**Exercise 2: Implementing Dependency Injection**

**Scenario:**

In the library management application, you need to manage the dependencies between the BookService and BookRepository classes using Spring's IoC (Inversion of Control) and DI (Dependency Injection).

**Step 1: Modify the XML Configuration**

**Task:**  
Update applicationContext.xml to wire BookRepository into BookService.

**Solution:**

**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 for BookRepository -->

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

<!-- Bean for BookService with DI -->

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

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

</bean>

</beans>

**Step 2: Update the BookService Class**

**Task:**  
Ensure that BookService has a setter method for BookRepository.

**Solution:**

**BookService.java**

package com.library.service;

import com.library.repository.BookRepository;

public class BookService {

private BookRepository bookRepository;

// Setter method for Spring to inject BookRepository

public void setBookRepository(BookRepository bookRepository) {

this.bookRepository = bookRepository;

}

public void listBooks() {

System.out.println("BookService: Listing books...");

bookRepository.fetchBooks();

}

}

**Step 3: Test the Configuration**

**Task:**  
Run the LibraryManagementApplication main class (here named MainApp) to verify that dependency injection is working.

**Solution:**

**MainApp.java**

package com.library;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import com.library.service.BookService;

public class MainApp {

public static void main(String[] args) {

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

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

bookService.listBooks();

}

}

**Output:**

BookService: Listing books...

BookRepository: Fetching books from the database...