**Exercise 1: Configuring a Basic Spring Application**

* 1. **Code:**

**pom.xml file:**

<project xmlns="http://maven.apache.org/POM/4.0.0"  
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0  
 https://maven.apache.org/xsd/maven-4.0.0.xsd">  
  
 <modelVersion>4.0.0</modelVersion>  
  
 <groupId>com.library</groupId>  
 <artifactId>LibraryManagement</artifactId>  
 <version>1.0-SNAPSHOT</version>  
  
 <dependencies>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-context</artifactId>  
 <version>5.3.30</version>  
 </dependency>  
 </dependencies>  
  
 <build>  
 <plugins>  
 <plugin>  
 <groupId>org.apache.maven.plugins</groupId>  
 <artifactId>maven-compiler-plugin</artifactId>  
 <version>3.10.1</version>  
 <configuration>  
 <source>1.8</source> <!-- or 11, 17 based on your JDK -->  
 <target>1.8</target>  
 </configuration>  
 </plugin>  
 </plugins>  
 </build>  
  
</project>

**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  
 https://www.springframework.org/schema/beans/spring-beans.xsd">  
  
 <!-- BookRepository Bean -->  
 <bean id="bookRepository" class="com.library.repository.BookRepository" />  
  
 <!-- BookService Bean -->  
 <bean id="bookService" class="com.library.service.BookService">  
 <property name="bookRepository" ref="bookRepository"/>  
 </bean>  
  
</beans>

**BookService.java:**

package com.library.service;  
  
import com.library.repository.BookRepository;  
  
public class BookService {  
   
 private BookRepository bookRepository;  
   
 public void setBookRepository(BookRepository bookRepository) {  
 this.bookRepository = bookRepository;  
 }  
 public void displayBook() {  
 String bookName = bookRepository.getBookName();  
 System.*out*.println("Book: " + bookName);  
 }  
}

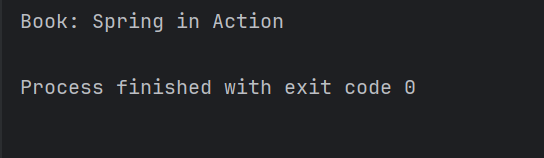
**BookRepository.java:**

package com.library.repository;  
  
public class BookRepository {  
 public String getBookName() {  
 return "Spring in Action";  
 }  
}

**MainApp.java:**

package com.library;  
  
import com.library.service.BookService;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
  
public class MainApp {  
 public static void main(String[] args) {  
 ApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");  
 BookService bookService = context.getBean("bookService", BookService.class);  
   
 bookService.displayBook();  
 }  
}

* 1. **Output:**



**Exercise 2: Implementing Dependency Injection**

**2.1 Code:**

**pom.xml file:**

<project xmlns="http://maven.apache.org/POM/4.0.0"  
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0  
 https://maven.apache.org/xsd/maven-4.0.0.xsd">  
  
 <modelVersion>4.0.0</modelVersion>  
  
 <groupId>com.library</groupId>  
 <artifactId>LibraryManagement</artifactId>  
 <version>1.0-SNAPSHOT</version>  
  
 <dependencies>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-context</artifactId>  
 <version>5.3.30</version>  
 </dependency>  
 </dependencies>  
  
 <build>  
 <plugins>  
 <plugin>  
 <groupId>org.apache.maven.plugins</groupId>  
 <artifactId>maven-compiler-plugin</artifactId>  
 <version>3.10.1</version>  
 <configuration>  
 <source>1.8</source> <!-- or 11, 17 based on your JDK -->  
 <target>1.8</target>  
 </configuration>  
 </plugin>  
 </plugins>  
 </build>  
</project>

**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  
 https://www.springframework.org/schema/beans/spring-beans.xsd">  
  
 <bean id="bookRepository" class="com.library.repository.BookRepository" />  
 <bean id="bookService" class="com.library.service.BookService">  
 <property name="bookRepository" ref="bookRepository"/>  
 </bean>  
  
</beans>

**BookService.java:**

package com.library.service;  
import com.library.repository.BookRepository;  
  
public class BookService {  
   
 private BookRepository bookRepository;  
 public void setBookRepository(BookRepository bookRepository) {  
 this.bookRepository = bookRepository;  
 }  
 public void displayBook() {  
 String bookName = bookRepository.getBookName();  
 System.*out*.println("Book: " + bookName);  
 }  
}

