**Exercise 1: Configuring a Basic Spring Application**

**Answer:**

**Program:**

//applicationContext.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="bookRepository" class="com.library.repository.BookRepository"/>

    <bean id="bookService" class="com.library.service.BookService">

        <property name="bookRepository" ref="bookRepository"/>

    </bean>

</beans>

//BookRepository.java

package com.library.repository;

public class BookRepository {

    public void saveBook(String bookName) {

        System.out.println("Book '" + bookName + "' saved to the database.");

    }

}

//BookService.java

package com.library.service;

import com.library.repository.BookRepository;

public class BookService {

    private BookRepository bookRepository;

    public void setBookRepository(BookRepository bookRepository) {

        this.bookRepository = bookRepository;

    }

    public void addBook(String bookName) {

        System.out.println("Adding book: " + bookName);

        bookRepository.saveBook(bookName);

    }

}

//LibraryApp.java

package com.library;

import org.springframework.context.ConfigurableApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import com.library.service.BookService;

public class LibraryApp

{

    public static void main( String[] args )

    {

        ConfigurableApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");

        BookService bookService = (BookService) context.getBean("bookService");

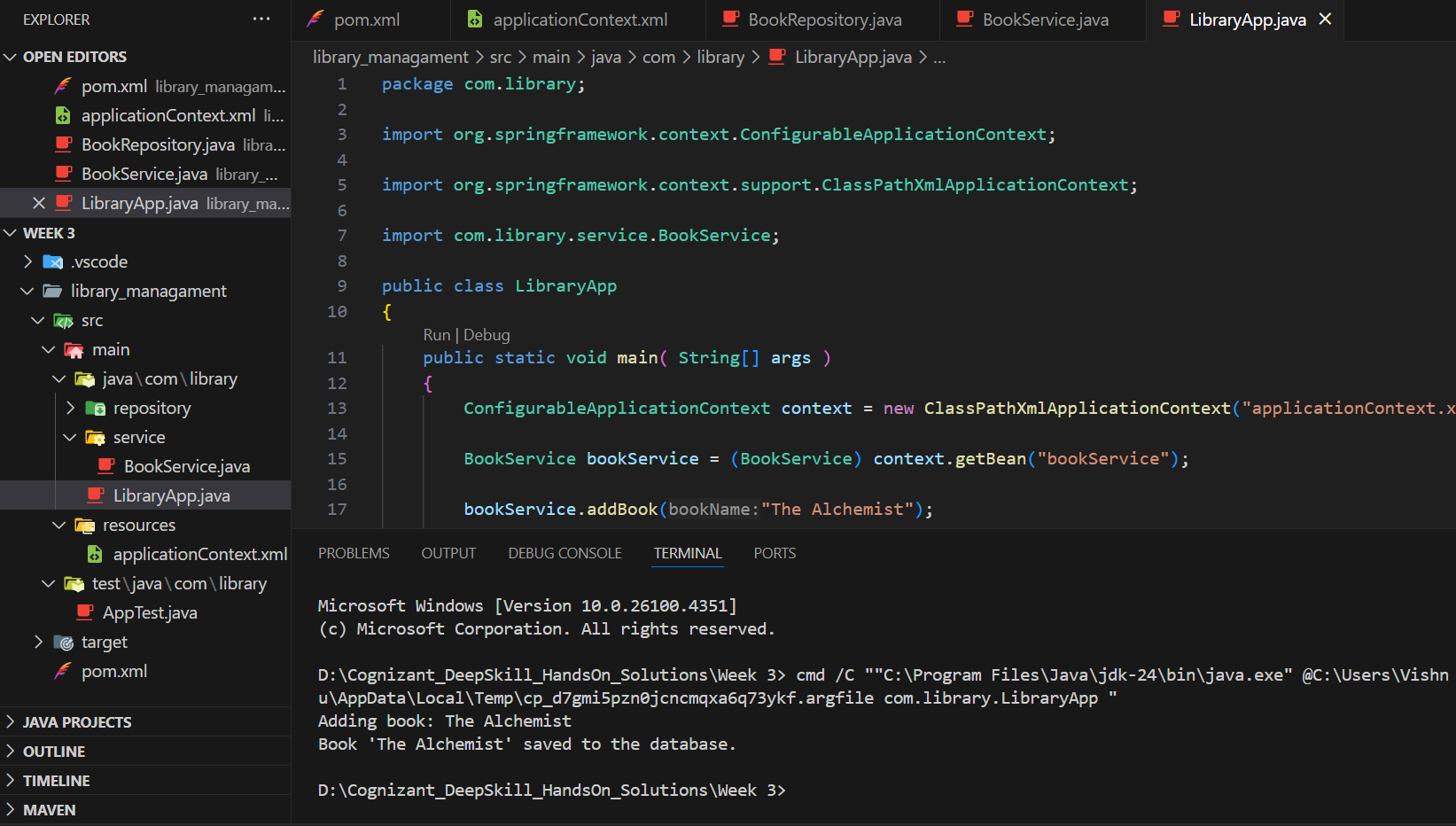
        bookService.addBook("The Alchemist");

        context.close();

