

Visual Studio Code Tutorial

What's Visual Studio Code?

- It's a free software / open source platform-independent software tool.
- Despite Eclipse and NetBeans, VS Code is a source-code editor which can be used with a lot of programming languages, like C, C++, Java, Python, Haskell...
- It includes support for debugging and GIT.
- Visual Studio can be extended via extensions available through a central repository. This includes additions to the editor and language support.

Getting Visual Studio Code

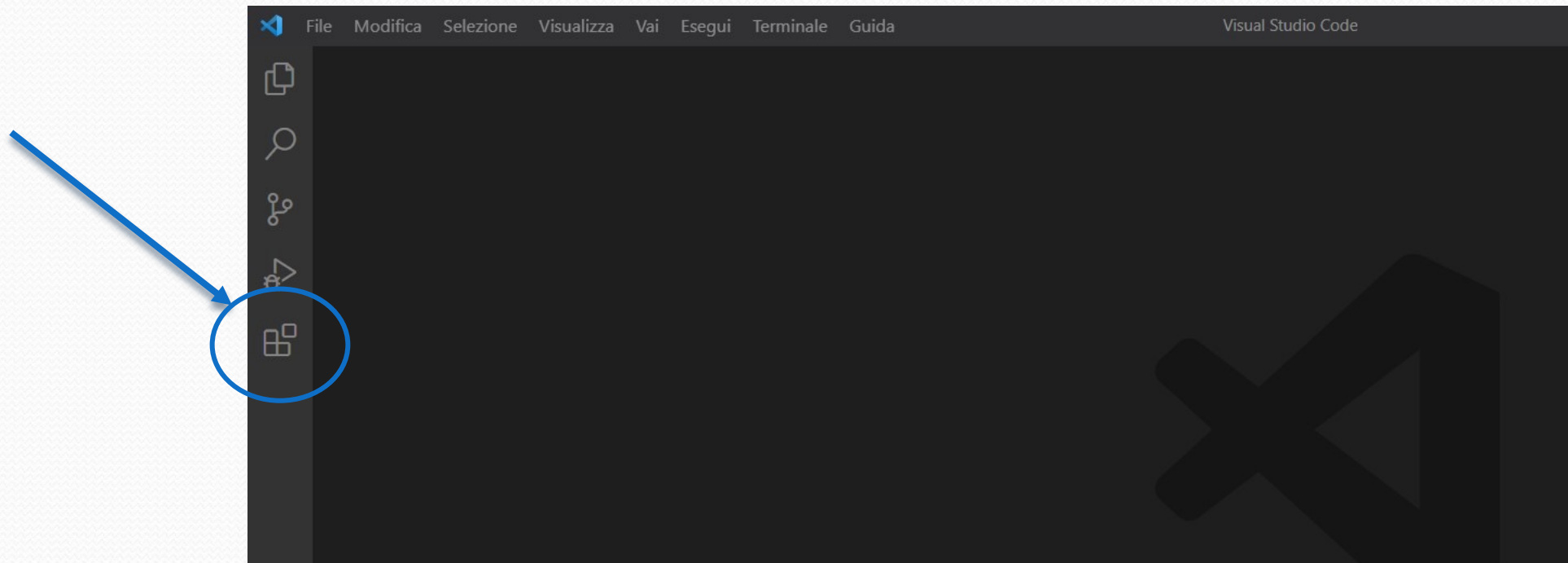
- On your laptop
 - Download the latest version at:
 - <https://code.visualstudio.com/Download>
 - Follow the instructions.

Java

- Once VS Code has been installed, you need to download a Java Development Kit (JDK).
 - If you haven't already, go to the link and download JDK 11 or higher:
 - <https://www.oracle.com/java/technologies/downloads/>

