



Programming Fundamentals 1

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IntelliJ and Spot

Basic Spot Class in our new IDE

Basic Spot Class



classes · methods ·
behaviour · overloading



Agenda

→ The IntelliJ IDE

→ New Project Setup

→ Basic Spot Class

The IntelliJ IDE





IntelliJ - An industry standard IDE

www.jetbrains.com/idea/download/#section:mac

Developer Tools Team Tools Education Solutions Support Store

IntelliJ IDEA Coming in 2023.2 New UI Beta What's New Features Resources Pricing [Download](#)

Windows macOS Linux

IntelliJ IDEA Ultimate
The Leading Java and Kotlin IDE

[Download](#) [.dmg](#) ▼

Free 30-day trial

Select an installer for Intel or Apple Silicon

```
public static MultivariateDifferentialFunction ndDifferential(Final MultivariateFunction f, Final MultivariateVector point) {  
    return new MultivariateDifferentialFunction() {  
        @Override  
        public double value(Final double[] point) { return f.value(point); }  
        @Override  
        public DerivativeStructure value(Final DerivativeStructure[] point) {  
            // set up the dual derivatives  
            final double[] dpoint = new double[point.length];  
            for (int i = 0; i < point.length; i++) {  
                dpoint[i] = point[i].getReal();  
                if (point[i].getOrder() > 1) {  
                    throw new IllegalArgumentException("point[" + i + "].getOrder() > 1");  
                }  
            }  
            return new MultivariateDifferentialFunction(ndDifferential(f, point, dpoint));  
        }  
    };  
}
```

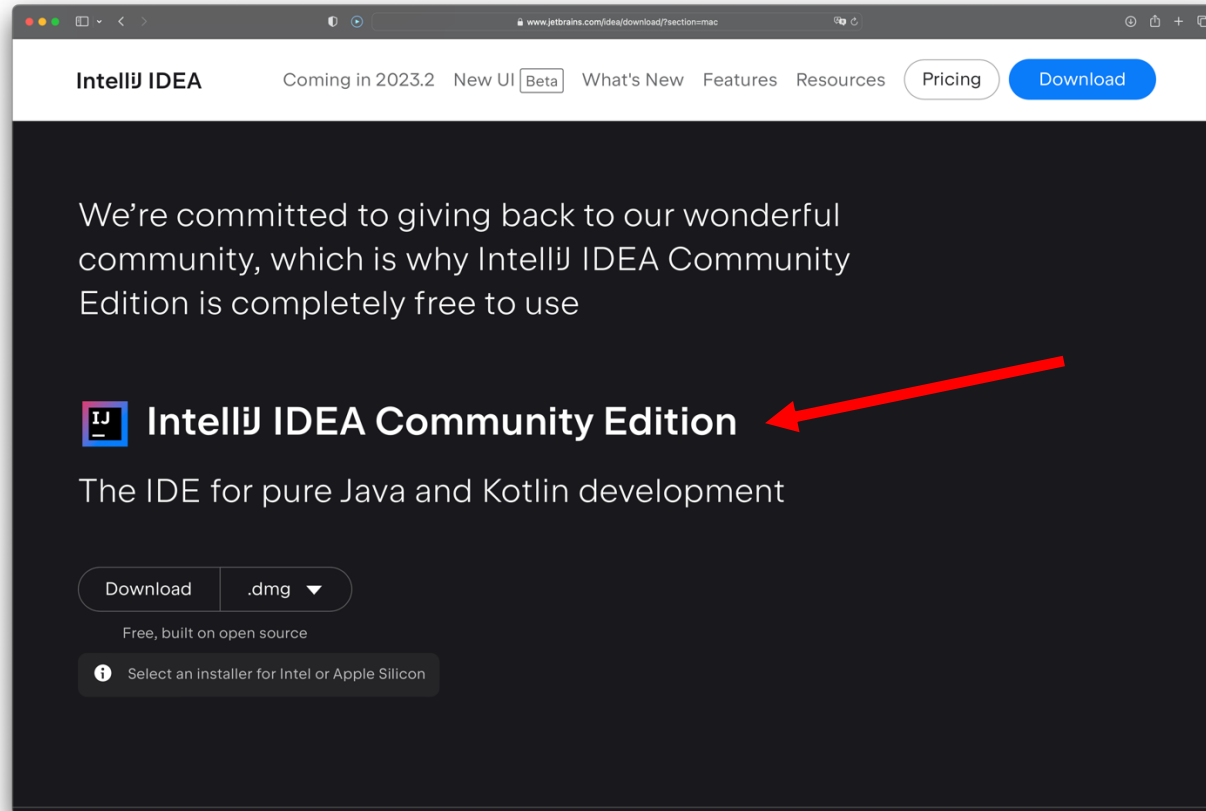
Version: 2023.14
Build: 231.9225.16
12 July 2023

[System requirements](#)
[Installation instructions](#)

[Other versions](#)
[Third-party software](#)



IntelliJ - An industry standard IDE

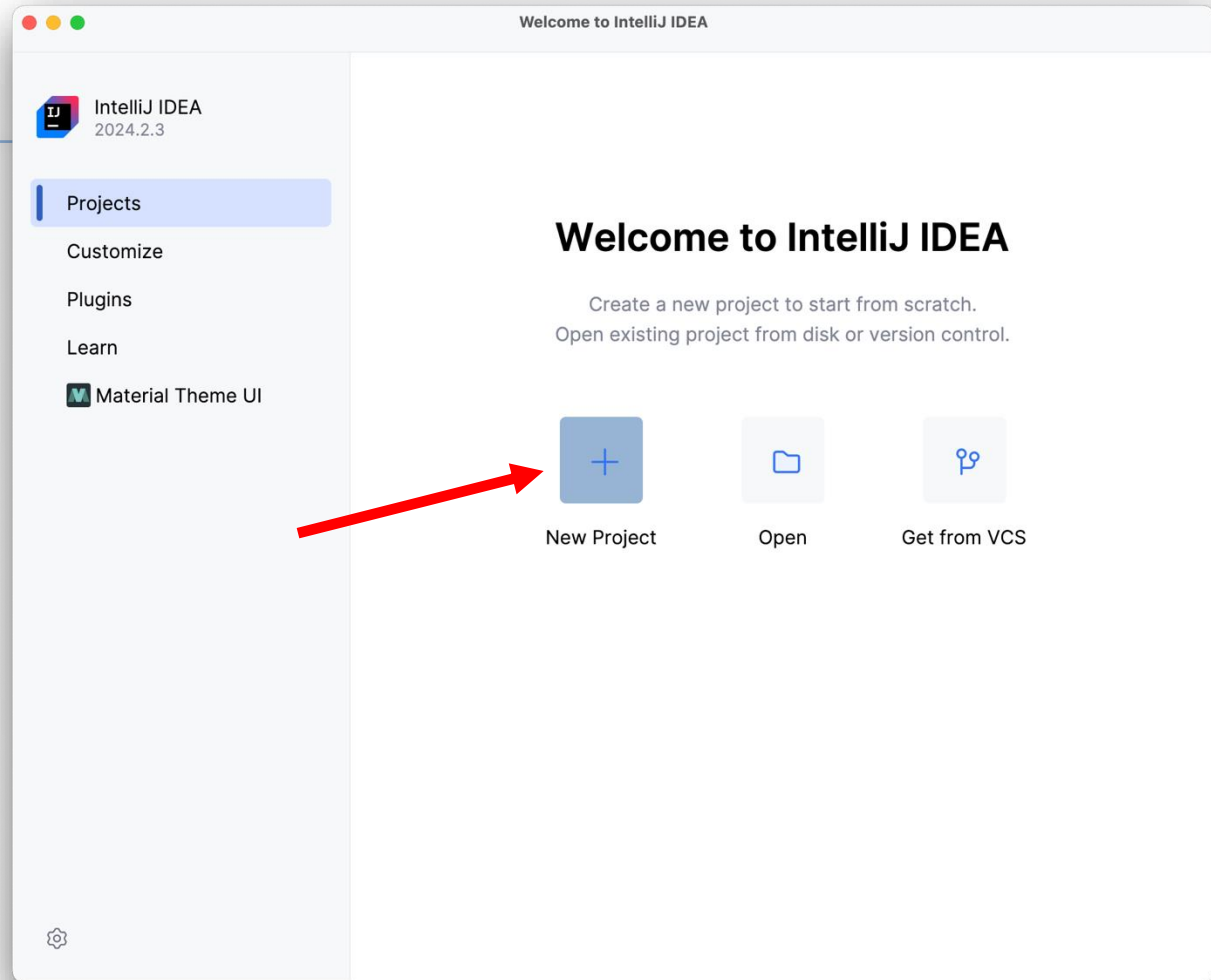


New Project Setup





Launch IntelliJ





New Java Project

New Project

Search:

New Project

- Java**
- Kotlin
- Groovy
- Empty Project

Generators

- Maven Archetype
- JavaFX
- Spring
- Compose for Desk...

