

SPRING FRAMEWORK COURSE

EXERCISE

TALENT CONTEST V1 WITH SPRING FRAMEWORK

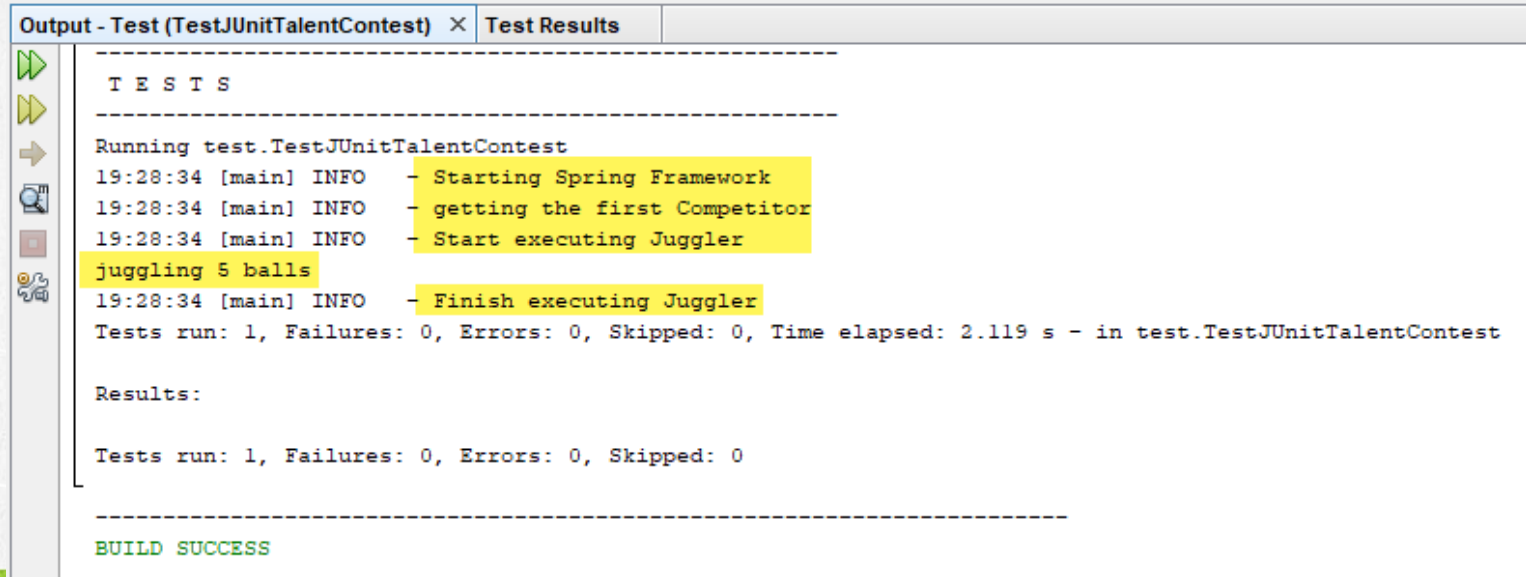


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EXERCISE OBJECTIVE

The objective of the exercise is to create the Talent Contest project. At the end we must observe the following output:



```
Output - Test (TestJUnitTalentContest) × Test Results
-----
T E S T S
-----
Running test.TestJUnitTalentContest
19:28:34 [main] INFO - Starting Spring Framework
19:28:34 [main] INFO - getting the first Competitor
19:28:34 [main] INFO - Start executing Juggler
juggling 5 balls
19:28:34 [main] INFO - Finish executing Juggler
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 2.119 s - in test.TestJUnitTalentContest

Results:

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

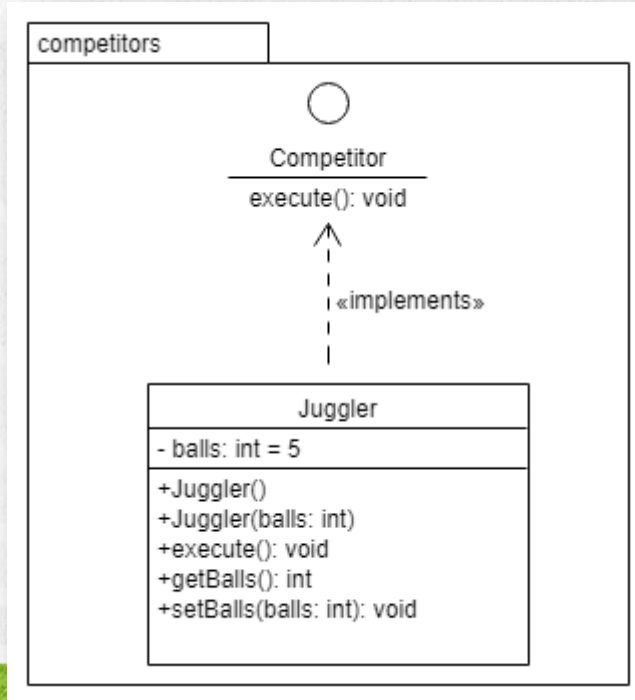
-----
BUILD SUCCESS
```

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TALENT CONTEST PROJECT

- We will create a project that contains the following classes:

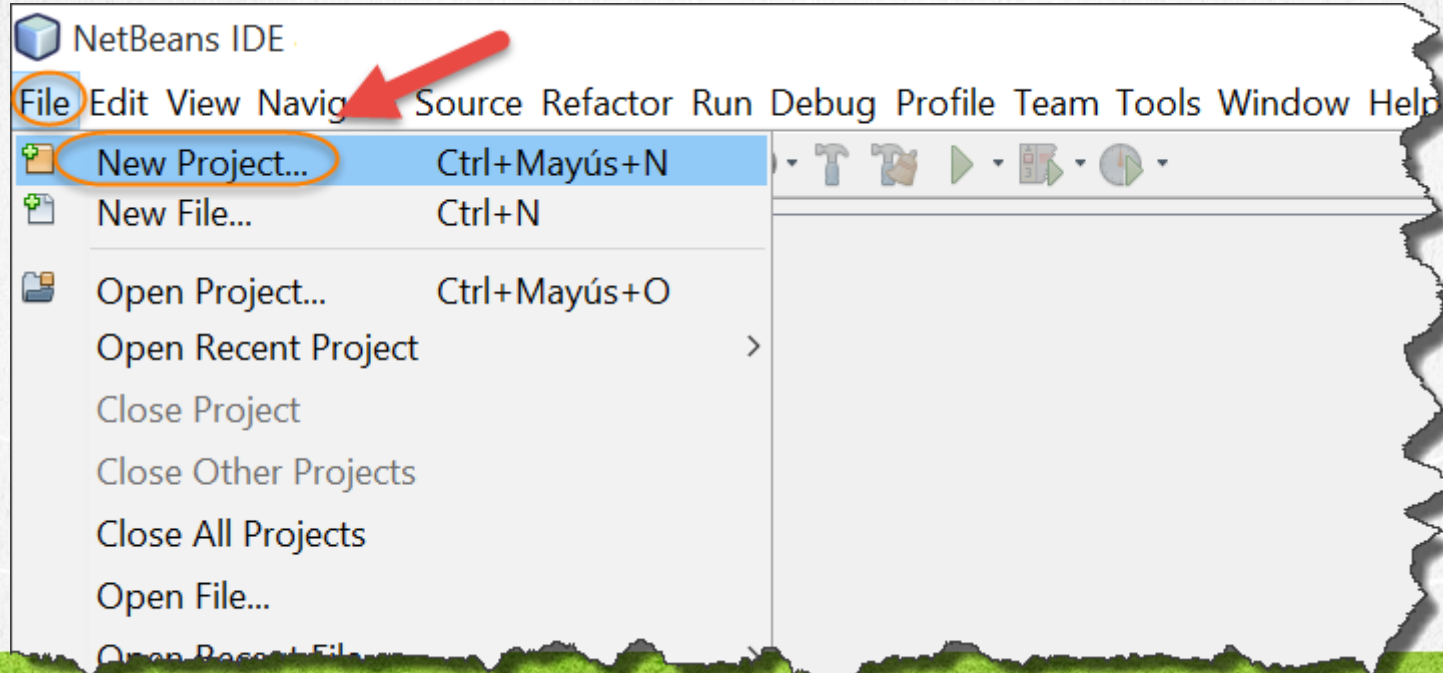


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1. CREATE A NEW PROJECT

We created the project spring-talent-contest-01:

