**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.

**BookRepository.java**

**package** com.library.repository;

**public** **class** BookRepository {

**public** **void** saveBook(String bookName) {

System.***out***.println("BookRepository: Saving book - " + bookName);

}

}

**BookService.java**

**package** com.library.service;

**import** com.library.repository.BookRepository;

**public** **class** BookService {

**private** BookRepository bookRepository;

// Setter for dependency injection

**public** **void** setBookRepository(BookRepository bookRepository) {

**this**.bookRepository = bookRepository;

}

**public** **void** addBook(String bookName) {

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

bookRepository.saveBook(bookName);

}

}

**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) {

// Load Spring container from applicationContext.xml

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

// Get BookService bean

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

// Call method

bookService.addBook("Spring in Action");

}

}

**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 via setter -->

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

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

</bean>

</beans>



