**Exercise 8: Implementing Basic AOP with Spring**

**Scenario:**

The library management application requires basic AOP functionality to separate cross-cutting concerns like logging and transaction management.

**LoggingAspect.java**

package com.library.aspect;

import org.aspectj.lang.annotation.After;

import org.aspectj.lang.annotation.Aspect;

import org.aspectj.lang.annotation.Before;

import org.springframework.stereotype.Component;

@Aspect

@Component

public class LoggingAspect {

@Before("execution(\* com.library.service.\*.\*(..))")

public void logBeforeMethodExecution() {

System.out.println("Logging before method execution");

}

@After("execution(\* com.library.service.\*.\*(..))")

public void logAfterMethodExecution() {

System.out.println("Logging after method execution");

}

}

applicationContext.xml

<beans xmlns="http://www.springframework.org/schema/beans"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xmlns:aop="http://www.springframework.org/schema/aop"

xsi:schemaLocation="http://www.springframework.org/schema/beans

http://www.springframework.org/schema/beans/spring-beans.xsd

http://www.springframework.org/schema/aop

http://www.springframework.org/schema/aop/spring-aop.xsd">

<!-- Bean for BookRepository -->

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

<!-- Constructor Injection for BookService -->

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

<constructor-arg ref="bookRepository"/>

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

</bean>

<!-- Aspect Configuration -->

<bean id="loggingAspect" class="com.library.aspect.LoggingAspect"/>

<aop:aspectj-autoproxy/>

</beans>

LibraryManagementApplication.java

package com.library;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class LibraryManagementApplication {

public static void main(String[] args) {

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

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

bookService.manageBooks();

}

}