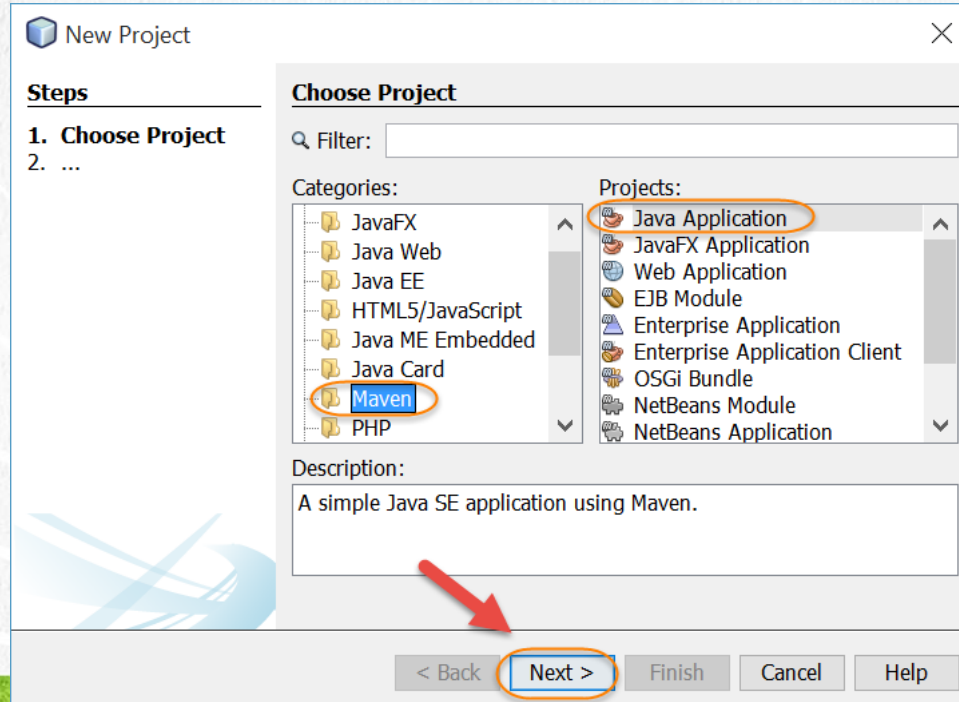


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1. CREATE A NEW PROJECT

We created the project spring-talent-contest-01:



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1. CREATE A NEW PROJECT

We created the project spring-talent-contest-01:

New Java Application

Steps

1. Choose Project
2. **Name and Location**

Name and Location

Project Name: spring-talent-contest-01

Project Location: C:\Courses\Spring\Lesson03 Browse...

Project Folder: C:\Courses\Spring\Lesson03\spring-talent-contest-01

Artifact Id: spring-talent-contest-01

Group Id: beans

Version: 1

Package: (Optional)

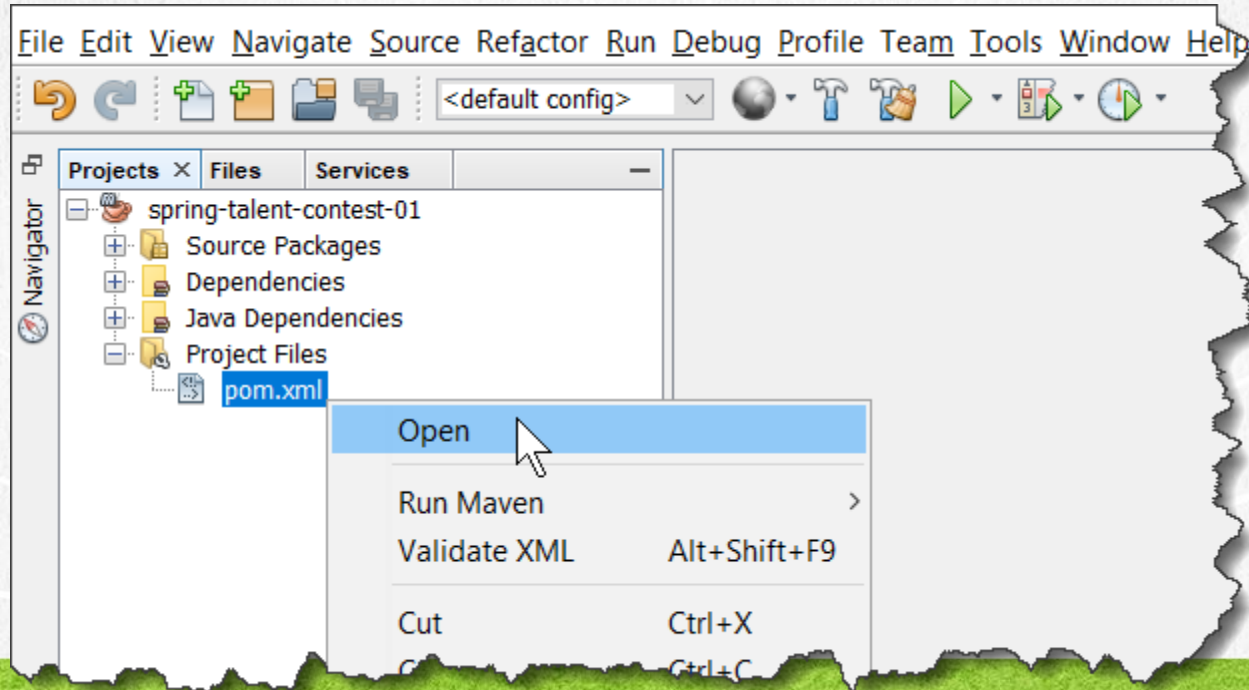
< Back Next > **Finish** Cancel Help

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2. ADD THE LIBRARIES

We open the file pom.xml and add the libraries that we will use:



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2. MODIFY THE CODE

[pom.xml:](#)

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```
<?xml version="1.0" encoding="UTF-8"?>
<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>beans</groupId>
  <artifactId>spring-talent-contest-01</artifactId>
  <version>1</version>
  <packaging>jar</packaging>
  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <maven.compiler.source>1.8</maven.compiler.source>
    <maven.compiler.target>1.8</maven.compiler.target>
    <spring.version>5.1.0.RELEASE</spring.version>
    <log4j.version>2.11.1</log4j.version>
    <junit.version>5.3.1</junit.version>
  </properties>
  <dependencies>
    <dependency>
      <groupId>org.springframework</groupId>
      <artifactId>spring-core</artifactId>
      <version>${spring.version}</version>
    </dependency>
    <dependency>
      <groupId>org.springframework</groupId>
      <artifactId>spring-context</artifactId>
      <version>${spring.version}</version>
    </dependency>
  </dependencies>
</project>
```


2. MODIFY THE CODE

[pom.xml:](#)

[Click to download](#)

