

Cognizant - DN 4.0 Deep Skilling Java FSE
Week 02 - TDD using Junit5 and Mockito

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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
    http://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>5.3.34</version>
    </dependency>
  </dependencies>
</project>
```

```
//BookRepository.java
```

```
package com.library.repository;

public class BookRepository {

    public void saveBook(String bookName) {

        System.out.println("Saving book: " + bookName);

    }

}
```

```
//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 addBook(String bookName) {

        System.out.println("Adding book: " + bookName);

        bookRepository.saveBook(bookName);

    }

}
```

```
//MainApp.java
```

```
package com.library;

import com.library.service.BookService;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

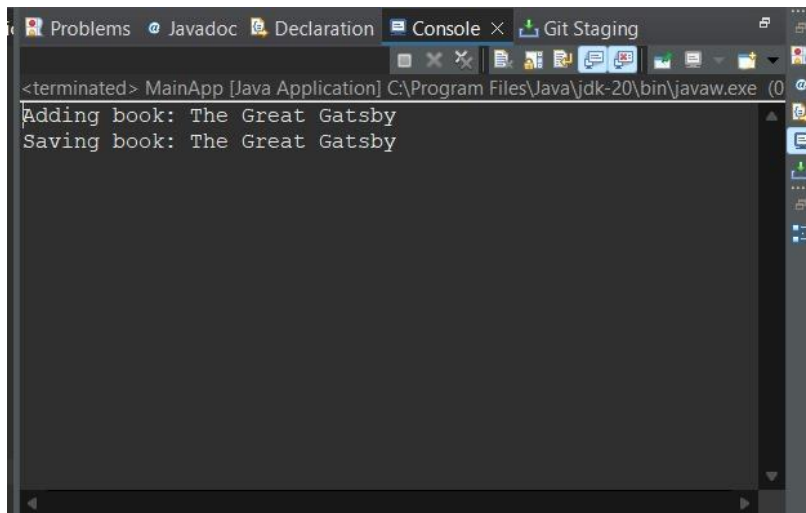
public class MainApp {
```

```
public static void main(String[] args) {  
    ApplicationContext context = new  
    ClassPathXmlApplicationContext("applicationContext.xml");  
    BookService bookService = context.getBean("bookService",  
    BookService.class);  
    bookService.addBook("The Great Gatsby");  
}  
}
```

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

Output:



Exercise 2: Implementing Dependency Injection

//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
        http://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>5.3.34</version>
        </dependency>
    </dependencies>
```

</project>

//BookRepository.java

```
package com.library.repository;

public class BookRepository {

    public void saveBook(String bookName) {

        System.out.println("Saving book: " + bookName);

    }

}
```

//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 addBook(String bookName) {

        System.out.println("Adding book: " + bookName);

        bookRepository.saveBook(bookName);

    }

}
```

//MainApp.java

```
package com.library;

import com.library.service.BookService;

import org.springframework.context.ApplicationContext;
```

```
import org.springframework.context.support.ClassPathXmlApplicationContext;

public class MainApp {

    private static ApplicationContext context;

    public static void main(String[] args) {

        ApplicationContext context = new
ClassPathXmlApplicationContext("applicationContext.xml");

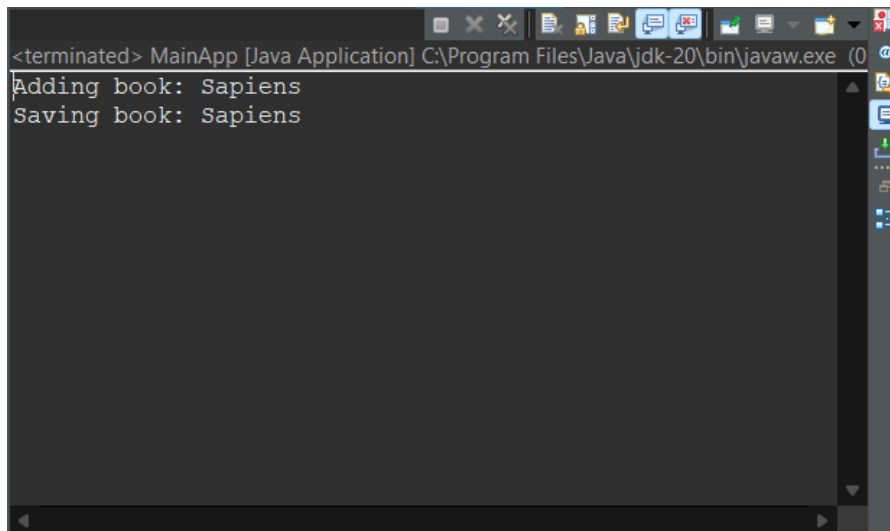
        BookService service = context.getBean("bookService",
BookService.class);