[More via plugins...](#)

Name:

Location:

Project will be created in: ~/Downloads/dev/java_apps/SpotConsoleV1.0

☐ Create Git repository

Build system: **IntelliJ** Maven Gradle

JDK:

☒ Add sample code

☒ Generate code with onboarding tips

> Advanced Settings

? CANCEL CREATE



New Java Project

New Project

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More via plugins...

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Project will be created in: ~/Downloads/dev/java_apps/SpotConsoleV1.0

☐ Create Git repository

Build system: IntelliJ Maven Gradle

JDK: 23 Oracle OpenJDK 23 - aarch64

☒ Add sample ☒ Generate

> Advanced Settings

Registered JDKs

- 21 Oracle OpenJDK 21.0.1 - aarch64
- 23 Oracle OpenJDK 23 - aarch64

Download JDK...

Add JDK from Disk...

Detected JDKs

- Eclipse Temurin 21.0.1 - aarch64 /Users/ddrohan/Library/Java/JavaVirtualMachines/temurin-21.0.1/Contents/Home
- Oracle OpenJDK 20.0.1 - aarch64 /Users/ddrohan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home
- Amazon Corretto 17.0.7 - aarch64 /Users/ddrohan/Library/Java/JavaVirtualMachines/corretto-17.0.7/Contents/Home
- Eclipse Temurin 11.0.19 - aarch64 /Users/ddrohan/.gradle/jdks/adoptium-11-aarch64-hotspot-mac/Contents/Home

? CANCEL CREATE



New Java Project

New Project

Java

Kotlin

Groovy

Empty Project

Generators

Maven Archetype

JavaFX

Spring

Compose for Desk...

More via plugins...

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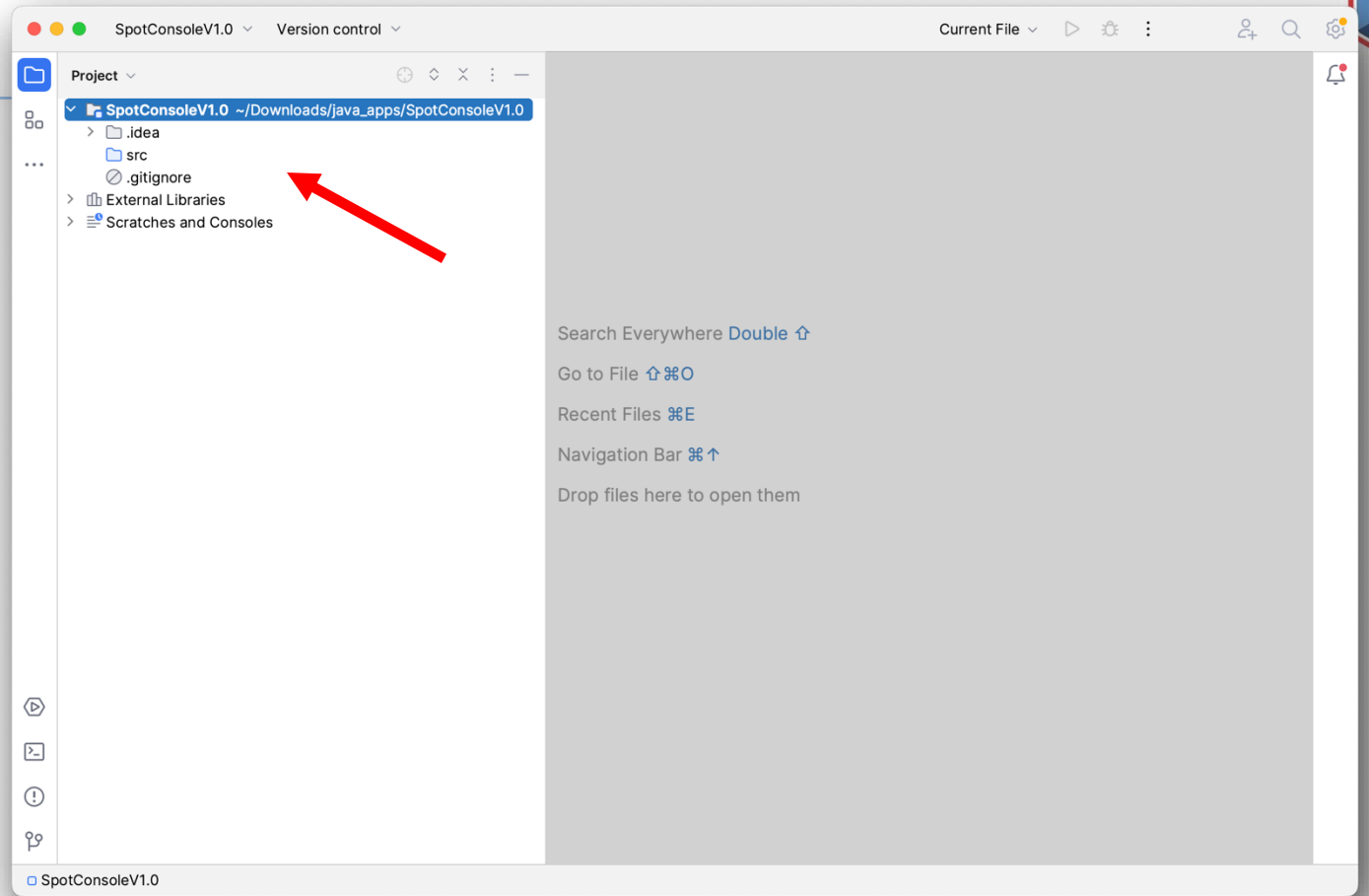
☒ Add sample code

