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Exercise 1: Configuring a Basic Spring Application

pom.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 https://maven.apache.org/xsd/maven-4.0.0.xsd">
 <modelVersion>4.0.0</modelVersion>
 <groupId>com.example</groupId>
 <artifactId>LibraryManagement</artifactId>
 <version>0.0.1-SNAPSHOT</version>
 <name>LibraryManagement</name>
     <dependencies>
       <!-- Spring Core -->
       <dependency>
          <groupId>org.springframework</groupId>
          <artifactId>spring-context</artifactId>
          <version>5.3.34</version>
       </dependency>
   </dependencies>
</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
          http://www.springframework.org/schema/beans/spring-beans.xsd">
```

```
    <bean id="bookRepository" class="com.example.BookRepository" />
    <bean id="bookService" class="com.example.BookService">
        <property name="bookRepository" ref="bookRepository"/>
    </bean>
</beans>
```

BookService.java

```
package com.example;
public class BookService
{
    private BookRepository bookRepository;
    public void setBookRepository(BookRepository bookRepository)
    {
        this.bookRepository = bookRepository;
    }
    public void addBook(String title)
    {
        System.out.println("Adding book: " + title);
        bookRepository.saveBook(title);
    }
}
```

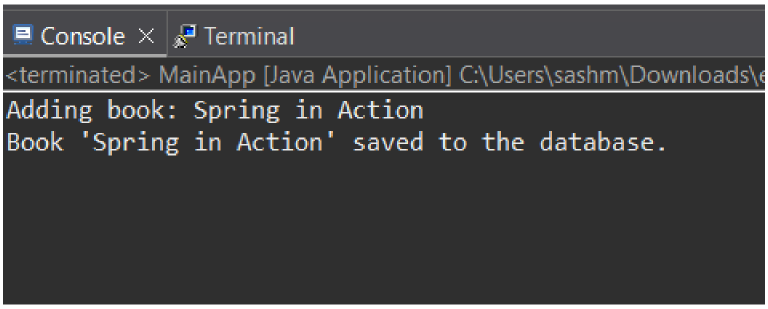
BookRepository.java

```
package com.example;
public class BookRepository
{
    public void saveBook(String title)
    {
        System.out.println("Book '" + title + "' saved to the database.");
    }
}
```

MainApp.java

```
package com.example;
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.addBook("Spring in Action");
   }
}
```

Output :



```
<terminated> MainApp [Java Application] C:\Users\sashm\Downloads\
Adding book: Spring in Action
Book 'Spring in Action' saved to the database.
```

Exercise 2: Implementing Dependency Injection

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

  <bean id="bookRepository" class="com.example.BookRepository" />
  <bean id="bookService" class="com.example.BookService">
    <property name="bookRepository" ref="bookRepository"/>
  </bean>
</beans>
```

BookService.java

```
package com.example;
public class BookService
{
  private BookRepository bookRepository;
  public void setBookRepository(BookRepository bookRepository)
  {
    this.bookRepository = bookRepository;
  }
  public void displayBookInfo()
  {
    System.out.println("Using BookRepository from BookService...");
    bookRepository.getBookDetails();
  }
}
```

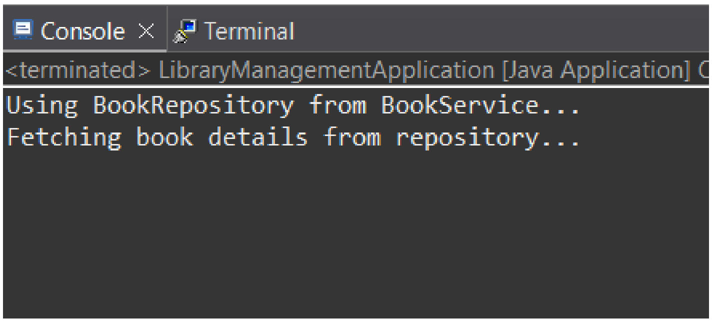
BookRepository.java

```
package com.example;

public class BookRepository

{

    public void getBookDetails() {

        System.out.println("Fetching book details from repository...");

    }

}
```

LibraryManagementApplication.java

```
package com.example;

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.displayBookInfo();

    }

}
```

Output :



```
<terminated> LibraryManagementApplication [Java Application] C
Using BookRepository from BookService...
Fetching book details from repository...
```

