**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.

**Steps:**

1. **Define an Aspect:**
   * Create a package **com.library.aspect** and add a class **LoggingAspect**.
2. **Create Advice Methods:**
   * Define advice methods in **LoggingAspect** for logging before and after method execution.
3. **Configure the Aspect:**
   * Update **applicationContext.xml** to register the aspect and enable **AspectJ** auto-proxying.
4. **Test the Aspect:**
   * Run the **LibraryManagementApplication** main class to verify the AOP functionality.

**Solution:**

 **Define an Aspect**:

* Create a package com.library.aspect and add a class LoggingAspect:

package com.library.aspect;

import org.aspectj.lang.annotation.Aspect;

import org.aspectj.lang.annotation.Before;

import org.aspectj.lang.annotation.After;

@Aspect

public class LoggingAspect {

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

public void beforeMethodExecution() {

System.out.println("Before method execution");

}

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

public void afterMethodExecution() {

System.out.println("After method execution");

}

}

 **Create Advice Methods**:

* Define advice methods in LoggingAspect for logging before and after method execution as shown above.

 **Configure the Aspect**:

* Update applicationContext.xml to register the aspect and enable AspectJ auto-proxying:

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

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

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

</bean>

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

<aop:aspectj-autoproxy/>

</beans>