☒ Generate code with onboarding tips

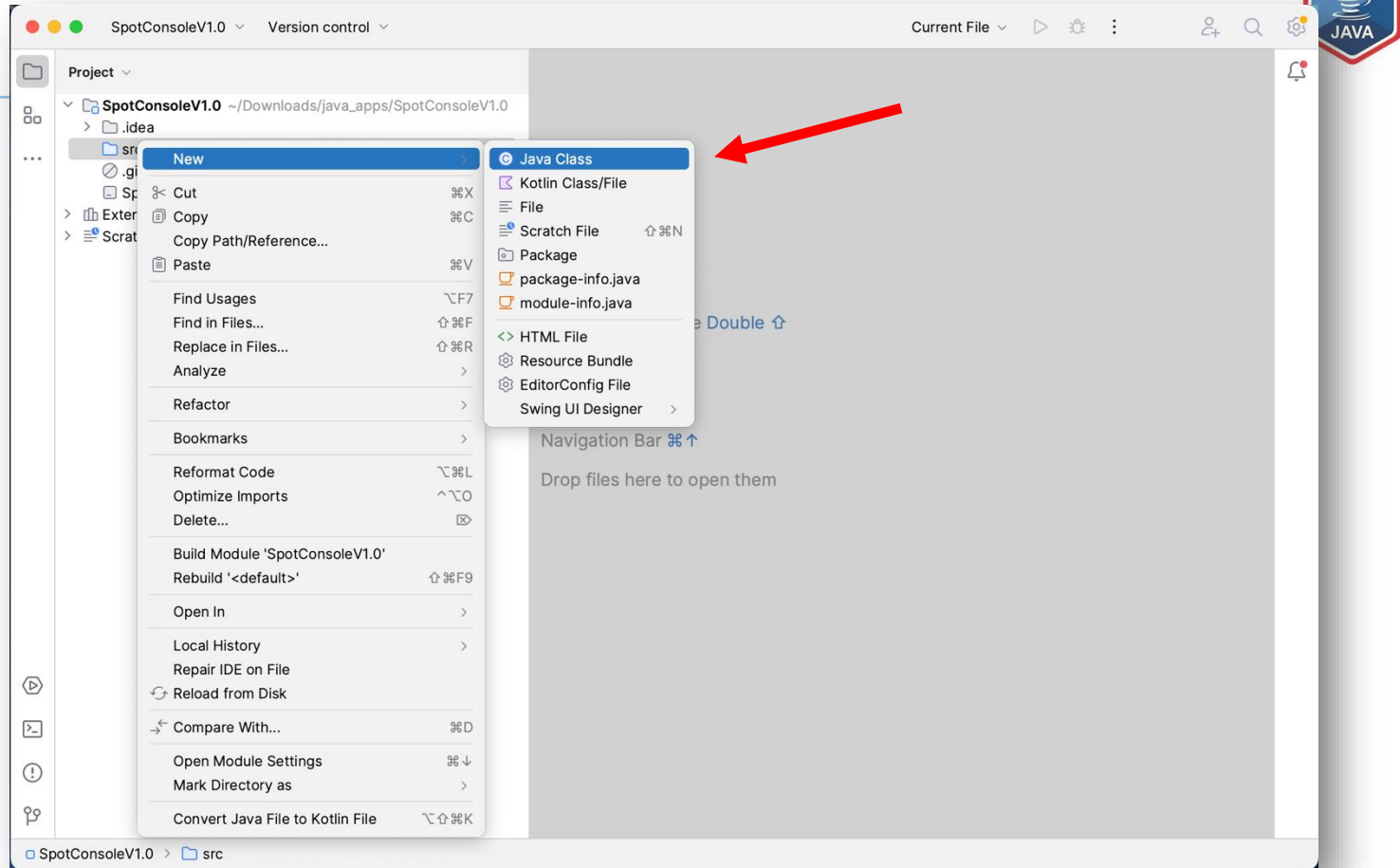
> Advanced Settings

CANCEL CREATE

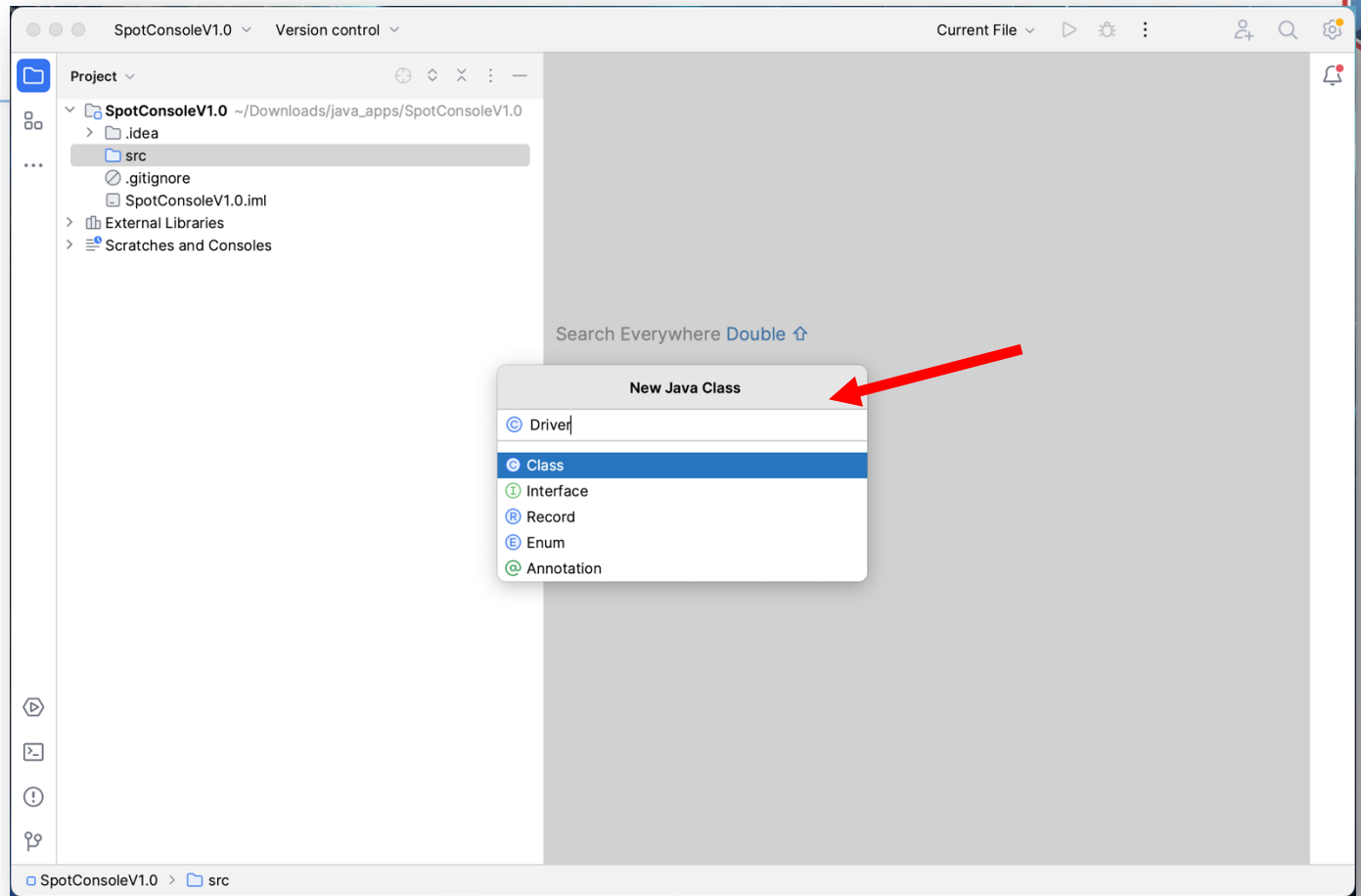
New Project



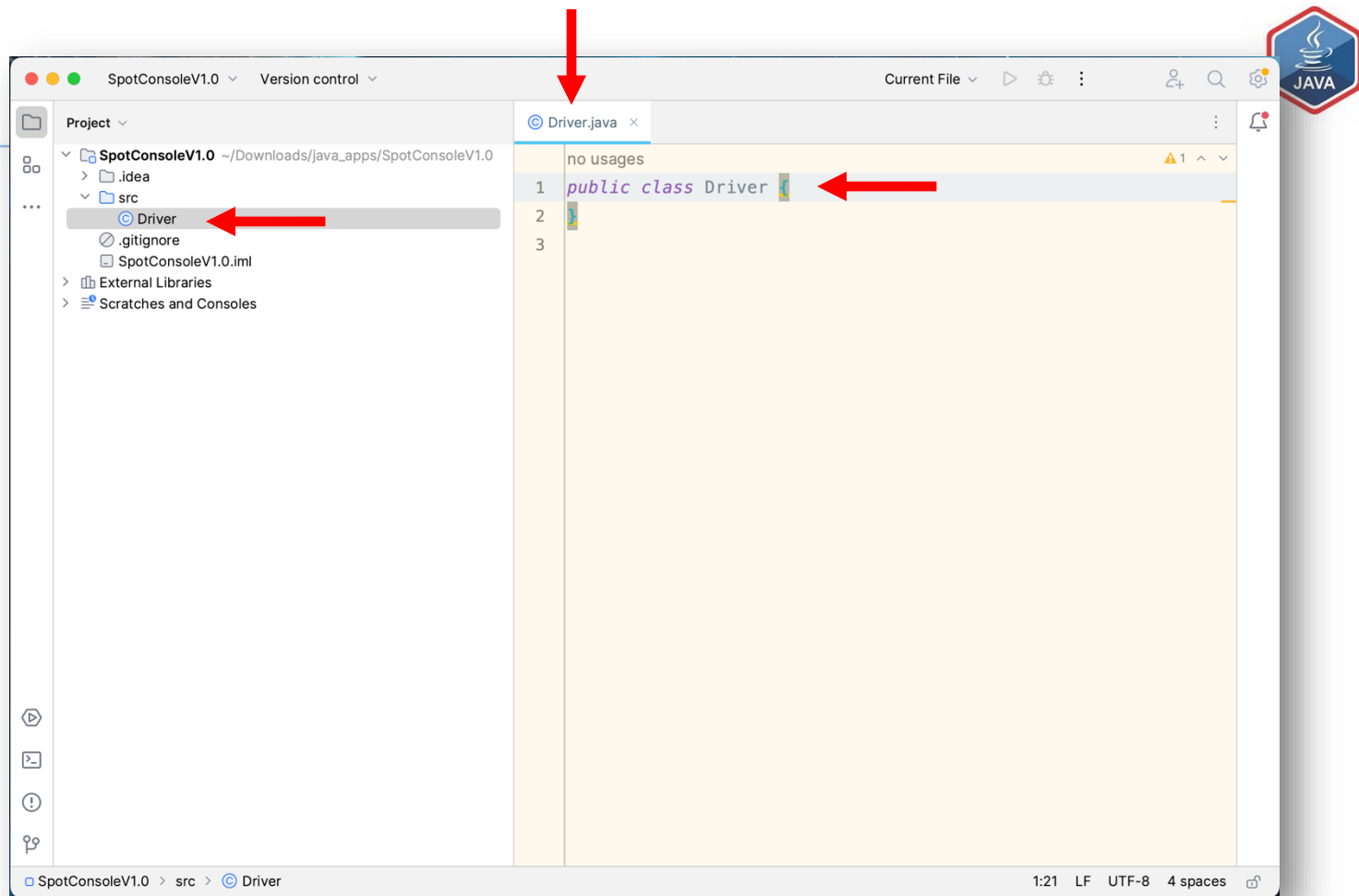
