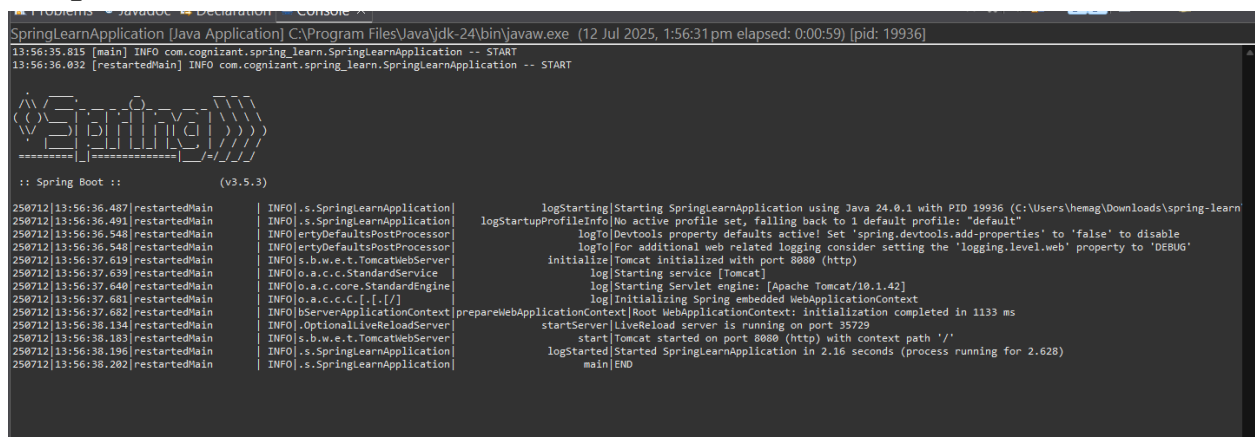
```
        SpringApplication.run(SpringLearnApplication.class, args);
```

```
        LOGGER.info("END");
```

```
    }
```

```
}
```

Output Screenshot:



```
SpringLearnApplication [Java Application] C:\Program Files\Java\jdk-24\bin\javaw.exe (12 Jul 2025, 1:56:31 pm elapsed: 0:00:59) [pid: 19936]
13:56:35.815 [main] INFO com.cognizant.spring_learn.SpringLearnApplication -- START
13:56:36.032 [restartedMain] INFO com.cognizant.spring_learn.SpringLearnApplication -- START

:: Spring Boot :: (v3.5.3)

250712|13:56:36.487|restartedMain|INFO|.s.SpringLearnApplication|logStarting|Starting SpringLearnApplication using Java 24.0.1 with PID 19936 (C:\Users\hemag\Downloads\spring-learn
250712|13:56:36.491|restartedMain|INFO|.s.SpringLearnApplication|logStartupProfileInfo|No active profile set, falling back to 1 default profile: "default"
250712|13:56:36.548|restartedMain|INFO|ertyDefaultsPostProcessor|logTo|Devtools property defaults active! Set 'spring.devtools.add-properties' to 'false' to disable
250712|13:56:36.548|restartedMain|INFO|ertyDefaultsPostProcessor|logTo|For additional web related logging consider setting the 'logging.level.web' property to 'DEBUG'
250712|13:56:37.619|restartedMain|INFO|.s.b.w.e.t.TomcatWebServer|Initialize|Tomcat initialized with port 8080 (http)
250712|13:56:37.639|restartedMain|INFO|.o.a.c.c.StandardService|log|Starting service [Tomcat]
250712|13:56:37.640|restartedMain|INFO|.o.a.c.c.core.StandardEngine|log|Starting Servlet engine: [Apache Tomcat/10.1.42]
250712|13:56:37.681|restartedMain|INFO|.o.a.c.c.C.[.[./]|log|Initializing Spring embedded WebApplicationContext
250712|13:56:37.682|restartedMain|INFO|.bServerApplicationContext|prepareWebApplicationContext|Root WebApplicationContext: initialization completed in 1133 ms
250712|13:56:38.124|restartedMain|INFO|.optionalLiveReloadServer|startServer|LiveReload server is running on port 35729
250712|13:56:38.183|restartedMain|INFO|.s.b.w.e.t.TomcatWebServer|start|Tomcat started on port 8080 (http) with context path '/'
250712|13:56:38.196|restartedMain|INFO|.s.SpringLearnApplication|logStarted|Started SpringLearnApplication in 2.16 seconds (process running for 2.628)
250712|13:56:38.202|restartedMain|INFO|.s.SpringLearnApplication|main|END
```