```
<dependency>
  <groupId>org.apache.logging.log4j</groupId>
  <artifactId>log4j-api</artifactId>
  <version>${log4j.version}</version>
</dependency>
<dependency>
  <groupId>org.apache.logging.log4j</groupId>
  <artifactId>log4j-core</artifactId>
  <version>${log4j.version}</version>
</dependency>
<dependency>
  <groupId>org.junit.jupiter</groupId>
  <artifactId>junit-jupiter-api</artifactId>
  <version>${junit.version}</version>
  <scope>test</scope>
</dependency>
<dependency>
  <groupId>org.junit.jupiter</groupId>
  <artifactId>junit-jupiter-engine</artifactId>
  <version>${junit.version}</version>
  <scope>test</scope>
</dependency>
</dependencies>
```

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2. MODIFY THE CODE

[pom.xml:](#)

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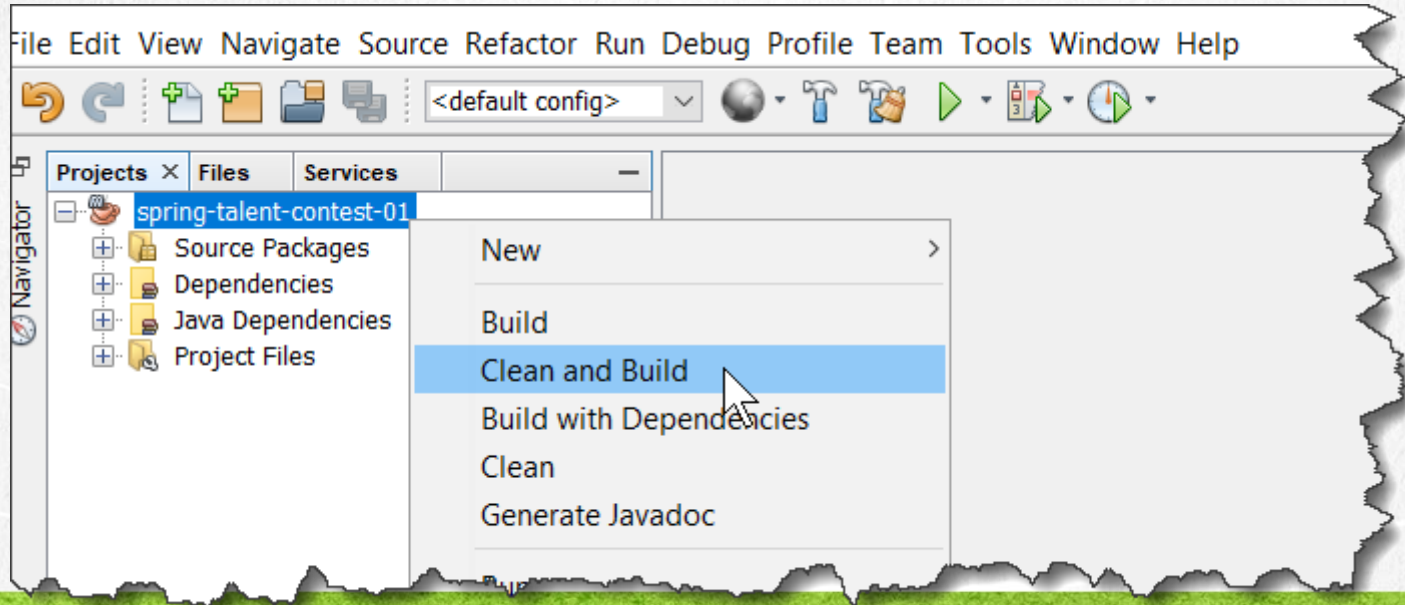
```
<build>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-surefire-plugin</artifactId>
      <version>2.22.0</version>
    </plugin>
  </plugins>
</build>
</project>
```

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3. EXECUTE CLEAN & BUILD

We do a clean & build to the project so that the libraries are downloaded if necessary:

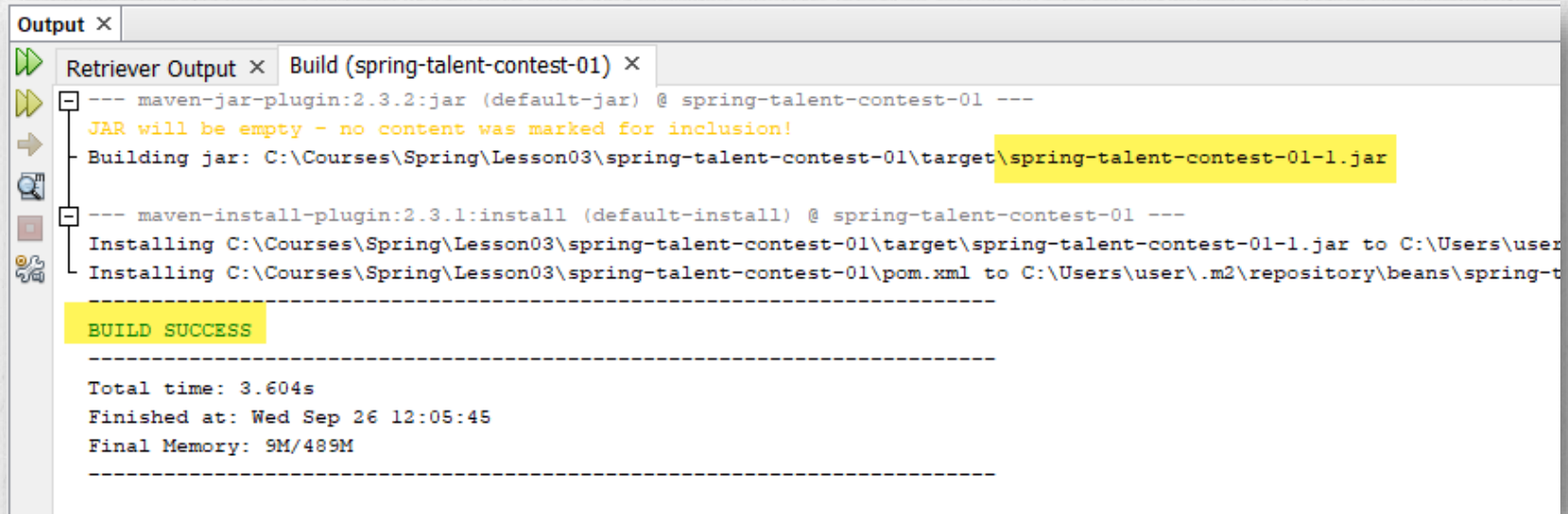


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3. EXECUTE CLEAN & BUILD

We do a clean & build to the project so that the libraries are downloaded if necessary:

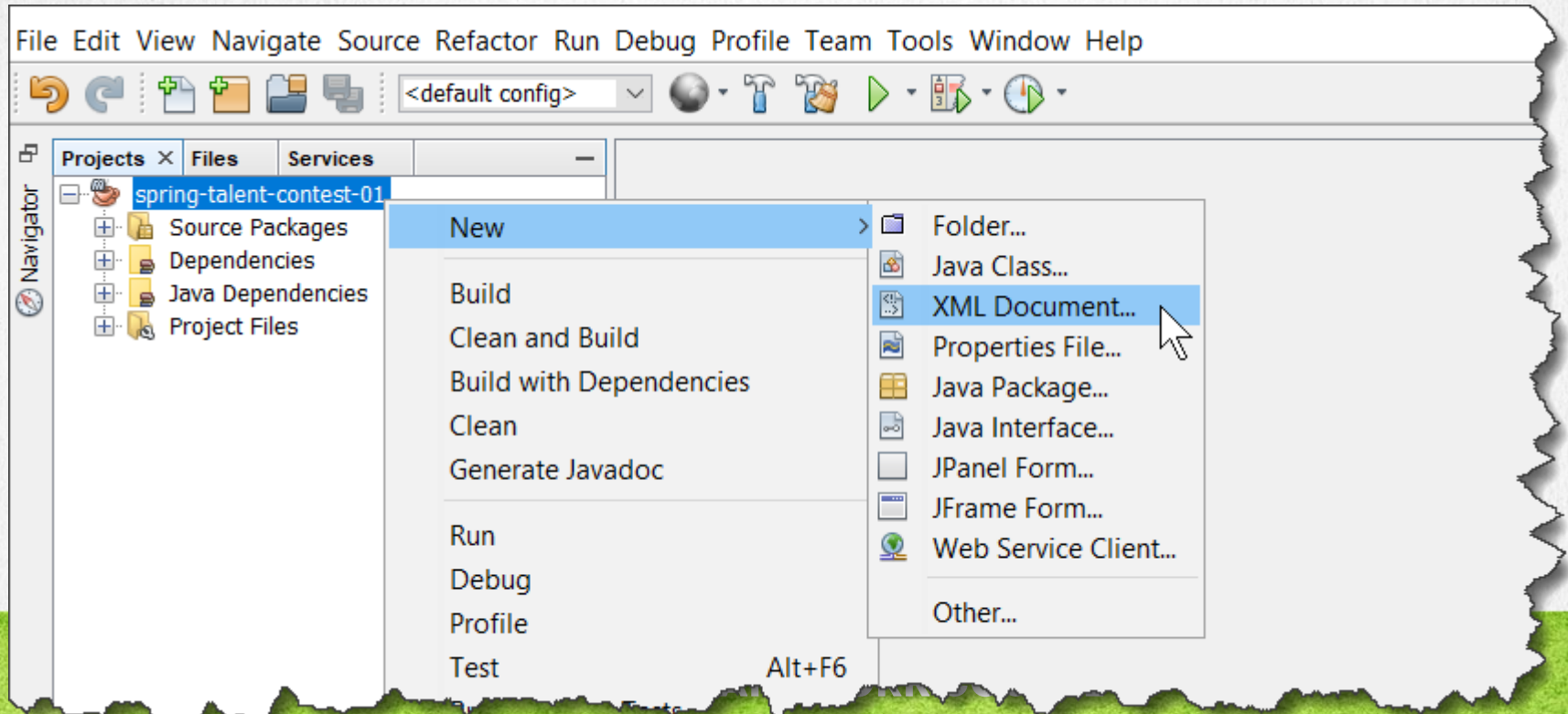


The screenshot shows the 'Output' window of an IDE with two tabs: 'Retriever Output' and 'Build (spring-talent-contest-01)'. The 'Build' tab is active, displaying the following log entries:

```
--- maven-jar-plugin:2.3.2:jar (default-jar) @ spring-talent-contest-01 ---  
JAR will be empty - no content was marked for inclusion!  
Building jar: C:\Courses\Spring\Lesson03\spring-talent-contest-01\target\spring-talent-contest-01-1.jar  
  
--- maven-install-plugin:2.3.1:install (default-install) @ spring-talent-contest-01 ---  
Installing C:\Courses\Spring\Lesson03\spring-talent-contest-01\target\spring-talent-contest-01-1.jar to C:\Users\user\...  
Installing C:\Courses\Spring\Lesson03\spring-talent-contest-01\pom.xml to C:\Users\user\.m2\repository\beans\spring-t...  
  