Create New Class



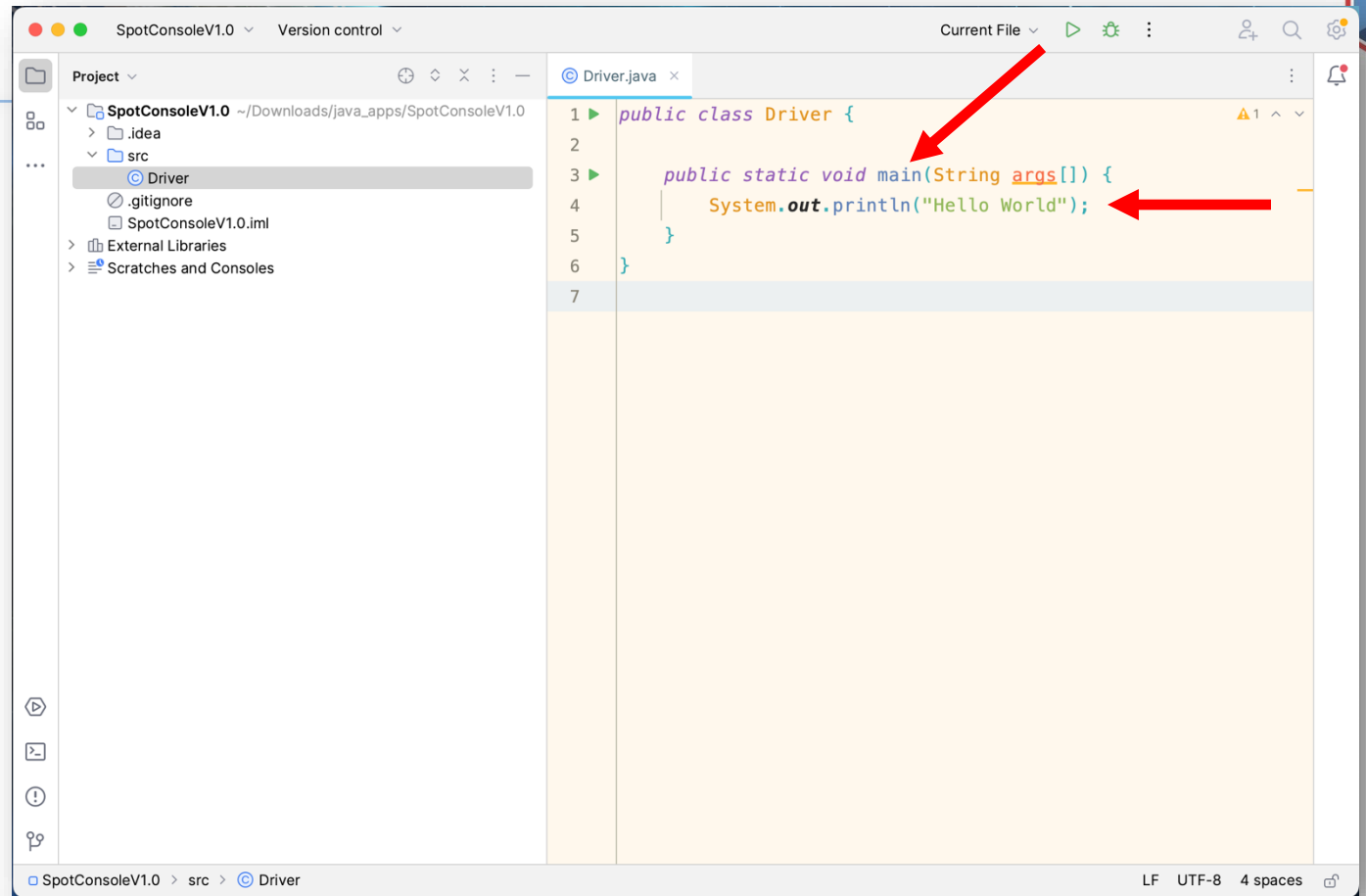
Create New Class Driver



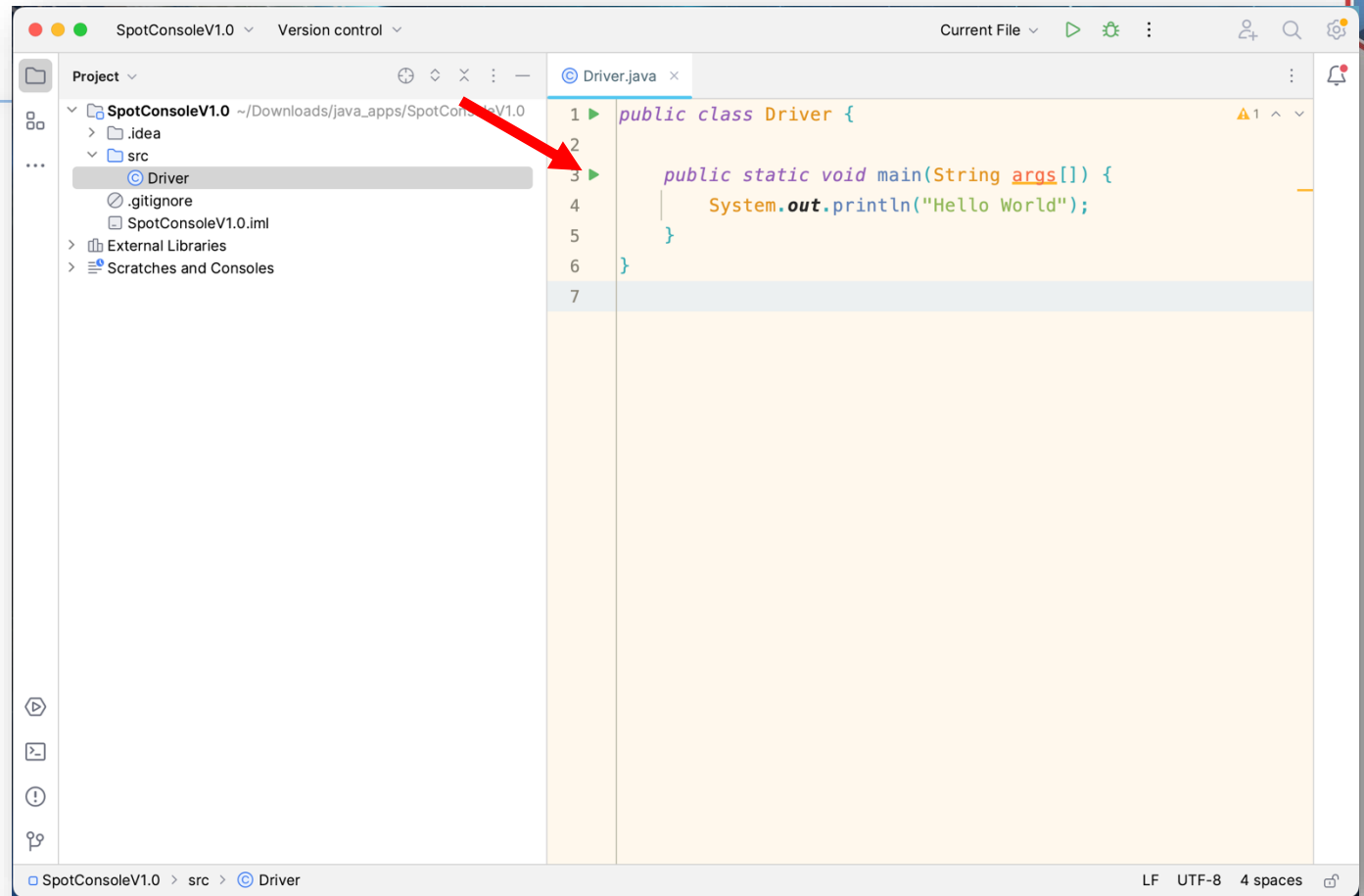
Create New Class Driver



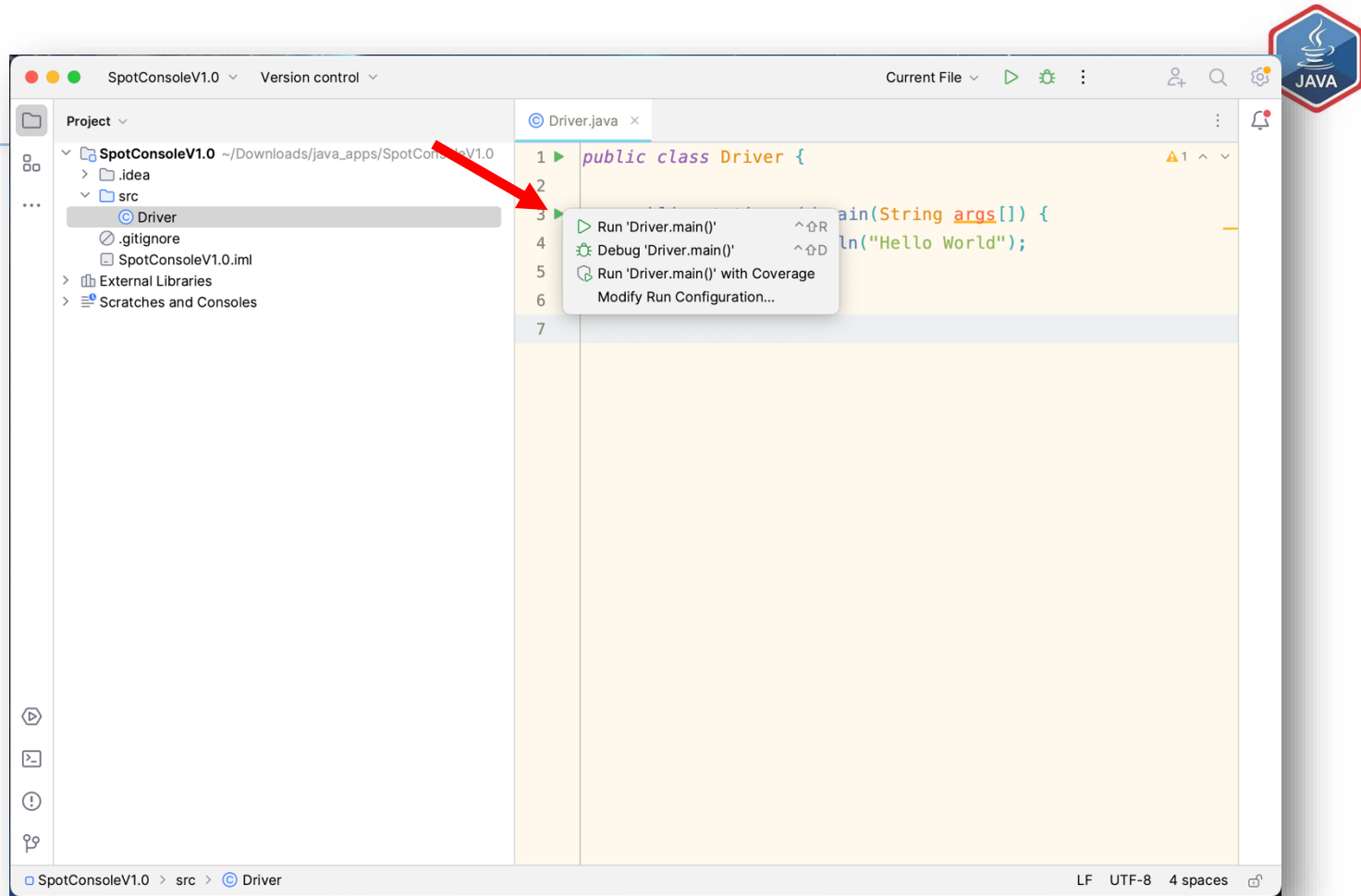
main() method