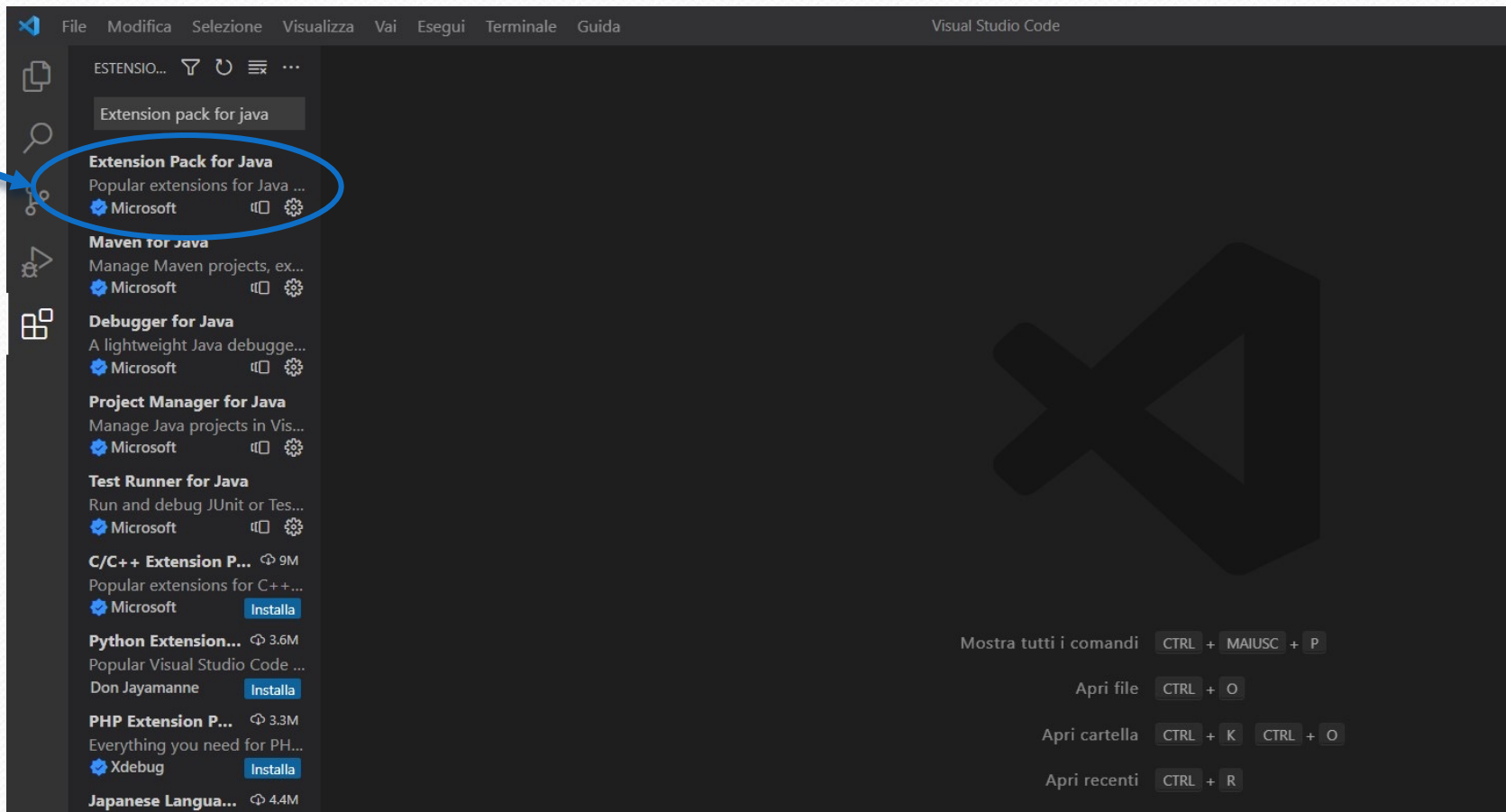
Extensions

- VS Code extensions let you add languages, debuggers, and tools to your installation to support your development workflow.
- To install an extension, you need to click on the extension icon on the left:



Extensions

- Search for «Extension Pack for Java» by Microsoft:



Extensions

- Click on Install. You can disable this feature whenever you like.

The screenshot shows the Visual Studio Code interface with the Extensions view open. The search bar contains 'Extension pack for java'. The left sidebar lists several Java-related extensions, including 'Extension Pack for Java', 'Maven for Java', 'Debugger for Java', 'Project Manager for Java', 'Test Runner for Java', 'C/C++ Extension P...', and 'Python Extension...'. The main panel displays the details for the 'Extension Pack for Java' by Microsoft, version v0.25.1. The extension is described as 'Popular extensions for Java development that provides Java IntelliSense, debugging, testing, Maven/Gradle support, project manager...'. The 'Disabilita' button is circled in red. Below the main extension details, there is a section for 'Pacchetto di estensione (6)' which lists other related extensions: 'Language Support for Java(TM) by Red Hat', 'Debugger for Java', 'Test Runner for Java', and 'Maven for Java'. The right sidebar shows 'Categorie' (Programming Languages, Debuggers, Extension Packs) and 'Risorse estensione' (Marketplace, Repository).