-----  
BUILD SUCCESS  
-----  
  
Total time: 3.604s  
Finished at: Wed Sep 26 12:05:45  
Final Memory: 9M/489M  
-----
```

4. CREATE AN XML FILE

We create the log4j2.xml file:



4. CREATE AN XML FILE

We create the log4j2.xml file:

New XML Document

Steps

1. Choose File Type
2. **Name and Location**
3. Select Document Type
4. ...

Name and Location

File Name: log4j2

Project: spring-talent-contest-01

Folder: src/main/resources Browse...

Created File: C:\Courses\Spring\Lesson03\spring-talent-contest-01\src/main/resources\log4j2.xml

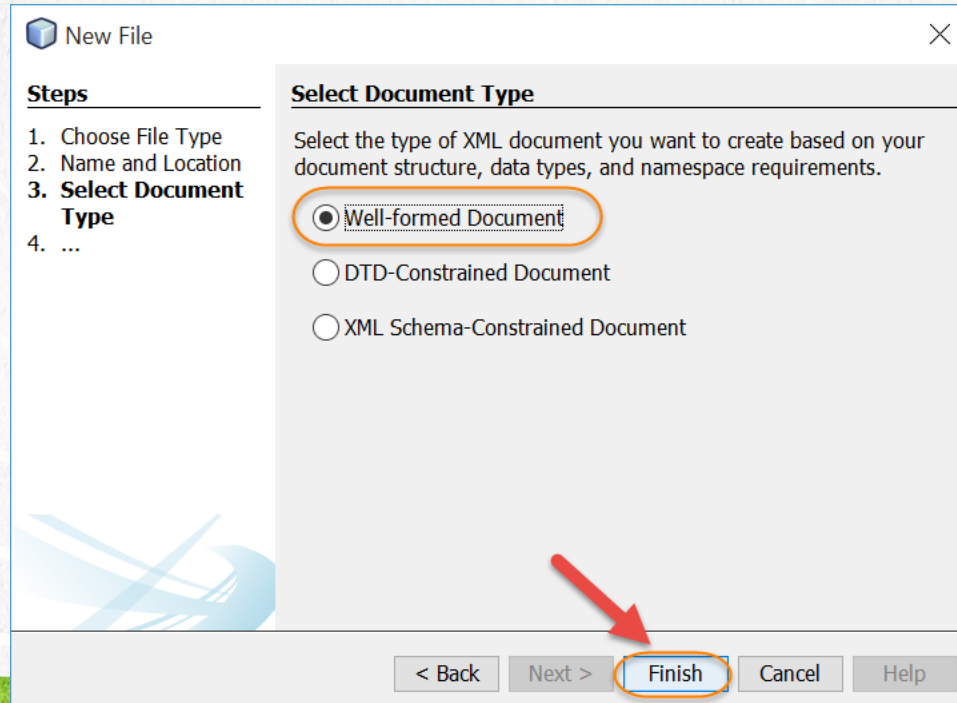
< Back **Next >** Finish Cancel Help

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4. CREATE AN XML FILE

We create the log4j2.xml file:



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5. MODIFY THE FILE

log4j2.xml:

[Click to download](#)

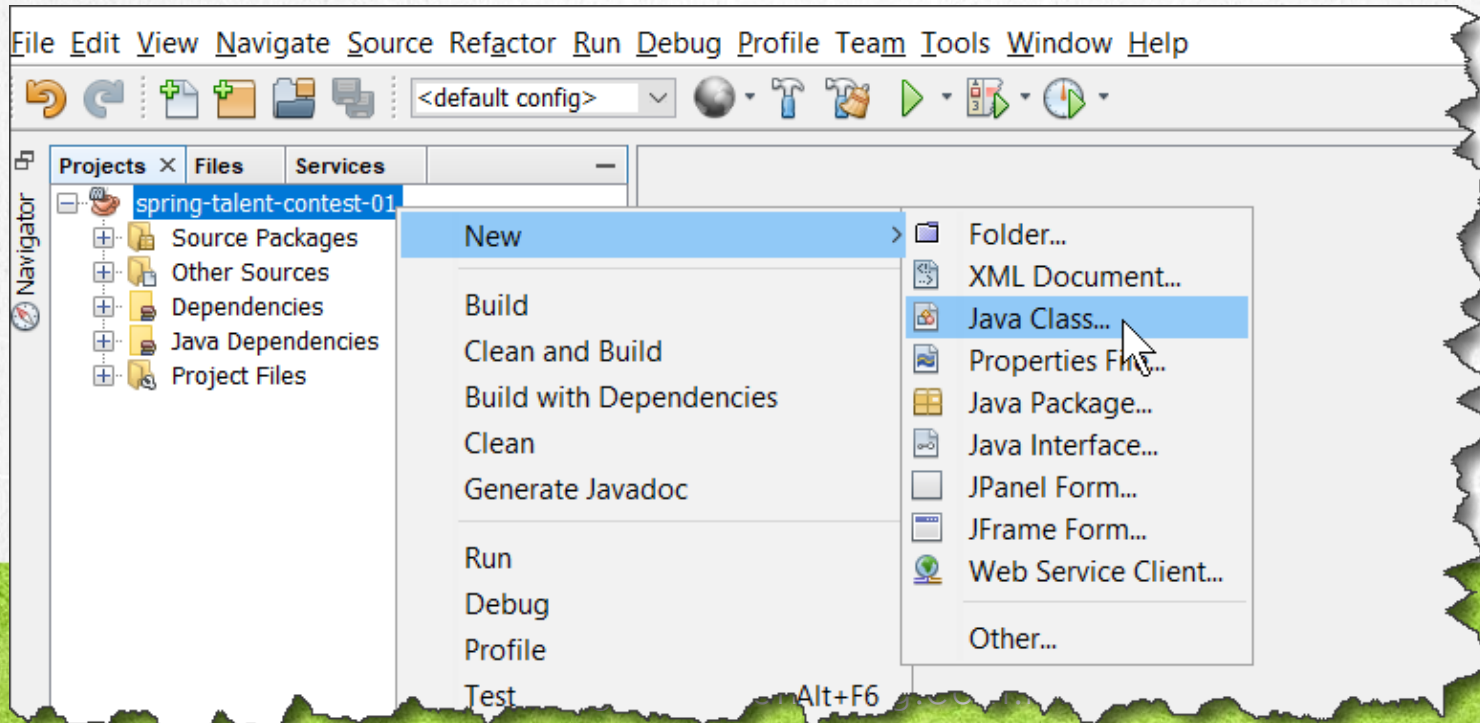
```
?xml version="1.0" encoding="UTF-8"?>
<Configuration status="INFO">
  <Appenders>
    <Console name="Console" target="SYSTEM_OUT">
      <PatternLayout pattern="%d{HH:mm:ss} [%t] %-5level %logger{36} - %msg%n" />
    </Console>
  </Appenders>
  <Loggers>
    <Root level="info">
      <AppenderRef ref="Console" />
    </Root>
  </Loggers>
</Configuration>
```

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6. CREATE A JAVA CLASS

We create the ExecutionException.java class. Note: This class is used to indicate any exception, however it is not part of the domain classes of this project.



6. CREATE A JAVA CLASS

We create the ExecutionException.java class. Note: This class is used to indicate any exception, however it is not part of the domain classes of this project.

New Java Class

Steps

1. Choose File Type
2. **Name and Location**

Name and Location

Class Name: ExecutionException

Project: spring-talent-contest-01

Location: Source Packages

Package: competitors

Created File: C:\Courses\Spring\Lesson03\spring-talent-contest-01\src\main\java\competitors\ExecutionException.java

< Back Next > **Finish** Cancel Help

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7. MODIFY THE FILE

[ExecutionException.java:](#)

[Click to download](#)

```
package competitors;

class ExecutionException extends RuntimeException {

    public ExecutionException() {
    }

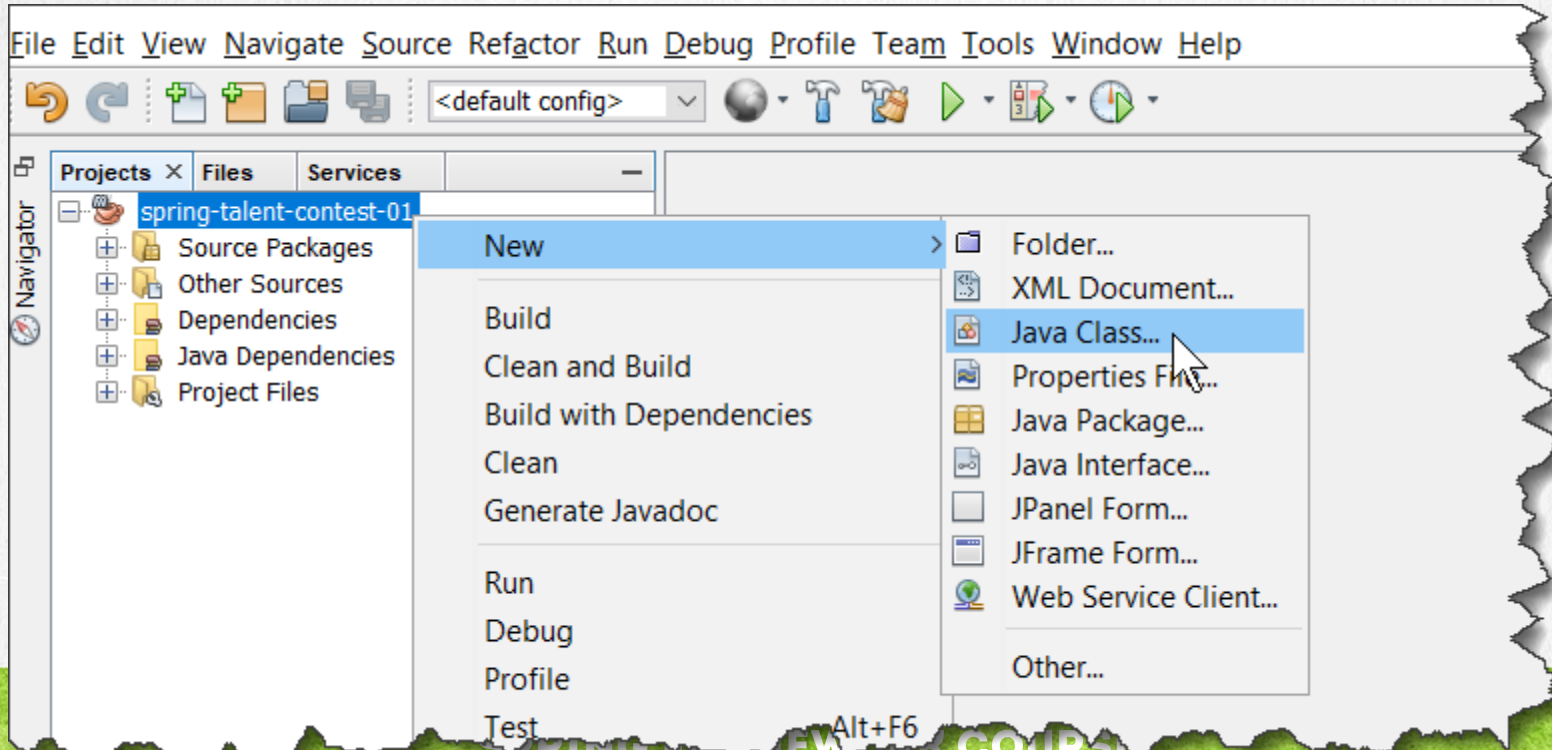
    public ExecutionException(String message) {
        super(message);
    }
}
```

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8. CREATE A JAVA CLASS

Create the Competitor.java interface:



8. CREATE A JAVA CLASS

Create the Competitor.java interface:

New Java Class

Steps

1. Choose File Type
2. **Name and Location**

Name and Location

Class Name:

Project:

Location:

Package:

Created File:

< Back Next > **Finish** Cancel Help

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9. MODIFY THE FILE

[Competitor.java:](#)

[Click to download](#)

