**Exercise 5: Configuring the Spring IoC Container**

**Scenario:**

The library management application requires a central configuration for beans and dependencies.

**Steps:**

1. **Create Spring Configuration File:**
   * Create an XML configuration file named **applicationContext.xml** in the **src/main/resources** directory.
   * Define beans for **BookService** and **BookRepository** in the XML file.
2. **Update the BookService Class:**
   * Ensure that the **BookService** class has a setter method for **BookRepository**.
3. **Run the Application:**
   * Create a main class to load the Spring context and test the configuration.

**Solution:**

**Create Spring Configuration File**:

* Create an XML configuration file named applicationContext.xml in the src/main/resources directory:

<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">

<!-- Define BookRepository bean -->

<bean id="bookRepository" class="com.library.repository.BookRepository" />

<!-- Define BookService bean with property injection -->

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

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

</bean>

</beans>

**Update the BookService Class**:

* Ensure that the BookService class has a setter method for BookRepository:

package com.library.service;

package com.library.service;

import com.library.repository.BookRepository;

public class BookService {

private BookRepository bookRepository;

// Constructor injection

public BookService(BookRepository bookRepository) {

this.bookRepository = bookRepository;

}

public void setBookRepository(BookRepository bookRepository) {

this.bookRepository = bookRepository;

}

// Example service method

public void performService() {

System.out.println("Service is performing operations.");

}

}

**Run the Application**:

* Create a main class to load the Spring context and test the configuration:

package com.library;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import com.library.service.BookService;

public class LibraryManagementApplication {

public static void main(String[] args) {

// Load the Spring context from XML configuration

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

// Retrieve the BookService bean

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

// Test the configuration

if (bookService != null) {

System.out.println("BookService bean successfully loaded.");

bookService.performService(); // Example method call

} else {

System.out.println("Failed to load BookService bean.");

}

}

}