    }

}

**Output:**



**Exercise 2: Implementing Dependency Injection**

**Answer:**

**Program:**

//applicationContext.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="bookRepository" class="com.library.repository.BookRepository"/>

    <bean id="bookService" class="com.library.service.BookService">

        <property name="bookRepository" ref="bookRepository"/>

    </bean>

</beans>

//BookRepository.java

package com.library.repository;

public class BookRepository {

    public void saveBook(String bookName) {

        System.out.println("Book '" + bookName + "' saved to the database.");

    }

}

//BookService.java

package com.library.service;

import com.library.repository.BookRepository;

public class BookService {

    private BookRepository bookRepository;

    public void setBookRepository(BookRepository bookRepository) {

        this.bookRepository = bookRepository;

    }

    public void addBook(String bookName) {

        System.out.println("Adding book: " + bookName);

        bookRepository.saveBook(bookName);

    }

}

//LibraryApp.java

package com.library;

import org.springframework.context.ConfigurableApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import com.library.service.BookService;

public class LibraryApp

{

    public static void main( String[] args )

    {

        ConfigurableApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");

        BookService bookService = (BookService) context.getBean("bookService");

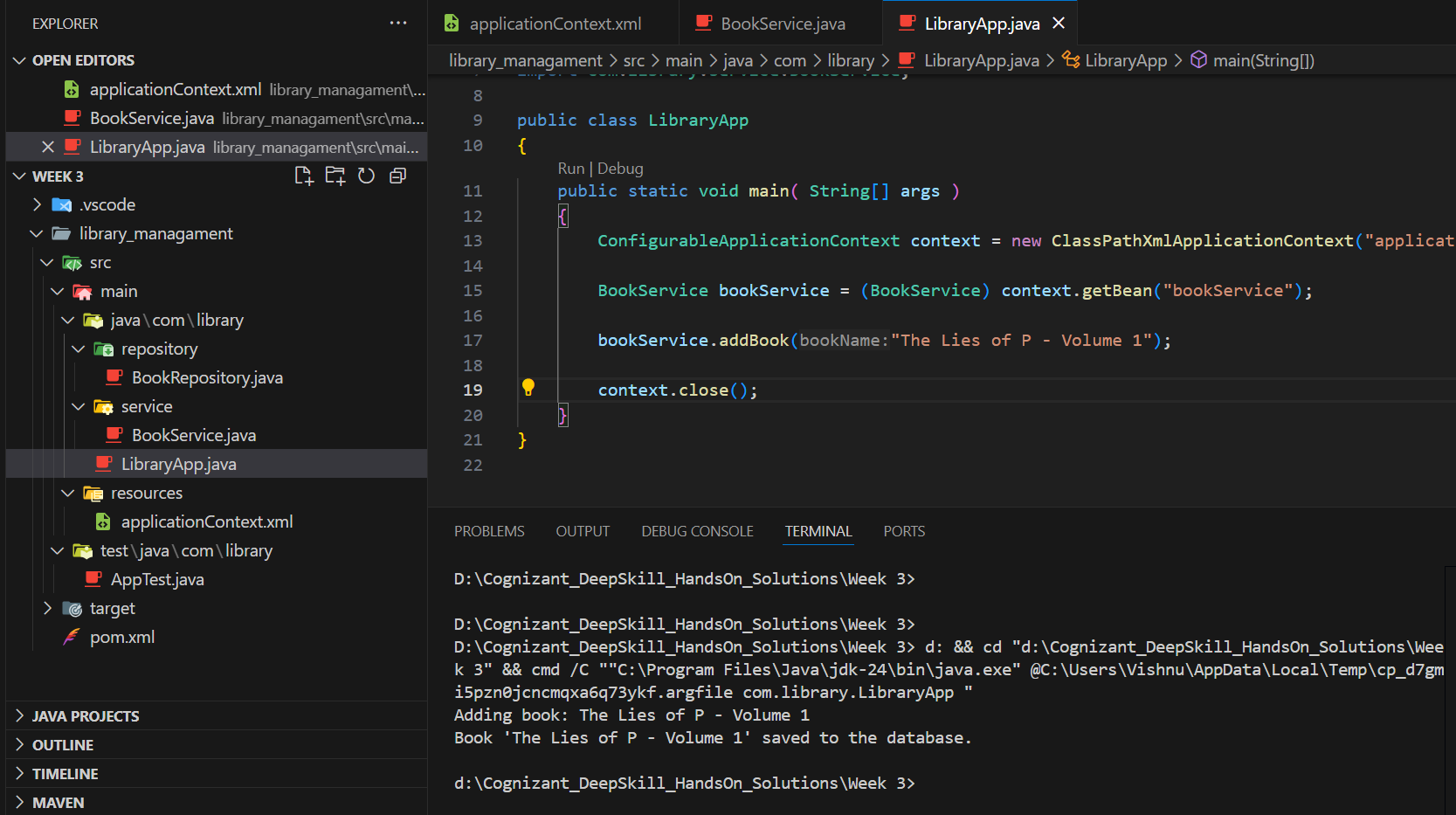
        bookService.addBook("The Lies of P - Volume 1");

