Handson session

Implementing Dependency Injection – Definitions & Key Points

Dependency Injection (DI)

DI is a design pattern used by Spring to decouple class dependencies. In this exercise, DI allows BookService to depend on BookRepository without creating it manually.

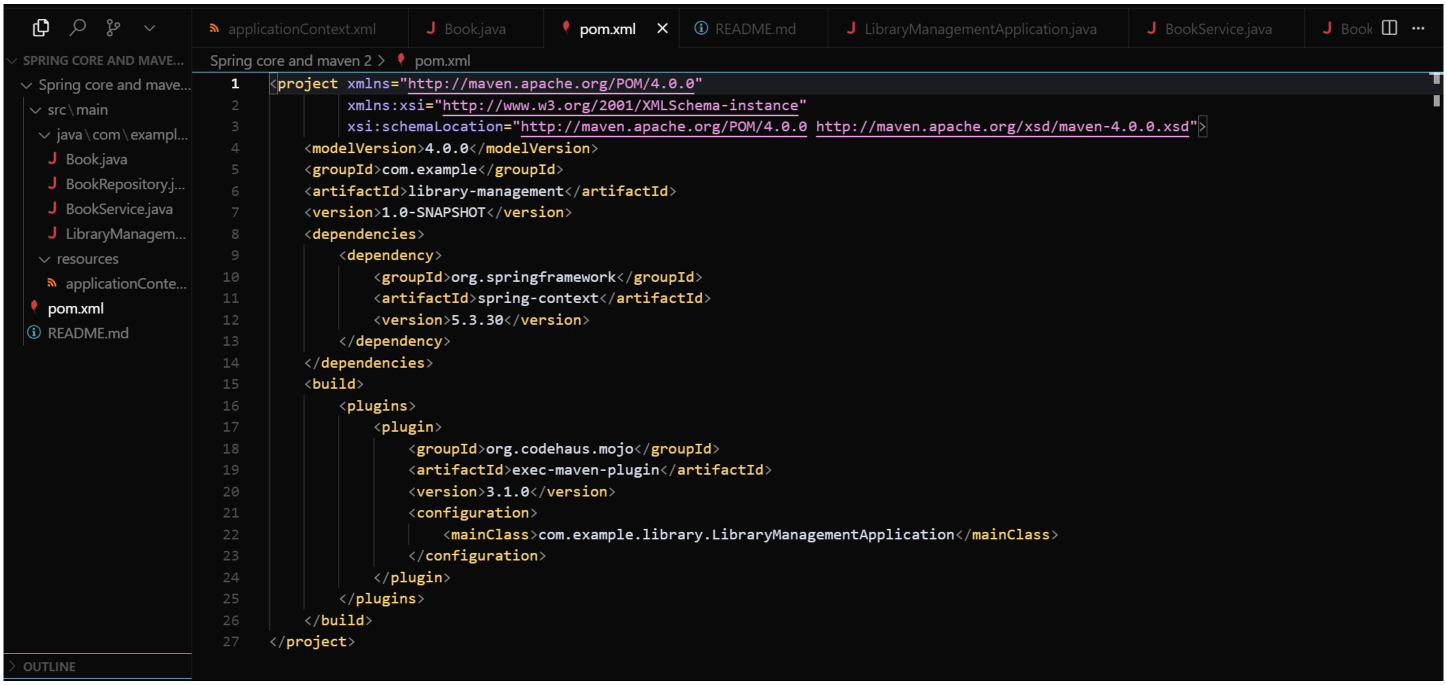
Benefits of Using DI

- Loose coupling between components
- Easier testing and maintenance
- Reusability and improved modularity
- Centralized configuration and object management