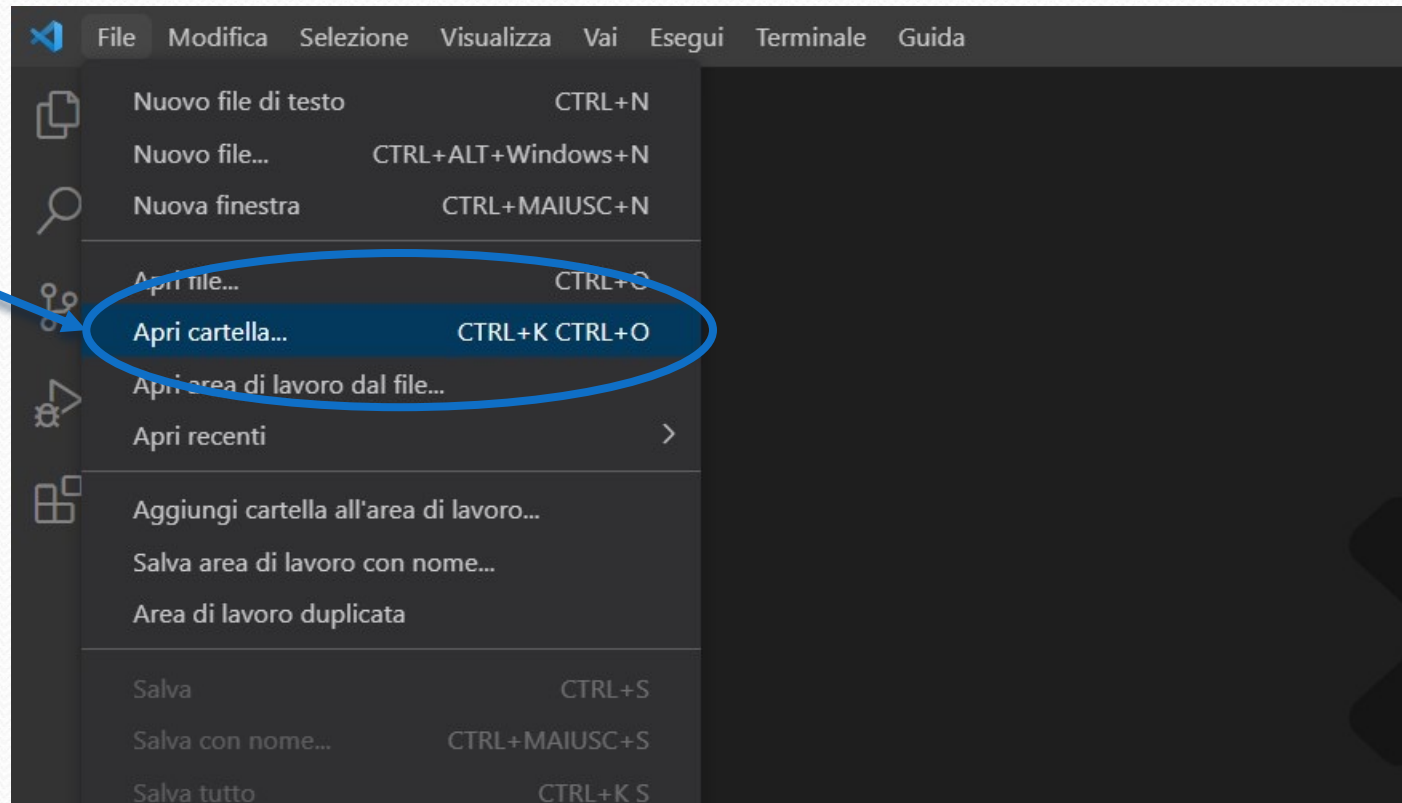
Extensions

- The «Extension Pack for Java» includes all the extensions that you need for Java, among which:
 - Language Support for Java by Red Hat
 - Debugger for Java
 - Project Manager for Java

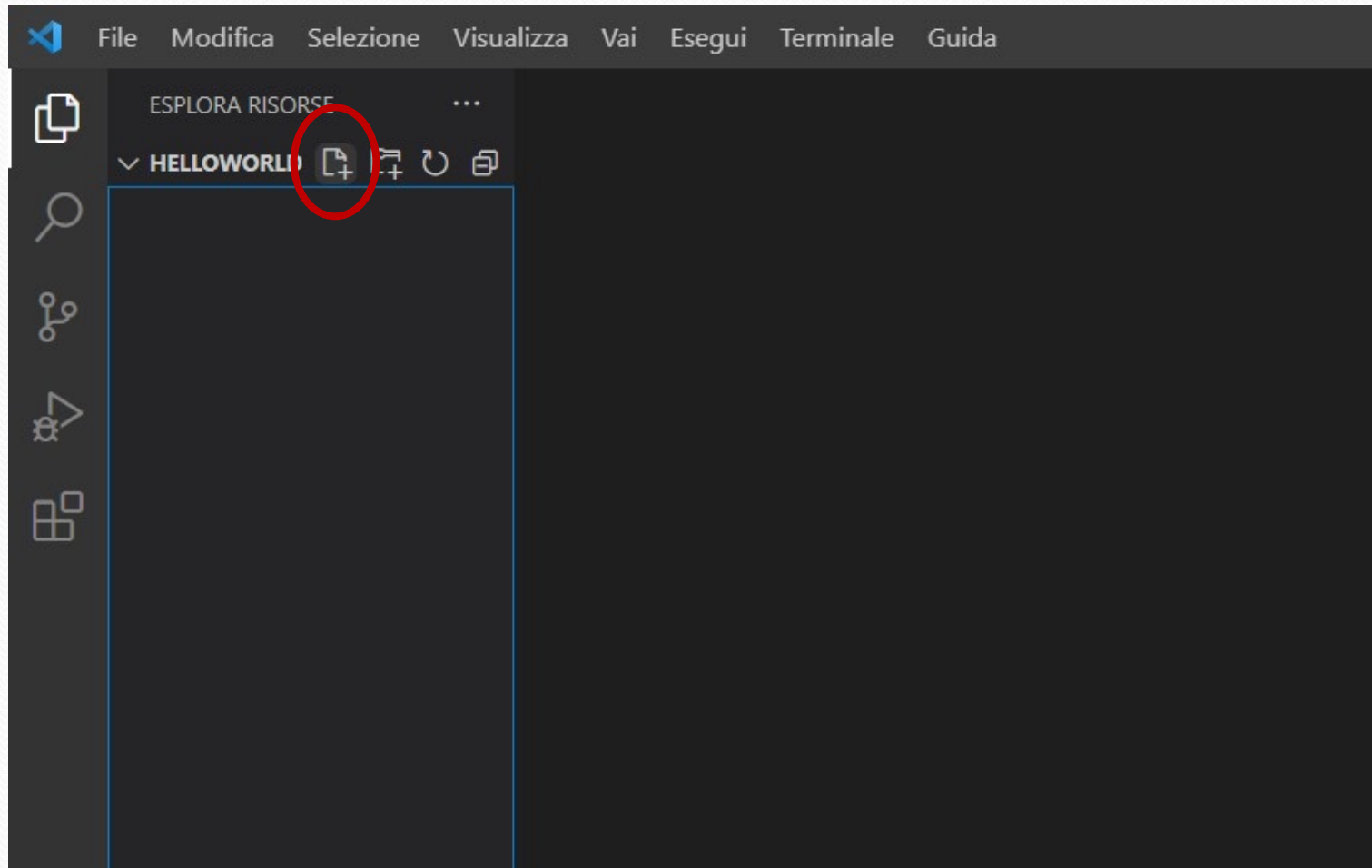
Let's start with basic stuff

Step1: Create a folder. This will contain the code.