        context.close();

    }

}

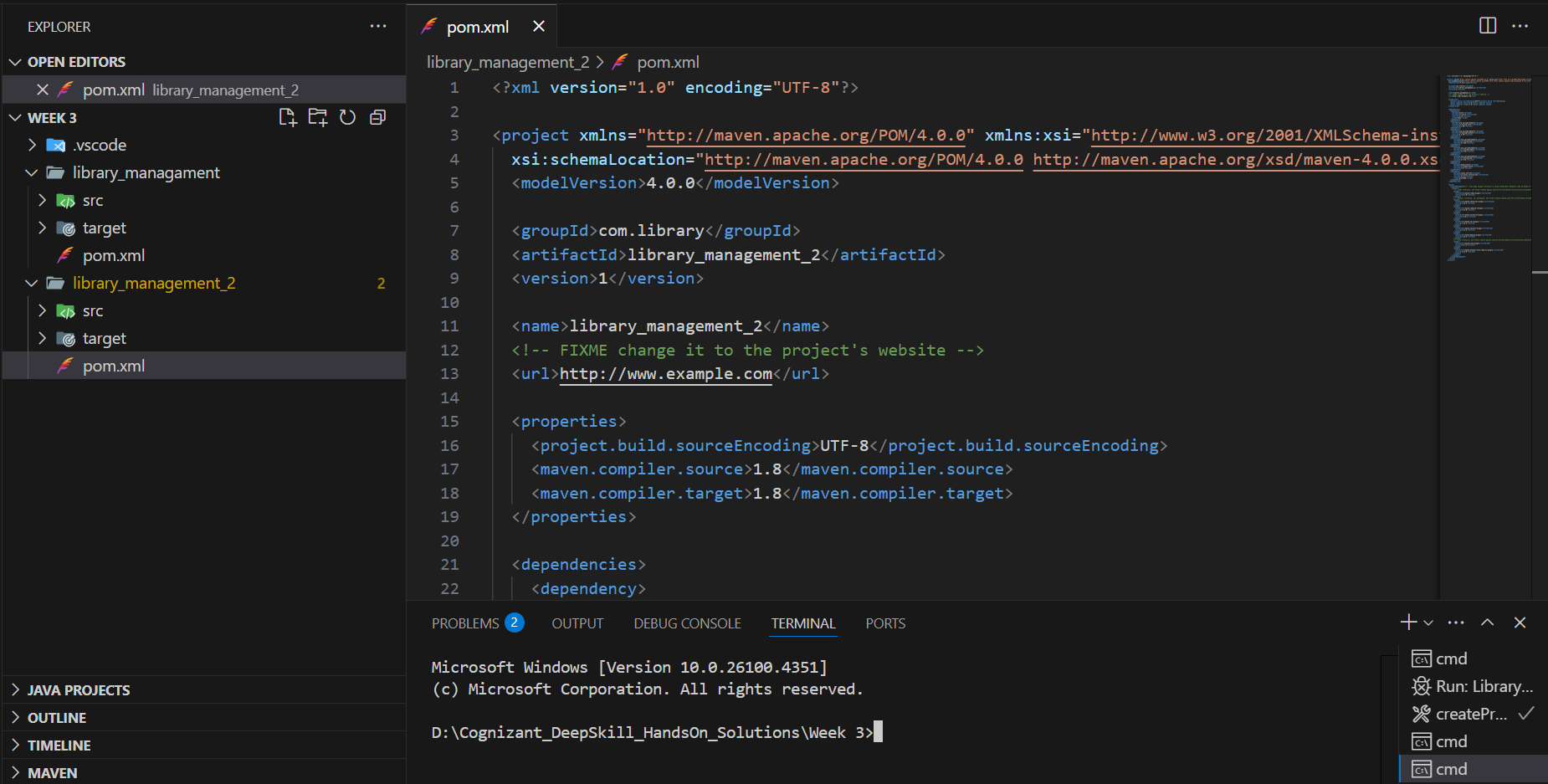
**Output:**



**Exercise 4: Creating and Configuring a Maven Project**

**Answer:**

//Project Structure



//pom.xml (with dependencies)

<?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 http://maven.apache.org/xsd/maven-4.0.0.xsd">

  <modelVersion>4.0.0</modelVersion>

  <groupId>com.library</groupId>

  <artifactId>library\_management\_2</artifactId>

  <version>1</version>

  <name>library\_management\_2</name>

  <!-- FIXME change it to the project's website -->

  <url>http://www.example.com</url>

  <properties>

    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

    <maven.compiler.source>1.8</maven.compiler.source>

    <maven.compiler.target>1.8</maven.compiler.target>

  </properties>

  <dependencies>

    <dependency>

      <groupId>junit</groupId>

      <artifactId>junit</artifactId>

      <version>4.11</version>

      <scope>test</scope>

    </dependency>

    <dependency>

      <groupId>org.springframework</groupId>

      <artifactId>spring-core</artifactId>

      <version>5.3.29</version>

    </dependency>

    <dependency>

      <groupId>org.springframework</groupId>

      <artifactId>spring-context</artifactId>

      <version>5.3.29</version>

    </dependency>

    <dependency>

        <groupId>org.springframework</groupId>

        <artifactId>spring-aop</artifactId>

        <version>5.3.29</version>

    </dependency>

    <dependency>

        <groupId>org.springframework</groupId>

        <artifactId>spring-webmvc</artifactId>

        <version>5.3.29</version>

    </dependency>

    <dependency>

        <groupId>org.springframework</groupId>

        <artifactId>spring-web</artifactId>

        <version>5.3.28</version>

    </dependency>

    <dependency>

        <groupId>aopalliance</groupId>

        <artifactId>aopalliance</artifactId>

        <version>1.0</version>

    </dependency>

    <dependency>