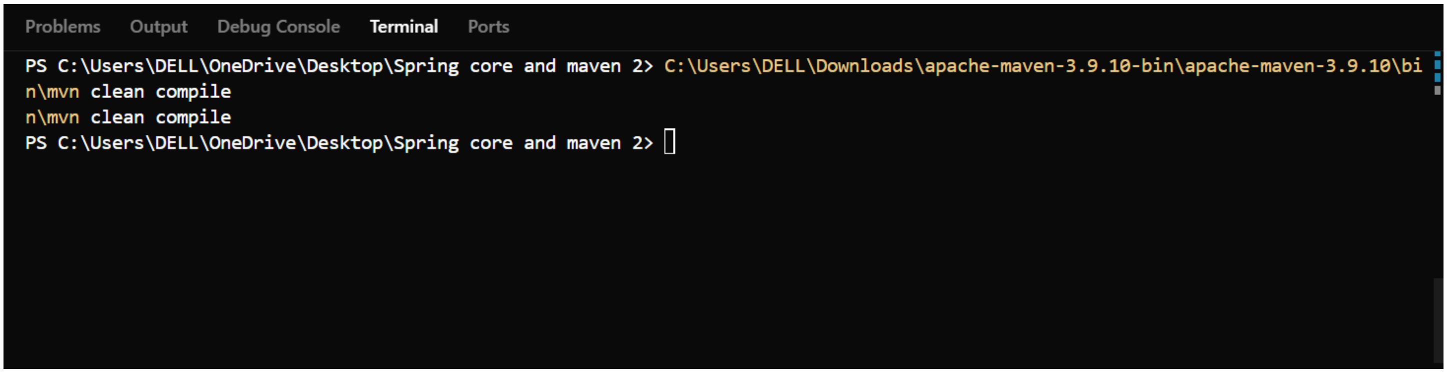
Objective of the Exercise

The goal of this exercise is to demonstrate how Spring Framework manages dependencies between classes using Inversion of Control (IoC) and Dependency Injection (DI).

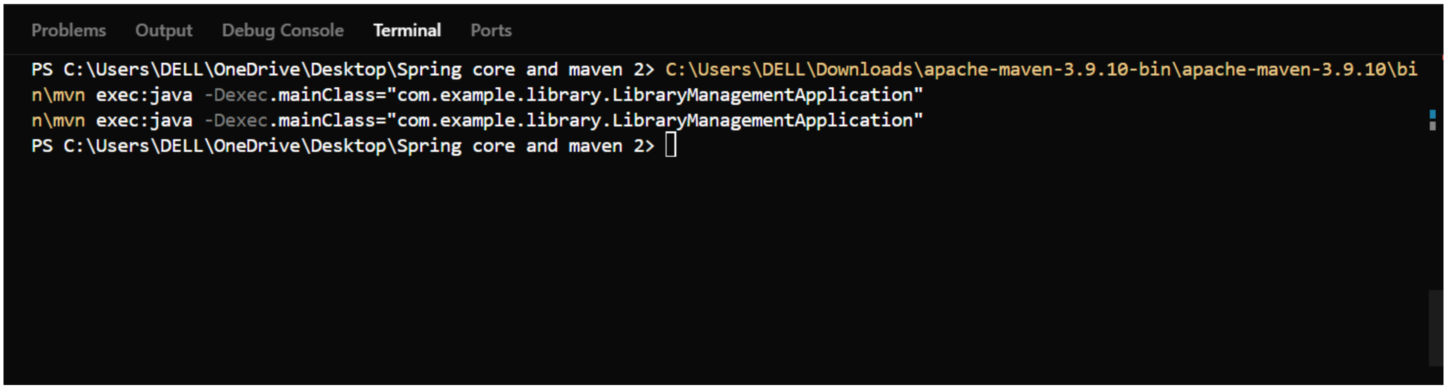
Outputs and Screenshots



```xml
<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 http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.example</groupId>
    <artifactId>library-management</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.codehaus.mojo</groupId>
                <artifactId>exec-maven-plugin</artifactId>
                <version>3.1.0</version>
                <configuration>
                    <mainClass>com.example.library.LibraryManagementApplication</mainClass>
                </configuration>
            </plugin>
        </plugins>
    </build>
</project>
```



```
PS C:\Users\DELL\OneDrive\Desktop\Spring core and maven 2> C:\Users\DELL\Downloads\apache-maven-3.9.10-bin\apache-maven-3.9.10\bi
n\mvn clean compile
n\mvn clean compile
PS C:\Users\DELL\OneDrive\Desktop\Spring core and maven 2> 
```



```
PS C:\Users\DELL\OneDrive\Desktop\Spring core and maven 2> C:\Users\DELL\Downloads\apache-maven-3.9.10-bin\apache-maven-3.9.10\bi
n\mvn exec:java -Dexec.mainClass="com.example.library.LibraryManagementApplication"
n\mvn exec:java -Dexec.mainClass="com.example.library.LibraryManagementApplication"
PS C:\Users\DELL\OneDrive\Desktop\Spring core and maven 2> 
```

Summary

This exercise demonstrates how Spring’s IoC container handles bean creation and wiring through setter-based dependency injection defined in an XML configuration.