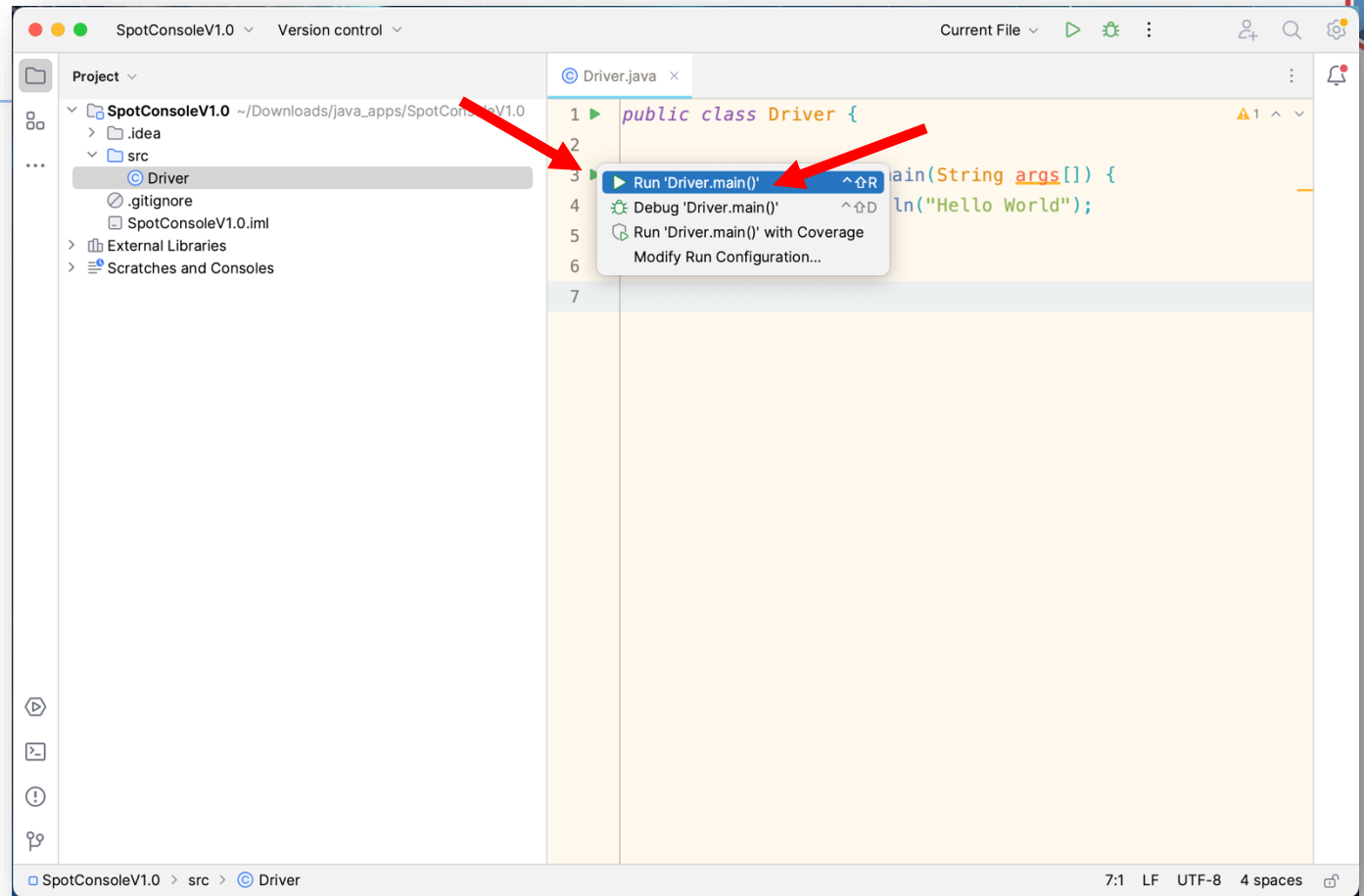
Run App



Run App



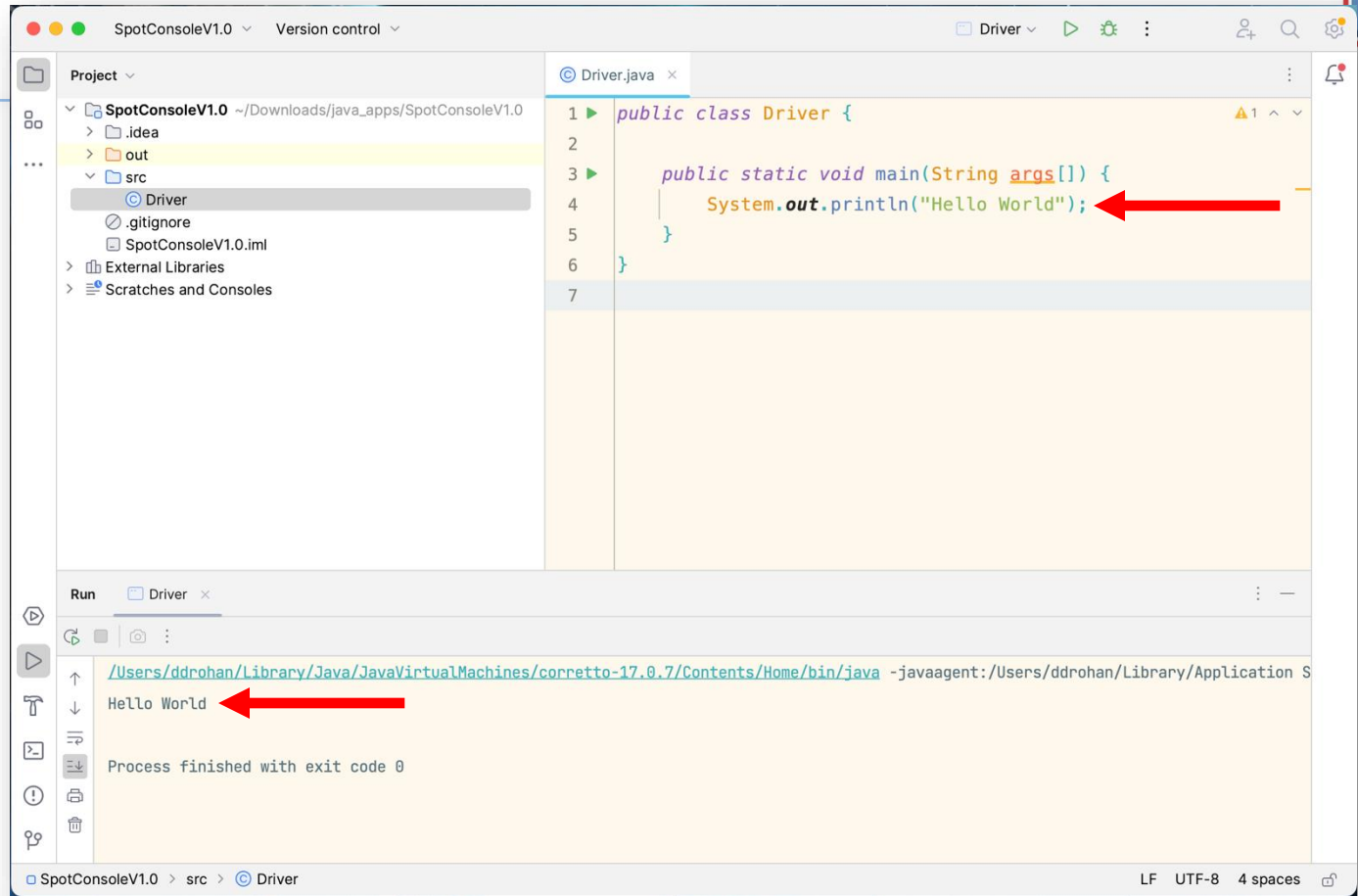
Run App





Run App

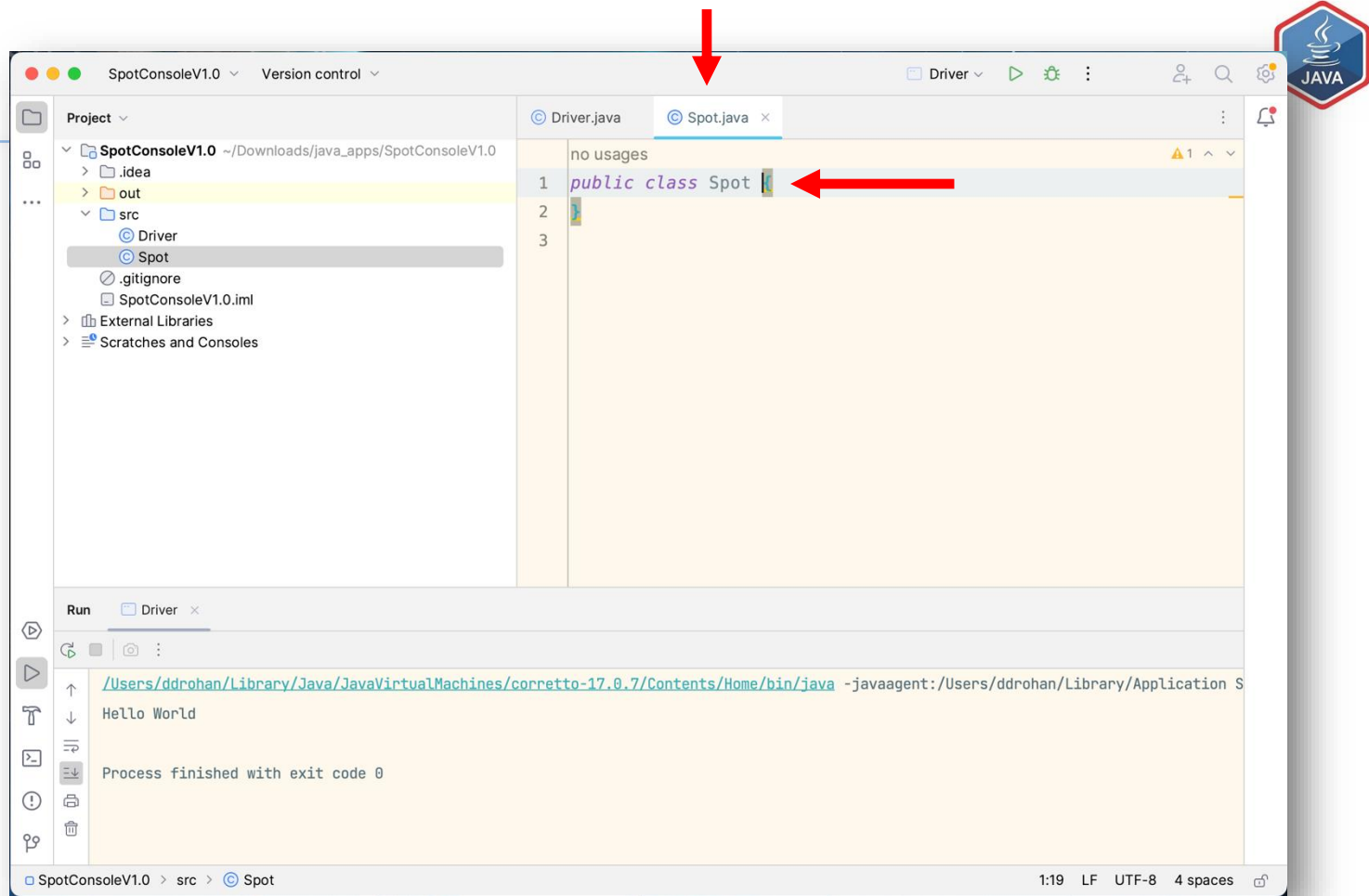
Console Output



Basic Spot Class