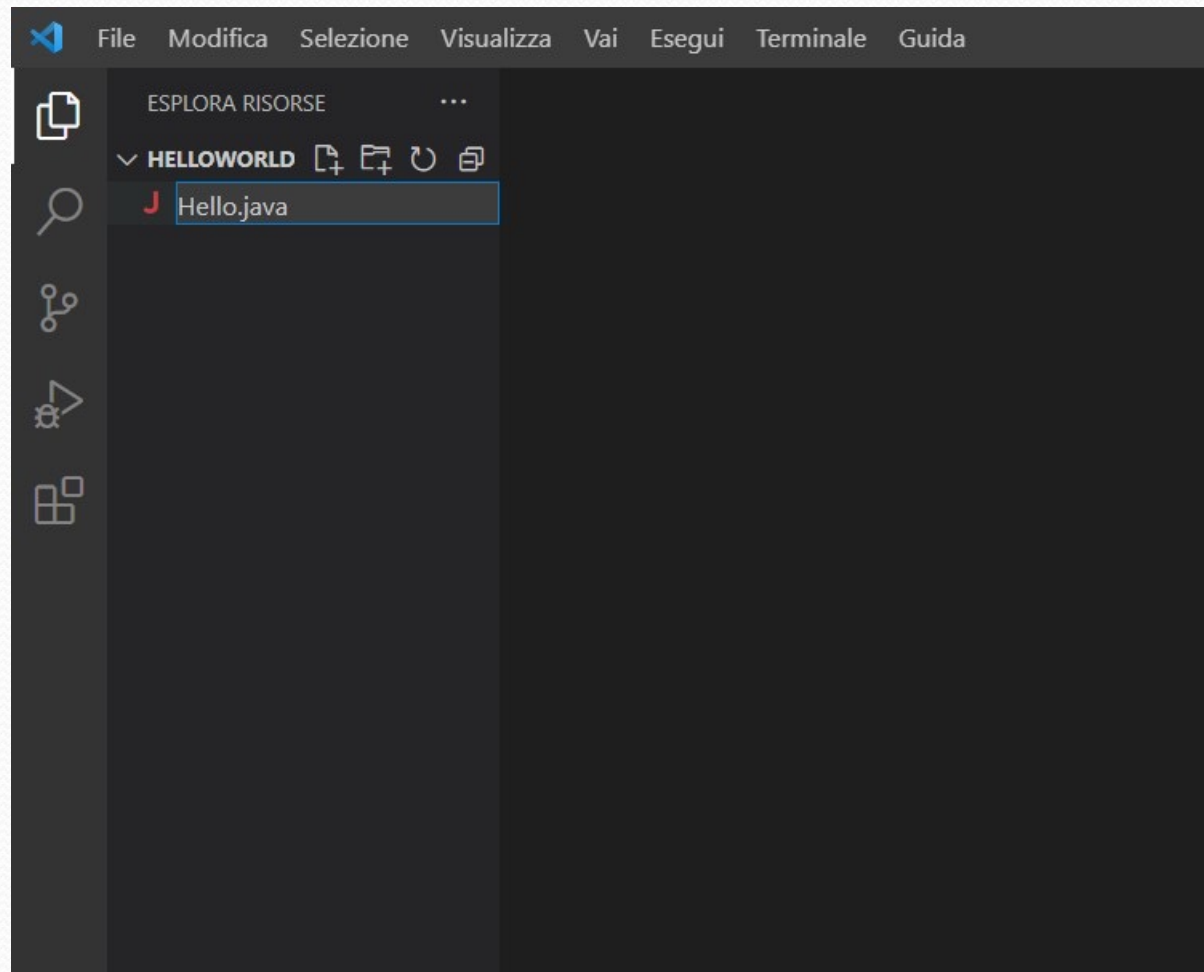
Step2: Open VS Code and go to «File» and then «Open Folder».