        service.addBook("Sapiens");

    }
}
```

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

Output:



Exercise 3: 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
    http://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>

  <properties>
    <maven.compiler.source>1.8</maven.compiler.source>
    <maven.compiler.target>1.8</maven.compiler.target>
  </properties>

  <dependencies>
    <!-- Spring Core & Context -->
    <dependency>
```

```
<groupId>org.springframework</groupId>
<artifactId>spring-context</artifactId>
<version>5.3.30</version>
</dependency>

<!-- Spring AOP (optional for aspects/logging) -->
<dependency>
  <groupId>org.springframework</groupId>
  <artifactId>spring-aop</artifactId>
  <version>5.3.30</version>
</dependency>

<!-- Spring Web MVC (for future REST/web controller support) -->
<dependency>
  <groupId>org.springframework</groupId>
  <artifactId>spring-webmvc</artifactId>
  <version>5.3.30</version>
</dependency>
</dependencies>

<build>
  <plugins>
    <!-- Compiler plugin to set Java version -->
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-compiler-plugin</artifactId>
      <version>3.11.0</version>
      <configuration>
        <source>1.8</source>
        <target>1.8</target>
```



```
        </configuration>
    </plugin>
</plugins>
</build>
</project>
```

```
//BookRepository.java
package com.library.repository;

public class BookRepository {
    public void saveBook(String bookName) {
        System.out.println("Saving book: " + bookName);
    }
}
```

```
//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;
    }

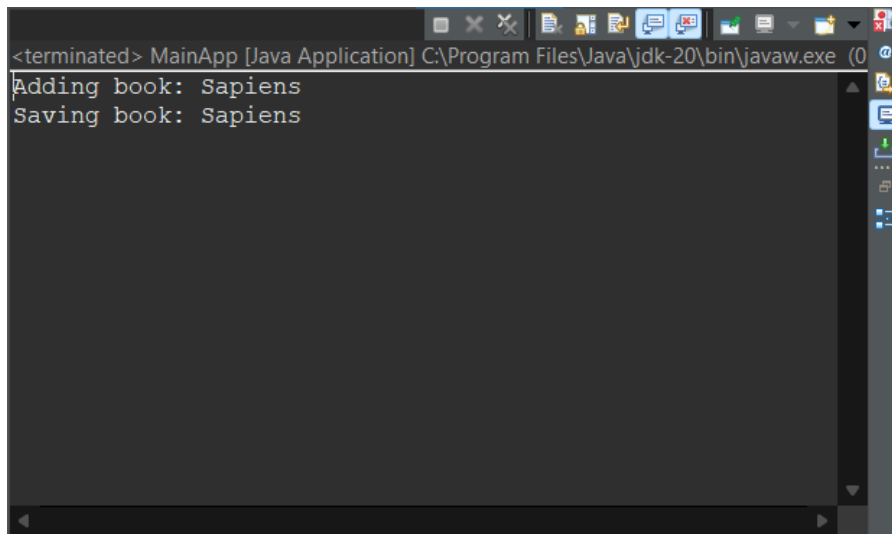
    public void addBook(String bookName) {
        System.out.println("Adding book: " + bookName);
        bookRepository.saveBook(bookName);
    }
}
```

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

    }
}
```

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

Output:



```
<terminated> MainApp [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (0
Adding book: Sapiens
Saving book: Sapiens
```