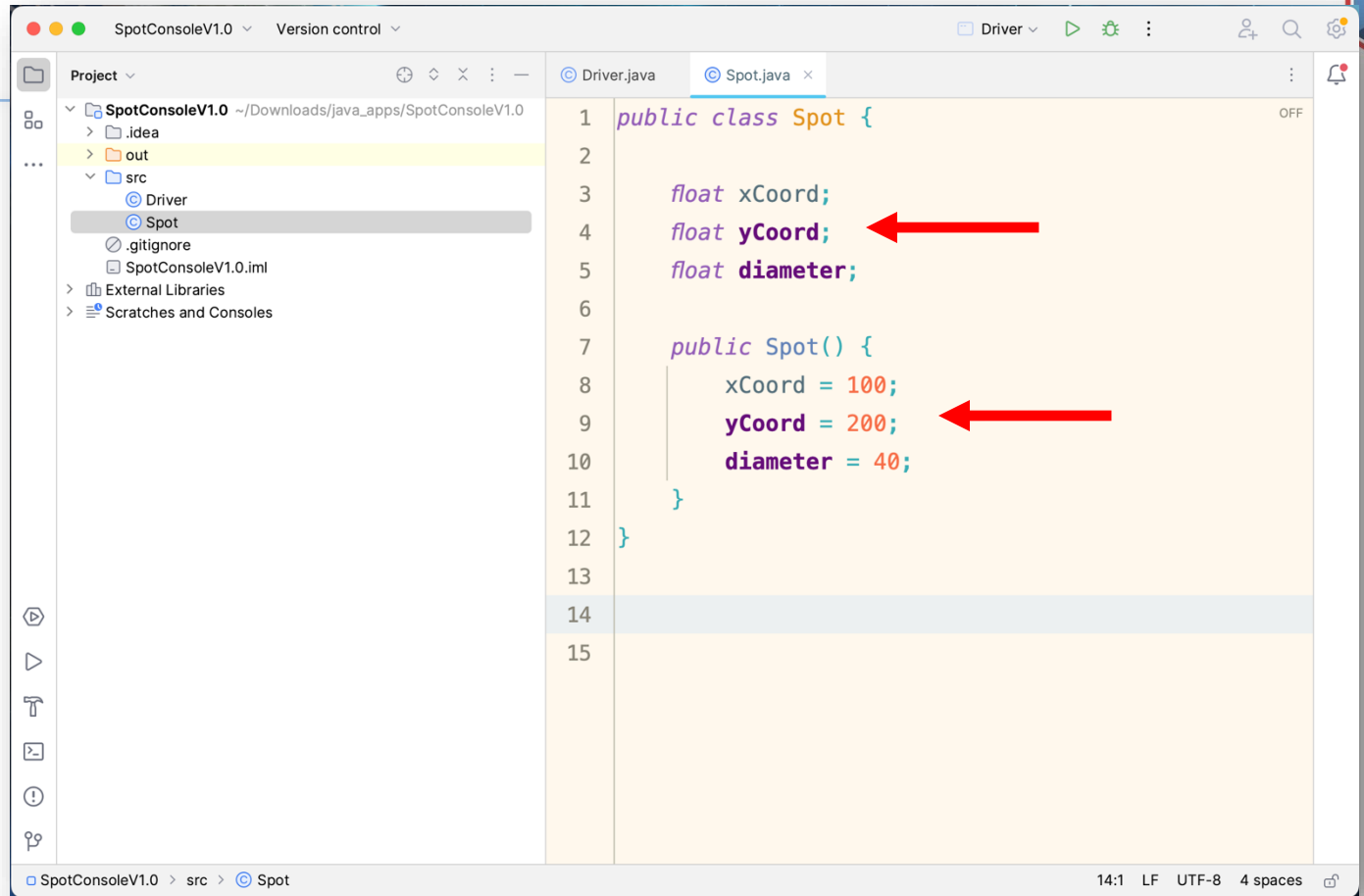
New Spot Class



Three fields:

- xCoord
- yCoord
- diameter

Default
constructor to
initialise the
fields with
starting data



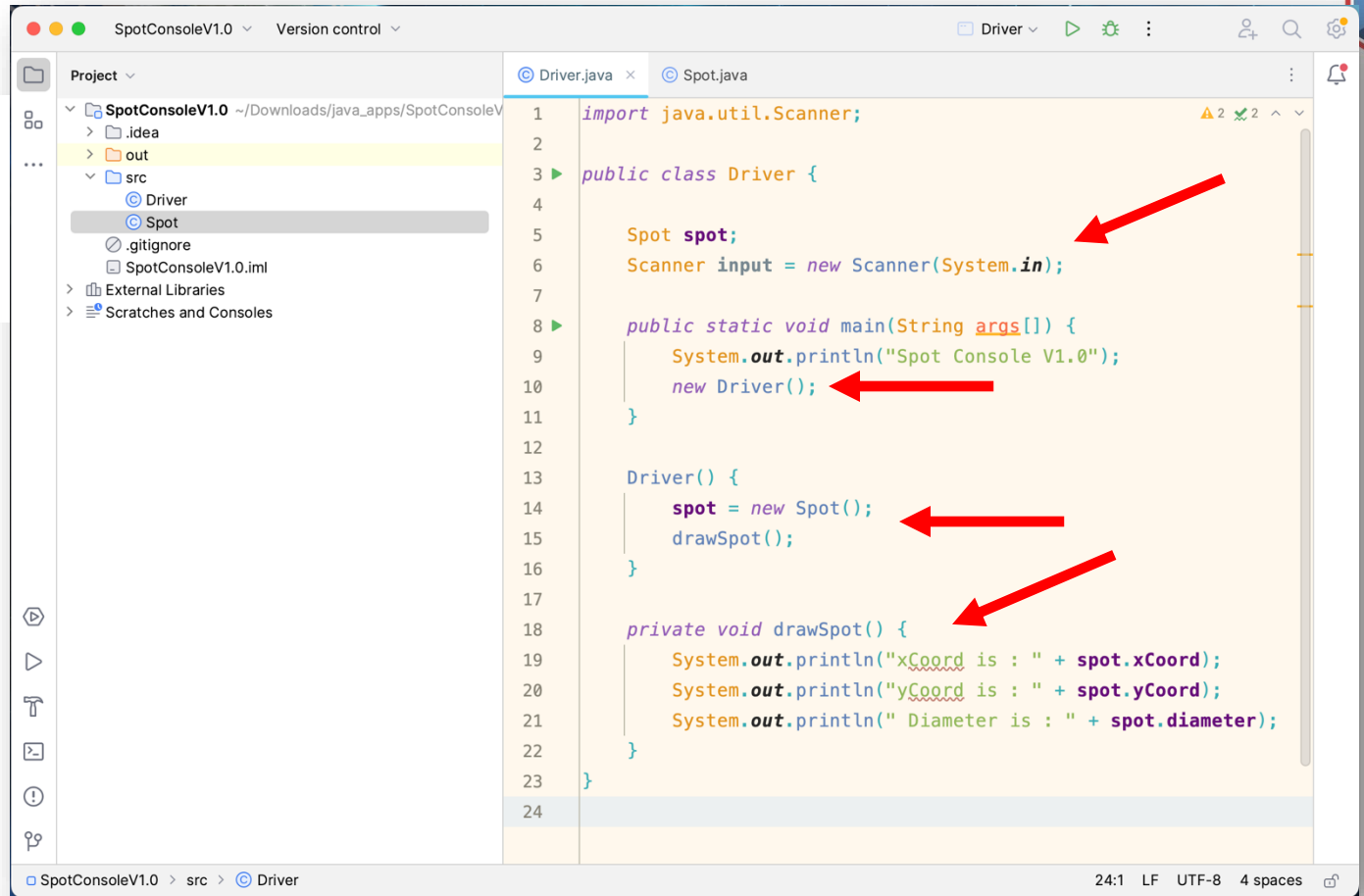
```
1 public class Spot {
2
3     float xCoord;
4     float yCoord;
5     float diameter;
6
7     public Spot() {
8         xCoord = 100;
9         yCoord = 200;
10        diameter = 40;
11    }
12 }
13
14
15
```