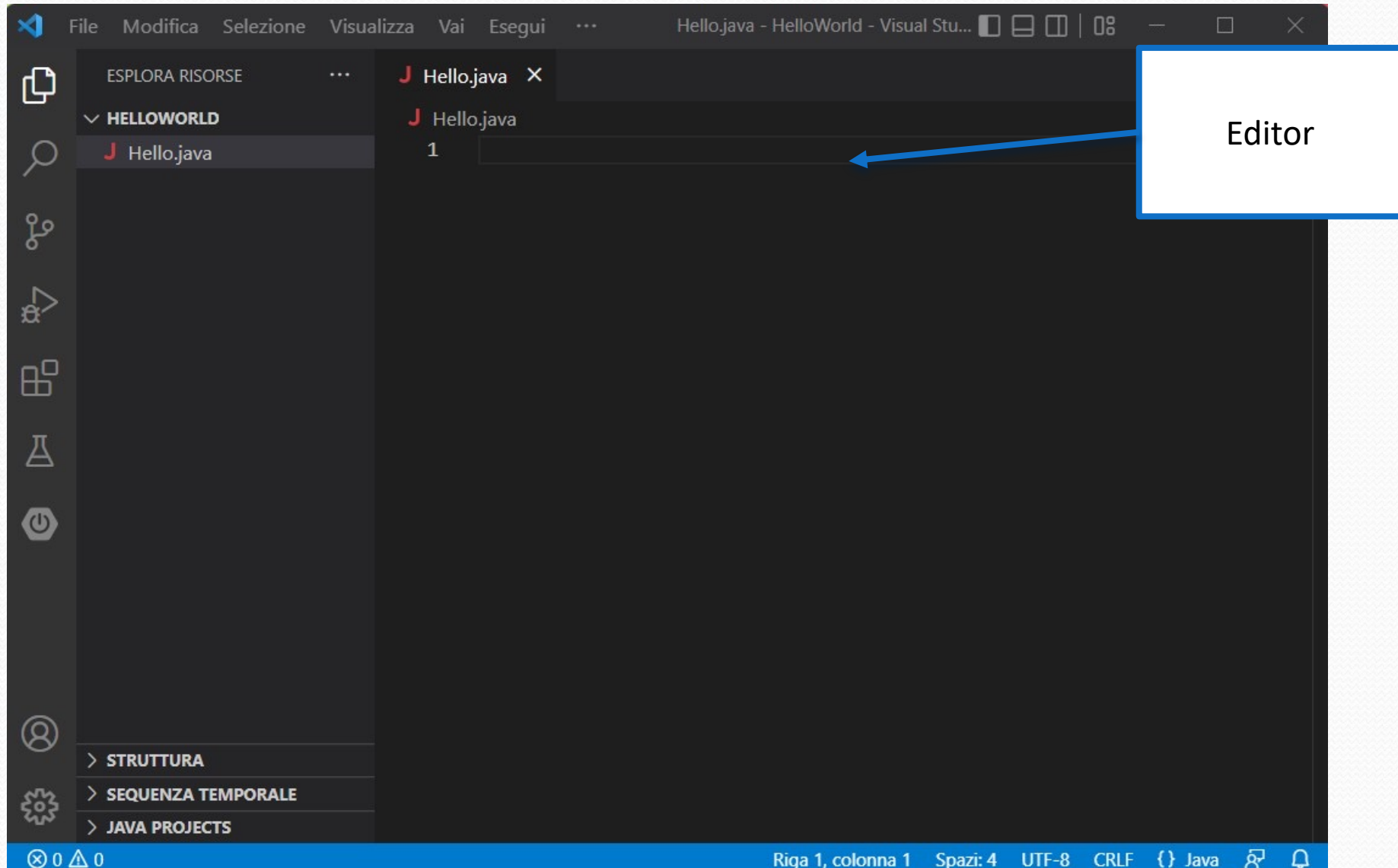
Step3: On the left you can see the explorer. Click on the «new file» icon.



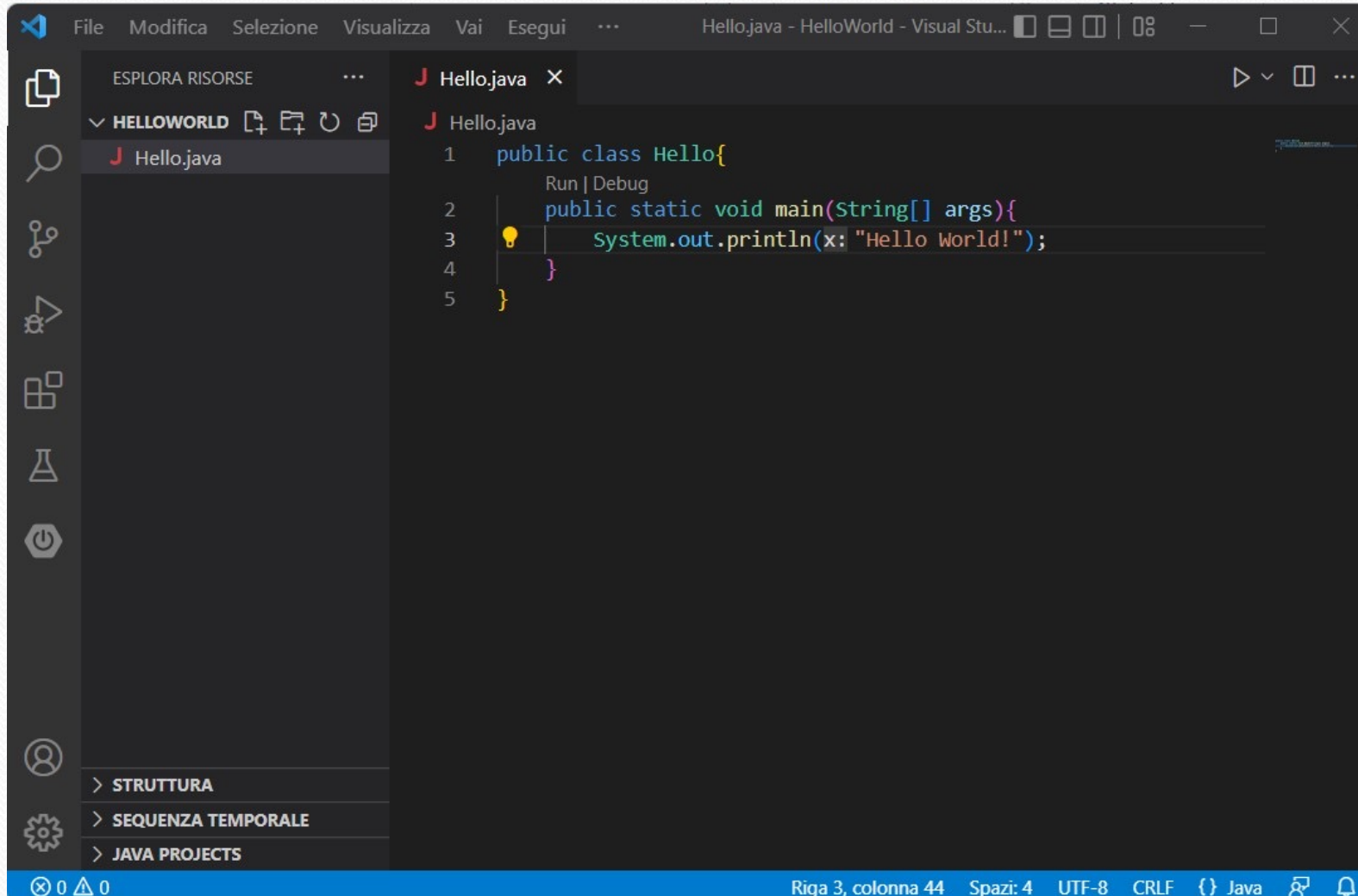
Step4: enter the file name. Remember the java extension.



