## **Exercise 2: Implementing Dependency Injection**

## FROM FILE: Spring Core\_Maven

## 1. Modifying the XML Configuration:

.Update applicationContext.xml to wire BookRepository into BookService.

#### Code:

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"</pre>
   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"</pre>
class="com.library.repository.BookRepository" />
  <!-- Bean for BookService with Dependency Injection -->
  <bean id="bookService" class="com.library.service.BookService">
    cproperty name="bookRepository" ref="bookRepository" />
  </bean>
</beans>
```

### **PIC From SpringTool:**

```
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                                                                          BookService.j...
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           1 <?xml version="1.0" encoding="UTF-8"?>
           2⊖ ⟨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 -->
           8
                 <bean id="bookRepository" class="com.library.repository.BookRepository" />
          10
          11
                 <!-- Bean for BookService with Dependency Injection -->
                 <bean id="bookService" class="com.library.service.BookService">
                   cproperty name="bookRepository" ref="bookRepository" />
          13
                 </bean>
          14
          15
          16 </beans>
```

## **Updating the BookService Class:**

.Ensure that BookService class has a setter method for BookRepository.

#### Code:

```
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 addBook(String bookName) {
    System.out.println("Adding book: " + bookName);
    bookRepository.saveBook(bookName);
}
```

## PIC From SpringTool:

}

}

```
🍔 JFSD18 - LibraryManagement/src/main/java/com/library/service/BookService.java - Spring Tool Suite 4
File Edit Source Refactor Source Navigate Search Project Run Window Help
□ Package Explorer ×
                          E S BookService.java X → applicationContext.xml

    V > LibraryManagement

                                         1 package com.library.service;

√ 

// src/main/java

                                         3 import com.library.repository.BookRepository;
       > 🕖 MainApp.java
                                        5 public class BookService {
         > 🗾 package-info.java
       private BookRepository bookRepository;

√ 
☑ BookRepository.java

                                               // Setter method for Dependency Injection
           9 // Setter method for Dependency Injection.
100 public void setBookRepository(BookRepository bookRepository) {
               saveBook(String) : void
                                        11
12
                                                   this.bookRepository = bookRepository;

→ 

⊕ com.library.service

                                        12
         > 🗓 BookService.java
                                        13
     public void addBook(String bookName) {
    System.out.println("Adding book: " + bookName);
                                        149
         applicationContext.xml
                                                   bookRepository.saveBook(bookName);
     > 🍱 src/test/java
                                       17
     > A JRE System Library [JavaSE-1.8]
                                        18 }
     > 🛋 Maven Dependencies
     > 🔑 src
       pom.xml
```

## MainApp.java class:

#### Code:

```
package com.library;
import org.springframework.context.ApplicationContext;
import
org.spring framework.context.support. Class Path Xml Application Context. \\
xt;
import com.library.service.BookService;
public class MainApp {
  public static void main(String[] args) {
    ApplicationContext context = new
ClassPathXmlApplicationContext("applicationContext.xml");
    // Retrieve the BookService bean
    BookService bookService = (BookService)
context.getBean("bookService");
    // Call method to test DI
    bookService.addBook("Spring Framework Essentials");
  }
}
```

### **PIC FROM SpringTool:**

```
🧓 JFSD18 - LibraryManagement/src/main/java/com/library/MainApp.java - Spring Tool Suite 4
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📑 🔋 Package Explorer × 🕒 💲 🖁 🗀 🖟 MainApp,java × 🖟 BookService,java 🖹 applicationContext.xml

 v 👺 LibraryManagement

                                                                                                     1 package com.library;

## src/main/java

**Teleplace**

**Teleplace**
                                                                                                         30 import org.springframework.context.ApplicationContext;

√ 

Æ com library

                                                                                                         4 import org.springframework.context.support.ClassPathXmlApplicationContext;
                       > 🕖 MainApp.java
                                                                                                         5 import com.library.service.BookService;
                       D package-info.java

√ # com.library.repository

                                                                                                      7 public class MainApp {

    BookRepository.java

                                                                                                                        public static void main(String[] args) {

    BookRepository

                                                                                                        10
                                       saveBook(String) : void
                                                                                                      911
                                                                                                                                     ApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");

w ## com.library.service

                                                                                                       12
                       → BookService.iava
                                                                                                        13
                                                                                                                                    // Retrieve the BookService bean

> 

B src/main/resources

                                                                                                                                     BookService bookService = (BookService) context.getBean("bookService");
                       applicationContext.xml
            > 🍱 src/test/java
                                                                                                        16
                                                                                                                                    // Call method to test DI
                                                                                                        17
                                                                                                                                     bookService.addBook("Spring Framework Essentials");
            > 🛋 JRE System Library [JavaSE-1.8]
                                                                                                        18
            > 🛋 Maven Dependencies
                                                                                                        19 }
            > 🗦 src
                 mx.moq
```

# **Test the Configuration:**

Run the LibraryManagementApplication main class to verify the dependency injection.

#### **OUTPUT:**

Adding book: Spring Framework Essentials

Book 'Spring Framework Essentials' saved to the repository.

## **PIC FROM SpringTool:**

```
□ 🖟 MainApp.java × 🖟 BookService.java
                                    applicationContext.xml
      1 package com.library;
        3@import org.springframework.context.ApplicationContext;
        4 import org.springframework.context.support.ClassPathXmlApplicationContext;
        5 import com.library.service.BookService;
        7 public class MainApp {
              public static void main(String[] args) {
       10
id
      a11
                 ApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");
       12
       13
                  // Retrieve the BookService bean
                  BookService bookService = (BookService) context.getBean("bookService");
       14
       15
       16
                  // Call method to test DI
       17
                  bookService.addBook("Spring Framework Essentials");
       18
       19 }
       วด
      <terminated> MainApp [Java Application] C:\Users\91833\Downloads\sts-4.23.1.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x
      Adding book: Spring Framework Essentials
      Book 'Spring Framework Essentials' saved to the repository.
```