```
package competitors;

public interface Competitor {

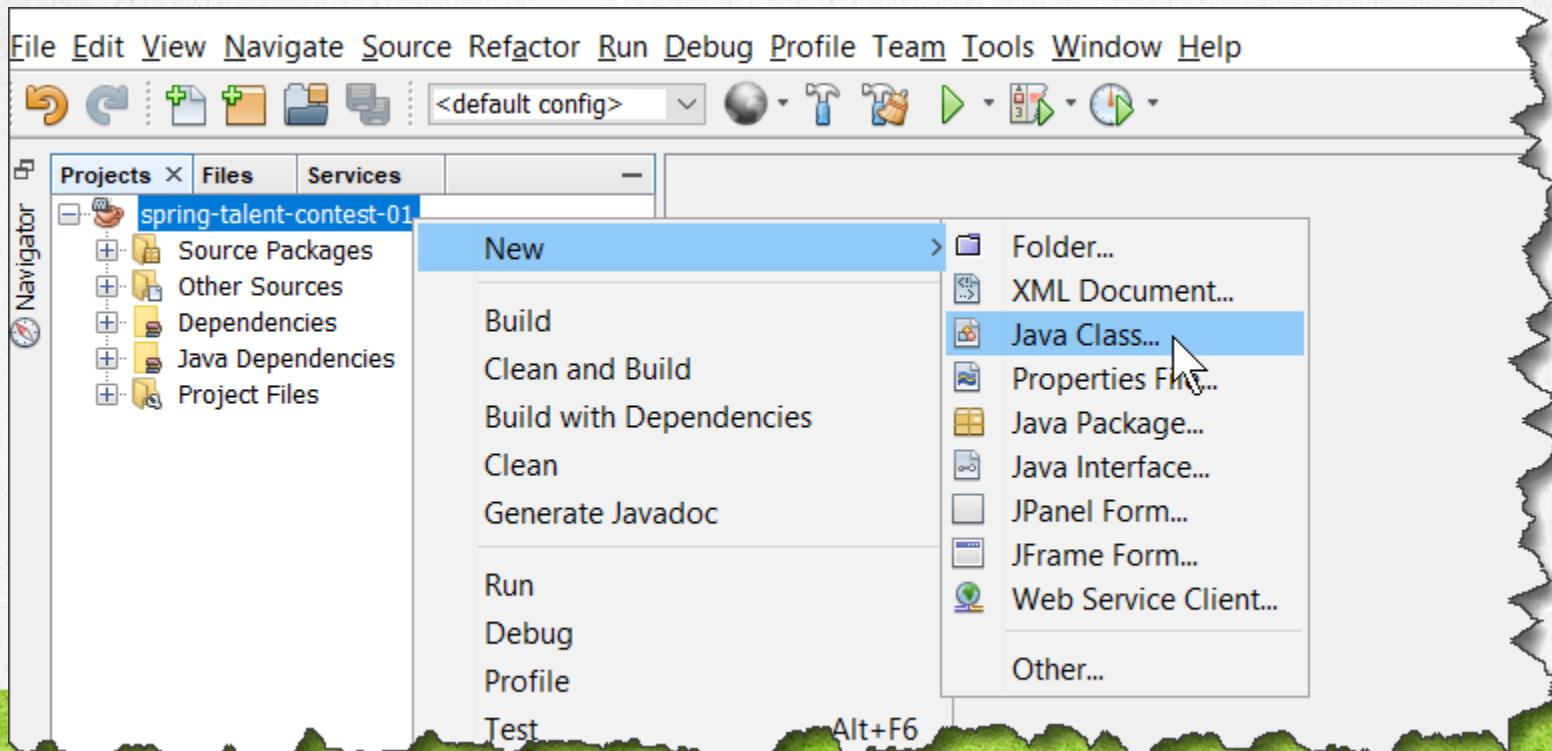
    public void execute() throws ExecutionException;
}
```

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10. CREATE A JAVA CLASS

We create the Juggler.java class:



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10. CREATE A JAVA CLASS

We create the Juggler.java class:

New Java Class

Steps

1. Choose File Type
2. **Name and Location**

Name and Location

Class Name:

Project:

Location:

Package:

Created File:

< Back Next > **Finish** Cancel Help

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11. MODIFY THE FILE

Juggler.java:

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```
package competitors;

public class Juggler implements Competitor {

    private int balls = 5;

    public Juggler() {
    }

    public Juggler(int balls) {
        this.balls = balls;
    }

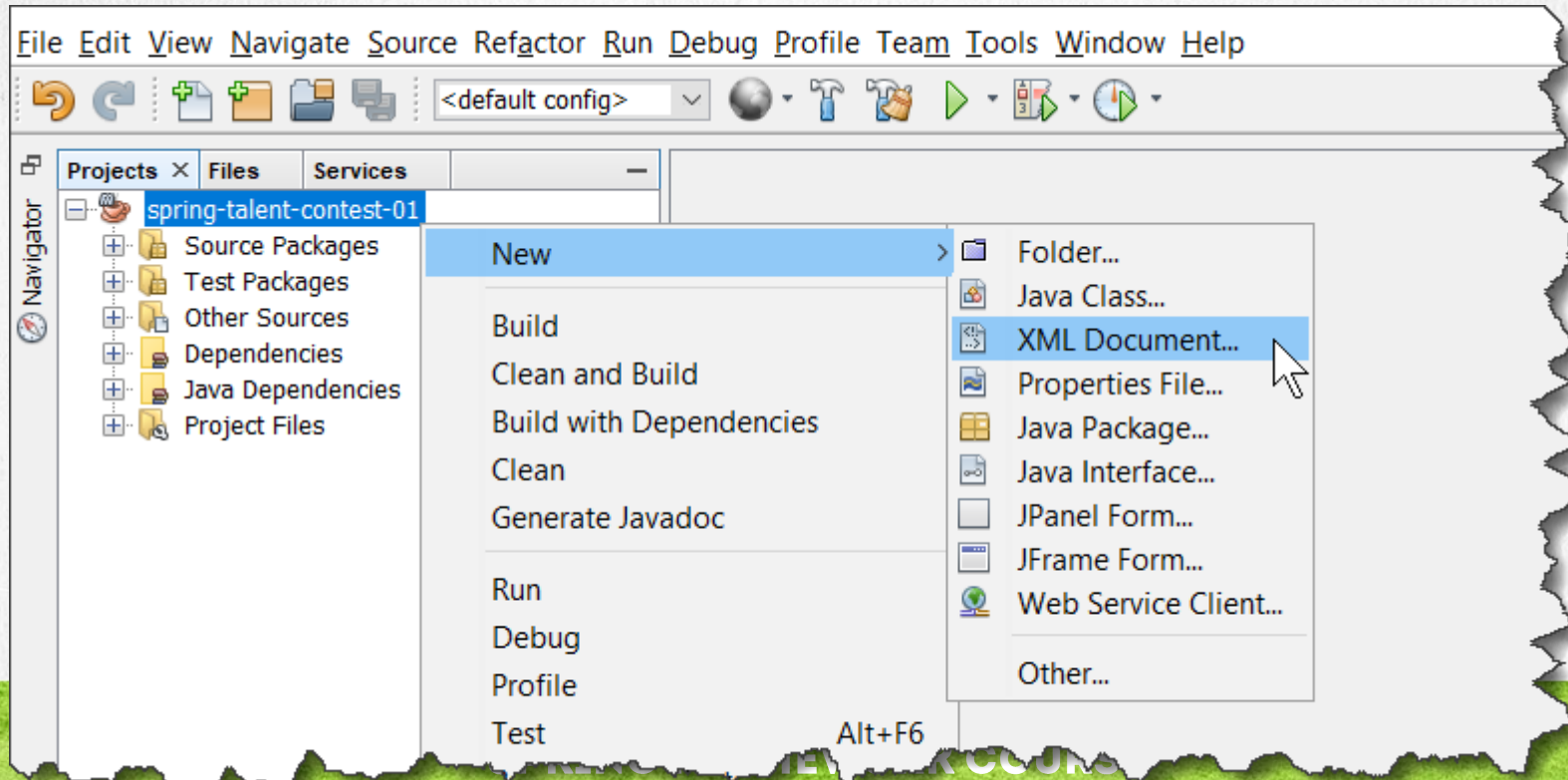
    @Override
    public void execute() throws ExecutionException {
        System.out.println("juggling " + this.balls + " balls");
    }

    public int getBalls() {
        return balls;
    }

    public void setBalls(int balls) {
        this.balls = balls;
    }
}
```