The screenshot shows an IDE window for a project named 'SpotConsoleV1.0'. The 'Project' view on the left shows the file structure with 'Spot.java' selected. The editor displays the code for 'Spot.java', which defines a 'Spot' class with three float fields: 'xCoord', 'yCoord', and 'diameter'. A default constructor 'Spot()' is provided, initializing 'xCoord' to 100, 'yCoord' to 200, and 'diameter' to 40. Two red arrows highlight the field declarations and their corresponding initial values in the constructor.

New Driver Class

Includes the
main() method

main() method
calls the
Driver
constructor

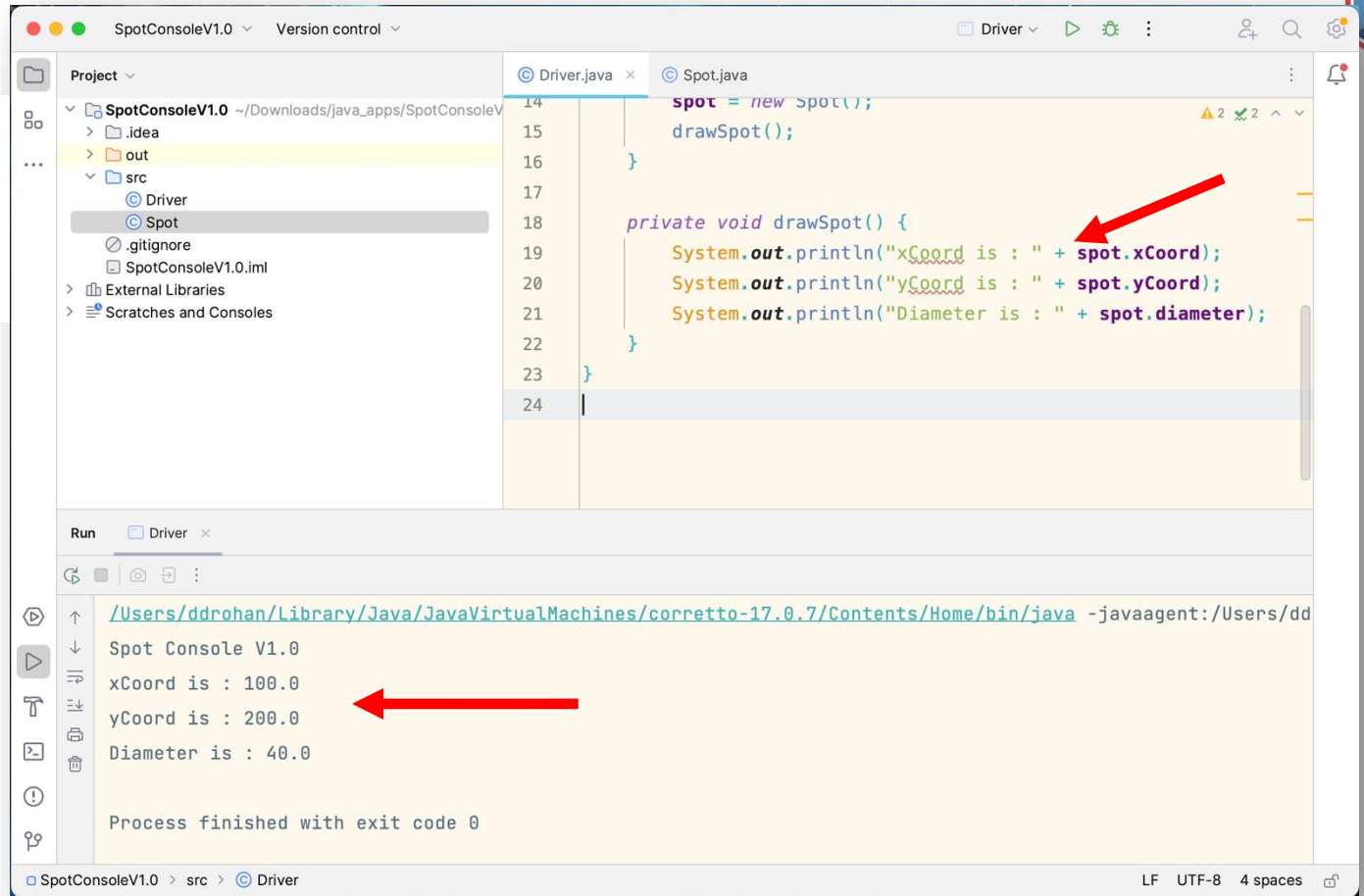


```
1 import java.util.Scanner;
2
3 public class Driver {
4
5     Spot spot;
6     Scanner input = new Scanner(System.in);
7
8     public static void main(String args[]) {
9         System.out.println("Spot Console V1.0");
10        new Driver();
11    }
12
13    Driver() {
14        spot = new Spot();
15        drawSpot();
16    }
17
18    private void drawSpot() {
19        System.out.println("xCoord is : " + spot.xCoord);
20        System.out.println("yCoord is : " + spot.yCoord);
21        System.out.println(" Diameter is : " + spot.diameter);
22    }
23
24 }
```

The screenshot shows an IDE window for a project named 'SpotConsoleV1.0'. The 'Project' sidebar on the left shows the file structure with 'Driver' and 'Spot' classes under the 'src' directory. The main editor displays 'Driver.java' with the following code. Four red arrows highlight specific parts of the code: the first arrow points to the 'Spot spot;' declaration on line 5; the second arrow points to the 'new Driver();' call on line 10; the third arrow points to the 'spot = new Spot();' line in the constructor on line 14; and the fourth arrow points to the 'drawSpot()' method call on line 15. The status bar at the bottom indicates the file is at line 24, column 1, using LF line endings, UTF-8 encoding, and 4 spaces for indentation.

New Driver Class

Console
Output



The screenshot shows an IDE window for a project named "SpotConsoleV1.0". The project structure on the left includes a "src" folder containing "Driver" and "Spot" classes. The "Driver.java" file is open, showing a "main" method that creates a "Spot" object and calls "drawSpot()". The "Spot.java" file is also open, showing a "drawSpot()" method that prints the coordinates and diameter of the spot. A red arrow points from the "spot.xCoord" property access in the "drawSpot()" method to the console output.

```
Spot Console V1.0
xCoord is : 100.0
yCoord is : 200.0
Diameter is : 40.0

Process finished with exit code 0
```

Questions?



Thanks.

A hand-drawn smiley face with a wide, curved mouth and two dots for eyes. It has a thick black outline and is positioned below the word "Thanks." within a yellow oval frame. A thick blue curved line arches over the entire graphic.