**Module 5 - Spring Core and Maven**

**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 and DI.

**Steps:**

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1. **Modify the XML Configuration:**
   * Update applicationContext.xml to wire BookRepository into BookService.
2. **Update the BookService Class:**
   * Ensure that BookService class has a setter method for BookRepository.
3. **Test the Configuration:**
   * Run the LibraryManagementApplication main class to verify the dependency injection.

**Solution:**

**Step 1:Modify the XML Configuration**

* **Updated applicationContext.xml** (located in src/main/resources)**:**
* **pom.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">

<!-- Define BookRepository bean -->

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

<!-- Define BookService bean and inject BookRepository -->

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

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

</bean>

</beans>

**Step 2: Update the BookService Class**

* **BookService.java** (in com.library.service)

package com.library.service;

import com.library.repository.BookRepository;

public class BookService {

private BookRepository bookRepository;

// Setter method for Dependency Injection

public void setBookRepository(BookRepository bookRepository) {

this.bookRepository = bookRepository;

}

public void listBooks() {

bookRepository.displayBooks();

}

}

**Step 3: Test the Configuration**

* **Main Class:** LibraryManagementApplication.java

package com.library;

import com.library.service.BookService;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class LibraryManagementApplication {

public static void main(String[] args) {

// Load Spring context

ApplicationContext context =

new ClassPathXmlApplicationContext("applicationContext.xml");

// Retrieve BookService bean

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

// Call method to test DI

bookService.listBooks();

}

}

**Output**:

When you run the LibraryManagementApplication, the console will display:

Fetching books from the repository...