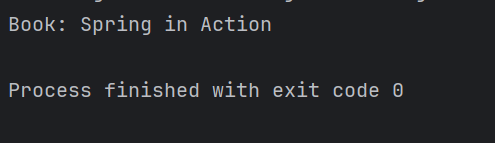
**BookRepository.java:**

package com.library.repository;  
  
public class BookRepository {  
 public String getBookName() {  
 return "Spring in Action";  
 }  
}

**MainApp.java:**

package com.library;  
import com.library.service.BookService;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
  
public class MainApp {  
 public static void main(String[] args) {  
 ApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");  
 BookService bookService = context.getBean("bookService", BookService.class);  
  
 bookService.displayBook();  
 }  
}

**2.2 Output:**

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**Exercise 4: Creating and Configuring a Maven Project**

**4.1 Code:**

**pom.xml file:**

<project xmlns="http://maven.apache.org/POM/4.0.0"  
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0  
 https://maven.apache.org/xsd/maven-4.0.0.xsd">  
 <modelVersion>4.0.0</modelVersion>  
 <groupId>com.library</groupId>  
 <artifactId>LibraryManagement</artifactId>  
 <version>1.0-SNAPSHOT</version>  
  
 <dependencies>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-context</artifactId>  
 <version>5.3.30</version>  
 </dependency>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-aop</artifactId>  
 <version>5.3.30</version>  
 </dependency>  
 <dependency>  
 <groupId>org.springframework</groupId>  
 <artifactId>spring-webmvc</artifactId>  
 <version>5.3.30</version>  
 </dependency>  
 <dependency>  
 <groupId>javax.servlet</groupId>  
 <artifactId>javax.servlet-api</artifactId>  
 <version>4.0.1</version>  
 <scope>provided</scope>  
 </dependency>  
 </dependencies>  
 <build>  
 <plugins>  
 <plugin>  
 <groupId>org.apache.maven.plugins</groupId>  
 <artifactId>maven-compiler-plugin</artifactId>  
 <version>3.10.1</version>  
 <configuration>  
 <source>1.8</source>  
 <target>1.8</target>  
 </configuration>  
 </plugin>  
 </plugins>  
 </build>  
</project>

**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  
 https://www.springframework.org/schema/beans/spring-beans.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="bookController" class="com.library.controller.BookController">  
 <property name="bookService" ref="bookService" />  
 </bean>  
</beans>

**BookService.java:**

package com.library.service;  
  
import com.library.repository.BookRepository;  
public class BookService {  
 private BookRepository bookRepository;  
 public void setBookRepository(BookRepository bookRepository) {  
 this.bookRepository = bookRepository;  
 }  
 public String getBook() {  
 return bookRepository.fetchBookTitle();  
 }  
}

**BookController.java:**

package com.library.controller;  
  
import com.library.service.BookService;  
  
public class BookController {  
 private BookService bookService;  
 public void setBookService(BookService bookService) {  
 this.bookService = bookService;  
 }  
 public void showBook() {  
 String book = bookService.getBook();  
 System.*out*.println("Book from Controller: " + book);  
 }  
}

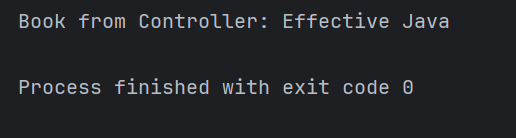
**BookRepository.java:**

package com.library.repository;  
public class BookRepository {  
 public String fetchBookTitle() {  
 return "Effective Java";  
 }  
}

**MainApp.java:**

package com.library;  
  
import com.library.controller.BookController;  
import org.springframework.context.ApplicationContext;  
import org.springframework.context.support.ClassPathXmlApplicationContext;  
  
public class MainApp {  
 public static void main(String[] args) {  
 ApplicationContext context = new ClassPathXmlApplicationContext(“applicationContext.xml”);  
  
 BookController controller = context.getBean(“bookController”, BookController.class);  
 controller.showBook();  
 }  
}

**4.2 Output:**

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