        <groupId>javax.servlet</groupId>

        <artifactId>javax.servlet-api</artifactId>

        <version>4.0.1</version>

        <scope>provided</scope>

    </dependency>

  </dependencies>

  <build>

    <pluginManagement><!-- lock down plugins versions to avoid using Maven defaults (may be moved to parent pom) -->

      <plugins>

        <!-- clean lifecycle, see https://maven.apache.org/ref/current/maven-core/lifecycles.html#clean\_Lifecycle -->

        <plugin>

          <artifactId>maven-clean-plugin</artifactId>

          <version>3.1.0</version>

        </plugin>

        <!-- default lifecycle, jar packaging: see https://maven.apache.org/ref/current/maven-core/default-bindings.html#Plugin\_bindings\_for\_jar\_packaging -->

        <plugin>

          <artifactId>maven-resources-plugin</artifactId>

          <version>3.0.2</version>

        </plugin>

        <plugin>

          <artifactId>maven-compiler-plugin</artifactId>

          <version>3.8.0</version>

        </plugin>

        <plugin>

          <artifactId>maven-surefire-plugin</artifactId>

          <version>2.22.1</version>

        </plugin>

        <plugin>

          <artifactId>maven-jar-plugin</artifactId>

          <version>3.0.2</version>

        </plugin>

        <plugin>

          <artifactId>maven-install-plugin</artifactId>

          <version>2.5.2</version>

        </plugin>

        <plugin>

          <artifactId>maven-deploy-plugin</artifactId>

          <version>2.8.2</version>

        </plugin>

        <!-- site lifecycle, see https://maven.apache.org/ref/current/maven-core/lifecycles.html#site\_Lifecycle -->

        <plugin>

          <artifactId>maven-site-plugin</artifactId>

          <version>3.7.1</version>

        </plugin>

        <plugin>

          <artifactId>maven-project-info-reports-plugin</artifactId>

          <version>3.0.0</version>

        </plugin>

      </plugins>

    </pluginManagement>

  </build>

</project>