Now that you have successfully created a file, you can start coding.



Step6: write your class and your main method. Remember that file and class names must be the same.

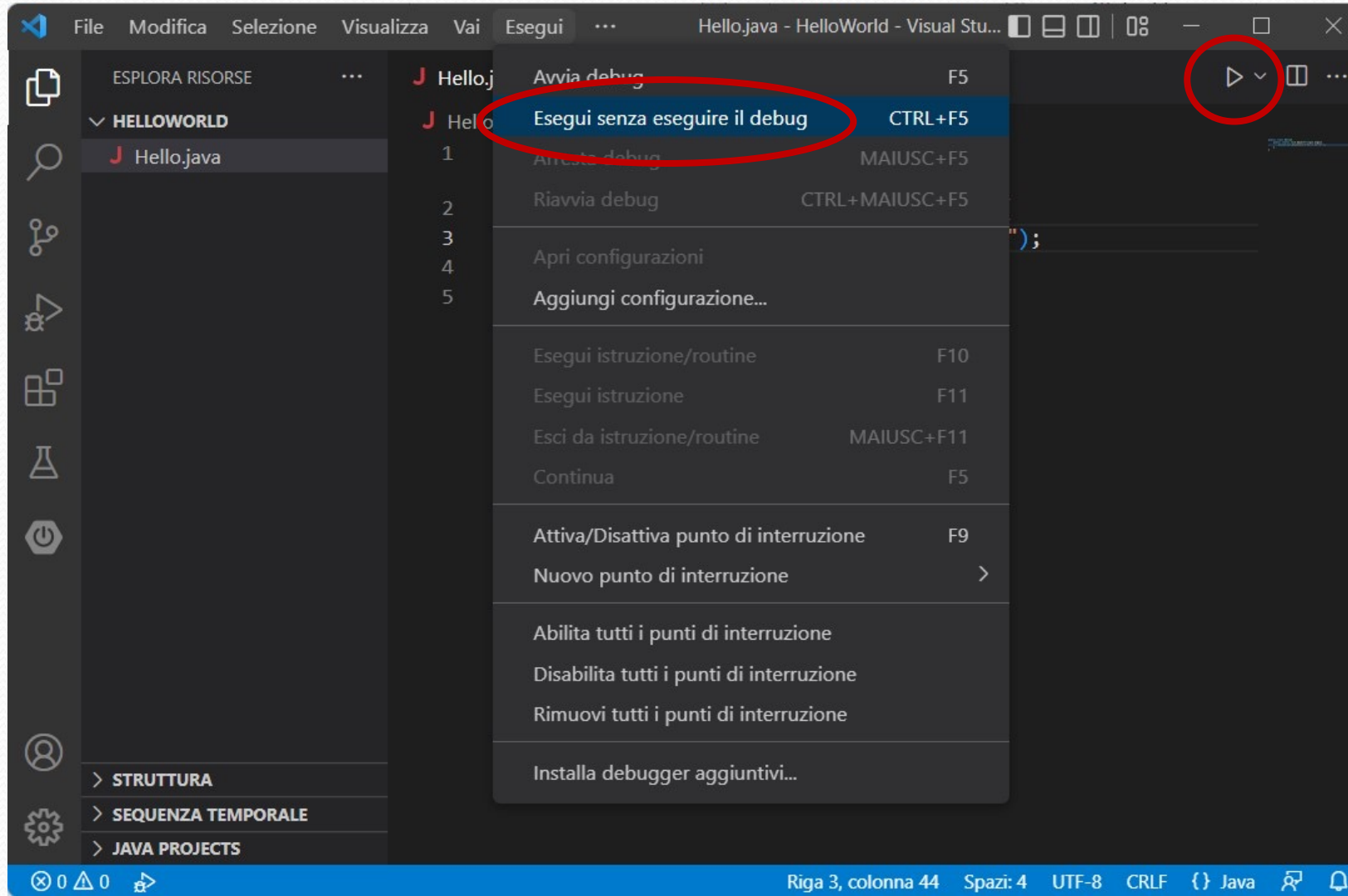


The screenshot shows the Visual Studio Code editor interface. The top menu bar includes 'File', 'Modifica', 'Selezione', 'Visualizza', 'Vai', 'Esegui', and a dropdown menu. The title bar reads 'Hello.java - HelloWorld - Visual Stu...'. The left sidebar contains the 'ESPLORA RISORSE' (Resource Explorer) panel, which shows a project named 'HELLOWORLD' containing a file 'Hello.java'. Below this is the 'STRUTTURA' (Structure) panel, which is currently empty. The main editor area displays the code for 'Hello.java':

```
1 public class Hello{
2     Run | Debug
3     public static void main(String[] args){
4         System.out.println(x: "Hello World!");
5     }
6 }
```

The status bar at the bottom indicates 'Riga 3, colonna 44' (Line 3, column 44), 'Spazi: 4' (Spaces: 4), 'UTF-8', 'CRLF', and 'Java'.