12. CREATE AN XML FILE

Create the applicationContext.xml file:



12. CREATE AN XML FILE

Create the applicationContext.xml file:

New XML Document

Steps

1. Choose File Type
2. **Name and Location**
3. Select Document Type
4. ...

Name and Location

File Name:

Project:

Folder:

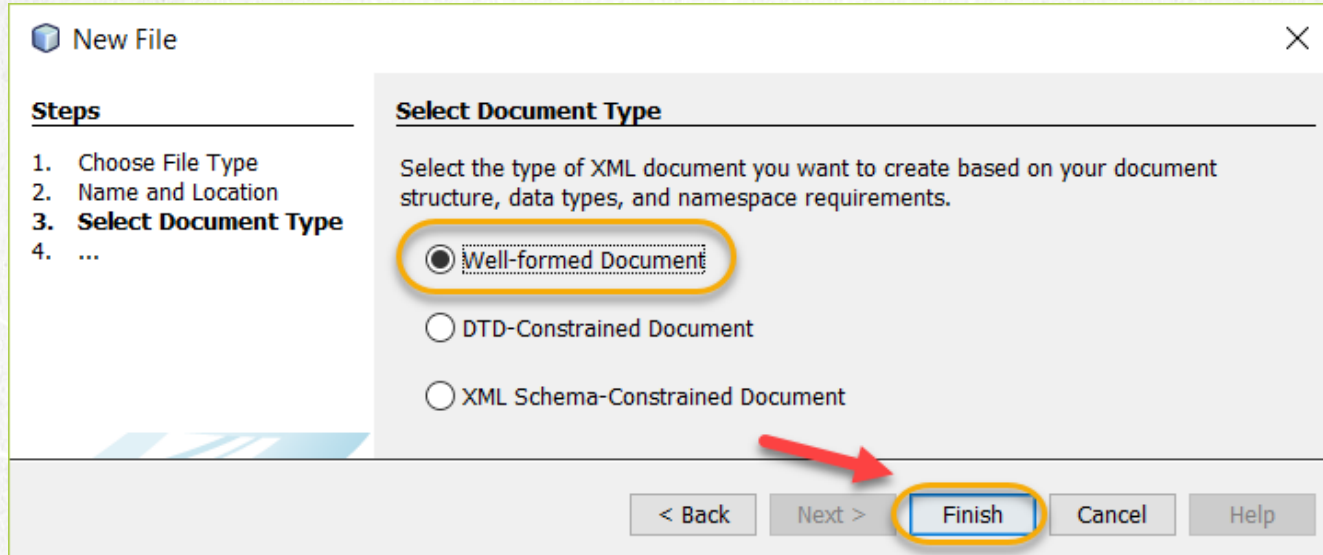
Created File:

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12. CREATE AN XML FILE

Create the applicationContext.xml file:



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13. MODIFY THE FILE

[applicationContext.xml:](#)

Click to download

```
<?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
http://www.springframework.org/schema/context
http://www.springframework.org/schema/context/spring-context.xsd">

    <!-- Equivalent code in Java:
    Juggler juggler = new Juggler(); -->
    <bean id="juggler" class="competitors.Juggler" />

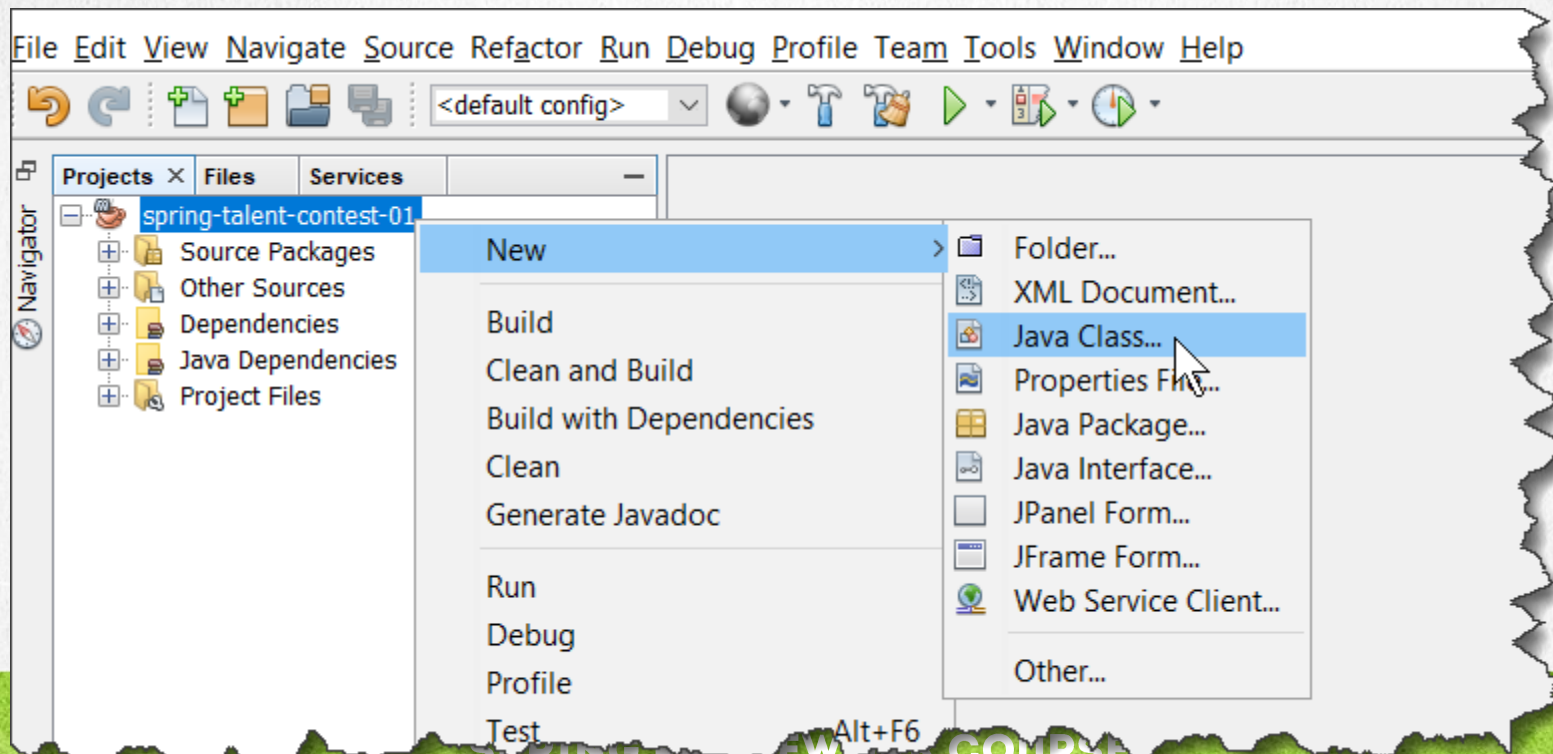
</beans>
```

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14. CREATE A NEW CLASS

We create the TestTalentContest.java class:



14. CREATE A NEW CLASS

We create the TestTalentContest .java class:

New Java Class

Steps

1. Choose File Type
2. **Name and Location**

Name and Location

Class Name:

Project:

Location:

Package:

Created File:

< Back Next > **Finish** Cancel Help

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15. MODIFY THE CODE

TestTalentContest.java:

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```
package test;

import competitors.Competitor;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;

public class TestTalentContest {

    public static void main(String[] args) {
        ApplicationContext ctx = new ClassPathXmlApplicationContext("applicationContext.xml");