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>24</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>
```

EX2 Spring Core — Load Country from Spring Configuration XML

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");
        String message = "Hello World!!";
        LOGGER.info("END");
        return message;
    }
}
```

Country.java

```
package com.cognizant.spring_learn.model;

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 + "]";
    }
}

```

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;

```

```

import java.text.SimpleDateFormat;
import java.util.Date;

```

```

@SpringBootApplication
public class SpringLearnApplication {

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

    public static void main(String[] args) {

```

```

    LOGGER.info("START");

    // Start the Spring Boot application
    SpringApplication.run(SpringLearnApplication.class, args);

    // Call method from Hands-on 2
    displayDate();

    LOGGER.info("END");
}

public static void displayDate() {
    LOGGER.info("START");

    // Load Spring XML configuration
    ApplicationContext context = new
    ClassPathXmlApplicationContext("date-format.xml");

    // Get dateFormat bean
    SimpleDateFormat format = context.getBean("dateFormat",
    SimpleDateFormat.class);

    try {
        Date date = format.parse("31/12/2018");
        LOGGER.debug("Date: {}", date);
    } catch (Exception e) {
        LOGGER.error("Error parsing date", e);
    }

    LOGGER.info("END");
}
}

```

RESOURCES

Application.properties:

```

spring.application.name=spring-learn
logging.level.org.springframework=info

```

```
logging.level.com.cognizant.spring_learn=debug
logging.pattern.console=%d{yyMMdd} | %d{HH:mm:ss.SSS} | %-20.20thread | %5p | %-25.
25logger{25} | %25M | %m%n
server.port=8085
```

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

Date_format.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="dateFormat" class="java.text.SimpleDateFormat">
    <constructor-arg value="dd/MM/yyyy" />
  </bean>
</beans>
```

SpringLearnApplicationTest.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() {
    }

}

```

EX 1: HELLO WORLD

HelloWorldServiceApplication.java:

```

package com.cognizant.spring_learn;

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

@SpringBootApplication
public class HelloWorldServiceApplication {
    public static void main(String[] args) {
        SpringApplication.run(HelloWorldServiceApplication.class, args);
    }
}

```

Pom.xml

```

<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>

    <groupId>com.cognizant.spring-learn</groupId>
    <artifactId>hello-world-service</artifactId>
    <version>0.0.1-SNAPSHOT</version>
    <description>Hello World REST Service</description>
    <packaging>jar</packaging>

```



```
<parent>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-parent</artifactId>
  <version>3.2.0</version>
  <relativePath/>
</parent>

<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-starter-logging</artifactId>
  </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>
```

</build>

</project>

Output Screenshot:

Hello World!!

EX2 REST - Country Web Service

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");
        return country;
    }
}
```

CountryServiceApplication.java

```
package com.cognizant.spring_learn;

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

@SpringBootApplication
public class CountryServiceApplication {
    public static void main(String[] args) {
        SpringApplication.run(CountryServiceApplication.class, args);
    }
}
```