Step7: run your project by clicking on «run» and then on «run without debugging» or by clicking on the run icon on the right.



As you can see, by running a file VS Code will open a new terminal in the section below where you can read the output.

Output

PROBLEMI OUTPUT TERMINALE JUPYTER CONSOLE DI DEBUG

Copyright (C) Microsoft Corporation. Tutti i diritti riservati.

Installa la versione più recente di PowerShell per nuove funzionalità e miglioramenti. <https://>

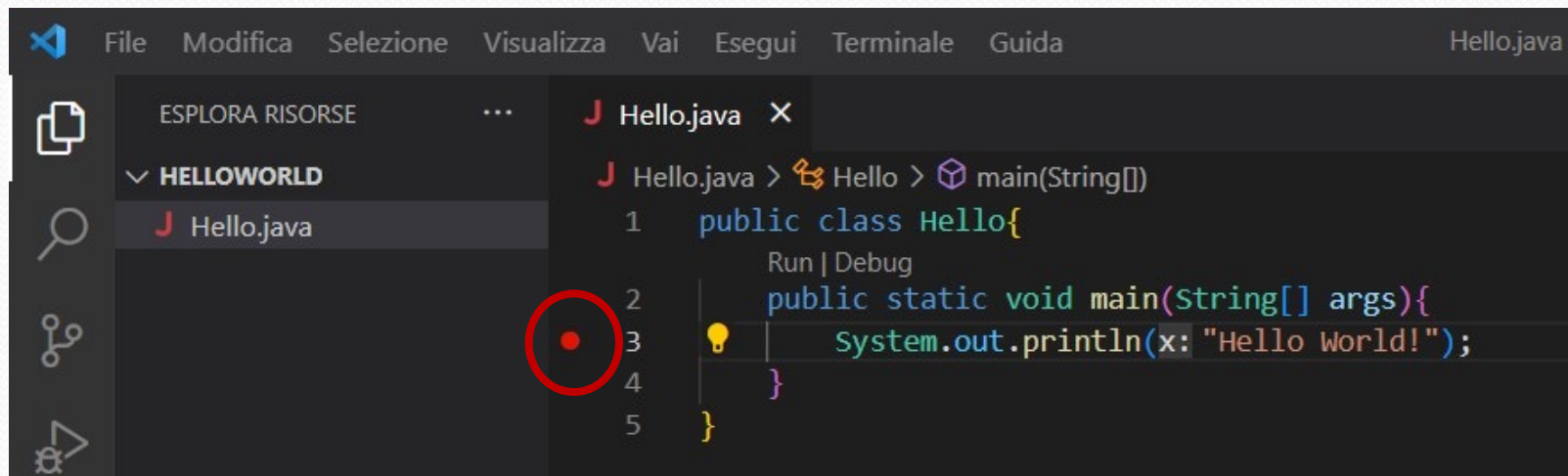
PS C:\Users\filip\Desktop\HelloWorld> & 'C:\Program Files\Java\jdk1.8.0_201\bin\java.exe' '-cp b1de5d6ebb83ba3\redhat.java\jdt_ws\HelloWorld_64d29271\bin' 'Hello'