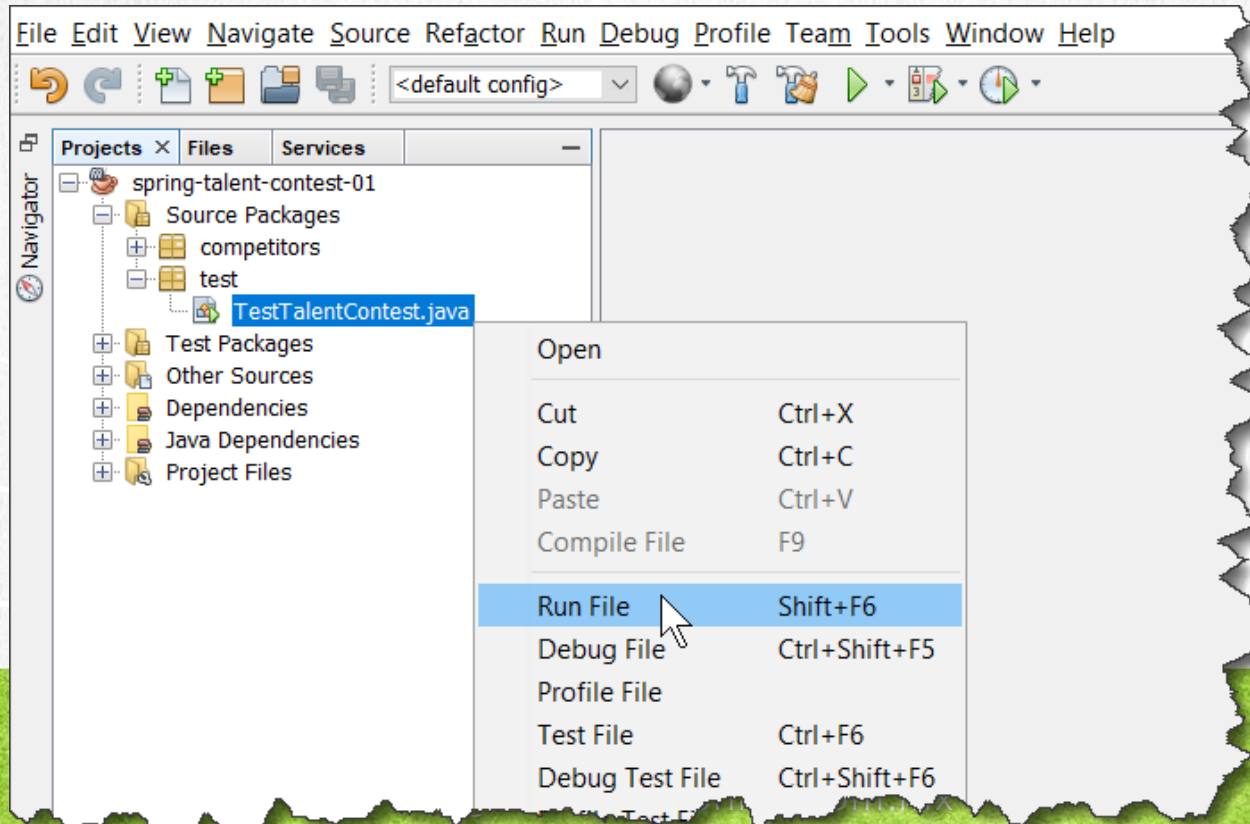
        Competitor competitor1 = (Competitor) ctx.getBean("juggler");
        competitor1.execute();
    }
}
```

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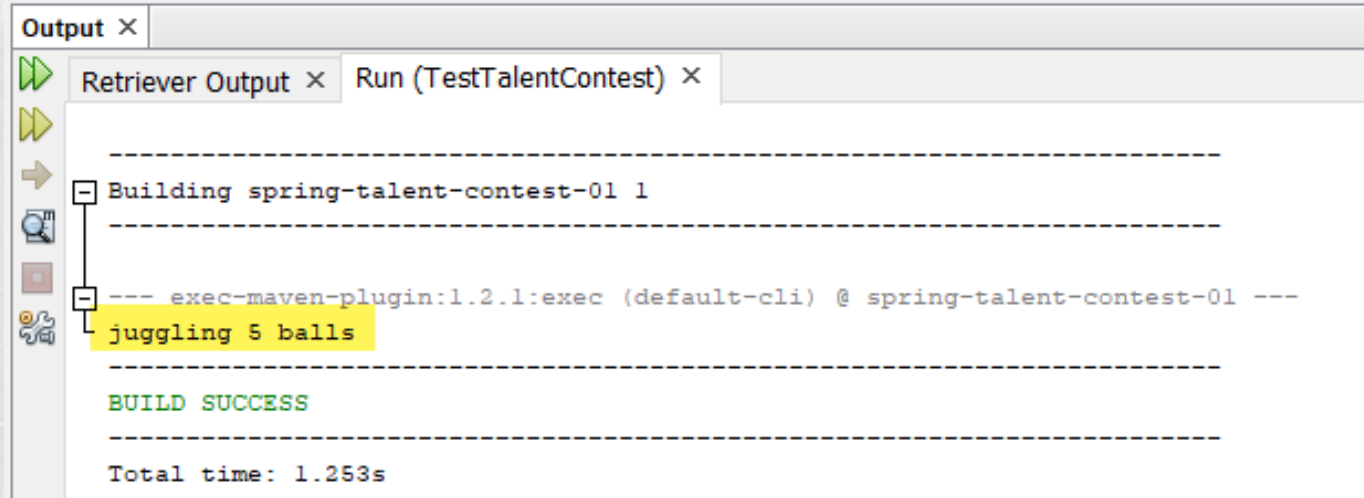
16. EXECUTE THE PROJECT

Execute the project:



16. EXECUTE THE PROJECT

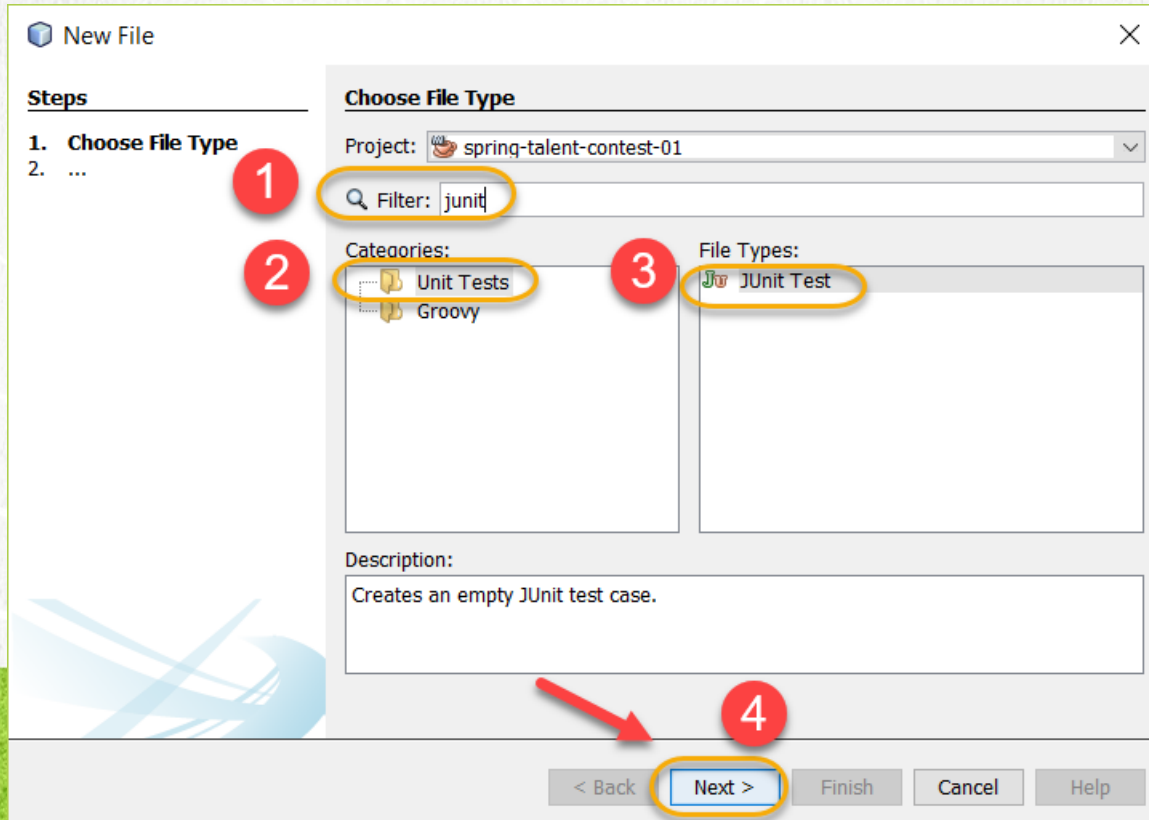
We execute the project. The result is as follows:



```
-----  
Building spring-talent-contest-01 1  
-----  
--- exec-maven-plugin:1.2.1:exec (default-cli) @ spring-talent-contest-01 ---  
juggling 5 balls  
-----  
BUILD SUCCESS  
-----  
Total time: 1.253s
```

17. CREATE A TEST UNIT CLASS

Create the Junit TestTalentContest.java:



17. CREATE A TEST UNIT CLASS

Create the Junit TestTalentContest.java:

New JUnit Test

Steps

1. Choose File Type
2. **Name and Location**

Name and Location

Class Name: TestJUnitTalentContest

Project: spring-talent-contest-01

Location: Test Packages

Package: test

Created File: C:\Courses\Spring\Lesson03\spring-talent-contest-01\src\test\java\test\TestJUnitTalentContest.java

Generated Code

- ☐ Test_INITIALIZER
- ☐ Test_Finalizer
- ☐ Test Class_INITIALIZER
- ☐ Test Class_Finalizer

Generated Comments

- ☐ Source Code Hints

< Back Next > **Finish** Cancel Help

18. MODIFY THE FILE

TestJUnitTalentContest.java:

Click to download

```
package test;

import competitors.*;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;
import org.apache.logging.log4j.*;
import static org.junit.jupiter.api.Assertions.assertEquals;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;

public class TestJUnitTalentContest {

    Logger log = LogManager.getRootLogger();
    private Competitor competitor1;

    @BeforeEach
    public void before() {
        log.info("Starting Spring Framework");
        ApplicationContext ctx = new ClassPathXmlApplicationContext("applicationContext.xml");
        log.info("getting the first Competitor");
        competitor1 = (Competitor) ctx.getBean("juggler");
    }
}
```

18. MODIFY THE FILE

[TestJUnitTalentContest.java:](#)

Click to download