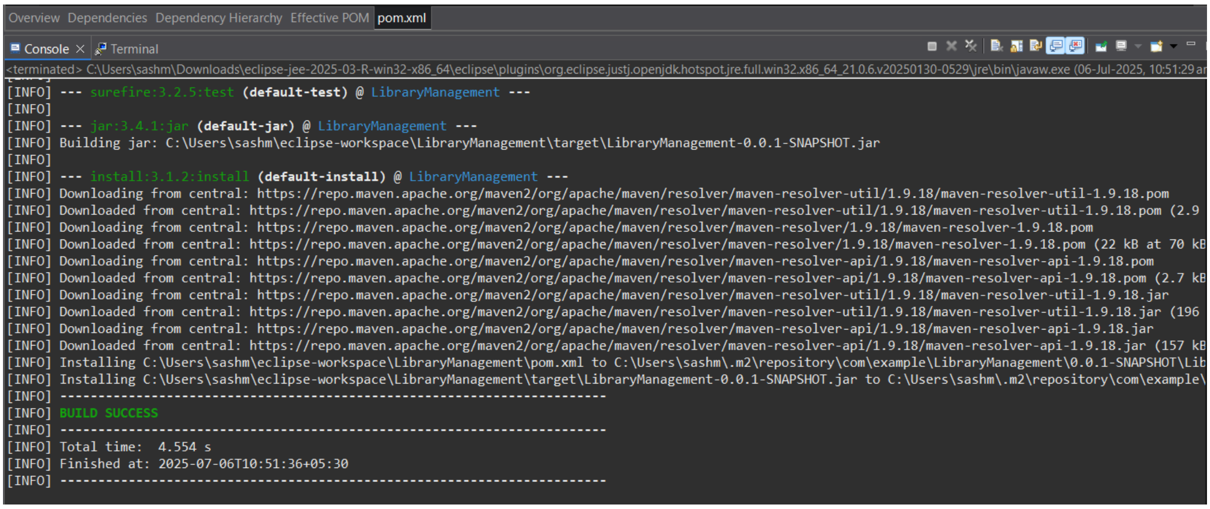
Exercise 4: Creating and Configuring a Maven Project

pom.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 https://maven.apache.org/xsd/maven-4.0.0.xsd">
     <modelVersion>4.0.0</modelVersion>
     <groupId>com.example</groupId>
    <artifactId>LibraryManagement</artifactId>
    <version>0.0.1-SNAPSHOT</version>
    <name>LibraryManagement</name>

    <dependencies>
        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-context</artifactId>
            <version>5.3.32</version>
        </dependency>

        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-aop</artifactId>
            <version>5.3.32</version>
        </dependency>

        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-webmvc</artifactId>
            <version>5.3.32</version>
        </dependency>

        <dependency>
            <groupId>javax.servlet</groupId>
```

```xml
      <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>3.8.1</version>

        <configuration>

          <source>1.8</source>

          <target>1.8</target>

        </configuration>

      </plugin>

    </plugins>

  </build>

</project>
```

Output :



```
<terminated> C:\Users\sashm\Downloads\eclipse-jee-2025-03-R-win32-x86_64\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bin\javaw.exe (06-Jul-2025, 10:51:29 ar
[INFO] --- surefire:3.2.5:test (default-test) @ LibraryManagement ---
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ LibraryManagement ---
[INFO] Building jar: C:\Users\sashm\eclipse-workspace\LibraryManagement\target\LibraryManagement-0.0.1-SNAPSHOT.jar
[INFO]
[INFO] --- install:3.1.2:install (default-install) @ LibraryManagement ---
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-util/1.9.18/maven-resolver-util-1.9.18.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-util/1.9.18/maven-resolver-util-1.9.18.pom (2.9
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver/1.9.18/maven-resolver-1.9.18.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver/1.9.18/maven-resolver-1.9.18.pom (22 kB at 70 kB
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-api/1.9.18/maven-resolver-api-1.9.18.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-api/1.9.18/maven-resolver-api-1.9.18.pom (2.7 kB
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-util/1.9.18/maven-resolver-util-1.9.18.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-util/1.9.18/maven-resolver-util-1.9.18.jar (196
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-api/1.9.18/maven-resolver-api-1.9.18.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/resolver/maven-resolver-api/1.9.18/maven-resolver-api-1.9.18.jar (157 kB
[INFO] Installing C:\Users\sashm\eclipse-workspace\LibraryManagement\pom.xml to C:\Users\sashm\.m2\repository\com\example\LibraryManagement\0.0.1-SNAPSHOT\Lib
[INFO] Installing C:\Users\sashm\eclipse-workspace\LibraryManagement\target\LibraryManagement-0.0.1-SNAPSHOT.jar to C:\Users\sashm\.m2\repository\com\example\
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  4.554 s
[INFO] Finished at: 2025-07-06T10:51:36+05:30
[INFO] ------------------------------------------------------------------------
```