Hello World

PS C:\Users\filip\Desktop\HelloWorld>

Debugging

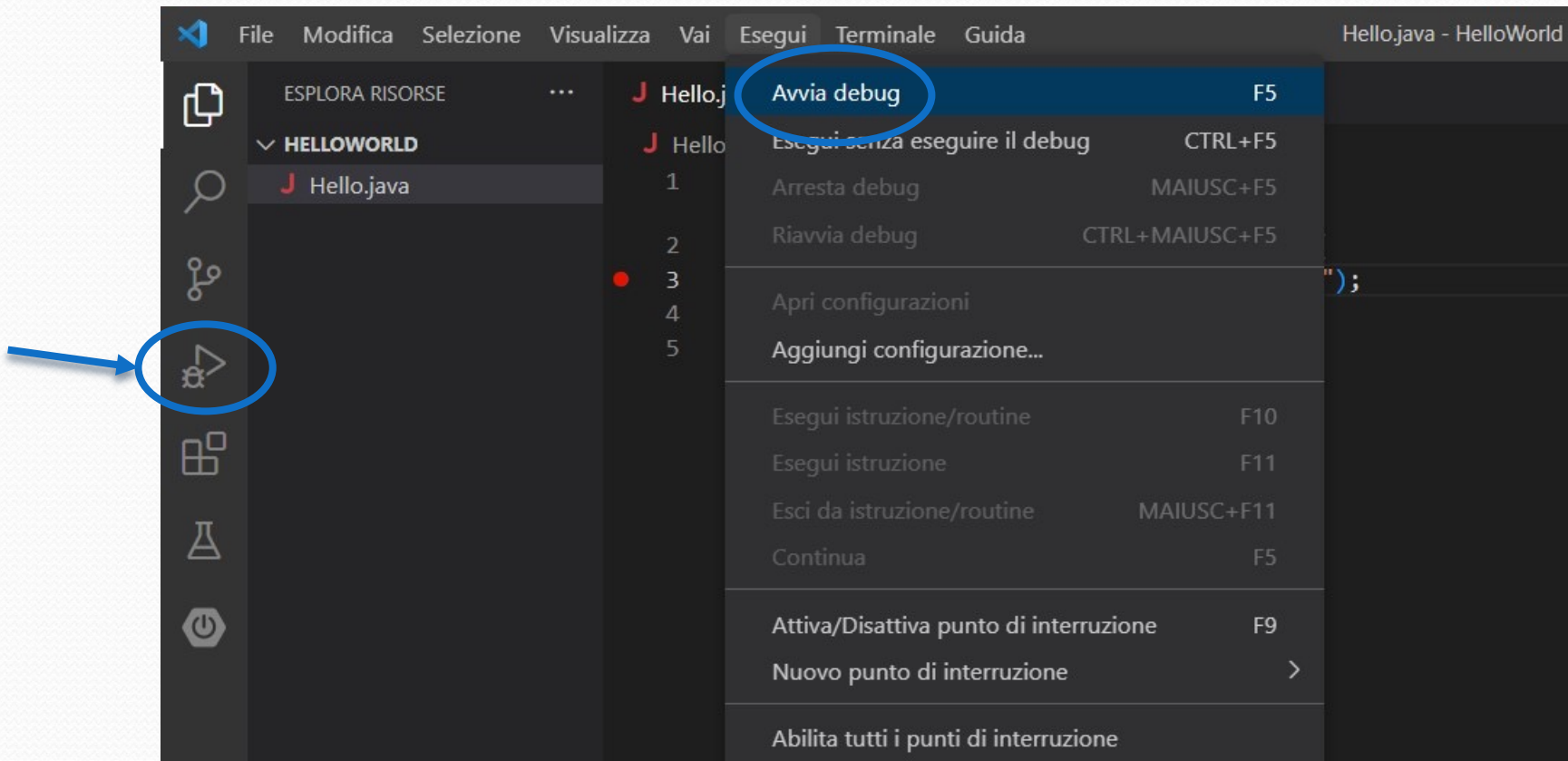
- First, set a breakpoint in the main() method by clicking in the left margin next to the call. If this code were a little less trivial, it would also be possible to set a conditional breakpoint -- one that stops when a particular expression is true, or one that stops after a specific number of hits -- by right-clicking the breakpoint and selecting **Modify Breakpoint** from the context menu.



Debugging

- To start debugging, select **Run > Start Debug** or click the «Run and Debug» icon on the left and then **Start Debug**.

Run and
Debug Icon



Debug Perspective

The screenshot displays the Eclipse IDE in the Debug Perspective. The central editor shows a Java file named 'Hello.java' with the following code:

```
1 public class Hello{  
2     public static void main(String[] args){ args = String[0]@7  
3     System.out.println(x: "Hello World!");  
4 }  
5 }
```

The third line of code is highlighted in green, indicating the current execution point. The left sidebar contains several panels:

- VARIABILI**: Shows local variables, including 'args' with value 'String[0]@7'.
- ESPRESSIONE DI CONTROLLO**: Empty panel.
- STACK DI CHIAMATE**: Shows the call stack with 'Thread [A...] IN ESECUZIONE' and 'Hello.main(String[])'.
- PUNTI DI INTERRUZIONE**: Shows 'Uncaught Exceptions', 'Caught Exceptions', and 'Hello.java' with a breakpoint at line 3.

The bottom panel shows the 'TERMINALE' (Terminal) with the output 'Hello World!' and the command prompt 'PS C:\Users\filip\Desktop\HelloWorld> c:; cd 'c:\Users\filip\Desktop\HelloWorld'; & 'C:\Program Files\Java\jdk1.8.0_201\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:54652' '-cp' 'C:\Users\filip\AppData\Roaming\Code\User\workspaceStorage\7d069cc6b6d1df00db1de5d6ebb83ba3\redhat.java\jdt_ws\HelloWorld_64d29271\bin' 'Hello''.

Buttons to Step through the code.

Variables in the scope with their current values.

Line of code where we stopped.

Call Stack.

List of Breakpoints

Step into

- Step **into** will cause the debugger to descend into any method calls on the current line. If there are multiple method calls, they'll be visited in order of execution; if there are no method calls, this is same as step over. This is broadly equivalent to following every individual line of execution as would be seen by the interpreter.

Step over

- Step **over** proceeds to the next line in your current scope (i.e. it goes to the next line), without descending into any method calls on the way. This is generally used for following the logic through a particular method without worrying about the details of its collaborators, and can be useful for finding at what point in a method the expected conditions are violated.

Step out

- Step **out** proceeds until the next "return" or equivalent - i.e. until control has returned to the preceding stack frame. This is generally used when you've seen all you need at *this* point/method, and want to bubble up the stack.

Python

- VS Code is an editor, which means you can use it with a large variety of programming languages, not only Java. You just need to install the proper extensions.
- For example, if you want to use python you have to install the Python extension for VS Code by Microsoft (just type for Python in the search bar).
 - <https://marketplace.visualstudio.com/items?itemName=ms-python.python>

Python

- Remember to install a Python interpreter if you haven't already.
 - <https://www.python.org/downloads/>
- To check if Python is already installed:
 - Open a command prompt window and type «python3 --version»

Python

- Create an «Hello World» program and run it.