```
@Test
public void testJuggler() {
    log.info("Start executing Juggler");

    int ballsTest = 5;
    competitor1.execute();
    assertEquals(ballsTest, ((Juggler) competitor1).getBalls());

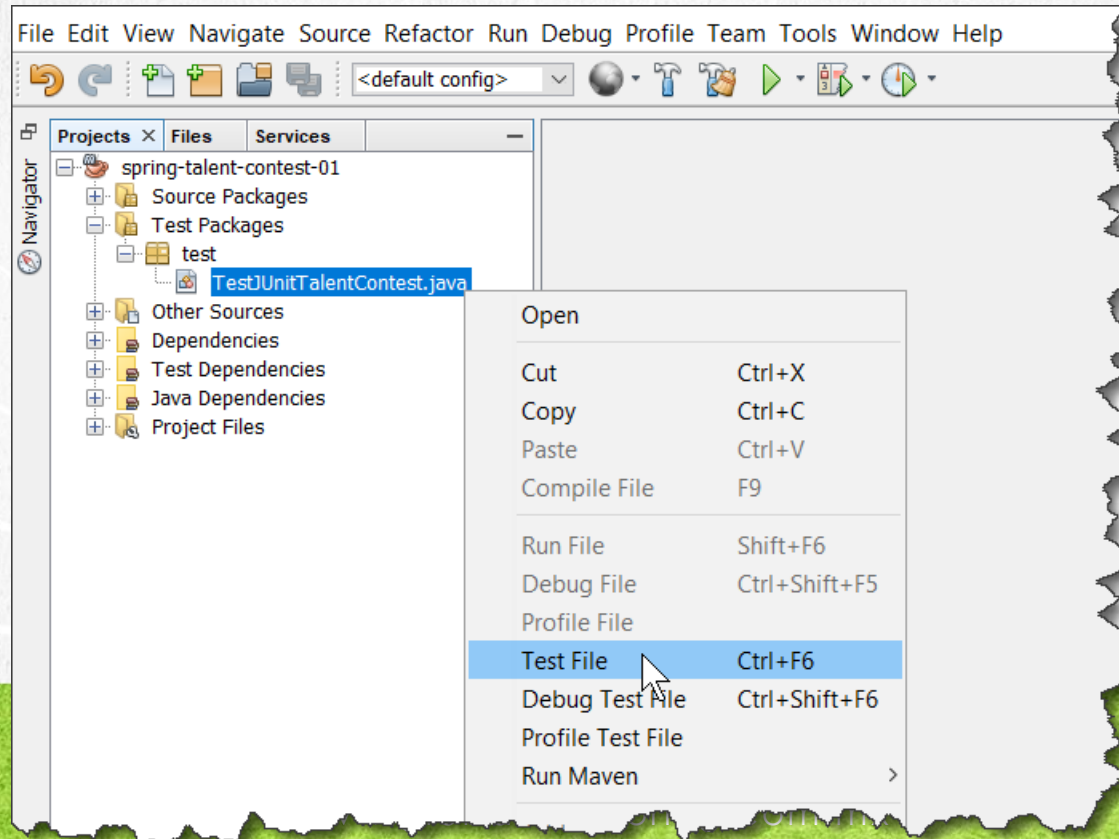
    log.info("Finish executing Juggler");
}
}
```

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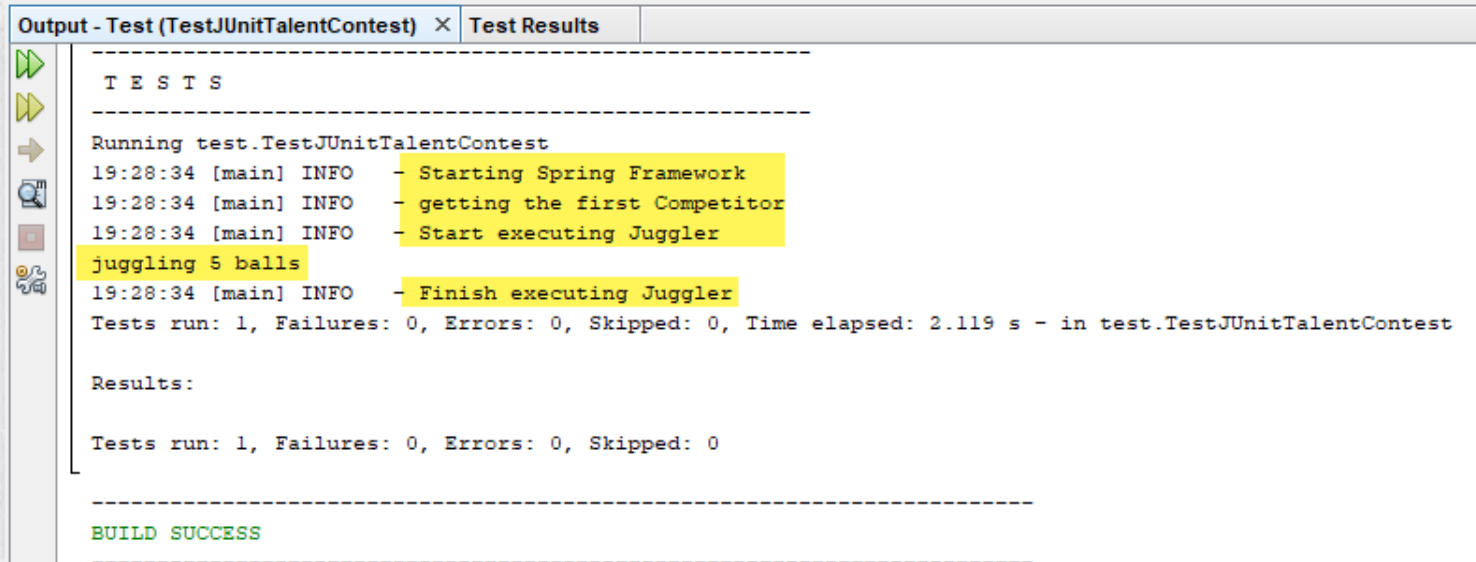
19. EXECUTE THE TEST

Execute the test:



19. EXECUTE THE TEST

We execute the test. The result is as follows:

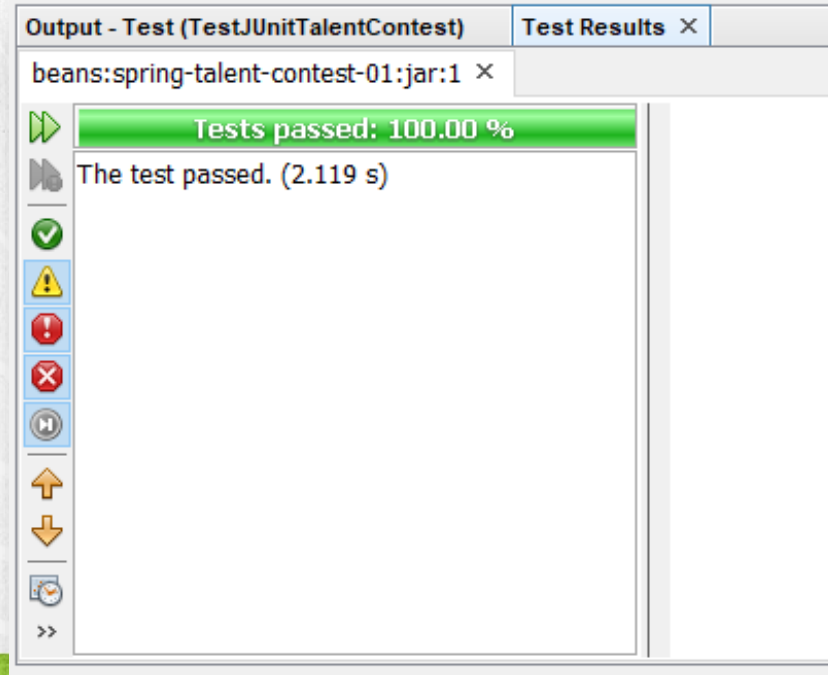


The screenshot shows an IDE's Output window with a tab titled "Output - Test (TestJUnitTalentContest) × Test Results". On the left side of the window, there is a vertical toolbar with icons for running (green play button), stepping through (yellow play button), and other debugging actions. The main area of the window displays the following text:

```
-----  
T E S T S  
-----  
Running test.TestJUnitTalentContest  
19:28:34 [main] INFO - Starting Spring Framework  
19:28:34 [main] INFO - getting the first Competitor  
19:28:34 [main] INFO - Start executing Juggler  
juggling 5 balls  
19:28:34 [main] INFO - Finish executing Juggler  
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 2.119 s - in test.TestJUnitTalentContest  
  
Results:  
  
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0  
  
-----  
BUILD SUCCESS  
-----
```


19. EXECUTE THE TEST

We execute the test. The result is as follows:



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EXERCISE CONCLUSION

With this exercise we have laid the foundations for many of the exercises that we will create throughout this course.

The base project of the Talent Competition will be developed through several lessons to put into practice the concepts of Spring that we will study.

In this first version we have created the Competitor interface, and a first class called Juggler.java. Later we did a test with both a standard Java class, but we also did a unit test to check the use of the Spring factory and retrieved the Spring bean defined in the applicationContext.xml file.

ONLINE COURSE

SPRING FRAMEWORK

By: Eng. Ubaldo Acosta



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