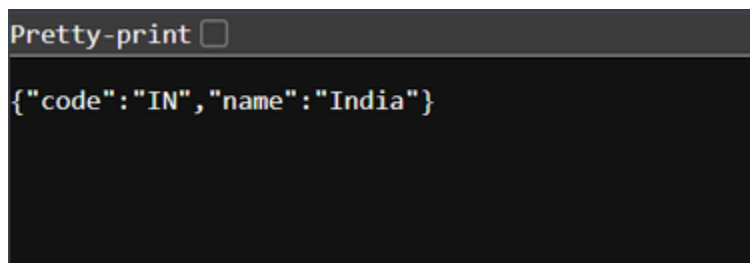
Country.xml

```
<?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
                           https://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>
```

Output Screenshot:



EX3 Get Country based on Country code

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.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.RestController;

@RestController
```

```
public class CountryController {  
  
    @Autowired  
    private CountryService countryService;  
  
    @GetMapping("/countries/{code}")  
    public Country getCountry(@PathVariable String code) {  
        return countryService.getCountry(code);  
    }  
}
```

Country.java

```
package com.cognizant.spring_learn.model;  
  
public class Country {  
    private String code;  
    private String name;  
  
    public Country() {}  
  
    public Country(String code, String name) {  
        this.code = code;  
        this.name = 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;
    }
}

```

CountryLookupApplication

```

package com.cognizant.spring_learn;

```

```

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

```

```

@SpringBootApplication

```

```

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

```

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

    <bean id="country1" class="com.cognizant.spring_learn.model.Country">
        <property name="code" value="IN"/>
        <property name="name" value="India"/>
    </bean>

    <bean id="country2" class="com.cognizant.spring_learn.model.Country">
        <property name="code" value="US"/>
        <property name="name" value="United States"/>
    </bean>

    <bean id="country3" class="com.cognizant.spring_learn.model.Country">
        <property name="code" value="JP"/>
    </bean>

```

```

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

    <bean id="countryList" class="java.util.ArrayList">
        <constructor-arg>
            <list>
                <ref bean="country1"/>
                <ref bean="country2"/>
                <ref bean="country3"/>
            </list>
        </constructor-arg>
    </bean>

</beans>

```

Pom.xml

```

<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>

    <groupId>com.cognizant.spring-learn</groupId>
    <artifactId>country-lookup-service</artifactId>
    <version>0.0.1-SNAPSHOT</version>
    <description>Country Lookup REST Service</description>
    <packaging>jar</packaging>

    <parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
        <version>3.2.0</version>
        <relativePath/>
    </parent>

    <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</groupId>
    <artifactId>spring-context</artifactId>
  </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>
```

Output Screenshot:


```
{ "code": "IN", "name": "India" }
```

EX5 JWT Hands on

Util:

```
package com.example.jwt;
```

```
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
```

```
@SpringBootApplication
public class JwtAuthExampleApplication {
    public static void main(String[] args) {
        SpringApplication.run(JwtAuthExampleApplication.class, args);
    }
}
```

Pom.xml

```
<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
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.example</groupId>
    <artifactId>jwt-auth-example</artifactId>
    <version>1.0-SNAPSHOT</version>
    <packaging>jar</packaging>
    <name>jwt-auth-example</name>
    <description>Spring Boot JWT Authentication Example</description>

    <parent>
```

```
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-parent</artifactId>
<version>2.7.15</version>
<relativePath/>
</parent>

<dependencies>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-security</artifactId>
  </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>
</dependencies>

<build>
  <plugins>
    <plugin>
```

```
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-maven-plugin</artifactId>
</plugin>
</plugins>
</build>
</project>
```

```
Microsoft Windows [Version 10.0.26100.4652]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hemag>curl -s -u user:pwd http://localhost:8090/authenticate
{"token":"eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJlc2VyIiwiaWF0IjoxNzUyNDYyMjYzLCJleHAiOjE3NTI0MDI4NjN9.Uwmo2d380iWb4c8obDwIN3meQnyHL2vCGLzMY7NHLSA"}
C:\Users\hemag>
```